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ABSTRACT BOOK

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Abstracts from the EAHP 2015 Congress

POSTER AWARD NOMINEES

Presentations on Wednesday, 25 March, 14:00 to 15:30, Hall D

Time	Poster number	Poster nominee oral presentations	Author(s)
14:00	PKP-001	Current vancomycin dosing recommendations for paediatric patients: a pharmacokinetic evaluation	N Rasouli
14:15	PP-002	Compatibility and stability of hyoscine N-butyl bromide and furosemide admixtures for use in palliative care	C Bosch-Ojeda
14:30	PS-042	Parenteral nutrition in premature infants: risk analysis after redesigning a production process	C Salazar
14:45	PS-046	Evaluation of a systematic tool to reduce inappropriate prescribing (STRIP) in adults with intellectual disability: a pilot study	R Zaal
15:00	CP-061	Long-term cost-effectiveness analysis of infliximab, etanercept and adalimumab in rheumatoid arthritis patients in real-life clinical practice	I Viguera-Guerra
15:15	DI-040	Long-term effect of an individualised medication plan with drug administration recommendations on the patients' drug knowledge	AFJ Send

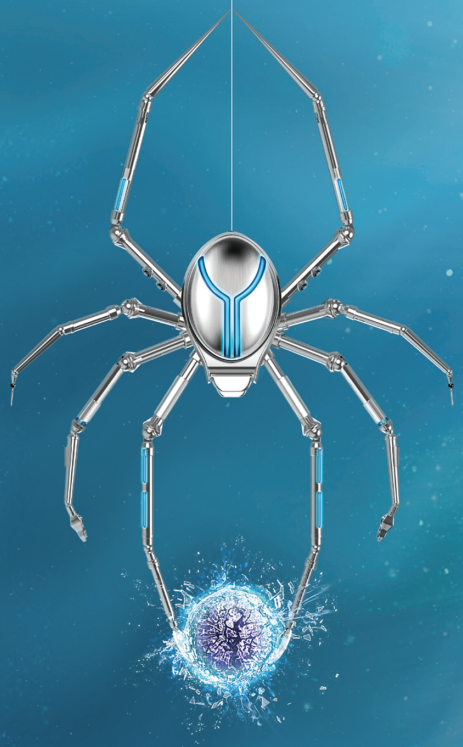
Presentations on Thursday, 26 March, 09:00 to 10:30, Hall D

Time	Poster number	Poster nominee oral presentations	Author(s)
09:00	CP-136	Inappropriate prescribing in older patients: assessment of a screening tool based on the stopp and start criteria	A-L Sennesael
09:15	CP-143	Involvement of microbial flora in aetiology of surgical site infections	D Calina
09:30	PP-028	Long-term stability of diluted solutions of the monoclonal antibody infliximab	N Navas
09:45	PS-116	Exposure to anticholinergic and sedative drugs: relationship between drug burden index, anticholinergic risk scales and falls in elderly hospitalised patients	E Jean-Bart

GAZYVARO™ (obinutuzumab, GA101) The only antibody with proven superiority vs. MabThera® (rituximab) in first-line CLL[1]

Demonstrated by a **head-to-head comparison of GAZYVARO and MabThera**, both in combination with chlorambucil, in adult patients with previously untreated chronic lymphocytic leukaemia (CLL) and with comorbidities making them unsuitable for full-dose fludarabine-based therapy, as per the GAZYVARO licence[1,2]

NEW
treatment option
for first-line CLL



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EFFECTIVE IN THE **REAL WORLD**[1]

- GAZYVARO is the **first glycoengineered type II anti-CD20** monoclonal antibody for CLL,[3,4] **proven to be superior to MabThera**[1]
- In a typical CLL patient population (median age 73 with at least 1 comorbidity), GAZYVARO+chlorambucil:
  - Added almost **1 year median progression-free survival** vs. MabThera+chlorambucil (26.7 months vs. 15.2 months; p<0.001)[1] – CLL11 primary endpoint
  - Is the first antibody to demonstrate **improved overall survival** vs. chlorambucil monotherapy in CLL, showing a 59% reduction in the risk of death (p=0.002); 80% of chlorambucil monotherapy patients vs. 91% of GAZYVARO+chlorambucil patients alive at median 23.0 month follow-up (data not yet mature)[1]
  - Offers a manageable tolerability profile[1]

References:

1. Goede V *et al. N Engl J Med* 2014; **370**:1101–1110 and Supplementary Appendices
2. Gazyvaro Summary of Product Characteristics available at www.medicines.org.uk
3. Ferrara C *et al. Biotechnol Bioeng* 2006; **93**:851–861
4. Mössner E *et al. Blood* 2010; **115**:4393–4402

RXUKOBIN00059 | Date of preparation: August 2014 | Produced by Roche Products Limited

Prescribing information can be found overleaf

GAZYVARO™
obinutuzumab

PRESCRIBING INFORMATION

Gazyvaro™▼ (obinutuzumab) 1000 mg concentrate for solution for infusion

Refer to Gazyvaro SPC for full prescribing information. **Indication:** Gazyvaro in combination with chlorambucil is indicated for the treatment of adult patients with previously untreated chronic lymphocytic leukaemia (CLL) and with co-morbidities making them unsuitable for full-dose fludarabine-based therapy. **Dosage and Administration:** Administer as an IV infusion through a dedicated line, with full resuscitation facilities immediately available and under supervision of an experienced physician. Do not administer as IV push or bolus. Administer premedication before each infusion - see SPC for further details. Consider withholding antihypertensives for 12 hours prior to and throughout each infusion and for the first hour after administration. Prophylaxis for Tumour Lysis Syndrome (TLS): adequate hydration and uricostatics recommended where lymphocyte count >25 x 10^9/L. *Duration of treatment*: 6 treatment cycles each of 28 days duration. Dose: Cycle 1: 1000 mg split over Day 1 (100mg) and Day 2 (or Day 1 continued) (900mg), 1000mg on Day 8 and 1000mg on Day 15. Cycles 2 - 6: 1000 mg on day 1. *Administration*: Monitor closely for infusion related reactions (IRRs) *Cycle 1: Day 1(100 mg)*: Administer at 25 mg/hr over 4 hours. Do not increase the infusion rate. *Day 2 (or Day 1 continued) (900 mg)*: Administer at 50 mg/hr. Infusion rate can be escalated in increments of 50 mg/hr every 30 minutes to a maximum of 400 mg/hr. *Cycle 1: Day 8 and Day 15 and Cycles 2 - 6:* Administer at 100 mg/hr, with escalation by 100 mg/hr increments every 30 minutes to a maximum of 400 mg/hr. Management of IRRs may require temporary interruption, reduction in rate of infusion, or treatment discontinuations – see SPC for further details. . **Contra-indications:** Hypersensitivity to any component of this product. **Precautions:** Record the trade name in the patient record to improve traceability of biological medicinal products. *IRRs*: Most frequently observed during infusion of first 1000mg with most patients having no IRRs during subsequent administrations. Mitigation measures to reduce IRRs should be followed, see SPC. Patients with a high tumour burden (peripheral lymphocyte count in CLL > 25 x 10^9/L) may be at increased risk of severe IRRs. Patients with renal impairment (CrCl < 50 mL/min) and with both Cumulative Illness Rating Scale (CIRS) > 6 and CrCl < 70 mL/min are more at risk of IRRs, including severe IRRs. Cases of cytokine release syndrome have been reported with Gazyvaro. Do not administer further infusions if patient experiences acute life-threatening respiratory symptoms, a Grade 4 (life threatening) IRR or, a second occurrence of a Grade 3 (prolonged/recurrent) IRR (after resuming the first infusion or during a subsequent infusion). Carefully monitor patients who have pre-existing cardiac or pulmonary conditions throughout the infusion and post-infusion period. For patients at acute risk of hypertensive crisis evaluate the benefit and risks of withholding anti-hypertensive medicine. *Hypersensitivity reactions including anaphylaxis*: Anaphylaxis has been reported. Hypersensitivity may be difficult to distinguish from IRRs. If a hypersensitivity reaction is suspected during infusion, stop the infusion and permanently discontinue Gazyvaro. Patients with known IgE mediated hypersensitivity to obinutuzumab must not be treated. *TLS*: TLS has been reported – see Dosage & Administration for suggested prophylaxis. *Neutropenia*: Severe and life-threatening neutropenia including febrile neutropenia has been reported and more frequently in patients with renal impairment (CrCl <50 mL/min). Patients with neutropenia should be closely monitored with regular laboratory tests until resolution. Treat in accordance with local guidelines and consider administration of granulocyte-colony stimulating factor. Consider dose delays with severe or life threatening neutropenia. For severe and long lasting (>1 week) neutropenia, antimicrobial prophylaxis strongly recommended throughout the treatment period until resolution to Grade 1 or 2. Antiviral and antifungal prophylaxis should be considered. Cases of late onset neutropenia (occurring 28 days after treatment end) and prolonged neutropenia (lasting >28 days after treatment end) have also been reported. *Thrombocytopenia*: Severe and life-threatening thrombocytopenia including acute thrombocytopenia (occurring within 24 hours after infusion) has been observed during treatment and more frequently in patients with renal impairment (CrCl <50 mL/min). Fatal haemorrhagic events have also been reported in Cycle 1 of treatment. A clear relationship between thrombocytopenia and haemorrhagic events has not been established. Monitor patients closely during the first cycle; perform regular laboratory tests until event resolution, consider dose delays in cases of severe or life-threatening thrombocytopenia. Use of all concomitant therapies which could worsen thrombocytopenia events should be taken into consideration particularly during the first cycle. *Worsening of pre-existing cardiac conditions*: May occur as part of an IRR and can be fatal. Patients with a history of cardiac disease should be monitored closely and hydrated with caution to prevent fluid overload. *Infections*: Do not administer Gazyvaro in the presence of an active infection and exercise caution when considering use in patients with a history of recurring or chronic infections. In patients with both CIRS>6 and CrCl<70 mL/min, an increased incidence and severity of infections was observed. *Hepatitis B reactivation*: HBV reactivation, some cases resulting in fulminant hepatitis, hepatic failure and death, can occur in patients treated with anti-CD20 antibodies including Gazyvaro. Perform hepatitis B virus screening (including HBsAg and HBcAb-status) before initiating treatment. Patients with active hepatitis B disease should not be treated and those with positive hepatitis B serology should consult liver disease experts before start of treatment and be monitored and managed to prevent hepatitis reactivation. *Progressive Multifocal Leukoencephalopathy (PML)*: PML has been reported and PML diagnosis should be considered in any patient presenting with new-onset or changes to pre-existing neurologic manifestations. Evaluation of PML includes consultation with a neurologist, brain MRI and lumbar puncture. Treatment should be withheld during investigation of potential PML; permanently discontinued if PML confirmed and refer patient to a neurologist. *Immunisation*: The safety of immunisation with live or attenuated viral vaccines following Gazyvaro therapy has not been studied and vaccination with live virus vaccines is not recommended during treatment and until B cell recovery. **Fertility, pregnancy and lactation:** Women of childbearing potential have to use effective contraception during and for 18 months after treatment. Gazyvaro should not be administered to pregnant women unless the possible benefit outweighs the potential risk. **Undesirable effects:** For full listings please refer to the Gazyvaro SPC. *Very common/common*: IRRs occurred in the majority of patients during the first cycle (65% with first 1000 mg infusion decreasing to less than 3% with subsequent infusions). Associated symptoms were nausea, chills, hypotension, pyrexia, vomiting, dyspnoea, flushing, hypertension, headache, tachycardia, and diarrhoea. Respiratory and cardiac symptoms such as bronchospasm, larynx and throat irritation, wheezing, laryngeal oedema and atrial fibrillation also reported. Neutropenia including prolonged and late onset neutropenia, thrombocytopenia, anaemia, leukopenia. Nasopharyngitis, urinary tract infection, oral herpes, rhinitis, pharyngitis. Squamous cell carcinoma of skin. TLS, hyperuricaemia. Hypertension. Cough. Diarrhoea, constipation. Alopecia. Arthralgia, back pain, musculoskeletal chest pain. Pyrexia. Weight increased. *Serious reactions*: IRRs. TLS. Neutropenia, thrombocytopenia. Cardiac events. PML (very rarely). Bacterial, fungal and new or re-activated viral infections. Worsening of pre-existing cardiac conditions; arrhythmias, angina pectoris, acute coronary syndrome, myocardial infarction and heart failure (these events may occur as part of an IRR and can be fatal). *Elderly*: Patients aged ≥75 years experienced more serious adverse events leading to death than patients < 75 years. Consult the SPC in relation to other adverse reactions **Legal Category:** POM **Presentation and Basic NHS Costs**: 1000mg of obinutuzumab in 40 mL (25 mg/mL) pack of 1 vial: £3,312.00. **Marketing Authorisation Number**: EU/1/14/937/001 **Marketing Authorisation Holder**: Roche Registration Limited, 6 Falcon Way, Welwyn Garden City, AL7 1TW. GAZYVARO is a registered trade mark.

RXUKMEDI00186 **Date of Preparation** July 2014

▼This medicinal product is subject to additional monitoring. This will allow quick identification of new safety information. Healthcare professionals are asked to report any suspected adverse reactions.

Adverse events should be reported. Reporting forms and information can be found at www.mhra.gov.uk/yellowcard. Adverse events should also be reported to Roche Products Ltd. Please contact Roche Drug Safety Centre by emailing welwyn.uk_dsc@roche.com or calling +44 (0)1707 367554.

As Gazyvaro is a biological medicine, healthcare professionals should report adverse reactions by brand name and batch number.

PRESCRIBING INFORMATION: MABTHERA® (rituximab) 100mg & 500mg concentrate for solution for infusion

Please refer to MabThera concentrate for solution for infusion SmPC for full prescribing information

Indications: Treatment of follicular lymphoma (FL) (i) with chemotherapy in previously untreated patients with stage III-IV FL, (ii) as maintenance therapy in patients responding to induction therapy (iii) as monotherapy in patients with stage III-IV FL who are chemoresistant or in second or subsequent relapse after chemotherapy. Treatment of previously untreated and relapsed/refractory chronic lymphocytic leukaemia in combination with chemotherapy. Treatment of CD20-positive diffuse large B-cell non-Hodgkin's lymphoma (DLBCL) in combination with CHOP. **Dosage and Administration:** Administer prepared MabThera as an IV infusion through a dedicated line, with full resuscitation facilities immediately available and under supervision of an experienced healthcare professional. Do not administer as IV push or bolus. Administer antipyretic and antihistaminic premedication before each infusion. Consider glucocorticoid premedication if chemotherapy does not contain glucocorticoid. Monitor closely for onset of cytokine release syndrome (CRS). Severe reactions e.g. severe dyspnoea, bronchospasm or hypoxia require immediate interruption of infusion. Evaluate FL patients for tumour lysis syndrome (TLS). *Follicular lymphoma:* (i) In combination with chemotherapy for previously untreated or relapsed/refractory FL, 375mg/m^2 on day 1 of each chemotherapy cycle for up to 8 cycles, (ii) As maintenance in patients responding to induction therapy for previously untreated FL: 375mg/m^2 once every 2 months (starting 2 months after the last dose of induction therapy) until disease progression or for maximum 2 years. In relapsed/refractory patients responding to induction therapy: 375mg/m^2 once every 3 months (starting 3 months after the last dose of induction therapy) until disease progression or for maximum 2 years. (iii) Induction as a single agent (includes retreatment following relapse), 375mg/m^2 once weekly for four weeks. *Diffuse large B-cell non-Hodgkin's lymphoma:* In combination with CHOP, 375mg/m^2 on day 1 of each chemotherapy cycle for 8 cycles. Administer after iv infusion of the glucocorticoid if applicable. *Chronic lymphocytic leukaemia:* Prophylactic hydration and uricostatics recommended 48 hours prior to MabThera. Where lymphocyte counts >25x10^9/L prednisone/prednisolone 100mg IV shortly before MabThera is recommended. In combination with chemotherapy, 375mg/m^2 on day 0 of first treatment cycle then 500mg/m^2 on day 1 of subsequent cycles, for 6 cycles in total. *First Infusion:* Recommended initial rate is 50mg/hr after 30 minutes this can be escalated in 50mg/h increments every 30 minutes to a maximum of 400mg/h. *Subsequent Infusions:* Initial rate 100mg/hr, and increased by 100mg/h increments at 30 minute intervals to a maximum of 400mg/h. *Dose adjustments:* No dose reductions of MabThera recommended. *Paediatric use:* Safety and efficacy of MabThera in children not established. **Contra-indications:** Hypersensitivity to any component of MabThera or to murine proteins. Active, severe infections. Severely immunocompromised patients. **Precautions:** Record tradename in the patient record to improve traceability of biological medicinal products. MabThera is associated with infusion related reactions (IRRs) including CRS, TLS, anaphylactic and hypersensitivity reactions. Severe IRRs with fatal outcome have been reported, characterised by pulmonary events and in some cases included rapid TLS and features of TLS in addition to fever, chills, rigors, hypotension, urticaria, angioedema & other symptoms. Use extreme caution and closely monitor first infusion when treating patients with >25x10^9/L circulating malignant cells or high tumour burden (higher risk of severe CRS). Consider reduced rate or split dose for any infusion where lymphocyte counts >25x10^9/L. See SmPC for further details on severe IRRs. Infusion related reactions of all kinds have been observed in 77% of patients treated with MabThera. Anaphylaxis and other hypersensitivity reactions have been reported following IV administration of proteins to patients. Additional reactions reported in some cases were myocardial infarction, atrial fibrillation, pulmonary oedema and acute reversible thrombocytopenia. Consider withholding anti-hypertensive medications prior to infusion. Caution in patients with a history of pulmonary insufficiency or pulmonary tumour infiltration. Closely monitor patients with history of cardiac disease and/or cardiotoxic chemotherapy. Perform regular full blood counts during MabThera therapy. Caution in patients with a history of, or susceptible to, chronic/recurring infection. Cases of fatal hepatitis B reactivation have been reported. Screen all patients for Hepatitis B virus (HBV) before initiating MabThera treatment; do not treat patients with active hepatitis B disease. Patients with positive HBV serology should consult a liver specialist and if treated be monitored and managed to prevent HBV reactivation. Monitor for progressive multifocal leukoencephalopathy (PML) and permanently discontinue MabThera if confirmed. Fatal cases have been reported – refer to SmPC for more information. Severe skin reactions such as Toxic Epidermal Necrolysis (TEN) and Stevens-Johnson Syndrome (SJS) – permanently discontinue treatment. For safety or efficacy of immunisation – consult SmPC. **Pregnancy and Lactation:** Use effective contraception during and for 12 months following MabThera treatment. **Undesirable effects:** *Common adverse reactions:* Infusion related reactions, reported in more than 50% of patients in clinical trials, predominantly during first infusion, usually in first 2 hours; mainly fever, chills and rigors; other symptoms include flushing, angioedema, nausea, urticaria/rash, fatigue, headache, throat irritation, rhinitis, vomiting and tumour pain; accompanied by hypotension and bronchospasm in up to 12% of cases. Incidence of infusion related symptoms decreases substantially with subsequent infusions. Infections: bacterial, viral & fungal infections reported. Haematological adverse events: occurred in a minority of patients and usually mild and reversible. Severe (grade 3 and 4) events (higher incidence in CLL patients >65yrs): thrombocytopenia, neutropenia, granulocytopenia, severe anaemia. Prolonged or late onset neutropenia in up to 25% CLL patients with FC chemotherapy. Cardiovascular events: exacerbation of pre-existing cardiac conditions such as angina pectoris or congestive heart failure. Hypotension, hypertension, arrhythmia. *Serious adverse reactions:* Serious infection including hepatitis B reactivation (common). Late neutropenia, pancytopenia, aplastic anaemia. Severe events in patients with prior cardiac condition or cardiotoxic chemotherapy, heart failure, myocardial infarction, cardiac arrythmias. Hearing loss. Severe vision loss. Multi-organ failure. Infusion related reactions, anaphylaxis, tumour lysis syndrome, cytokine release syndrome, serum sickness. Cranial neuropathy, peripheral neuropathy, facial nerve palsy, loss of other senses and progressive multifocal leukoencephalopathy. Renal failure. Bronchospasm, respiratory failure, pulmonary infiltrates, interstitial lung disease. Gastro-intestinal perforation. Severe bullous skin reactions; Toxic Epidermal Necrolysis, Stevens-Johnson Syndrome. Vasculitis. Cases of posterior reversible encephalopathy syndrome (PRES) / reversible posterior leukoencephalopathy syndrome (RPLS) reported – see SmPC. *Prescribers should consult the SmPC in relation to other side-effects.* **Legal Category:** POM. **Presentations and Basic NHS Costs:** 100mg of rituximab in 10mL (10mg/mL) pack of 2 vials: £349.25. 500mg of rituximab in 50mL (10mg/mL) pack of 1 vial: £873.15. **Marketing Authorisation Numbers:** EU/1/98/067/001 (100mg). EU/1/98/067/002 (500mg). **Marketing Authorisation Holder:** Roche Registration Limited, 6 Falcon Way, Welwyn Garden City, AL7 1TW. MABTHERA is a registered trade mark.

RXUKMEDI00194 **Date of Preparation:** July 2014

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Adverse events should be reported. Reporting forms and information can be found at www.mhra.gov.uk/yellowcard. Adverse events should also be reported to Roche Products Ltd. Please contact Roche Drug Safety Centre by emailing welwyn.uk_dsc@roche.com or calling +44(0)1707 367554.

As MabThera is a biological medicine, healthcare professionals should report adverse reactions by brand name and batch number.

GAZYVARO™▼

obinutuzumab

Clinical pharmacy

CP-001 IMPACT OF A PHARMACEUTICAL CARE PROGRAMME FOCUSED ON SOLID ORGAN TRANSPLANT PATIENTS

M Montero-Hernández*, M Fernández-Megía, I Font-Noguera, M Cuellar-Monreal, C Planells-Herrero, C Sáez-Pons, P García-Gómez, J Poveda-Andrés. *Hospital Universitario Y Politécnico La Fe, Pharmacy, Valencia, Spain*

10.1136/ejhpharm-2015-000639.1

Background Patient and organ survival is dependent on the use of immunosuppressant drugs. The doses are reduced several months after the surgery to low maintenance phase levels. Treatments are complex and require drug treatment monitoring.
Purpose To analyse the impact of a Pharmaceutical Care Programme focused on solid organ transplant patients for the prevention and correction of drug-related problems (DRPs). DRPs include medication errors in the process of prescribing, dispensing or administering a drug.
Material and methods Study design: retrospective observational study. Sample: 222 solid organ transplant patients: 94 kidney (9 with pancreas), 31 lung, 86 liver and 19 heart. The IASER method (identify, act, monitor, evaluate and results) was used as a tool to analyse and categorise the DRPs. Variables: number and type of DRP, drugs, recommended actions, acceptance and cost savings (acquisition drug cost, preparation and administration time cost, GRD cost, etc.
Results 125 DRPs were detected in 88 patients (0.5 problem/solid organ transplant patient). 60.8% of the patients were males and the average of age was 53 years (7–86). Identified by validation (71.2%) and analytical parameters (24.0%). 41.6% of DRPs reached the patient. The main problems were over dosage (24%) in kidney transplant and (8%) in liver transplant patients, the need for additional treatment (12%) in lung transplant and (1.6%) in heart transplant patients. The DRPs were categorised into safety (45.6%), indication (33.6%), effectiveness (18.4%) and adherence (2.4%). The therapeutic groups involved were mainly antibiotics (50%) and immunosuppressants (26%). 81.6% of the actions were accepted by physicians. 72% were relevant to improving patient care. The financial impact was €69,826/year saved (€38,123/year in kidney transplant, €19,106/year in lung transplant, €9,658/year in liver transplant and €2,939/year in heart transplant patients).
Conclusion Management of complex treatments requires the involvement of all health professionals. A pharmaceutical care programme based on pharmacotherapeutic monitoring resolved DRPs in solid organ transplant patients. It improved the quality of treatment and saved money.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-002 PHARMACEUTICAL CARE SYSTEM FOR LIVER TRANSPLANT PATIENTS USING ELECTRONIC CONSULTATION

[1]M Fernández-Megía*, [2]R López-Andujar, [1]I Font-Noguera, [1]M Montero-Hernández, [1]I Puchalt-Escribano, [1]J Poveda-Andrés. *[1]Hospital Universitario Y Politécnico La Fe, Pharmacy, Valencia, Spain; [2]Hospital Universitario Y Politécnico La Fe, Hepatobiliary Surgery Unit, Valencia, Spain*

10.1136/ejhpharm-2015-000639.2

Background Information and education for transplant patients can improve their health outcomes. Communication between health professionals through the electronic medical record is used in the management of hospitalised patients.
Purpose To evaluate a pharmaceutical care program in liver transplantation patients through electronic consultation.
Material and methods Setting: tertiary hospital of 1,000 beds. Design: observational prospective study. Population: 90 liver transplant patients during 2013. System: the physician requests the pharmacist consultation via the electronic medical record. The pharmacist delivers the documentation and training to the patient in collaboration with the medical and nursing team. At discharge, the pharmacist gives education about drugs by an informative newsletter and planning schedule. One week after discharge, he telephones the patient to complete a survey on the training level and satisfaction. Variables: patient characteristics, diagnosis, treatment, level of understanding and satisfaction.
Results During the study period, 63 patients met the criteria for inclusion in the system. 100% of the consultations were performed and recorded. (Median; range): 57 years (26–69); 80% male; stay: 14 days (8–60); number of diseases contributing to the patient's condition: 2.5 (1–9); drugs at admission: 5.5 (0–14); drugs at discharge: 10 (5–10). The main reason for transplantation was viral hepatitis: HCV (58%), HBV (14%), alcoholic cirrhosis (30%) and hepatocellular carcinoma associated with previous cases (14%). 31 surveys were obtained with a level of understanding 4.8 out of 5. 90% of patients used the schedule delivered. 58% claimed to know what it was for each drug, 90% were not confused with taking the medicines and 97% did not forget to take their medicines. Finally, 97% said they were satisfied with the information received.
Conclusion The participation of a pharmacist in this system can contribute to a better understanding of the treatments by the transplant patient. Electronic consultation has proved a useful and efficient tool for coordinating activities among professionals involved.

REFERENCESS AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-003 CLINICAL PHARMACIST INTERVENTIONS ON PARENTERAL NUTRITION APPROPRIATENESS IN A TEACHING HOSPITAL

G Meers, K Noerens*, H Collier, P Cortoos. *UZ Brussel, Hospital Pharmacy, Brussels, Belgium*

10.1136/ejhpharm-2015-000639.3

Background Total Parenteral Nutrition (TPN) isn't always prescribed according to international guidelines: nutritional screening is frequently lacking, the prescribed therapy is not always adapted accordingly and subsequent monitoring is often absent. Our objective was to assess the potential benefit of a clinical pharmacist reviewing prescribed TPN.
Purpose Evaluation of the appropriateness of prescribed TPN.
Material and methods Setting: A prospective pre-post intervention study in a tertiary care teaching hospital with a high percentage of cancer and critically ill patients.

Method: Adult hospitalised patients on TPN were included. The presence of a Nutritional Risk Screening-2002 and the calculation of energy requirements, the indication, the therapy appropriateness and the therapy duration were assessed by a

clinical pharmacist. During the intervention period feedback was provided to the physician and dietician in multidisciplinary collaboration. The ESPEN guidelines were taken as golden standard. All data were obtained from the electronic patients files.
Results We assessed 272 hospitalisations, 152 pre-interventional (10/2013–01/2014) and 120 post-interventional (02/2014–04/2014). During the latter period an intervention was needed in 83.7% (176 interventions) of the cases. Prevalence of nutritional screening increased from 25.0% to 61.7% ($p < 0.001$) as did energy requirement calculation (30.9% vs. 67.5%; $p < 0.001$). Therapy appropriateness increased from 58.8% to 75.8% ($p < 0.05$). The median duration (6.0 vs. 7.0 days) of the therapy was not significantly reduced ($p = 0.36$). We avoided the production of at least 81 TPNs on a total of 1172. During the 3 month intervention period an estimated total saving of 20756€ could be obtained.
Conclusion The additional monitoring of the appropriateness of TPN by a clinical pharmacist has a positive influence on therapy quality and healthcare costs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

1 ESPEN guidelines (http://www.espen.org/education/espen-guidelines)
2 Nutrition support team

No conflict of interest.

CP-004 AGE-RELATED MACULAR DEGENERATION: ECONOMIC IMPACT OF IMPLEMENTING TREATMENT GUIDELINES

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Introduction
Background Drugs for age-related neovascular macular degeneration (AMD) reverse the disease process, usually leading to gains in visual acuity. Ranibizumab (Lucentis) was licensed for AMD in the EU in 2007. Bevacizumab (Avastin), has been widely used globally off-label by splitting up doses licensed for cancer.
Purpose To assess the use and cost of intravitreal ranibizumab and bevacizumab, after the implementation of AMD treatment guidelines.
Methods A retrospective analysis of the use of both drugs in our hospital from 2007 to 2013 was conducted. At the end of 2009 AMD treatment guidelines were implemented in our hospital: ranibizumab 0.5 mg only can be prescribed after poor response to three monthly injections of bevacizumab 1.25 mg.
Results A total of 494 doses of ranibizumab were administered to 107 patients. Bevacizumab was administered to 418 patients with a total of 1325 doses.

Prescriptions for each drug were as follows (from 2007 to 2013):

- Ranibizumab: 23, 147, 179, 32, 27, 25, 61.
- Bevacizumab: 0, 56, 63, 204, 259, 340, 403.

In 2010 after the implementation of the protocol, ranibizumab prescriptions decreased 82.1%, from 179 (2009) to 32 (2010). Bevacizumab prescriptions increased 223.8%, from 63 (2009) to 204 (2010).

Ranibizumab injection average cost was €985.69 per injection. Each bevacizumab injection cost €16.40. Ranibizumab costs in the whole seven year period were €486,929. Bevacizumab costs in the same period were €21,730. Global saving costs for implementing this protocol in our hospital were €1,151,128.
Conclusions Our study showed that considerable savings may be obtained by promoting the most cost-effectiveness alternative as first line treatment for AMD. The role of hospital pharmacists was crucial, involving the process of splitting up bevacizumab doses.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

CP-005 ASSESSMENT OF DRUG-DRUG INTERACTIONS INVOLVING PSYCHIATRIC AGENTS IN HOSPITALISED PATIENTS

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10.1136/ejhpharm-2015-000639.5

Background The use of psychiatric agents in hospitals increases the complexity of pharmacotherapy and the risk of drug–drug interactions.
Purpose To assess the frequency and clinical relevance of interactions associated with the use of antipsychotics, anxiolytics, antidepressants and sedative/hypnotics in a hospital.
Material and methods Cross-sectional observational study in which the treatment of adult patients admitted to a general hospital (1,350 beds) was reviewed. The investigators, using a computerised physician order entry program, evaluated pharmacotherapy of inpatients involving antipsychotics, anxiolytics, antidepressants and sedatives/hypnotics. They assessed drug-drug interactions and their clinical significance as described in the literature. Reference sources were the Micromedex database and the Spanish Society of Hospital Pharmacist's professional guide to drug interactions.
Results Treatment of 393 patients was analysed. Of these, 179 (45.5%) were prescribed one of the drugs studied; 53.6% were female and 46.4% male with mean age 65 (SD ± 17.7) years. The average number of drugs prescribed per patient was 12 (SD ± 4.41). A total of 221 drug interactions was detected (9.5% pharmacokinetic, 90.5% pharmacodynamic), affecting 70.4% of patients. A total of 42.8% were due to prescription of antipsychotics, 31.1% due to antidepressants, 18.5% to anxiolytics and 7.6% to hypnotics/sedatives. The medical specialties involved were surgery (22.4%), oncology (11.1%), cardiology (8.9%), internal medicine (8.9%) and psychiatry (8.4%). Based on clinical significance, 47.5% of interactions were severe, 25.3% moderate and 27.1% mild. Potential interactions with significant clinical effects were haloperidol-tramadol (increased seizure risk), escitalopram-low molecular weight heparin (increased risk of bleeding) and midazolam-morphine (increased sedation). Three contraindicated combinations were detected: escitalopram-metoclopramide for increased QT interval, linezolid-amitriptyline for serotonin syndrome and risperidone-metoclopramide for neuroleptic syndrome and extrapyramidal reactions.
Conclusion Prescription of antipsychotic drugs, antidepressants, anxiolytics and sedatives/hypnotics to inpatients is very common. These drugs cause numerous drug interactions, which can potentially have serious consequences for hospitalised patients.

REFERENCES AND/OR ACKNOWLEDGEMENTS

1 Psychiatric Department

No conflict of interest.

CP-006 PRACTICAL UTILITY OF ITPA GENOTIPATION IN A TERTIARY HOSPITAL

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10.1136/ejhpharm-2015-000639.6

Background Inosine triphosphatase (ITPA) genotyping is used for predicting anaemia in patients with genotype 1 chronic hepatitis C. The AA and CA genotypes have the lowest incidence of anaemia.
Purpose To compare the incidence of anaemia, the reduction in ribavirin (RBV) dose and the use of darbepoetin in patients treated with boceprevir or telaprevir before and after the introduction of ITPA genotyping in a tertiary care hospital.
Material and methods Observational, pre-post intervention study using pharmacotherapeutic records of patients treated with telaprevir or boceprevir before and after the introduction of ITPA genotyping. Anaemia was defined as haemoglobin (Hb) <10.5 mg/dL. Baseline characteristics were age, sex, fibroscan, basal Hb, nadir Hb and ITPA genotype. Homogeneity of baseline characteristics was evaluated by the t-test. Comparisons of the incidence of anaemia, the reduction of RBV dose and the use of darbepoetin were made with the independent proportions test.
Results Before genotyping 37 patients were included (27 male, 10 female): Mean fibroscan was 22 kpa, mean basal Hb was 15.6 mg/dL and mean nadir Hb was 10.4 mg/dL. After genotyping 20 patients were included (16 male, 4 female): 18 patients were CC (90%) and two were AC (10%). Mean fibroscan was 11.9 kpa (significantly lower than before genotyping). Mean basal Hb was 16.1 mg/dL and mean nadir Hb was 10.9 mg/dL.

Comparison of before and after results. Reduction in RBV dose: 43.2% vs. 40% (p = n.s.); anaemia: 35.1% vs. 45% (p = n.s.); and treatment with darbepoetin: 32.4% vs. 25% (p = n.s.)
Conclusion Although the reduced use of darbepoetin suggests the practical utility of this resource, a higher percentage of patients experienced anaemia after ITPA genotyping was available. This is possibly because the RBV dose was reduced by less than before genotyping even though 90% of patients were the CC (pro-anaemia) genotype. Greater emphasis should be placed on this resource.

No conflict of interest.

CP-007 HEPATITIS C VIRUS TREATMENT-RELATED ANAEMIA AND ITS ASSOCIATION WITH HIGHER SUSTAINED VIROLOGIC RESPONSE RATE

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10.1136/ejhpharm-2015-000639.7

Background Some authors have described that among Hepatitis C Virus (HCV) genotype 1-infected patients treated with dual therapy, anaemia has been associated with higher rates of Sustained Virological Response (SVR) as well as the use of erythropoiesis-stimulating agents.
Purpose To investigate the relationships between treatment outcomes, anaemia, and their management with ribavirin dose reduction and/or darbepoetin in patients treated with boceprevir (BOC) or telaprevir (TLV) in a tertiary hospital.
Material and methods Observational study. Data was collected from pharmacotherapeutic records of patients who initiated therapy with TLV or BOC between December'12 and May'13. Anaemia was defined as haemoglobin (Hb) <10.5 mg/dL. Darbepoetin was permitted for anaemic patients after ribavirin dose reduction. The variables were: age, sex, reduction of ribavirin dose and use of darbepoetin.
Results 36 patients were studied (26 men and 10 women). 23 (63.8%) patients were treated with TLV and 13 (36.2%) with BOC.

25 (69.5%) patients reached SVR (16 (69.5%) for TLV and 9 (69.2%) for BOC). 12 of these patients experienced anaemia (48%) (7 (43.8%) for TLV and 5 (55.6%) for BOC). The total number of patients who experienced anaemia was 17 (47.2%) (9 (39.1%) for TLV and 8 (61.5%) for BOC), 16 patients (44.4%) had a reduction in their ribavirin dose (8 (34.8%) for TLV and 8 (61.5%) for BOC) and 12 patients (33.3%) used darbepoetin (6 (26.1%) for TLV and 6 (46.1%) for BOC); 8 of these 12 (66.6%) patients showed SVR, 1 relapsed and 3 abandoned treatment due to adverse events (4 (66.6%) for TLV and 4 (66.6%) for BOC).
Conclusion

1. Among our genotype 1-infected patients treated with BOC or TLV anaemia was not associated with higher rates of SVR.
2. Patients with darbepoetin did not have higher rates of SVR.
3. Percentages of SVR were similar between TLV and BOC.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-008 A CLINICO-ETHICAL FRAMEWORK FOR MULTIDISCIPLINARY MEDICINES REVIEW IN NURSING HOMES: A HEALTH FOUNDATION SHINE PROJECT

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Background Polypharmacy is common in care home residents. Inappropriate and potentially harmful prescribing in older people has been reported extensively in the literature. Residents in care homes often have little involvement in prescribing decisions involving them. Reviewing and stopping inappropriate medicines is not standard practice across the health economy.
Purpose To develop a method of optimising medicines whilst ensuring that all residents were involved in decisions.
Material and methods Pharmacists undertook a detailed medicines review using primary care records and presented to a multidisciplinary team (MDT) meeting with the care home nurse and general practitioner. The team considered:

- Is the medicine still needed?
- Is the medicine beneficial, taking into account co-morbidities?
- Are any appropriate medicines not being prescribed?

Following the MDT meeting, residents were asked their views before any intervention was made. Residents were followed up after the review to identify any adverse events. Any residents taking psychotropic medicines were discussed with a Psychiatry of Old Age Services consultant where appropriate.

Results In total 422 residents in 20 care homes were reviewed; 1,346 interventions were made in 384 (91%) residents, with the most common intervention being to stop a prescription. 704 medicines were stopped in 298 residents. 1.7 medicines were stopped for every resident reviewed (range 0 to 9 medicines; SD 1.7), giving a 17.4% reduction in medicines prescribed. The main reasons for stopping medicines were a lack of current indication (57%) and residents not wanting to take the medicine (17%). 41 medicines (6%) were stopped because of safety concerns. Follow-up found 9 minor events following stopping medicines. The net annualised savings against the medicines budget were €99,340 or €235 per resident reviewed.

Conclusion This project demonstrated that a multidisciplinary medicines review involving a pharmacist, doctor, care home nurse and the resident can safely reduce over-prescribing and inappropriate medication whilst generating significant savings from the medicines budget.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-009 IMPACT OF PHARMACEUTICAL INTERVENTION ON QUALITY OF LIFE AND COPING STRATEGIES IN PATIENTS WITH HAEMATOLOGICAL MALIGNANCIES

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10.1136/ejhpharm-2015-000639.9

Background Chemotherapy especially that used in Haematological Malignancies (HMs) has severe biological and clinical adverse effects (AEs). Such symptoms often impair patients' quality of life (QoL). Adjuvant drugs are prescribed to patients to prevent these AEs. For patients at home, taking these adjuvant drugs is complicated because of the different regimens: only if necessary (antiemetics), only in the presence of symptoms such as fever (antibiotics), etc.

Purpose In our hospital, patients receiving their first chemotherapy for an HM benefit from a pharmaceutical intervention (PI).

We conducted a prospective study approved by the local ethics committee to determine the impact of the PI on pain, fatigue, QoL and coping strategies in patients undergoing chemotherapy for an HM.

Material and methods Patients received either usual care (UC) + PI (PI group) or UC alone (UC group). They had to complete the QLQ-C30 and MAC 21 questionnaires before starting the 1st chemotherapy session (T1), during the inter-treatment interval (T2) and the day before starting the 2nd chemotherapy session (T3).

To determine predictive factors of pain, fatigue and QoL at T3, a univariate followed by a multivariate ANOVA was used. The time until definitive deterioration was estimated using a Kaplan-Meier method.

Results 68 patients were included in the PI (n = 34) or UC groups (n = 34). Ninety-two percent of the patients returned all the questionnaires. At T3, pain and fatigue were lower in the PI group. Between T1 and T3, QoL remained stable. We identified a significant improvement of 5 points in QoL for patients in the PI group.

Conclusion Whatever the statistical model used, the pharmacist intervention at the beginning of chemotherapy had a less than significant impact on pain and fatigue but nevertheless it was confirmed to have had a significantly positive impact on QoL.

REFERENCES AND/OR ACKNOWLEDGEMENTS

The authors thank Philip Bastable.

No conflict of interest.

CP-010 ADHERENCE TO LONG-TERM MEDICINES IN HIV-INFECTED PATIENTS

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10.1136/ejhpharm-2015-000639.10

Background Comorbid chronic conditions have increased among HIV-infected patients. Little work has studied adherence rates for long-term medicines (LTMs).

Purpose To assess adherence to other LTMs (non-antiretroviral therapy) among HIV-infected patients as well as to evaluate its relationship with clinical and therapeutic factors.

Material and methods A cross-sectional study was conducted from May to July 2014 in HIV-infected patients treated with ART and ≥1 LTM. The following variables were collected: sex, age, living situation, employment status, mode of transmission, T-CD4, viral load, CDC classification, type of ART and adherence to other LTM (non-antiretroviral treatment), using the 4-item Morisky Medication Adherence Scale. The chi-squared test was applied to examine the role of the different variables on adherence, using SPSS 20.0.

Results 126 patients were included (80.4% male, mean age 50.4 ± 8.3). Injection drug use was the main mode of transmission (61.9%). The median T-CD4 was 538.5 cells/mm^3 (IQR: 341.1–778.2). Most of patients presented T-CD4 ≥ 500 cells/mm^3 (56.3%) and undetectable viral load (74.6%). 63.5% of them had AIDS. ART was mainly (36.5%) two nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs) with one non-nucleoside reverse transcriptase inhibitor (NNRTI). The percentage of patients adherent to other LTMs (non-antiretroviral therapy) was 46.0%. The variable AIDS exhibited a statistically significant relationship with non-adherence (OR = 2.2; CI [1.1–4.7]; p = 0.041). The most common long-term medicines were sedatives and anxiolytics (42.9%), lipid-lowering drugs (35.7%), antihypertensives (33.3%), gastrointestinals (28.6%), antidepressants (15.1%), antidiabetics (12.7%), analgesics (11.1%), antiasthmatics (9.5%) and cardiovascular drugs (87.9%).

Abstract CP-010 Table 1

Variable: n (%)	Non-Adherent (n = 68)	Adherent (n = 58)	p-Value
Age ≥ 50 years	30 (44.1)	26 (44.8)	1.000
Gender: female	14 (20.6)	12 (20.7)	1.000
Living alone	18 (26.5)	11 (19.0)	0.399
Employment status: employed	16 (23.5)	19 (32.8)	0.399
Mode of transmission			
Sexual	21 (30.9)	27 (46.6)	
Injection drug use	47 (69.1)	31 (63.4)	0.097
Detectable viral load (>20 copias/ml)	18 (26.5)	14 (24.1)	0.839
T-CD4 ≥ 500 Cells/mm^3	38 (55.9)	33 (56.9)	1.000
AIDS	49 (72.1)	31 (53.4)	0.041
Type of ART			
2NRTIs + NNRTI	25 (36.8)	21 (36.2)	
2NRTIs + IP/r	20 (29.4)	21 (36.2)	
Others	23 (33.8)	16 (27.6)	0.657

Conclusion Patients showed a low level of adherence to other LTMs. This study allowed us to attempt to educate HIV-infected patients with suboptimal adherence.

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No conflict of interest.

CP-011 LENGTH OF ANTIMICROBIAL USE AND THE ROLE OF THE PHARMACIST IN AN ACUTE HOSPITAL SETTING

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Background Spain accounts for the highest antibiotic use in Europe. Different studies have reported between 30 and 50% of antibiotic treatments are inappropriate in hospital.
Purpose To assess the impact of pharmaceutical interventions in controlling the duration of antimicrobial treatment and to evaluate their impact on optimising the treatment.
Material and methods Prospective observational study conducted over 6 months in a tertiary level hospital. Patients with 10 days or longer, ongoing antibiotics courses were reviewed, followed by a recommendation to the physician to review the need for continued treatment. Pharmacy interventions were classified: 1. Duration of treatment compliant with the patient's clinical condition and trust guidelines; 2. Duration of treatment not supported by the antibiotic policy, but maintained due to the patient's clinical condition; and 3. Duration not appropriate, hence discontinuation of antibiotic therapy as a result of pharmacy intervention.
Results 132 patients on ongoing antibiotic treatment ≥10 days were identified, 35.7% of whom were female, mean age 63 ± 16.3. In 76 cases (57%), the total duration fell into the first category, whereas in 36 and 20 cases, the duration fell into categories 2 and 3, respectively. A reduction in the number of patients on long-term antibiotics was observed since the commencement of the study: 30 patients in March 2014, 21 (April), 20 (May), 21 (June), 19 (August), and 21 (September). According to their pharmacological class, β-lactams, particularly imipenem (11%) and ceftriaxone (11%) were the group of antibiotics with the highest number of interventions, followed by quinolones, mainly levofloxacin. The most involved prescriber specialty was internal medicine (22%).
Conclusion Only 15% of pharmacist interventions on antibiotic duration resulted in discontinuation of the ongoing regimen. Nevertheless, there was a positive trend towards a reduction in the overall length of antimicrobial treatment over the study period.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-012 MEDICINES RECONCILIATION ñ IMPLEMENTATION BY CLINICAL PHARMACISTS IN THE OTORHINOLARYNGOLOGY CLINIC

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10.1136/ejhpharm-2015-000639.12

Background Taking a complete medical history of patients before hospital admission includes an accurate assessment of the current drug history which provides the basis for appropriate pharmacotherapy during the stay in hospital and at discharge as we know from the literature, this is best performed by a clinical pharmacist.
Purpose To evaluate specific aspects of medicines reconciliation by pharmacists performed as part of the clinical routine.
Material and methods Throughout a 4 week pilot phase, 178 patients were seen by a pharmacist for medicines reconciliation. During an interview, the current medicines were assessed including brand name, administration form and strength, dosing scheme and temporarily discontinued treatment. Moreover, information about patients' allergies, intolerances and concomitant diseases was collected. After verifying the medicines (check for omissions, duplications, dosing errors or drug interactions), the appropriate medicines were switched to the hospital drug formulary. If drug-related problems were found the attending physician was informed by the clinical pharmacist and possible solutions were discussed. As a follow-up, patients' medical records were reviewed and physicians', nurses' and pharmacists' feedback on the project was evaluated.
Results Clinical pharmacists performed medicines reconciliation as part of the clinical routine. In the pilot phase, 133 patients were regularly taking medicines and 36 brought a medicines list, however, this list was out-of-date or differed from patients' statements in many cases. The average total time required per patient was 18 (2–80) min. Frequent discrepancies or medicines errors were associated with fixed combinations, statins, ASA and bridging of anticoagulants. Feedback was generally positive although process optimisation possibilities were identified.
Conclusion Our project has shown the successful integration of a clinical pharmacist in the clinical routine of preadmission. Pharmaceutical interventions were largely accepted by the physicians, (potential) medicines errors and critical drugs could be revealed, and new SOPs will be created. We intend to continue the project.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-013 ETANERCEPT ON STEROID-REFRACTARY ACUTE GRAFT-VERSUS-HOST DISEASE

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10.1136/ejhpharm-2015-000639.13

Background Allogeneic hematopoietic stem cell transplantation (HSCT) is the first-line treatment for many haematological diseases. Graft-versus-host disease (GVHD) is the major complication of HSCT.

Steroids are the mainstay treatment of GVHD for reducing the systemic pro-inflammatory response. In about half of the patients, steroid treatment fails and they have to be treated with other immunosuppressant drugs. Of these, treatment with anti-TNF drugs such as etanercept is becoming an option for digestive manifestations of GVHD.

Purpose To describe etanercept use and effectiveness in steroid-refractory acute graft-versus-host disease, after hematopoietic cell transplantation.

Material and methods Patients treated with etanercept, an off-label use for steroid-refractory acute graft-versus-host disease, were selected and each patient's medical history was reviewed to assess the clinical response.

Results The study included 5 patients: 4 presented with digestive manifestations and one 1 presented pulmonary and liver manifestations. 4 patients showed a clinical response: 3 of them a partial response and 1 a total response.

In 4 cases, etanercept 25 mg was administered twice a week with variable duration of treatment, achieving no response in 1 case (3 weeks), partial response in 2 cases (4 weeks and 8 weeks) and a complete response in 1 case (8 week period). Only one patient was treated with etanercept 50 mg administered twice a week for 5 weeks with a partial treatment response.

Conclusion Previously published data estimated the response rates at about 60–62%, which was consistent with our results. These update the scarce bibliographic information about etanercept use in steroid-refractory acute graft-versus-host disease. Due to clinical design limitations and the small patient population, further clinical studies should be conducted to assess the efficacy and safety of etanercept in these patients

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No conflict of interest.

CP-014 PARENTERAL NUTRITION, IS STANDARIZATION ACCEPTABLE?

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10.1136/ejhpharm-2015-000639.14

Background A prospective study in which the standard parenteral nutrition prescribed by physicians for adult patients was compared with that designed by a resident pharmacist taking advantage of nutritional knowledge acquired during an internship in the area of nutrition with another hospital.

Purpose To weigh the advantages and disadvantages of individualised and standardised parenteral nutrition formulas.

Material and methods We selected 20 patients hospitalised in surgical wards in our hospital. The standardised parenteral nutrition prescribed by physicians was studied. We evaluated: indication, nutritional status of the patients, the incidence of complications during the process and the suitability of the standardised parenteral nutrition prescribed according to the clinical practice guidelines established by the Working Group on Nutrition – Spanish Hospital Pharmacists Society.

Results

- From a total of 20 patients, 40% of them had been prescribed standard parenteral nutrition that did not fit with the recommended guidelines.
- 80% of standardised parenteral nutrition did not fit with the caloric and water requirements recommended in clinical practice guidelines.
- 50% of patients had hypertriglyceridemia that was not controlled with the standardised parenteral nutrition.
- 40% of patients needed a correction in the contribution of electrolytes to suit the requirements published in the clinical practice guidelines.

Conclusion

- There is an excess of standardisation of parenteral nutrition in our hospital.
- The consequence is a decrease in the quality of treatment.
- Parenteral nutrition is used in off-label clinical situations.
- There is a lack of adequate monitoring.
- Parenteral nutrition can be adapted to the specific requirements of the patients and this is indicated especially in critical patients.
- The standard parenteral nutrition is useful in patients with standard energy and nutrient requirements.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-015 IMPACT OF PHARMACIST INTERVENTION USING SHARED DECISION MAKING ON ADHERENCE AND MEASURABLE DEPRESSED PATIENT OUTCOMES

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Background Adherence to antidepressant treatment is an essential step for the management of major depressive disorder patients. Patients actively make decisions about their adherence to medicines.

Purpose To evaluate the effectiveness of a pharmacist intervention based on shared decision making (SDM) to improve adherence and patient outcomes compared to usual care in patients diagnosed with major depression disorder (MDD).

Material and methods A prospective randomised controlled study, with 6-month follow-up, with randomisation of participants to two alternative groups as follows: 1) interventions based on SDM, to enhance patient adherence (IG) 2) usual pharmaceutical care group (CG). The study was conducted in an outpatients department in a psychiatric hospital. Patient adherence, treatment beliefs, patient satisfaction with depression treatment, severity of depression, health-related quality of life and quality of patients' involvement in SDM were collected at baseline, three and six months.

Results 239 patients were met the inclusion criteria during recruitment for this study, randomised to the IG (n = 119) or CG (n = 120); 19 patients completely dropped out of the study (10 patients from CG and 9 from IG). The average age was 39 years in the experimental group and 40 years in the control group. At the end of six months' follow-up patients in the IG showed significant different in adherence to medicines, treatment satisfaction, general overuse beliefs, specific concerns beliefs and the total general beliefs about medicines compared with CG. On the other hand severity of depression and health-related quality of life showed statically insignificant differences at the end of six months comparing with CG.

Abstract CP-015 Table 1

Factor	Intervention Group (N = 110)		Control Group (N = 110)		T-Value	Sig
Mean	Std. Deviation	Mean	Std. Deviation			
Medicines						0.000 (0.01)
Adherence Scale	5.99	1.88	4.94	1.94	4.059	

Conclusion Pharmacist intervention based on SDM significantly improved adherence, treatment satisfaction and patients' belief in antidepressants compared to usual care. We believe it will be a useful practice for regular psychiatric pharmacy care after a cost-effectiveness evaluation of this intervention.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-016 ASSESSMENT OF SEVERITY OF DEPRESSION, HEALTH-RELATED QUALITY OF LIFE AND ADHERENCE IN DEPRESSED PATIENTS

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Background Health-Related Quality of Life (HRQoL) evaluation is becoming increasingly recognised as an important outcome measure in the care of mental illness patients. Evidence shows that chronically-ill patients have a lower quality of life and lower adherence to their drug treatment. A limited number of studies has investigated the relationship between HRQoL, adherence to antidepressant and severity of depression.
Purpose To assess the effect of severity of depression on adherence to medicines and on the HRQoL.
Material and methods A questionnaire-based, cross-sectional descriptive study was carried out between August 2013 and January 2014 in an outpatient clinic at a psychiatric hospital. All patients meeting the inclusion criteria were invited sequentially to participate. Written consent was sought from the patients, eligible participants met one of the research coordinators to assess adherence to medicines by using the Morisky Medication Adherence Scale, severity of symptoms was measured by the Montgomery–Åsberg Depression Rating Scale and health-related quality of life was measured by the EuroQol-5 dimensional questionnaire (EQ-5D).
Results A total of 187 patients participated in this study. 53.5% were females. Mean EQ-5D descriptive score was 0.67 SD 0.35 for males and 0.63 SD 0.38 for females. A total of 54 different EQ-5D health states were described by the patients. The data showed no effect of age, education level, duration of illness and number of antidepressants on the EQ-5D score. Using Pearson's correlation coefficient to examine the relationship between EQ-5D and EQ-VAS scores and the topics of this study, resulted in a positive association between adherence and both EQ-5D (0.2899) and EQ-VAS (0.2116) with significant correlation at the 0.01 level. There was at the same time a negative association between EQ-5D and EuroQol-visual analogue scale (EQ-VAS) scores and severity of depression (0.6962);(0.4869) respectively with significant correlation at the 0.01 level.
Conclusion Association between severity of depression and HRQL reflects the importance of evaluating the severity of the depression and its impact on HRQL and adherence. An appreciation of the severity and appropriate management enable healthcare providers to control depression better.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-017 DIFFERENCES IN VALUES OF BODY SURFACE AREA IN CHEMOTHERAPY PATIENTS

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10.1136/ejhpharm-2015-000639.17

Background Chemotherapy drug dosing in adult patients with cancer has traditionally been based on patient's estimated body surface area (BSA). BSA can be calculated using several standard formulas and none of them is recommended above the others.
Purpose To assess the variation in BSA calculated in oncology patients using different validated formulas.
Material and methods All patients receiving chemotherapy in our hospital, whose weight and height were recorded, were included. BSA was calculated for all patients using six formulas (DuBois, Mosteller, Gehan and George, Haycock, Fujimoto and Takahira). All calculated BSAs were compared against DuBois BSA, as this is the most widely-used formula.
Results In 55 months, a total of 1,868 patients was included. 1,192 (63.8%) were overweight patients (BMI ≥ 25.00) and 32 (1.71%) were underweight (BMI < 18.50).

Abstract CP-017 Table 1 Absolute differences in BSA calculated with several formulas compared to BSA calculated using DuBois formula

	BMI	N	SC Mosteller	SC Gehan	SC Haycock	SC Fujimoto	SC Takahira
Severe Thinness	<16.00	9	2.69%	2.34%	3.91%	3.26%	0.79%
Moderate Thinness	16.00–16.99	4	1.99%	1.57%	2.85%	3.09%	0.79%
Mild Thinness	17.00–18.49	19	1.57%	1.18%	2.21%	3.00%	0.79%
Normal Range	18.50–24.99	644	0.63%	1.29%	0.99%	2.53%	0.79%
Pre-Obese	25.00–29.99	776	1.78%	2.97%	2.82%	2.16%	0.79%
Obese Class I	30.00–34.99	308	3.08%	4.59%	4.79%	1.84%	0.79%
Obese Class II	35.00–39.99	86	4.35%	6.19%	6.72%	1.53%	0.79%
Obese Class III	≥40.00	22	5.73%	7.94%	8.83%	1.19%	

Conclusion There are remarkable differences in values of BSA depending on the formula used to calculate it, especially at the extremes of BMI. This may result in great differences in dosing, especially in overweight patients. Therefore, when calculating BSA, the formula used should always be stated.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-018 PARENTERAL NUTRITION GIVEN IN THE PEROPERATIVE PERIOD IN ABDOMINAL SURGERY: COMPLIANCE WITH GUIDELINES

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10.1136/ejhpharm-2015-000639.18

Background A significant proportion of patients are receiving parenteral nutrition (PN) for elective surgery in our abdominal surgery unit.
Purpose To assess compliance of prescriptions with international guidelines.
Material and methods Patients who underwent elective surgery and who received PN were selected during a 6-month period (January 2013–June 2013). The ESPEN guidelines[1] were considered the reference guidelines. The clinical pharmacist assessed conformity with guidelines with information from prescriptions and medical files.
Results 23 patients were selected: 15 patients had uncomplicated surgery (US), 6 had postoperative ileus (PI) and 2 another complication (OC). ESPEN guidelines recommend preoperative PN in severely undernourished patients who cannot be adequately orally or enterally fed. Postoperative PN is recommended for undernourished patients in whom enteral nutrition is not feasible or tolerated, or when patients with postoperative complications impairing gastrointestinal functions are unable to meet energy requirements for at least 7 days. Only 6 treatments (26%) complied with the guidelines: As none of the patients qualified as undernourished and all patients had gastrointestinal impairment due to surgery, only patients with PN at least 7 days after surgery complied with guidelines.
Conclusion This study demonstrates most PN treatments in elective abdominal surgery are not in agreement with the guidelines. A multidisciplinary group (nutritionist, dietician, surgeon and pharmacist) was created to implement specific protocols. Measures for improvement will be taken and monitored in 2014.

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No conflict of interest.

CP-019 ALBUMIN CONSUMPTION IN FIVE YEARS 2009–2013: AN EXAMPLE OF IMPROVED PRESCRIBING APPROPRIATENESS

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10.1136/ejhpharm-2015-000639.19

Background Albumin has a significant impact on spending and it poses a risk to economic sustainability. Prescriptions are often inappropriate and corrective actions are required.
Purpose Albumin consumption was analysed in some departments to improve the appropriateness of prescriptions. The Drug Commission in September 2009 approved a new form, which is now used in our Region, with indications of documented effectiveness. The prescription of the specialist must also be approved by transfusion centre doctors to evaluate clinical parameters.
Material and methods Albumin consumption was analysed in the first 8 months from 2009 to 2013 in hospital wards with higher requests (Cardiology, Gastroenterology, Geriatrics, Internal Medicine, Hepato-biliary-pancreatic Surgery, Vascular Surgery). Data were extrapolated from XPharmacy management software and analysed using Microsoft Excel.
Results Introduction of a new form reduced albumin consumption significantly: from 8067 vials in 2009 to 1371 vials in 2013 for the same period (6696 fewer vials, a reduction of 83%). Over the years, consumption has continuously reduced with satisfactory overall results in all the departments examined (performance% reductions 2013/2009: Geriatrics minus 94.83%, Gastroenterology, minus 92.01%, Hepato-Biliary-Pancreatic Surgery minus 84.47%, Internal Medicine minus 75.71%, Cardiology minus 75.53%, Vascular Surgery minus 40.47%). The comparison 2013/2010 presents significant results (down by 40.44% total, Gastroenterology minus 78.21%, Internal Medicine minus 51.72%).
Conclusion Corrective action against inappropriate use of albumin has immediately resulted in a decrease in vials dispensed in all departments.

Hospital pharmaceutical consumption has declined dramatically, with significant savings.

Collaboration with transfusion centre doctors reduced off-label and inappropriate prescriptions: synergy of Pharmacy, Blood Transfusion Centre and departments showed that appropriate pharmacological treatment can also save money.

The steady decline in consumption in years analysed is the result of sustained and careful appropriateness checks even after the introduction of the new model (see comparison 2013/2010), and demonstrates the effectiveness of the measures taken.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-020 RECONCILIATION ERRORS AT HOSPITAL DISCHARGE: EFFECTIVENESS OF A PHARMACIST INTERVENTION

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Background Medicines reconciliation at discharge is a key strategy to ensure proper drug prescription and the effectiveness and safety of any treatment.
Purpose To analyse the effectiveness of an information technology-based medicines reconciliation intervention to reduce reconciliation errors at discharge.

Material and methods A quasi-experimental interrupted time series study carried out in the cardio-pneumology unit of a general hospital from February to April 2013. The study consisted of three phases: pre-intervention, intervention and post-intervention, each involving 23 days of observations. The intervention consisted of incorporating a pharmacist in the medical team, who included the patient's pre-admission medicines in an information technology-based application integrated into the electronic clinical history of the patient. The effectiveness was evaluated by a segmented regression analysis of the mean daily proportion of reconciliation errors per patient in the discharge report using the Prais–Winsten method. The types of error identified and their potential seriousness were then analysed, as was the effectiveness of the intervention to reduce the errors considered to be of clinical importance.
Results 321 patients (119, 105 and 97 in each phase, respectively) were included in the study. For the 3966 medicines recorded, 1087 reconciliation errors were identified in 77.9% of the patients. Pharmaceutical intervention led to a gradual reduction in these errors ($\beta_3 = -0.42$; $p = 0.553$), especially in the case of those of clinical importance ($\beta_3 = -0.54$; $p = 0.029$). When pharmaceutical intervention was withdrawn, the number of errors increased again, both overall ($\beta_4 = 29.06$; $p = 0.003$) and in the case of clinically important errors ($\beta_4 = 10.8$; $p = 0.002$). Most errors involved omission of medicines (46.7%) or incomplete prescription (43.8%), 35% being considered of clinical importance.
Conclusion The proposed intervention highlighted the high incidence of reconciliation errors at discharge and was effective in reducing both the overall percentage of errors and those considered to be of clinical importance.

REFERENCES AND/OR ACKNOWLEDGEMENTS

We would like to thank the participating patients and physicians who supported our study.

No conflict of interest.

CP-021 INCORPORATION OF THE STOPP CRITERIA INTO CLINICAL PHARMACY PRACTICE

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Background Hospital pharmacists providing a clinical pharmacy service are well placed to apply the Screening Tool of Older Persons' Prescriptions (STOPP) criteria to elderly inpatients to identify potentially inappropriate prescribing.
Purpose To incorporate the STOPP criteria into clinical pharmacy practice; to ascertain what proportion of clinical pharmacists' recommendations based on the STOPP criteria were implemented in practice; and to explore doctors' reasons for non-implementation.
Material and methods Pharmacists applied the entire STOPP criteria to a random selection of inpatients. On identification of (a) potentially inappropriate medicine (s) (PIM(s)), the pharmacist documented their recommendation (s) in the patient's medical records and contacted the patient's doctor. Follow up after 3–4 working days determined if the recommendations had been implemented. For recommendations not accepted, a semi-structured telephone interview was conducted with doctors to explore the reason (s) for non-implementation.
Results

- 140 patients were included in the study with a median age of 79 years. The median number of regular medicines prescribed was 8.
- Pharmacists identified 50 PIMs related to 44 patients; however, on review of the patient's medical notes, pharmacists deemed 22 of these PIMs appropriate.
- Pharmacists made a written and verbal recommendation involving 28 STOPP PIMs in 25 patients (17.8%).
- Doctors implemented 16 (57%) out of 28 recommendations, 7 PIMs (25%) were not accepted and 5 PIMs (18%) were lost to follow up.
- 7 Doctors were contacted to participate in a semi-structured telephone interview in relation to 7 PIMs prescribed (All related to proton pump inhibitors).
- The average time taken to apply the STOPP criteria Was 9.97 min.

Conclusion Incorporation of the STOPP criteria into clinical pharmacy practice is an effective method of identifying PIMs in the elderly population. Doctors are receptive to clinical pharmacists' interventions with the exception of proton pump inhibitors.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-022 POTENTIAL DRUG INTERACTIONS BETWEEN PROTEASE INHIBITORS AND HOME MEDICINES IN HEPATITIS C VIRUS-INFECTED PATIENTS

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10.1136/ejhpharm-2015-000639.22

Background The new protease inhibitors (PI) boceprevir and telaprevir have demonstrated improved outcomes in hepatitis C virus (HCV)-infected patients in combination with peginterferon and ribavirin. Both are substrates for and inhibitors of the drug transporter P-glycoprotein and the cytochrome P450 enzyme 3A4 and are, therefore, prone to clinically relevant drug interactions.
Purpose To identify potential drug interactions (PDIs) between PI (telaprevir and boceprevir) and the home medicines of hepatitis C patients treated with triple therapy (telaprevir, ribavirin and peginterferon), classify them according to the severity and analyse the therapeutic groups (ATC classification) most frequently involved.
Material and methods Prospective observational study performed from September 2012 to September 2013 of all patients treated with PI and home medicines. The following variables were recorded for each patient: sex, age, home drug treatment and PDIs. An online literature research was performed about PI interactions (PubMed/Medline), and interactions were classified according to the risk as Lexi-Interact Online classification: B (no action needed), C (monitor therapy), D (consider changing the treatment) and X (avoid combination).
Results Thirty-five patients were included (62.9% men). Median age 54 years [37–69]. The median number of drugs taken at home was 5 [1–10]. A total of 48 PDIs were detected (mean of PDIs of 1.37 per patient). 8.3% of PDIs were classified as risk B, 31.3% C, 58.3% D and 2.1% X. Therapeutic groups most frequently involved were: psycholeptics (22.9%), psychoanaleptics

(8.3%), drugs for functional gastrointestinal disorders (8.3%), analgesics (8.3%), beta blocking agents (8.3%) and corticosteroids (8.3%).

Conclusion The incidence of PDIs was very high. In most of the interactions detected it was necessary to consider changing the treatment. Therefore, it would be advisable to monitor strictly chronic treatment of patients treated with telaprevir and boceprevir, to identify and assess the severity of the interactions.

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No conflict of interest.

CP-023 THE USE OF INTENSIVE DOSES OF STATINS AFTER ACUTE MYOCARDIAL INFARCTION IN AN EMERGENCY ROOM WITH A CLINICAL PHARMACIST

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10.1136/ejhpharm-2015-000639.23

Background The administration of an intensive dose of statins after acute myocardial infarction (AMI) has proved to be superior to conventional doses in reducing morbidity and mortality (IA evidence) but application in clinical practice is variable.

Purpose To find out whether intensive statins doses are being used after AMI and the involvement of an emergency clinical pharmacist in this quality measure.

Material and methods The study was conducted from February to April 2014 in an emergency room with a clinical pharmacist of a tertiary hospital. Patients with AMI were recorded and their discharge reports of hospitalisation and blood tests were reviewed. An Excel sheet with the following items was prepared: Patient sex, age, basal low density lipoproteins (LDL), intensive doses of statins after AMI (YES/NO), pharmaceutical intervention to modify the dose of statins to intensive dose (YES/NO), LDL levels at discharge, type and dose of statin scheduled in the discharge report. The target LDL levels after AMI were lower than 70 mg/dl according to clinical practice guidelines (GPC) of the European society of Cardiology (ESC) 2013.

Results 32 AMIs were recorded. A previous blood test including LDL levels was available in 22 patients, in 95.5% these exceeded 70 mg/dl. 84.4% of the patients received intensive doses of statins in the emergency room, 40.7% prescribed by the physician and 59.3% prescribed after a recommendation by the clinical pharmacist. At hospital discharge all patients except one were prescribed an statin. No patients were discharged with intensive doses.

Conclusion

- The use of intensive statins doses in the emergency room is high but It Is necessary to unify criteria at hospital discharge.
- The pharmaceutical recommendation to use intensive doses of statins after AMI implies an increase in compliance with evidence-based recommendations of the GPC.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

CP-024 USE OF ERYTHROPOIESIS-STIMULATING AGENTS IN ANAEMIA SECONDARY TO CHRONIC KIDNEY DISEASE IN A TERTIARY HOSPITAL

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10.1136/ejhpharm-2015-000639.24

Background Currently, there is little uniformity in the management of the anaemia secondary to chronic kidney disease (CKD).

Purpose To analyse the use profile of erythropoiesis-stimulating agents (ESA) in the treatment of anaemia due to CKD in daily clinical practice, and to evaluate their effectiveness, safety, cost and the factors that influence resistance to these drugs.

Material and methods A descriptive, cross-sectional study was carried out in adult patients with anaemia due to CKD treated with ESA in the Outpatient Unit of a tertiary hospital. Patient characteristics according to the different ESAs (epoetin α/β, darbepoetin α and CERA) were analysed: effectiveness (optimal levels of Hb), safety (high levels of Hb) and cost (cost/patient-month according to dosage and ex-factory price). Equipotent doses of ESA and the factors that influence the resistance to these drugs were also evaluated.

Results 333 patients (23.4% epoetin α/β, 41.5% darbepoetin α and 35.1% CERA) were included. Patients treated with CERA had better values of serum creatinine, C-reactive protein, albumin and parathyroid hormone, and 94% of them were not on dialysis. The median (p25–p75) of Hb was 11.9 (11.1–12.7) g/dl and Hb level exceeded 13 g/dl in 16.5% of patients; no statistical differences were found between different ESAs. Median doses/patient-month were: epoetin α/β 12857 (8571–21714) IU, darbepoetin α 85.7 (42.9–128.6) mcg and CERA 75.0 (50.0–100.0) mcg. The need for higher doses and, thus, the associated cost varied depending on the type of patient: predialysis < functioning kidney transplant < dialysis. A low transferrin saturation index (TSI) was also correlated with higher doses of ESA.

Conclusion No differences in effectiveness or safety were found among different ESAs, although patients treated with CERA showed better clinical characteristics. Dialysis, renal transplantation and low TSI were the most important factors related to ESA resistance and, therefore, to its efficiency.

REFERENCES AND/OR ACKNOWLEDGEMENTS

1 Pharmacy and Nephrology Departments

No conflict of interest.

CP-025 PATIENTS' ADHERENCE-RELATED BELIEFS ABOUT MEDICINES PRESCRIBED FOR LONG-TERM CONDITIONS IN HIV PATIENTS

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10.1136/ejhpharm-2015-000639.25

Background There has been an increase in the number of chronic conditions concomitantly present in HIV-infected individuals and correspondingly, in comedication. Beliefs play a crucial role in medicines adherence.

Purpose To investigate the relationship between beliefs (necessity and concerns) of HIV-infected patients about comedication and their adherence.
Material and methods We conducted a cross-sectional study between May–July 2014, that included HIV-infected patients treated with antiretroviral treatment (ART) and ≥1 additional drugs for other chronic diseases.

The variables analysed in the study were demographics (sex, age), mode of transmission, $CD4^+$, HIV plasma viral load, beliefs about comedication and adherence to treatment for chronic conditions.

The Beliefs about Medicines Questionnaires (BMQ) was used to assess patients' beliefs about drugs for additional diseases. The BMQ-Specific has two scales (necessity and concern) with five questions each that uses a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = uncertain, 4 = agree, 5 = strongly agree). A total score per scale was calculated. Self-reported comedication adherence was measured using the 4-item Morisky Medication Adherence Scale (MMAS). MMAS scores were dichotomised into adherent/non-adherent.

Internal consistency within BMQ scales was measured with Cronbach's α and their association with adherence was assessed with t-Student tests, using SPSS 20.0.
Results We included 126 patients (80.4% male, mean age 50.4 ± 8.3). Injected drug use was the main mode of transmission. 43.7% of patients presented $CD4^+ \leq 500$ cells/mm^3 and 25.4%, detectable viral load. The mean number of additional medicines was 2.9 ± 2.0.

The percentage of non-adherent patients was 54.0%. Belief in necessity was positively related to self-reported adherence. No relationship between adherence and concern was found. Internal consistency for BMQ-Specific was high (Cronbach's alfa = 0.724) which indicates high intercorrelation between items.

Abstract CP-025 Table 1

BMQ-Specific scale	Cronbach´s alfa	Non-Adherent (Mean±SD)	Adherent (Mean±SD)	p-value
Necessity	0.794	17.3 ± 5.6	18.8 ± 4.4	0.188
Concern	0.785	14.6 ± 5.7	12.1 ± 6.1	0.019

Conclusion Greater conviction that comedication is necessary was associated with higher self-reported adherence in HIV infected-patients, suggesting that it could be important to focus on the necessity of this treatment to improve adherence.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

CP-026 EFFICACY OF TRIPLE THERAPY WITH PROTEASE INHIBITORS FOR THE TREATMENT OF HEPATITIS C VIRUS IN CLINICAL PRACTICE

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10.1136/ejhpharm-2015-000639.26

Background Given the large number of new drugs for the treatment of hepatitis C virus (HCV) and the high economic cost, it is important to decide which treatment is best suited to each patient.
Purpose To evaluate the efficacy of triple therapy with protease inhibitors for the treatment of HCV in clinical practice.
Material and methods Two-year retrospective study including all patients treated with triple therapy for HCV.

Parameters analysed were: sex, age, HCV genotype, liver fibrosis, type of patient (pretreated/treatment-naive) HIV co-infection and HCV viral load (VL).

The collected data were obtained by reviewing medical records, and Savac prescription and validation program.
Results A total of 26 patients were included, 19 (73%) men. The median age was 52 years. Regarding genotype, 11 (42%) had genotype 1a and 15 (58%) had genotype 1b. Only four (15%) patients had simultaneously HIV infection. The most common liver fibrosis was grade 3.

After finishing the treatment, 23 patients had undetectable viral load (one of the patients presented detectable viral load at week 4 and two of them at week 12). Twenty-four weeks after the treatment, 22 of them had sustained viral response (SVR). In the table we can see the response rates based on the drug and/or patient characteristics.

Abstract CP-026 Table 1

	No. of patients	Week 4	Week 12	Week 24	Week 48	SVR
Total	26	96.15%	92.31%	92.31%	88.46%	84.62%
Telaprevir	19	94.74%	89.47%	89.47%	89.47%	84.21%
Boceprevir	7	100%	100%	100%	85.71%	85.71%
Naive	10	100%	100%	100%	90%	90%
Previously-Treated	16	93.75%	87.50%	87.50%	87.50%	81.25%
Relapsers	8	100%	100%	100%	100%	100%
Partial Response	7	87.50%	75.00%	75.00%	75.00%	62.50%
Null Responders	1	100%	100%	100%	100%	100%

Conclusion The triple therapy regimen is a highly effective treatment that gets a SVR in most patients.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-027 EFFICACY AND SAFETY OF RIBAVIRIN USED FOR RESPIRATORY SYNCITIAL VIRUS TREATMENT IN HAEMATOLOGICAL PATIENTS

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10.1136/ejhpharm-2015-000639.27

Background Ribavirin is a drug used to treat hepatitis, but it is also used (off-label) for the treatment of respiratory syncytial virus (RSV)
Purpose To evaluate the efficacy and safety of ribavirin when used for RSV treatment in haematological patients.
Material and methods Retrospective study during the RSV season. Parameters analysed were: sex, age, dose and treatment

duration, laboratory confirmation of RSV, haemoglobin, LDH, bilirubin, and the need for transfusions.

The collected data were obtained by reviewing medical records and consulting the Savac prescription and validation program.

Results A total of 9 patients were included, 4 (44%) men. The median age was 49 years (range 13–69). The median number of days of treatment was 14 days (range 7–14) and all tested positive for RSV. The dose for all patients was 200 mg/day on the first two days and 1200 mg/day until the end of treatment. By the end of the treatment, the virus had been eradicated in 100% of patients.

Regarding safety, none of the patients presented symptoms of haemolytic anaemia. Haemoglobin remained constant throughout the treatment, with a median of 88 g/L at baseline and 91 g/L and 86 g/L at 7 and 14 days of treatment, respectively, with LDH constant at 400 IU/L throughout treatment and regular indirect bilirubin levels. Six (67%) of the patients received blood transfusions, but all of them had already received transfusions before ribavirin treatment. None of the patients presented symptoms of haemolytic anaemia, and no adverse effects were detected attributable to ribavirin.

Conclusion Treatment with ribavirin for RSV proved to be an effective treatment in our patients.

Since haemoglobin levels remained constant during treatment, and patients required transfusion due to the disease, treatment with ribavirin at this dose appears to be a safe treatment.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-028 DOSE ADJUSTMENTS FOR HOSPITALISED PATIENTS WITH RENAL IMPAIRMENT

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Background Scanning the renal insufficiency levels of the patients and doctors' response to them with dose regulation, our pharmacists recognised either (a) doses of drugs were not being adjusted in a relevant response to insufficiency or (b) dose reductions were not consistent with evidence-based recommendations.

Purpose To advise physicians regarding appropriate doses following determinations of the level of renal insufficiency of the patients. We hoped that patients treated with antibacterials would be less vulnerable to toxicity and that reduced readmission rates might be expected. A reduction in drug costs might also be expected as a result of dose reduction.

Material and methods Patients' kidney function was assessed using the Modification of Diet in Renal Disease (MDRD) method. Physicians were contacted and provided with recommendations regarding appropriate doses for the patients who required dose adjustment. Pharmacists continued to monitor for appropriate dosing until discharge.

Results Over a period of 18 months, our pharmacists examined 5432 patient charts and suggested dose adjustments for 723 patients. For 622 cases (86%) doctors reduced the dose following the recommendations. Physicians also made requests for pharmacist input regarding dose selection in a further 358 cases outside of the 5432 examined by pharmacists. As a result of the dose adjustments, savings worth €62,700 were made. That amount corresponded to €58 per patient and €174 per day.

Conclusion The standard of care for hospitalised patients with renal impairment was improved and cost savings were also achieved. The success of this study is demonstrated by the ongoing requests from physicians for pharmacist input into dose selection decisions and the routine incorporation of this clinical application into pharmacists' duties. This emerging situation shows the importance of pharmacists' contribution to decision-making on a daily basis.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-029 ANTI-TNF AGENTS FOR THE TREATMENT OF BEHCET'S DISEASE

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Background Behçet's disease (BD) is an inflammatory disease characterised by recurrent oral aphthous ulcers and numerous potential systemic manifestations.

Purpose To describe the experience of our centre with the use of adalimumab, etanercept and infliximab for the treatment of severe clinical manifestations in patients with BD in whom immunosuppressive treatment had failed.

Material and methods Retrospective review of medical records of 36 months (January 2010–December 2013) from patients with BD treated with adalimumab, etanercept or infliximab as compassionate use. Demographic and clinical data included age, sex, previous treatment, indication, side effects, concomitant drugs and clinical outcome.

Results 12 patients were included (5/7 women/men) 3/12 treated with infliximab, 2/12 etanercept, and 7/12 adalimumab; with a mean age of 36 years (range 21–55). We decided to start treatment due to the lack of response in the control of symptoms (3/12 patients had cutaneous lesions), and ocular involvement (9/12 patients with uveitis of repetition and visual deterioration). The patients had received conventional treatment: 4/12 had received two drugs, 4/12 three drugs, 2/12 four drugs, 1/12 five drugs and one had received six drugs previously. The most prescribed drugs were corticosteroids, azathioprine and cyclosporine. 1/12 patient had received previous treatment with infliximab before adalimumab with relapse of symptoms. We did not detect any adverse effects in patients treated. In all patients, clinical improvement was evident from the first administration. 8/12 patients showed reduction of symptoms, while 4/12 patients became asymptomatic. They continue in treatment.

Conclusion Anti-TNF agents are a good option for patients with severe BD who are resistant to steroid and immunosuppressive treatment, with a good safety profile. The benefit of this treatment supports the hypothesis that TNF-a is an important factor in the pathogenesis of BD. Moreover, no adverse effects were detected in the treated patients, in agreement with the few cases described in the literature reviewed.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

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CP-030 EFFECTIVENESS OF BIOLOGICAL DRUGS IN RHEUMATOID ARTHRITIS PATIENTS: A COMPARATIVE ANALYSIS

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Background Today rheumatoid arthritis (RA) treatments are: 1) conventional drugs, such as DMARDs (Disease Modifying Antirheumatic Drugs), glucocorticoids, analgesics and NSAIDs (Nonsteroidal anti-inflammatory drugs); 2) biological drugs which, possibly combined with traditional drugs, are intended to reduce joint damage, disability and functional loss, improving quality of life.
Purpose As the first therapeutic goal is faster disease remission, the aim of this study was to evaluate the effectiveness of biological drugs in RA patients treated from April 2010 to March 2013 in a Rheumatology Unit.
Material and methods Therapeutic effectiveness of 6-month biological treatment periods was evaluated according to EULAR standards, using as therapeutic target the reduction of DAS28 index (t6 medium – t0 medium). The results were analysed by "paired Student's t-test" to determine their statistical significance.
Results In the period of analysis, 99 prescriptions were considered. After six months of treatment with biological drugs, there was a moderate response in 64.6% of the patients by EULAR criteria with etanercept scoring the highest (18.2%, 25). Of the moderate responses, 61% (39) were achieved by a combination of biologicals + DMARDs. In the patients examined an average reduction of distribution of DAS28 from 5.13 at t0 to 3.39 was recorded at t6. Using the "paired Student's t test", the difference between the average DAS28 values before and after the treatment was significant at the $p < 0.001$ level. As to specific molecules, the most relevant average DAS28 reduction was achieved by tocilizumab (-3.00 ± 1.77) followed by adalimumab (-1.79 ± 1.65), abatacept (-1.62 ± 1.86), etanercept (-1.59 ± 1.25) and rituximab (-0.95 ± 1.34).
Conclusion These results suggest that combination therapy with DMARDs was more effective than monotherapy with biological drugs. Tocilizumab recorded the highest average decrease in comparison to other molecules.

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No conflict of interest.

CP-031 STUDY OF DEXAMETHASONE INTRAVITREAL IMPLANTS IN PATIENTS WITH DIABETIC MACULAR OEDEMA

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10.1136/ejhpharm-2015-000639.31

Background Diabetic macular oedema (DME) is the main cause of impairment of visual acuity in diabetic patients. The current standard treatment for patients with DME (focal/grid laser photocoagulation) does not usually improve impaired vision, and many patients continue to lose vision despite laser treatment. Intravitreal drug treatments are important new options for the treatment of diabetic retinopathy. Dexamethasone intravitreal (DI) implants are not approved for the treatment of DME, although traditionally corticosteroids such as triamcinolone have been used intravitreally to decrease the DME.
Purpose To evaluate the safety and tolerability of DI implants and to assess compliance with the protocol for the treatment of DME.
Material and methods Retrospective review of 34 patients with decreased visual acuity, due to refractory DME, who received a single injection of dexamethasone between January 2012 and July 2014.

Our protocol recommended ranibizumab as the drug of first choice for DME and that dexamethasone should be administered to non-responders to ranibizumab or high cardiovascular risk patients (patients with a history of stroke within the last 6 months).
Results 34 patients were included in the study; 5/34 patients started with DI directly while 29/34 patients started with ranibizumab. The reason for the change was therapeutic failure (18/29 patients) and cardiovascular risk (11/29 patients). We did not detect any adverse effects in patients treated. Average transition time was 4 months. 13/34 patients received a single dose, 21/13 patients received two or more doses. The repeat interval was less than 6 months in 12/34 patients (median 5.3 months), longer than 6 months in 22/34 patients.
Conclusion High level of compliance with the protocol. In most patients the recommended interval of 6 months between doses of dexamethasone remains.

There was a tendency to shorten the interval between insertions of DI implants.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-032 OFF-LABEL USE OF ADALIMUMAB IN BEHÇET'S DISEASE. A CASE REPORT

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10.1136/ejhpharm-2015-000639.32

Background Behçet's disease (BD) is a rheumatic disease characterised by polyarthritis, urogenital ulcers, uveitis, cutaneous lesions, alterations in the central nervous system and vascular disease.
Purpose To describe the use of adalimumab in a patient with BD in whom immunosuppressant treatment had failed.
Material and methods Follow-up of a patient with BD treated with adalimumab after trying other treatments without success.

The most common parameters used when monitoring BD are: erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP). Data were collected from the medical history (Selene) and the outpatients dispensing software (Savac).
Results A 43-year-old woman visited the rheumatologist in April 2010 because of polyarthralgia and symptoms of inflammatory disease; she had had recurrent episodes of red eye, cutaneous lesions and urogenital ulcers.

She started symptomatic treatment with allopurinol and colchicine because she was suspected of suffering from BD. In June 2011, positive HLA-B51 was determined and methotrexate

treatment was initiated. Despite the initial improvement, after seven months she had aphthous and cutaneous lesions and corticosteroids were added to the treatment.

In May 2012, she visited the ophthalmologist and she was diagnosed with uveitis and this confirmed the diagnosis of BD. The dose of methotrexate was increased but without results.

Finally, adalimumab was added to the methotrexate (baseline CRP = 0.7 mg/dL and ESR = 65 mm/h). She presented clear improvement (month 1: CRP < 0.4 mg/dL and ESR = 6 mm/h; month 4: CRP = 0.4 mg/dL and ESR = 6 mm/h; month 12: CRP = 0.5 mg/dL and ESR = 11 mm/h). To date, after a follow-up of 21 months, the patient is continuing to have adalimumab, with good clinical control and no side effects.

Conclusion Our patient responded well to the treatment. Although more data are needed, there are previous studies that suggest that adalimumab represents a valid option for patients with BD and severe symptoms.

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The support of the entire department has allowed this work.

No conflict of interest.

CP-033 USE OF INFLIXIMAB IN A PREGNANT WOMAN WITH ANKYLOSING SPONDYLITIS

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Background The use of drugs during pregnancy is always controversial. There is limited information about the use of infliximab during pregnancy.

Purpose To describe the effectiveness and safety of infliximab in a patient with ankylosing spondylitis during pregnancy.

Material and methods Retrospective and observational study of a pregnant woman with ankylosing spondylitis who was treated with infliximab.

The data collected was: week of gestation, infliximab dosage and laboratory data: erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP).

Results A 32-year-old woman was diagnosed with ankylosing spondylitis in 2005 and she started treatment with infliximab 5 mg/kg every 8 weeks in 2007. In 2012, she got pregnant and stopped treatment (CRP < 0.3 mg/dL and ESR = 2 mm/h).

Due to this treatment interruption, she started suffering diffuse polyarthralgia, soreness and disabling pain. At week 14 of pregnancy, her ankylosing spondylitis flared up with pain in several joints. She was prescribed corticosteroids without success and she asked to resume treatment with infliximab.

The teratogens centre indicated that there was no absolute contraindication. Therefore, the hospital's Medical Director authorised the off-label use of infliximab in a pregnant woman.

At week 16 of pregnancy, she was treated with infliximab (previous values: CRP = 1.1 mg/dL and ESR = 40 mm/h). After that, she showed a significant improvement (ESR = 9mm/h).

She was retreated at weeks 23 and 30 of pregnancy (values after the second dosage during pregnancy: CRP = 0.4 mg/dL and ESR = 2 mm/h).

At week 40 of pregnancy, she gave birth without any problems. The newborn weight was 3.420 kg and the APGAR score was 9/10.

She restarted the treatment with infliximab two weeks after birth, the previous values were CRP = 7.4 mg/dL and ESR = 33 mm/h, but they quickly normalised (CRP < 0.4 mg/dL and ESR = 6 mm/h).

Conclusion In our limited clinical experience, infliximab was safe and effective in our patient. However, the use of infliximab during pregnancy should be studied on a case-by-case basis.

REFERENCES AND/OR ACKNOWLEDGEMENTS

We thank the entire department for supporting this work.

No conflict of interest.

CP-034 IPILIMUMAB EXPERIENCE IN ADVANCED MELANOMA

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Background Ipilimumab is a high-cost drug that requires authorisation from the Medical Board for its use in our hospital.

Purpose To describe the experience with ipilimumab in the treatment of advanced melanoma (unresectable or metastatic) after at least one prior unsuccessful chemotherapy treatment in a third-level hospital.

Material and methods Retrospective review of medical records of all patients treated and collection of the following data: diagnosis, pre-treatments, cycles received, response to treatment, tolerance and safety.

Results Since January 2012 ipilimumab has been requested for 6 patients (four men and two women) with a mean age of 53 years (45–60). The initial diagnosis was Clark level II (n = 3), level III (n = 1), level IV (n = 1) melanoma; only one of them presented choroid melanoma in the left eye. After first-line treatment, patients developed metastases in lung and bone (n = 2), lung and liver (n = 1), lung and central nervous system (n = 1), bone and liver (n = 1) and brain metastases (n = 4). The first-line treatments received were: high-dose interferon (n = 2), fotemustine (n = 2), vemurafenib (n = 2) due to BRAF gene mutation. As second-line treatments, patients received ipilimumab (3 mg/kg every 21 days × 4 cycles). Only two patients completed all four doses, and only one of them has remained stable for the last two years. Regarding tolerance, two cases documented severe headache, and the other one presented grade II gastrointestinal toxicity.

Conclusion In our experience, the patient who received four complete cycles and had no brain metastases or choroidal melanoma was the only one who responded to the treatment. The remaining patients did not meet the inclusion criteria of the pivotal trial (MDX010–20) for the approval of ipilimumab.

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No conflict of interest.

CP-035 LOW MOLECULAR WEIGHT HEPARINS IN RENAL IMPAIRMENT, OBESITY AND ELDERLY PATIENTS

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Background Major bleeding complications with LMWH treatment have been reported both in clinical studies and during post-marketing surveillance. Monitoring of anti-factor Xa activity is recommended in special populations treated with low molecular weight heparins (LMWH).
Purpose To evaluate the effectiveness and safety of LMWH administration as prophylaxis and treatment of venous thromboembolism and acute coronary syndromes in selected patients.
Material and methods Prospective, descriptive study included patients with renal impairment, obese or elderly patients treated with LMWH over five months (January–May 2014). Study variables collected: sex, age, indication and doses of enoxaparin, anti-factor Xa, creatinine and platelets. The data were obtained from clinical records and prescriptions.
Results Anti-factor Xa was studied in 62 patients, 39 men (63%) and 23 women (37%) with a mean age of 67 years (32–90). 40% of patients had renal failure, 45% obesity and 15% were elderly patients.

The treatment dose of LMWH is 1 mg/kg/12 h (including for obese patients) but in renal impairment 1 mg/kg/24 h is recommended and in elderly patients, 1.5 mg/kg/24 h. 58 patients (93.5%) received therapeutic doses. There were 34.5% low doses, 51.7% correct doses and 13.8% high doses, and the average of anti-factor Xa was 0.3 IU/ml, 0.74 IU/ml and 1.5 IU/ml respectively.

The prophylactic dose is 40 mg/24 h but in renal impairment 20 mg/24 h is recommended and in obese patients, 60 mg/24 h. 4 patients (6.5%) received prophylactic doses. There were 25% low doses and 75% correct doses, and the average of anti-factor Xa was 0.6 IU/ml and 0.26 IU/ml, respectively. Our pharmaceutical interventions were to increase or reduce and repeat the control. All our recommendations were approved.

Regarding safety, there were six thrombocytopenic (9.7%) patients and no bleeding.
Conclusion Anticoagulation monitoring optimises the effectiveness in patients with special requirements, such as patients with renal failure, obesity and elderly patients. 60% of prescriptions were for low doses, therefore the Pharmacy Service proposed making a protocol for coagulation.

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No conflict of interest.

CP-036 DRUG INTERACTIONS INVOLVING ANTIBIOTICS: DO THEY CARE?

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10.1136/ejhpharm-2015-000639.36

Background Drugs interact when the effect of a drug is modified by another co-administered drug, food or herb. According to a number of studies, almost half the prescriptions are accompanied by interactions (8–43%, depending on the ward), but few (12–25%) are clinically relevant. Antibiotics are a wide group of drugs used a great deal in our environment (in 49.8% of inpatients), and are associated with important interactions. Pharmacists help doctors to manage them by writing an intervention on the patient history, after evaluating patient clinical status.
Purpose To describe quantitative and qualitative antibiotic-drug interactions among our patients, assessing their expected clinical impact and intervening if they are relevant; to see how doctors modify prescriptions.
Material and methods We searched interactions involving antibiotics in all available prescriptions of every ward at the time of screening. We used Medscape app as screening tool, adopting their rating system (minor, significant, serious or contraindicated), considering intervention only in the relevant ones. SPSS20 was used for data coding and statistical processing. To improve intervention quality, additional data were reviewed in trusted sources like Stockley or Lex Interact.
Results Antibiotics were found in 156 prescriptions, mostly penicillins (45 prescriptions), quinolones (35) and carbapenems (34). A total of 1,415 interactions were detected (average per patient 9.07 ± 9.39), only 271 (19.2%) involving antibiotics. Among those, 76 minor, 116 significant, 78 serious and one contraindicated interaction were found. We intervened in only 16 cases (mostly about nephro/ototoxicity, serotonergic syndrome involving linezolid and monoamine-oxidase inhibitors, and proarrhythmic combinations). Only four prescriptions were modified after the interaction had been reported.
Conclusion Antibiotics play an important role in interactions; despite this few are dangerous, and must be filtered before choosing to intervene. Despite their relevance, doctors seem to underestimate the associated risks, ignoring the advice given. To improve their knowledge and respect for this topic, our Service will soon be teaching a course for healthcare professionals.

REFERENCES AND/OR ACKNOWLEDGEMENTS

(NONE)

No conflict of interest.

CP-037 EFFICACY OF ABIRATERONE IN THE TREATMENT OF PROSTATE CANCER

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10.1136/ejhpharm-2015-000639.37

Background Hormone treatment based on analogues of gonadotropin releasing hormone (GnRH) with antiandrogens is the first-line treatment for prostate cancer. This treatment produces a PSA reduction, improvement of symptoms and tumour regression. When PSA increases again it is considered to have developed resistance and other treatment lines such as abiraterone are used.

Abiraterone is an androgen synthesis inhibitor in the testes, adrenals and prostate tumour tissue.
Purpose To analyse the response to, and safety of, abiraterone in the population of a tertiary level hospital.

Material and methods A retrospective observational study was carried out including all patients who started on abiraterone from 2011 to present. Demographical, diagnostic, therapeutic and clinical variables were gathered.

The response was assessed by a 50% PSA reduction or more as compared to baseline values. To assess the safety, abiraterone-related adverse events were recorded.

Outpatient dispensing application Farmatools and electronic medical records were used for patient identification and data collection.

Results 18 patients were included, 89% diagnosed with metastatic prostate cancer. 50% had poor tumour differentiation with high aggressiveness (Gleason 7–10).

As a first-line of treatment, 83% received GnRH analogues plus an antiandrogen, 11% GnRH analogues alone and 6% ketoconazole. No patients orchiectomized. As a second-line treatment, 28% received docetaxel, 44% estramustine, 22% abiraterone and 6% ketoconazole. Abiraterone was started as third-line or later treatment and after tumour progression, except in 3 patients who received it as second-line treatment.

44% were considered responders and 56% non-responders because of an increase or non-reduction of PSA.

The median duration of treatment was 5 months (1–25). In all cases, the reason for suspension was disease progression.

17% had fatigue as the only adverse effect.

Conclusion Abiraterone is a well-tolerated drug that has shown low activity in previously-treated prostate cancer patients who had responded poorly to ketoconazole, docetaxel and estramustine.

Best responding patients were those who received only GnRH analogues as pre-treatment.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-038 ADEQUACY OF NUTRITION ENERGY DELIVERY IN SURGICAL INTENSIVE CARE

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10.1136/ejhpharm-2015-000639.38

Background Underfeeding is correlated with a higher morbidity rate, mortality and lenght of stay. Measuring and managinig nutrional risk are therefore important tasks.

Purpose Evaluation of nutrition adequacy energy delivery in surgical intensive care unit (ICU), compliant with European recommendations.

Material and methods Prospective study, of one month, in 3 surgical ICU with daily analysis of all nutritional supports. Were taken into account:oral alimentation and enrichment, enteral and parenteral nutrition, micronutrients and electrolytes supplies, energy delivery data and adequacy of nutritional support, duration, indication, weight loss. Energy targets were set at 15 kcal/kg/day for Day 3 (D3) and 20 kcal/kg/day for D7. Kruskal Wallis and Fischer tests were used for values of $p < 0.05$ considered significant ones.

Results Sixty six patients: mean age 57.9 ± 17.3 years and mean BMI 26.9 ± 5.2 kg/m^2. Mean of length of stay was 10.1 ± 5.3 days ($p > 0.05$). Nutrition was initiated with parenteral nutrition for 39.4% patients versus 37.9% with enteral nutrition versus 22.7% with oral nutrition ($p < 0.01$). Time to feeding was 2.2 ± 1.1 days ($p > 0.05$). Energy target was reached at D3 for 53% patients vs 62% at D7 ($p > 0.05$). Time needed to achieve the target rate was 5.3 ± 2.9 days ($p > 0.05$). Energy delivery was lower than the energy target during the first 3 days ($p < 0.001$). Difference between energy target and delivery decreased from −19.7 kcal/kg/day as a mean during the first day, to a mean of −3.3 kcal/kg/day at D7. Proportion of energy target provided by the enteral, parenteral or oral route was not significantly different from D1 to D7 ($p > 0.05$). Cumulated energy balance was 5023 ± 38.9 kcal/kg/day. At the last day, protein intake was <1.2 g/kg/day for 32% of patients receiving parenteral nutrition vs. 38.5% receiving enteral nutrition ($p < 0.05$).

Conclusion One can reach the caloric target at D3 and D7 and provide a better balance between enteral and parental nutrition as defined by European recommendations.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

CP-039 PRESCRIPTION PROFILE AND IMPACT AFTER THE PEGYLATED LIPOSOMAL DOXORUBICIN SHORTAGE ALERT

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Background The normal supply of Caelyx was interrupted worldwide in December 2011. Because of the limited number of vials available, medicines agencies established a plan to control the distribution and use, restricting it only to patients with advanced ovarian cancer on second-line treatment and Kaposi's sarcoma associated with AIDS.

Purpose To assess the Caelyx prescription profile and how the alert has affected the off-label use of this drug.

Material and methods A retrospective observational study was performed of Caelyx prescriptions. Data were collected from the oncologic electronic prescription program by reviewing the patients' medical history. We set break points for data collection when the shortage and the re-establishment of the supply alerts were published (December 2011 and October 2012, respectively). Variables included: total of patients, diagnosis, off-label uses and the number of treatments initiated before and after the alerts were published.

Results Forty-nine patients have been treated with Caelyx since marketing authorisation. Before the alert was published, 32 patients had been treated. Diagnoses were: Kaposi's sarcoma (2), ovarian (12), breast (13) cancers and multiple myeloma (1) plus four off-label uses (endometrial (1) cancer, Hodgkin's lymphoma (2), malignant fibrous histiocytoma (1)).

From the shortage alert publication until the re-establishment of the supply, six patients were treated for authorised indications. Diagnoses were: ovarian cancer (5) and Kaposi's sarcoma (1).

After the re-establishment of the supply, 11 patients were treated. Diagnoses were: Kaposi's sarcoma (1), ovarian (5) and breast (4) cancer and one patient with endometrial cancer on off-label use.

Off-label uses approved decreased from four before the shortage alert to one after the re-establishment of the supply.

Excluding the stock-out period, the number of patients whose treatments were initiated before and after the re-establishment of the supply was reduced by 66%.
Conclusion The shortage of Caelyx has changed the prescription profile. Currently, less Caelyx is being prescribed and the clinical practice is more consistent with the Summary of Product Characteristics.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-040 SWITCHING TO TENOFOVIR/EMTRICITABINE/RILPIVIRINE IN HIV-1 PATIENTS PREVIOUSLY TREATED WITH TENOFOVIR/EMTRICITABINE/EFAVIRENZ

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Background The new combination tenofovir/emtricitabine/rilpivirine (TDF/FTC/RPV) produces fewer adverse central nervous system effects, encouraging better adherence while being as effective as the tenofovir/emtricitabine/efavirenz (TDF/FTC/EFV) combination.
Purpose To analyse the progress of patients with HIV-1 infection who changed treatment from TDF/FTC/EFV to TDF/FTC/RPV. To evaluate the maintenance of viral suppression and the adherence.
Material and methods Retrospective observational study. Study duration: 1 year. Patients were switched to treatment with TDF/FTC/RPV. We excluded patients who had not been treated previously with TDF/FTC/EFV and treatment-naive patients. We developed a database with viral load (VL) and CD4 T lymphocyte level (LTCD4) before switching and after 6 months of treatment. We also considered the adherence to the new antiretroviral by number and date of prescriptions dispensed.
Results In the study period, 149 patients were treated with TDF/FTC/RPV. Of these, 50.3% (75) had previously been treated with TDF/FTC/EFV. The remaining patients were excluded for not meeting the study criteria. 94.7% (71) of the patients maintained virological suppression to less than 37 copies/ml. Three patients with 523, 400, 64.04 and 48.58 copies/ml, respectively, were able to achieve a VL of fewer than 37 copies/ml after 6 months treatment with TDF/FTC/RPV. The LTCD4 level increased or remained at figures close to those already obtained from previous treatment in all patients. All patients maintained their adherence due to continuing with a single tablet daily, having a better side effect profile.
Conclusion In patients with HIV infection, change of treatment from TDF/FTC/EFV to TDF/FTC/RPV proved effective, and maintained or decreased the levels of VL. The results obtained in this study are similar to *Nelson et al*'s study, which concludes that we must identify patients with adverse effects to EFV so they can benefit from TDF/FTC/RPV.[1]

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No conflict of interest.

CP-041 ONE-STOP DISPENSING: EXPERIENCES REPORTED BY PHYSICIANS AND NURSING STAFF AT AN ORTHOPAEDIC WARD

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Background The healthcare sector is constantly being challenged to achieve the best health and value for money. Dispensing and administration of medicines are time consuming processes for the nursing staff. The patient role is changing to include further patient involvement and empowerment.
Purpose To evaluate the senior doctors' and nursing staff's experiences with the OSD system.
Material and methods The pilot OSD project ran from April to December 2013. Before inclusion, a nurse or senior doctor assessed whether individual patients were suitable for self-administration (OSD-II) according to the criteria set by the regional medicine guidelines. The medicine was placed in a bedside locker, after a pharmacist had recorded a medicines history and checked the quality of the patient's own medicines. Two sets of focus group interviews; one with 3 senior doctors and one with 6 nursing staff were conducted by the Centre for Patient Experience and Evaluation. The interviews were recorded, transcribed and analysed by condensations of meanings in two categories: positive and negative experiences with the OSD system.
Results Physicians (n = 3) as well as nursing staff (n = 6) reported that the OSD system had improved the quality of patient-specific medicines management. The nursing staff all stated that the model did save time. The physicians all stated that the interdisciplinary collaboration with the Hospital Pharmacy was valuable. A challenge with the OSD system included documentation of "as needed" medicines (n = 9). Another challenge related to patients not able to administer their medicines at the bedside. The dispensing process was reported as time consuming and technically challenging (n = 6).
Conclusion Physicians and nursing staff reported positive experiences with the OSD-system, but some challenges have to be addressed, before the OSD system can work well for all patients.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-042 ASSESSMENT OF INCIDENCE AND MANAGEMENT OF HAEMATOLOGIC TOXICITY IN AMBULATORY GASTROINTESTINAL CANCER PATIENTS

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Background Haematological toxicity (HT) is a well-known side effect of chemotherapy. Neutropenia and thrombocytopenia are common reasons for dose reductions and treatment delays in chemotherapy treatment. Correct management of chemotherapy-induced HT is essential to achieve optimal treatment outcomes.

Purpose To assess the incidence and review the management of HT in ambulatory patients with gastrointestinal cancer receiving intravenous chemotherapy.
Material and methods Haematological parameters which had been measured before the application of chemotherapy were retrospectively collected for 121 patients treated in 2012. In patients with HT (defined as leukopenia, neutropenia, thrombocytopenia or anaemia) dose reductions and treatment delays were reviewed and compared to available international guidelines for the management of HT.
Results HT occurred in 73 (60.3%) patients. 41 (33.9%) patients presented with leukopenia, 33 (27.3%) with neutropenia, 25 (20.6%) with thrombocytopenia and 52 (42.9%) with anaemia. According to international guidelines, treatment adjustments were required in 24 patients (19.8%) and altogether in 64 chemotherapy cycles. Dose reductions were required in 18/64 (28.1%) cycles, and treatment delays in 58/64 (90.6%) cycles. Actual dose reductions were lower than stated in the guidelines in 7 (38.9%) cycles; treatment dates were not rescheduled in 21 (36.2%) out of 58 cycles in which treatment delays were required. Overall, treatment adjustments were not suitable in 9/24 (37.5%) patients. Higher dose reductions or longer treatment delays than stated in the guidelines were not considered inappropriate, since these may have occurred due to other conditions, not related to HT.
Conclusion Incidence of thrombocytopenia and anaemia in gastrointestinal cancer patients was comparable, while incidence of neutropenia was lower than in similar previous studies. The high number of incorrectly adjusted treatments demonstrated the necessity for a clinical pharmacist to review chemotherapy prescriptions together with laboratory parameters and to create hospital guidelines for the management of HT.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-043 IMPLEMENTATION OF EXTENDED TOP-UP SERVICE INCREASED CORRECT RECORDING IN THE ELECTRONIC MEDICATION MODULE

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Background Patient safety is compromised when incorrect data are recorded in the electronic medication module (EMM). To ensure increased consistency between the medicines consumed by the patient with the medicines prescribed in the EMM, the hospital pharmacy scaled up the top-up service from a logistical "Model 1" to an extended top-up service "Model 2".
Purpose To evaluate whether implementation of Model 2 could increase the number of correct records of generic substitution and administration status in the EMM on two hospitals wards.
Material and methods Model 2 focused on generic substitution and correct recording in the EMM.

The intervention study consisted of implementation of Model 2 including a two-hour training session for nursing staff regarding management of generic substitution and recording of use of the patients' own medicine in the EMM. Data of incorrect recording in the EMM were collected during two time periods; for five weeks before the intervention and for five weeks after.

Results Medicine prescriptions were evaluated in two orthopaedic wards; 699 patients (6021 prescriptions) before and 448 patients (3491 prescriptions) after the intervention.
Introduction of Model 2 significantly reduced the number of incorrect generic prescriptions in EMM with 58%; 59 incorrect prescriptions before and 14 after the intervention.

Similarly the intervention reduced the number of incorrectly recorded prescriptions of use of the patients' own medicine in the EMM, by 88%; 282 incorrect records of the patients' own medicine before and 21 after the intervention.
Conclusion The introduction of an extended top-up service increased correct recording in the EMM for generic substitution and recording of the patients' own medicine, respectively.

The hospital pharmacy will offer an extended top-up service to all wards in the hospital.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

CP-044 EFFECTIVENESS AND SAFETY OF IMATINIB IN CHRONIC MYELOID LEUKAEMIA IN A TERTIARY HOSPITAL

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Background Imatinib was the first BCR-ABL tyrosine kinase inhibitor (TKI) available for chronic myeloid leukaemia (CML) treatment. Newer drugs, with a faster and better response, were subsequently developed.
Purpose To analyse the effectiveness and safety of imatinib in CML patients.
Material and methods Retrospective, observational study. Patients who picked up imatinib in our hospital (June 2011–June 2014), including those who were subsequently changed to second generation (2G)–TKI, were included.

Variables included demographics (sex, age) and clinical data (time since diagnosis, reason for termination, 2G–TKI received). Adverse drug reactions (ADRs) were compiled in relation to safety.

In terms of effectiveness, we considered complete haematological and cytogenetic response and major molecular response (CHR, CCR, MMR) in patients who continued with imatinib at the time of the data compilation.

Data was compiled through the electronic prescription programme and medical records.
Results We analysed 48 patients. 45.8% (n = 22) were male, with a mean age of 58.7 (9–82). Mean time since diagnosis was 8.2 years (3–13).

31 patients continued with imatinib when data were collected. The 17 remaining changed to 2G–TKIs (10 to nilotinib, 7 to dasatinib). Reasons for termination were: intolerance (n = 9); failure and intolerance (n = 5), loss of response (n = 1), and inclusion in a clinical trial (n = 2).

Notified ADRs in our 48 patients were: skin rash-pruritus (4), musculoskeletal pain-myalgia (8), oedema (11, 8 palpebral), gastrointestinal problems (3), haematological reactions (2), other (5).

Effectiveness in patients who continued with imatinib was: 27 patients presented CHR, CCR, MMR; 1 had just died, 3 had no data available.

Conclusion

- A considerable proportion of our patients continue with imatinib, and currently present a MMR.
- The main reason for termination was intolerance.
- All the notified ADRs were included as frequent or very frequent in the Summary of Product Characteristics.

Even with the development of newer drugs, imatinib demonstrated a good profile among our patients and continues to be a good alternative for CML treatment.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-045 ELECTRONIC PRESCRIBING: THE DEVELOPMENT OF A PAEDIATRIC DRUG DATABASE

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Background A standardised electronic paediatric drug database was needed in order to aid paediatric drug dose selection within both prescribing and clinical pharmacist screening.

Purpose To determine a system of information inputs and checks to support the development of an electronic paediatric drug database (DD). The DD is designed as a clinical support tool to aid paediatric drug dose selection within both prescribing and clinical pharmacist screening.

Material and methods A multi-disciplinary team was appointed that included senior and junior medical staff, senior and junior pharmacists, pharmacy technicians, data analyst/database engineer, nursing staff and project manager. The DD was built in MS Access 2007. Information arbitration is provided by a senior oversight team consisting of the Deputy Chief Medical Officer, Chair of Drugs and Therapeutics Committee and Director of the Academic Practice Unit (a clinical pharmacist).

Results Common data sources used in clinical practice were identified as suitable for information harvesting. The DD system is based on 5 core data fields: Drug, Indication, Route, Age, and Dose; known as DIRAD. Each DIRAD is unique with processes in place to ensure they are not duplicated. Input of a draft DIRAD occurs at level 1 (L1), which is the lowest level in the 5 level process. Passage through the system to final approval at L5 requires acceptance of the DIRAD at each and every level in the process. To date (July 2014) over 3,000 DIRADs have been entered into the system representing 765 drug entities. Reference to relevant dm + d codes is allowed within the DD structure. Migration of the system to a Sequel Server (SQL) platform is planned.

Conclusion The developed 5 stage process has been successfully used to capture and validate clinical information suitable to support electronic prescribing of medicines for paediatrics.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-046 HYPERSENSITIVITY REACTIONS TO CHEMOTHERAPY: SO... WHAT DO WE DO NOW?

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Background Despite using steroid premedication before administering potentially highly allergenic chemotherapy (taxanes, platinum drugs, biological macromolecules, etc.), some patients get sensitised during the first cycles and tend to develop hypersensitivity reactions. This leads to early treatment interruption, which could be critical for the patient's outcome. Once identified, the allergen may be re-administered under a desensitisation protocol, inducing a tolerance state in which the patient doesn't react again. During each session, the whole dose is administered starting at a very low infusion rate, which is periodically increased until the regular rate is achieved. Patients with a positive skin test, severe reaction despite negative test, and those who react again during controlled administration are candidates for desensitisation.

Purpose To describe the management and outcomes of patients who reacted to chemotherapy, and how oncologists changed their prescriptions to available options.

Material and methods We carried out a retrospective study (period 2011–2014), obtaining data from patients' clinical histories and chemotherapy records. SPSS20 was used for data coding and statistical processing.

Results Sixteen patients (81.2% female, average 62.9 ± 7.3 years, diagnosed with ovarian cancer) experienced mild (9), moderate (3) or severe (4) hypersensitivity reactions to chemotherapy (68.8% platinum drugs). Five patients had a positive skin test; only three were enrolled on desensitisation programmes, the remaining two switched treatment line. Two patients had a severe reaction but a negative test, one of them was enrolled and the other switched treatment. The remaining nine (negative test, mild-moderate reaction) didn't experience a second reaction during controlled infusions, so they kept the same treatment; just one reacted and was proposed for the programme. Four desensitisations were carried without incident, the remaining one had to be stopped due to a reaction when the infusion reached the top rate during the first session.

Conclusion Desensitisation, provided by Drug Allergy and Hospital Pharmacy departments, allows standard treatment lines to be continued, modifying oncologists' decisions and improving patient outcomes.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-047 PHARMACIST'S CONTRIBUTION TO THE OPTIMISATION OF DRUG THERAPY IN ONCOLOGY INPATIENTS

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Background Numerous studies have shown that the presence of a pharmacist on hospital rounds as a full member of the patient care team prevents drug errors.

Purpose To analyse pharmaceutical interventions made by a fourth-year pharmacy resident to optimise drug treatment in oncology inpatients, as well as the acceptance rate of recommendations.
Material and methods 2-month prospective observational study, conducted during the rotation of a fourth-year pharmacy resident in the Oncology ward. In order to perform the patient daily follow-up, the following pharmaceutical care was carried out: 1) participation in medical rounds; 2) review of medical records and analytical data; 3) prescription validation; 4) medicines reconciliation upon admission and discharge; 5) discharge medication information. Pharmaceutical interventions and their acceptance by the medical team were recorded.
Results An average of 16 patients were followed up every day. 85 interventions were recorded, classified into: different dose/frequency (29.4%), omission (14.1%), medicines reconciliation (10.6%), prescription clarification (5.9%), antibiotic duration (3.5%), antibiotic/antifungal choice (3.5%), adverse effects information (3.5%), duplicated treatment (2.4%), pharmacological interactions (2.4%), dose adjustment due to renal impairment (2.4%), discharge medication information (2.4%) and other (11.8%). 82.4% of recommendations were accepted by the medical team.
Conclusion The presence of a pharmacist on the ward contributed to close monitoring of the drug treatment in oncology inpatients. Thanks to this daily follow-up multiple pharmaceutical interventions were made, mainly related to change in dose or frequency, which had a high acceptance rate by the medical team. This shows the need and importance of the integration of pharmacists in the medical team, to improve the quality and safety of the drug treatment provided to oncology inpatients.

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No conflict of interest.

CP-048 ANALYSIS OF THE AMBULATORY USE OF BOTULINUM TOXIN TYPE A IN A TERTIARY HOSPITAL: AUTHORISED AND OFF-LABEL INDICATIONS

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Background In Spain, the authorised indications for botulinum toxin type A (BTTA, Botox) are:

- Neurological diseases: focal spasticity (foot, wrist and hand, ankle), blepharospasm, hemifacial spasm and associated focal dystonias, cervical dystonia and chronic migraine in adults.
- Bladder disorders: urinary incontinence in adults with neurogenic detrusor overactivity or idiopathic overactive bladder.
- Skin disorders: Severe primary axillary hyperhidrosis.

Purpose To analyse the ambulatory use of BTTA in our hospital for one year.
Material and methods A retrospective descriptive analysis of all patients treated with BTTA from May 2013 to April 2014 was carried out. Records from the hospital's electronic prescribing software (Silicon software) were reviewed and the following data were collected: number of patients and prescriptions dispensed, indications and clinical department.
Results A total of 431 patients were treated with BTTA, counting 611 prescriptions dispensed. Two patients received 4 doses, 18 patients 3 doses, 138 patients 2 doses and 273 patients one dose.

The distribution of administrations by clinical department and indication was:

- Pain Unit: focal spasticity (5), hemifacial spasm (1), off-label: different pains in back, neck and extremities (5)
- Maxillofacial Surgery: hemifacial spasm and associated focal dystonias or disorders in the facial nerve (27)
- Ophthalmology: blepharospasm (2) and off-label: strabismus or esotropia (33)
- General surgery: off-label: anal fissure (8)
- Plastic Surgery: hemifacial spasm and associated focal dystonias (12)
- Dermatology: hyperhidrosis (41)
- Neurophysiology: off-label: idiopathic peripheral neuropathy (1) and paralysis of vocal cords (3)
- Neurology: blepharospasm (32), cervical dystonia (48), hemifacial spasm (23), focal spasticity (64), hyperhidrosis (10), migraine (7)
- Otolaryngology: off-label: sialorrhea (10) and oropharynx malignant neoplasm (2)
- Urology: urinary incontinence (57)
- Rehabilitation: cervical dystonia (1), hemifacial spasm (1), focal spasticity (247), off-label: complication of amputation stump (1)

Conclusion In our hospital, BTTA is mainly used in authorised conditions. Neurology and Rehabilitation call on BTTA most frequently. General Surgery, Ophthalmology and Otolaryngology respond to off-label conditions in most of their patients.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-049 CLINICAL RELEVANCE OF RECONCILIATION ERRORS AT ADMISSION FROM EMERGENCY DEPARTMENT AVOIDED BY THE CLINICAL PHARMACIST

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Background Medicines reconciliation in the emergency department (ED) is essential to optimising the safe and effective use of medicines.
Purpose To analyse reconciliation errors avoided by the ED pharmacist and to assess the severity and clinical relevance.
Material and methods The study was conducted between November 2013 and June 2014 in a general hospital of 330 beds. A pharmacist attended the daily ED meeting, selecting patients at higher risk of medicines error. The pharmacist wrote the home medicines history using primary care electronic records and interviews with the patient/caregiver, and compared it with the prescription in the ED. Medicines reconciliation was carried out with the emergency physician. Any unjustified discrepancy was considered a reconciliation error (RE). REs were classified according to the Consensus Statement of the Spanish Society of Hospital Pharmacy (SEFH). The severity of REs were estimated using the categorization of The National Coordinating Council for Medicines Error Reporting and Prevention, considering

pharmacist intervention clinically relevant if it avoided potential patient harm.
Results 132 patients were included. 51% were female and the mean age was 75.8 ± 9.4 years. The average number of drugs per patient was 11.4 ± 4.2. 239 REs were found affecting 89 patients (67.4%), the average error per patient was 1.8 ± 2. Types of RE were omission (71.1%), different route, dose or regimen (14.6%), incomplete prescription (8.8%), different drug (3.8%), and interaction (1.7%). The severity of the RE was: 14.2% reached the patient without causing harm (C), 35.2% reached the patient and required intervention/monitoring (D), 33.9% would have caused temporary harm (E) and 16.7% harm that would have prolonged hospitalisation (F). 85.9% of interventions on clinically relevant REs (category E–F) were accepted, thus avoiding potential harm to 61.8% of patients with reconciliation errors.
Conclusion The high proportion of patients in which the ED pharmacist intervention prevented a potential harm highlights the importance of his role in the reconciliation process.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

CP-050 POSACONAZOLE AND INVASIVE FUNGAL INFECTION

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Background Invasive fungal infection (IFI) is a serious problem due to its high incidence, morbidity, mortality and budget impact. Therefore strategies are needed for antifungal use optimisation. Posaconazole has the approval of our Hospital Pharmacy and Therapeutics Committee (PTC) for its use in IFI prophylaxis in patients diagnosed with acute myeloid leukaemia (AML), myelodysplastic syndrome, oropharyngeal candidiasis, and in treatment of refractory cases of IFI.
Purpose To analyse posaconazole use, assessing the compliance with the criteria established by our PTC, and also its efficacy, safety and budget impact.
Material and methods We have carried out a retrospective study of patients under posaconazole treatment in our hospital between September 2013 and September 2014. We gathered data from patients' clinical history and the Farmatools unit dose records module about age, gender, diagnosis, indication, posology, treatment length, previous treatment lines, clinical analytics and microbiology, outcomes, adverse events, drug interactions and laboratory selling price.
Results We found data from eleven patients (81% male, average age 52 years, 18 minimum and 86 maximum). Average posaconazole dose was 600 mg/day, and average treatment length was 12.8 days. The most frequent diagnosis was AML (4), followed by myelodysplastic syndrome (3), current IFI (2), iatrogenic agranulocytosis (1) and aplastic anaemia (1). In most cases (90.9%) posaconazole use met PTC criteria; the remaining indications weren't approved (first line treatment for current IFI). The outcome was positive for 81.8% of patients, the remaining two switched to another antifungal because of symptoms suggestive of IFI. All experienced increases in transaminases and direct bilirubin, improving after treatment ended. Main drug interactions involved ranitidine and ciclosporin. Total cost was € 33,899.47 (average per patient €3000).
Conclusion PTC criteria were met in most of the cases, but posaconazole use for non-approved indications represented an additional cost of €18,155.4, which emphasises the need for tight control of criteria compliance.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-051 EVALUATION OF ELECTRONIC DRUG INTERACTION CHECKER DATABASES – RHEUMATOID ARTHRITIS PATIENTS CASE STUDY

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Background Due to sometimes difficult pharmacological management of the disease and comorbidities, patients with rheumatoid arthritis (RA) are often subjected to multi-drug treatment. Electronic databases with drug interaction checker functions can be a useful tool to predict potential drug-drug interactions; however the descriptions may not always be supported by adequate data.
Purpose To evaluate the validity and appropriateness of drug-drug interaction descriptions of a commercial and an open-access database.
Material and methods The medical records of 25 patients receiving 5 or more medicines (N = 8,64 ± 1,95) were analysed. The majority (84%) were receiving methotrexate and 16% were on additional biological treatment (adalimumab, etanercept or tocilizumab).

Lexi-comp and Drugs.com databases were used to identify potential interactions. The descriptions rated **D** (N = 26) or **X** (N = 1) (Lexi-comp) or **Major** (N = 21) (Drugs.com) were reviewed. The interaction descriptions were classified as either (1) appropriate (data based on primary sources and/or medicinal products' SmPCs), (2) undefined (general descriptions including multiple drugs or inconclusive data) or (3) inappropriate (data not corroborated by primary sources or misinterpreted).
Results The Lexi-comp and Drugs.com descriptions of interaction were deemed "appropriate" (63 vs. 48%), "undefined" (26 vs. 33%) and "inappropriate" (11 vs. 19%) respectively. The majority of "undefined" classifications were describing class effects. The overestimation of biologicals and methotrexate interactions (even though concomitant use is recommended by current guidelines) was the main cause for "inappropriate" classifications.
Conclusion The databases with interaction checker functions provide a powerful tool for a pharmacist when reviewing the patient's treatment. Nevertheless, in patients with RA, due to simultaneous use of a variety of immunomodulatory drugs, the databases tend to overestimate the class effect of those medicines. Our data shows that only about one half (56% overall) of potential interactions described in them can be classified as "appropriate". It is therefore crucial that the pharmacist's final decision is based on clinical data.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

CP-052 THE PREVALENCE OF CLOSTRIDIUM DIFFICILE AND USE OF THE ANTIBIOTIC CLINDAMYCIN

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Background Clostridium difficile is a Gram-positive anaerobic bacillus. All classes of antimicrobials have been associated with Clostridium difficile infection (CDI) such as clindamycin, cephalosporins, penicillins. In the past 10–15 years CDI has emerged as an important infectious disease worldwide. In recent years, Osijek Clinical Hospital (KBCO) has witnessed a steady growth of Clostridium difficile isolates from 689 in 2010 to 953 in 2012.
Purpose To demonstrate that restricting the use of clindamycin reduces the number of isolates of C. difficile in KBCO and thus reduces the cost of treatment.
Material and methods The antibiotic clindamycin was placed on the list of reserve antibiotics in November 2013, which means that it can be issued from hospital pharmacy only with the approval of the Nosocomial Infections Committee. We analysed the number of cases of C. difficile positively identified by the KBCO Microbiological Laboratory from January 1st to September 30th 2013 and January 1st to September 30th 2014. In parallel, we analysed data on consumption of clindamycin obtained from BIS3000 electronic records in the Hospital pharmacy.
Results The number of positive isolates of C. difficile in the period January 1st to September 30th 2013 was 454, while in the period from January 1st to September 30th 2014 that number was 171. Consumption of the antibiotic clindamycin from January 1st to September 30th 2013 amounted to a total of 8,359 DDD, costing HRK 335,442 (€1 = HRK 7.5), while in the period from January 1st to September 30th 2014 the cost was 4,153 DDD, HRK 118,628.
Conclusion Restrictions in the use of clindamycin resulted in consumption falling by 50% and costs decreased by 65%. The number of positive cases of C. difficile was reduced by 62%.

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CP-053 IDENTIFICATION OF A NATIONAL PORTFOLIO OF UNLICENSED PHARMACEUTICAL PREPARATIONS IN DENMARK

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Background In Denmark, hospital pharmacies manufacture as well as buy unlicensed pharmaceutical preparations prescribed by physicians. Each Danish hospital pharmacy is responsible for manufacturing and supplying preparations within their own Region; however cross-Regional coordination is limited. This has resulted in a vast portfolio of unlicensed pharmaceutical preparations with possibly many duplications and similar preparations and with different or unknown clinical use, even though the clinical needs are similar throughout the country.
Purpose To identify a common national portfolio corresponding to clinical need by analysing and categorising the use of unlicensed pharmaceutical preparations from all Danish hospital pharmacies.
Material and methods The study was a retrospective analysis of sales data from 2012 and 2013, which were collected from the electronic system of all Danish hospital pharmacies.

The total sales data were analysed by 6 clinical pharmacists representing all major hospital pharmacies. The process was facilitated by a project manager.

The clinical pharmacists categorised the existing portfolio according to preparation, formulation and indication. They identified identical preparations, alternatives and estimated the overall clinical relevance. The pharmacists consulted colleagues, physicians and guidelines to ensure broad and accepted categorization.
Results A total of 2,754 unlicensed pharmaceutical preparations were identified in the existing portfolio. Of these, 739 preparations were considered to be of clinical relevance and should be included in the updated national portfolio of unlicensed pharmaceutical preparations.

Indications were allocated to all 739 preparations.
Conclusion A national portfolio of extemporaneous pharmaceutical preparations with corresponding indications was identified. The portfolio helps secure a unified content and use of unlicensed pharmaceutical preparations across Denmark, which potentially could lead to increased patient safety.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

CP-054 OFF-LABEL USE OF EMTRICITABINE/RILPIVIRINE/TENOFOVIR

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Background Emtricitabine/rilpivirine/tenofovir (FTC/RPV/TDF) was initially approved for the treatment of human immunodeficiency virus type 1 in treatment-naïve adult patients with a viral load ≤ 100,000 copies/mL.
Purpose To evaluate the effectiveness and safety of off-label use of FTC/RPV/TDF after this drug was included in our hospital's formulary.
Material and methods This retrospective observational study included all patients for whom FTC/RPV/TDFwasdispensed from our university hospital's pharmacy department from October 2013 to March 2014. We collected the following information from medical records: age, sex, drug history, prior antiretroviral treatment, reasons for treatment change, viral load, CD4 count and atherogenic index at the start and end of the study period, adherence, side effects and reasons for discontinuing treatment.
Results We included 19 consecutive patients (14 men and 5 women; mean age, 44.7 years). All patients were treatment-experienced; 78% had previously been treated with efavirenz/

emtricitabine/tenofovir. The most frequent reasons for changing antiretroviral treatment were hyperlipidaemia (38.8%) and interaction with methadone (22%). The viral load was <50 copies/mL in 10 patients. The mean CD4 count was 634.6/mm^3 at baseline and 596.4/mm^3 at study end (normal range: 450–1400/mm^3). The mean atherogenic index, recorded in 16 patients, was 4.5 (normal range: 0–5) at both the beginning and end of the study. No side effects were documented. Two patients discontinued treatment for reasons unrelated to the antiretroviral (pregnancy and death). We detected no non-adherence to the treatment.

Conclusion In our centre, changing treatment to FTC/RPV/TDF is mostly due to side effects and interactions in the previous treatment. Although our preliminary data preclude definitive conclusions, FTC/RPV/TDF seems safe and effective.

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No conflict of interest.

CP-055 PHARMACY INTERVENTIONS IN VENOUS THROMBOEMBOLISM PROPHYLAXIS IN MEDICAL PATIENTS

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Background Venous thrombosis and pulmonary embolism are potentially preventable causes of hospital-related morbidity and mortality. Thromboprophylaxis is thought to be underused in medical inpatients. The PRETEMED guide is a risk assessment tool used to quantify the risk of venous thromboembolism (VTE) in medical inpatients.

Purpose To evaluate the appropriateness of VTE prophylaxis in medical inpatients and to describe Pharmacy Interventions to improve this treatment.

Material and methods Cross-sectional study in a medical ward in a public hospital with 120 beds. VTE risk factors and VTE prophylaxis prescribed were assessed in patients admitted from the emergency department. Patients treated with low molecular weight heparin (LMWH) or enoxaparin for therapeutic purposes were excluded. The PRETEMED guide was used as a risk assessment tool to evaluate the appropriateness of the prophylaxis given to patients.

Results 168 patients were analysed and 113 included in the study with indications for VTE prophylaxis, 60 of them (53%) were men, mean age 75 years (SD 18.3). According to the PRETEMED guide, 13.3% of patients had low risk of VTE, 6.2% moderate and 80.5% high. In 49 patients (43%) there were discrepancies between the VTE prophylaxis prescribed and the PREMETED guide recommendation: 32% treatment omission, 7% no treatment indication and 4% overdoses.

Thirty-one pharmacy interventions in 27% of patients were made during this period. Sixteen (52%) were related to the need for LMWH and fifteen (48%) to the dose of enoxaparin prescribed (wrong dose, wrong frequency or adjustment for renal impairment needed). Twenty-three (74%) of them were accepted, 14 were treatment initiation and 9 were dose adjustments.

Conclusion In almost half of the patients included in the study the VTE prophylaxis prescriptions did not agree with the PRETEMED guide recommendations and most of them were related to treatment omission. Pharmacists improved patients' treatment by working with the assistants' team in making interventions that were mostly accepted.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-056 ABSTRACT WITHDRAWN

CP-057 DOSAGE ADJUSTMENT OF EPOETIN β AND DARBEPOETIN α IN CHRONIC KIDNEY DISEASE

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Background Erythropoietin (EPO) is indicated in the treatment of anaemia associated with chronic kidney disease (CKD).

Purpose To determine the average dose of epoetin β and darbepoetin α required to achieve adequate levels of haemoglobin (Hb) in patients with CKD not yet undergoing dialysis and the rate conversion factor between the two EPOs.

Material and methods Retrospective study. Patients included: stage 3 to 5 CKD who started treatment with EPO between January 2012–December 2012. Follow-up period: 6 months. Hb target range: 10.0 g/dL–12.5 g/dL. Data collected: sex, age, CKD stage; baseline, 3 and 6 months data analysis; type of EPO and posology. Data: medical and pharmacotherapeutic history (Farmatools).

Results 81 patients. Median baseline characteristics: 59.3% men, age 73.8 years (30–88), stage 3 CKD (29.7%), 4 (57.8%) and 5 (12.5%); Hb 10.2 ± 1.2 g/dL; 63.0% had serum ferritin values >100 ng/ml. 40.7% received epoetin β (average weekly dose: 7,718.2 ± 6,155.7 IU) and 59.3% darbepoetin α (average weekly dose: 20.6 ± 10.3 μg). 46.9% (38/81) of patients changed EPO treatment: 71.1% (27/38) dosage. Hb level increased statistically significantly after 3 (1.5 g/dL average increase, $p < 0.001$) and 6 months of treatment (1.6 g/dL, $p < 0.001$); haematocrit level also did at 3 (4.8 g/dL, $p < 0.001$) and 6 months (5.1 g/dL, $p < 0.001$). After 3 months 53.1% of patients had Hb 10.0–12.5 g/dL. Average weekly dose to achieve Hb target range: 6,875.0 IU of epoetin β and 20.4 μg of darbepoetin α, which represent a relationship between the two doses of EPOs: 337:1.

Conclusion EPO increased Hb and haematocrit baseline levels statistically significantly after 3 and 6 months of treatment. The relationship between the two doses of EPOs to achieve Hb target range (epoetin β: darbepoetin α) found in our study was different from the relationship described in the Summary of Product Characteristics (337:1 vs. 200:1 respectively).

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No conflict of interest.

CP-058 PHARMACEUTICAL CARE SYSTEM FOR CHRONIC PAEDIATRIC PATIENTS

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Background Meeting chronic patient needs is essential to improve health outcomes.
Purpose To design a pharmaceutical care plan for chronic paediatric patients using a risk stratification tool.
Material and methods The care plan was developed in 4 steps from April to June 2014:

1. 1. Literature review.
2. 2.4 workshops were held with experts. The chronic conditions and the variables of each patient with their corresponding relative weights were defined, varying from 1(low) to 4 (high risk) in ascending order of risk, and resulted in a risk matrix with increasing levels, which included the pharmaceutical care actions to be carried out in each level.
3. 3. pre-test was developed and used in 195 patients from 7 hospitals.
4. 4.5 case studies were performed.

Results The care plan was applied to patients with different chronic conditions, classified into 15 groups (autoimmune, gastrointestinal, oncology, etc.). 13 variables divided into 3 categories were defined: demographic (age, obesity/malnutrition, social/cognitive problems); clinical (visits to the emergency room), comorbidities, clinical conditions that require special monitoring);and drug treatment (polypharmacy, complex patterns, changes in regular regimen, suspected non-adherence, suspicion/risk of medication-related problem, high-risk medicine). Afterwards, 4 risk levels were defined according to the total variable score: level 4, for patients with ≤17 points; level 3, 18 to 22 points; level 2, 23 to 26 points; and level 1, for ≥27 points. For each risk level 3 types of care actions were defined: pharmacotherapy monitoring, training/education to patient/parent/caregiver, and coordination activities with the care team.

We evaluated the distribution of 195 real patients into the defined risk levels: 60% were scored into level 4, 20% into level 3, 13% into level 2 and 7 into level 1. This was considered an adequately stratified population distribution.
Conclusion The pharmaceutical care plan adequately stratified chronic paediatric patients into different risk levels and can be used to prioritise those patients that will benefit more from our interventions.

REFERENCES AND/OR ACKNOWLEDGEMENTS

We would like to thank Abbvie and Ascendo consulting for their logistic support.

No conflict of interest.

CP-059 EVALUATION OF CLINICAL PHARMACEUTICAL INTERVENTIONS IN A TERTIARY CARE HOSPITAL

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Background Interventions made by clinical pharmacists have shown to reduce the frequency of drug-related problems.
Purpose To describe all Pharmaceutical Interventions performed, assessing the type, medical units involved and the pharmacotherapeutic group of the drugs.
Material and methods A retrospective observational study of the pharmaceutical interventions was performed in a tertiary care hospital with 590 beds between January 2009 and September 2014. The medical records were consulted to obtain this data.
Results

- 11.985 interventions were performed during the study period in 5 major therapeutic classes: antibacterial (64.66%), gastrointestinal drugs (23.01%), blood formation and coagulation (4.64%), dietary supplements (2.79%) and hormones (2.62%).
- There were 23 different types of pharmaceutical interventions, the more frequent were: 38.33% related to restricted antibiotic justification, 23.63% sequential treatment, 7.54% treatment duration, 4.04% underdosing, 2.32% therapeutic duplication.
- The most frequent medical units involved were: Internal medicine (30.5%), pneumology (12.58%) and surgery (11.23%).

Conclusion This study shows the importance of Pharmaceutical interventions detecting potential drug interactions and drug-related problems in order to optimise the pharmacotherapeutic treatment. A clinical pharmacist optimises pharmacotherapy for all patients, improves treatment efficacy and safety.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Dr. Cotrina

No conflict of interest.

CP-060 COMPARISON OF ETHNIC CHRISTIAN AND MUSLIM POPULATIONS ON ANTIRETROVIRAL TREATMENT

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Background Highly active antiretroviral treatment (HAART) has achieved infection control for human immunodeficiency virus type 1, decreasing the morbidity and mortality associated with it. But on the other hand, it can produce short and long-term side effects. Previous studies have shown that the ethnic Muslim population has a better lipid profile than the ethnic Christian population in Spain.
Purpose To analyse differences in the lipid profile, blood glucose levels, CD4 count and viral load (VL) between the ethnic Christian and Muslim populations with antiretroviral treatment in a university hospital.
Material and methods A descriptive cross-sectional study of patients with antiretroviral treatment, who collected medicines

from the outpatient unit of our pharmacy department (PD). The information collected was: age, sex, current drug treatment (obtained from PD program) and glucose, triglycerides, total cholesterol, HDL cholesterol, LDL cholesterol, VL, CD4 count (obtained from the hospital's clinical laboratory program). The results were analysed using SPSS version 15.0.

Results 85 patients were included; 47 (55.3%) were Christians and the rest Muslims. 59 (69.4%) were men, of whom 23 (39%) belonged to the Muslim ethnic and 36 (61%) to Christian ethnic. Of the 26 women, 15 (57.7%) were Muslim and 11 (42.3%) Christian. The mean age of patients was 47.8 years (SD: 10.1). We found 19 different pharmacological treatments and the most prescribed were: efavirenz/emtricitabine/tenofovir (32.9%), lopinavir/ritonavir monotherapy (29.4%) and lopinavir/ritonavir + emtricitabine/tenofovir (9.4%). 24 Christian and 11 Muslim patients had hypertriglyceridemia (value >150 mg/dL) with statistically significant differences (p = 0.039). 21 Christian patients had CD4 counts below 450/mmc; this number of patients was statistically significant (p = 0.044). No statistical significance was found in the other laboratory test values.

Conclusion Our results show that ethnic Christians had a higher rate of hypertriglyceridemia and low levels of CD4. However other studies would be needed to confirm these findings, which could contribute to a better selection of antiretroviral therapy.

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No conflict of interest.

CP-061 LONG-TERM COST-EFFECTIVENESS ANALYSIS OF INFLIXIMAB, ETANERCEPT AND ADALIMUMAB IN RHEUMATOID ARTHRITIS PATIENTS IN REAL-LIFE CLINICAL PRACTICE

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Background Anti-tumour necrosis factor-α agents are very effective in the management of rheumatoid arthritis (RA) patients, but superiority among them has not been established. Also, long-term pharmacoeconomic studies examining the cost-effectiveness of biological agents in real-life clinical practice are scarce.

Purpose To assess the efficiency, in terms of cost, of achieving clinical remission (CR), of infliximab, etanercept and adalimumab in a real clinical setting after two years of treatment.

Material and methods All patients diagnosed with RA in a tertiary referral hospital referred through an interdisciplinary consensus protocol who started treatment with infliximab, etanercept or adalimumab between January 2007 and December 2012 were included. Data examined included demographic and clinical variables and use of health-care resources.

Effectiveness was measured as the proportion of patients achieving CR after two years of treatment (DAS28 value <2, 6).

Costs were assessed from the hospital perspective including the Spanish official drug acquisition costs and costs for diagnostic tests and different medical services, obtained from the Hospital's financial management database.

Cost-effectiveness was calculated dividing total health direct costs by percentage of patients achieving clinical remission.

Results 130 patients were included (55 on infliximab, 44 on etanercept and 31 on adalimumab).

45.20% of patients on adalimumab achieved clinical remission after two years, versus 29.1% on infliximab (p = 0.133) and 22.7% on etanercept (p = 0.04), with no significant differences between etanercept and adalimumab (p = 0.475).

Mean total health direct costs at two years were €29,857.67, €25,328.60 and €23,309.09 for adalimumab, infliximab and etanercept respectively.

The mean costs (IC95%) of achieving CR after two years with adalimumab, infliximab and etanercept were €66,057 (48,038–84,076), €87,040 (78,496–95,584) and €102,683 (94,559–110,807) respectively.

Adalimumab was more efficient than etanercept (p < 0.001) and infliximab (p = 0.026), without statistically significant differences between etanercept and infliximab (p = 0.086).

Conclusion Adalimumab was shown to be the most efficient treatment in achieving clinical remission in real-life clinical practice in our hospital.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-062 COST IMPACT OF BELIMUMAB IN A HOSPITAL SETTING

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Background Belimumab is a monoclonal antibody indicated as add-on treatment in adult patients with active systemic lupus erythematosus (SLE) despite standard treatment. Given its modest efficacy and the lack of data for severe forms, the improvement in actual benefit (IAB) of belimumab was assessed to be minor. Thus, Health Authorities approved the hospital use of belimumab but its administration in hospital settings is not supported by health insurance.

Purpose To assess the cost impact of belimumab treatment in adult patients with SLE in our hospital.

Material and methods Data available from the SLE population in the Internal Medicine Department was used as input in the model. An Excel model was adopted for the analysis, which was performed from our hospital perspective. The recommended dose regimen was 10 mg/kg on days 0, 14 and 28 and at 4-week intervals thereafter. Patients received their treatment as part of a day hospital admission. Total charges and costs details were obtained from the National Tariffs Databases.

Results A retrospective analysis was conducted on a dataset of 12 female patients followed over a period of 15 months (from January 2013 to May 2014).

Based on a cost of €162.65 for a 120 mg vial and €542.15 for a 400 mg vial, the cost of belimumab per course and per patient was estimated at €972.5 whereas only €30 (drug-related reimbursement in the total hospital daily costs) were refunded to the hospital. 113 courses of treatment were recorded during this period. Therefore, a total of €106,504 remained chargeable to the hospital.

Conclusion Despite some evidence of its clinical effectiveness, the health benefits could be outweighed by the significant costs associated with belimumab. It is important to target patients most likely to benefit from belimumab, to establish well-defined

optimal treatment duration, or even to consider other therapeutic alternatives.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

CP-063 PHARMACY ASSISTANCE FOR FRAIL PATIENTS WITH NASOGASTRIC TUBE

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Background A frail patient is an immobilised person and/or a nursing home resident and/or in a terminal stage. This population is hyper-frequent in primary health care (PHC) centres and hospitals. This group generates large expenses in drugs and they usually need a nasogastric tube (NGT).
Purpose To evaluate the implementation of pharmacy assistance for frail patients with NGT after hospital discharge.
Material and methods Prospective study conducted between June and September 2014. Sequence of activities: a physician or nurse selected the patients who require pharmaceutical intervention to guarantee the correct administration of drugs via NGT, compatibility with enteral nutrition and stability of solid solutions or dispersions of drugs. A report with recommendations, substitutions and interruptions of treatments was issued to the patient. Variables: age, drugs per patient, therapeutic group (TG) according to the Anatomical Therapeutic Chemical (ATC) classification system and active substances with submitted recommendations and levels of approval. Sources of information: electronic medical history (DIRAYA), electronic prescription program (APD – ATHOS) and specialised bibliography. Data was analysed using SPSS 15.0.
Results 23 requests were received. The mean age of the patients was 81.65 (± 8.97) years. The mean of prescribed drugs per patient was 8 (2–19). 75% (138/184) of the patients required specific recommendations (a mean of 6 drugs per patient). The most common TGs were related to the nervous system 29.71% (41) and the cardiovascular system 25.36% (35). The most frequent active principles were: omeprazole 9.42% (13) and acetylsalicylic acid 5.8% (8). 100% of the recommendations were accepted.
Conclusion This system guarantees a constant information flow between PHC centres and hospitals that will avoid problems and guarantee correct drug administration. Future studies will show the economic impact and the improvement in the quality of life with the reduction of visits to PHC centres and hospitals.

REFERENCES AND/OR ACKNOWLEDGEMENTS

None.

No conflict of interest.

CP-064 ANALYSIS OF ORAL IMMUNOSUPPRESSANT USE IN OFF-LABEL INDICATIONS IN A HOSPITAL PHARMACY SERVICE

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Background Our Hospital Pharmacy Service (HPS) participates in the process of authorising off-label indications (OLIs) of drugs. Immunosuppressants are often used in OLIs.
Purpose To analyse prescriptions for oral immunosuppressants dispensed as OLI in our HPS Outpatient Unit (HPSOU) to identify points in the system that could be improved.
Material and methods Retrospective study of oral immunosuppressants dispensed at our centre between March 2012 and March 2014.

Variables collected were age, sex, drug, prescribing service and indication; obtained from the HPSOU database and the electronic medical history.
Results 269 patients (median age 52 years (5–92), 135 women (50%) and 134 men (50%)) were evaluated.

6 drugs were dispensed in 8 different medicinal products: tacrolimus 94 patients (35%), mycophenolate mofetil 78 (29%), mycophenolic acid 56 (21%), ciclosporin 34 (17%), everolimus 6 (2%) and sirolimus 1 (0.3%).

11 services were involved: Haematology (89 patients: 33%), Rheumatology (61: 23%), Nephrology (56: 21%), Ophthalmology (15: 6%), Digestive (14: 5%), Pneumology (10: 4%), Paediatrics (9: 3%), Neurology (8: 3%), Internal Medicine (4: 1%), Dermatology (2: 0.7%) and Oncology (1: 0.3%).

Immunosuppressants were dispensed for 35 different indications. Main indications and their treatments were: Allogeneic Hematopoietic Stem Cell Transplantation (allo-HSCT) for 75 patients (28%), with tacrolimus (71%), mycophenolate mofetil (17%) and ciclosporin (12%); Systemic Lupus Erythematosus (SLE) for 46 (17%), with mycophenolate mofetil (62%), mycophenolic acid (30%) and tacrolimus (8%) and Membranous Glomerulonephritis (MGN) for 20 (7%), with mycophenolic acid (50%) and tacrolimus.
Conclusion The use of oral immunosuppressants as OLI is an established treatment for various indications, specially, allo-HSCT, SLE and GMN. The creation of multidisciplinary groups to develop protocols for the management of these drugs is required.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Summaries of product characteristics of the evaluated medicinal products.

No conflict of interest.

CP-065 SWITCHING ANTIRETROVIRAL THERAPY: REASONS AND ASSOCIATED COSTS IN A COHORT OF HIV-INFECTED PATIENTS

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Background Several factors, such as toxicity, virological failure or low adherence can justify the need for switching antiretroviral therapy (ART) in HIV patients.
Purpose To study the reasons for switching ART in an HIV unit in a tertiary hospital. Secondary objectives were to study the number of switches over time and their estimated annual cost (EAC).
Material and methods We recorded ART switches performed every 6 months from January 2012–June 2014 in our cohort of 1,550 HIV-infected patients. Date collected: previous and new

ART, reason for switching and EAC (difference in the daily acquisition cost between the new and the previous ART calculated for 365 days of treatment). The Spearman test was used for bivariate correlations.

Results 685 switches were performed: 117 (7.5%), 98 (6.3%), 130 (8.4%), 157 (10.1%) and 183 (11.8%) in each 6-month period. An increase in the number of changes/6 months over time was observed (Spearman rho: 0.9; $p < 0.05$). The total number of switches/6 months correlated only with toxicity (Spearman rho: 0.95; $p < 0.05$).

Abstract CP-065 Table 1 Reasons for switching and EAC (euros)

Year	2012	2013	First six months of 2014
Switches/EAC	215/-10,851	287[1]/-59,725	183[1]/20,616
Annual acquisition cost of ART	10,318,403	10,325,638	5,063,660
Reasons for switching/EAC:			
Toxicity	125/-12,189	180/-73,508	107/1,175
Virological failure	37/102,712	33/53,084	24/34,997
Simplification	45/-103,271	49/-68,650	35/-35,371
Drug interaction	8/1,898	22/25,551	14/24,754

[1]Three for pregnancy.

Conclusion

- An increase in the number of switches per 6-month period was observed over time. Total number of switches/6 months was correlated to those associated with toxicity. The availability of new and less toxic ARTs may explain these results.
- Toxicity remained the most frequent reason for switching, representing between 58% and 63% depending on the year.
- Switches due to virological failure entailed an increase in the EAC, while those due to simplification brought cost savings. Overall, the economic impact of this strategy on the annual acquisition cost of ARTs in our hospital seems to be minimal.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-066 PIRFENIDONE IN IDIOPATHIC PULMONARY FIBROSIS: A CASE REPORT

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Background Idiopathic pulmonary fibrosis (IPF) is a chronic, limited lung fibrosing interstitial pneumonia of unknown cause with poor prognosis and few therapeutic options, with a median survival of 2–5 years from diagnosis. It is characterised by fibroblast proliferation and abnormal accumulation of extracellular matrix molecules, particularly collagen fibres. Pirfenidone is the first IPF-specific antifibrotic, with anti-inflammatory and antifibrotic properties whose mechanism of action has not been fully established. To date, pirfenidone is the only drug with proven efficacy in the treatment of IPF. It is considered an orphan drug, and is not yet marketed in all European countries, so that additional monitoring is required.

Purpose To describe the progress of a patient treated with pirfenidone as well as the safety of this new treatment.

Material and methods A prospective observational study was conducted. The patient, a 65-year-old male, stopped smoking 2 years ago (with a cumulative tobacco consumption index of 57 packs/year). He was diagnosed with IPF in 2012 by clinical and radiological criteria. Pirfenidone was approved as a foreign drug for a period of three months by the Ministry of Health.

Results After titration, the usual pirfenidone dose was administered (2403 mg daily). After 3 months of treatment, forced vital capacity (FVC) experienced less than 10% decrease (only 1.2%) and diffusing capacity or transfer factor of the lung for carbon monoxide (DLCO) decreased by 6.1% showing no radiological progression. There were no increase in transaminases, no digestive disturbances or weight loss.

Conclusion Pirfenidone has been used successfully to date in our case, so it is possible to continue the treatment until a new patient evaluation at 6 months in order to prevent a lung transplant. Although more and longer treatment periods are needed, pirfenidone seems to be a well-tolerated treatment option for IPF.

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No conflict of interest.

CP-067 USE OF VALIDATED CARE QUALITY INDICATORS TO IDENTIFY IMPROVEMENTS IN HIV PHARMACEUTICAL CARE

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Background Care quality indicators are used to quantify quality of care. The Spanish HIV group (GESIDA) has developed care quality indicators for the care of persons infected by HIV/AIDS, some of them related to pharmaceutical activities.

Purpose To determine the compliance with GESIDA indicators and identify areas in which to improve HIV pharmaceutical care.

Material and methods Prospective multicentre study. Inclusion criteria: treatment-naïve patients beginning antiretroviral therapy in 2012 and 2013, 48 weeks of treatment and patient monitoring in pharmaceutical care consultations of the centres involved (PSITAR cohort). The care quality indicators were obtained from the GESIDA consensus document/National AIDS Plan on antiretroviral treatment in adults (2014).

Results 102 patients were studied, 86.3% male, mean age of 39.4 years (SD 11.79). At the beginning of the treatment the median viral load was 69,700 and mean CD4 was 316 (SD 216); in 57% of patients it was <350. 5.8% of patients showed resistance to any treatment. The most common treatments were tenofovir, emtricitabine and efavirenz combination (44%), darunavir, ritonavir, tenofovir, and emtricitabine combination (10%) and tenofovir, emtricitabine and raltegravir combination (8%).

Abstract CP-067 Table 1

Indicators	Dimension	Result	Standard
Compliance of initial treatment with GESIDA guidelines	Effectiveness	92.15%	95%
Undetectable viral load (<50 copies/ml) at week 48	Effectiveness	88.25%	80%
Treatment modifications within the first year	Effectiveness	28.43%	<30%
Resistance study in virological failures	Effectiveness	74%	90%
Abacavir initiation without HLA-B*5701 screening	Safety	0%	0%
Treatment adherence measure	Follow-up	54.9%	95%
Average annual expenditure per patient	Efficiency	€8,552	€8,633

Conclusion Effectiveness, efficiency and safety care quality indicators are mostly achieved. We can conclude that more resistance studies are required in the event of virological failure and we should improve treatment adherence records.

REFERENCES AND/OR ACKNOWLEDGEMENTS

1 www.gesida-seimc.org

No conflict of interest.

CP-068 COMPATIBILITY ANALYSIS OF PROPOFOL–OPTIMISATION OF DRUG TREATMENT SAFETY

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Background Infusions are an essential part in the treatment of intensive care patients. Due to increasingly complex treatments the simultaneous application of several drugs through a central multi-lumen catheter is unavoidable. This entails the risk of physicochemical and chemical incompatibility reactions.

One standard sedative used on the intensive care unit is propofol. Because of its physicochemical and optical properties propofol poses a special risk in identifying stability problems and incompatibilities. Additionally, only limited compatibility data are available.

Purpose To optimise the safety of drug treatment in a cardiovascular intensive care unit by preventing drug incompatibilities between propofol and other analgesic and sedative drugs.

Material and methods On the cardiovascular intensive care unit documented propofol drug combinations were narrowed down to practice-oriented combinations of propofol 2% with clonidine, midazolam, sufentanil, remifentanil, piritramide, lormetazepam, γ-hydroxybutyric acid und dexmedetomidine which were diluted to standardised concentrations. Mixtures at a ratio of 1:1 were stored at room temperature for 7 days. Samples were taken at defined points of time.

The physical and the emulsion stability in particular were determined by pH value, zeta potential and globule size distribution measurements using light backscattering. Analyses on crystal and microbiological growth gave additional information about the stability.

The chemical stability determination was carried out by high performance liquid chromatography (HPLC).

Results The light backscattering and zeta potential analyses resulted in three stability groups. The least stable group consisted of propofol, remifentanil and lormetazepam. All other mixtures remained stable over a defined period of time. No crystal and bacterial growth could be detected.

The HPLC data indicated the chemical stability of all previously tested propofol drug combinations.

Conclusion We found evidence of incompatibilities and compatibilities of propofol with analgesic and sedative drugs. Through further investigations the safety of drug treatment should be increased.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-069 QUALITY OF ANTIBIOTIC TREATMENT IN PRETERM NEONATES: A READY-TO-USE FORMULATION OF GENTAMICIN SULPHATE

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Background Intravenous (IV) drug treatment of preterm neonates is affected by: clinical status (i.e. sepsis/infections, immature physiology, pharmacokinetic/pharmacodynamic variation), shortage of ready-to-use formulations, small doses of drug required and the dangers of the IV route.

Purpose To identify the most prescribed IV antibiotics so that ready-to-use formulations can be prepared with standard concentrations (SCs) of drug avoiding handling (reconstitution/dilution) in the ward.

Material and methods The Hospital Pharmacy, Neonatology and Hygiene Department of "Azienda Ospedali Riuniti-Ancona" conducted this multiphase study. Phase I: a review of IV antibiotics prescribed to preterm (24^{+0}–31^{+6}weeks) Neonatology inpatients from 2004–2013. Phase II: study of pharmaceutical quality and stability of SC (2 mg/ml) gentamicin sulphate (the gold standard in sepsis/infections). Aqueous solutions were prepared by pharmacists in two different ways: with and without filtration. Both batches were stored in polyethylene syringes for 90 days at 2–8°C and 25°C and were examined for: endotoxin absence with the LAL test (Limulus amoebocyte lysate, Endosafe Portable Test System) in accordance with the Italian Pharmacopoeia 12th edition (kinetic-chromogenic technique); sterility test (BacT/ALERT FA, six days of incubation at 36°C) for aerobic bacteria/fungi; quantification with HPLC-MS/MS technique of gentamicin components (C_1, C_2, C_{1a}) at 0–3–7–14–21–28–60–90 days. Limits of detection (LOD) and quantitation (LOQ) were 0.25 ng. The SC was derived from the usual dose (2.5 mg/kg/12 h) for a 1,000 g patient.

Results Phase I studies found: 1,011 preterm inpatients (521 males, 420 females), 222 cases of sepsis (52 early, 170 late) and 102 infections. Gentamicin was the most used antibiotic with 1,126 doses for 88 patients per year. Phase II studies certified: sterility (no microbiological growth), absence of endotoxins and stability of GS 2 mg/ml stored 90 days at 2–8°C and 25°C. No significant changes in concentration of gentamicin components: P not significant, t-test >0.05.

Conclusion After this "pilot study" the next target could be to provide standard concentration unit dose treatments direct from the pharmacy to paediatric patients.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-070 THE IMPACT OF HOSPITAL ANTIBIOTIC GUIDELINES ON SURGICAL PROPHYLAXIS IN PAEDIATRIC PATIENTS SUFFERING UPPER AND LOWER EXTREMITY INJURIES

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Background Surgical prophylaxis may account for 1/3 of all antibiotic use in paediatric hospitals and 80% of all antibiotic use in surgery. Appropriate surgical antimicrobial prophylaxis can prevent post-operative infection of the surgical site.
Purpose To evaluate antibiotic use for surgical prophylaxis in paediatric patients suffering upper and lower extremity injuries.
Material and methods Retrospective review of patients' medicines records before guidelines introduction in July/August and two months after in November/December 2013. Comparative analysis of the appropriateness of prophylaxis: number and percentage of patients who got prophylaxis on time, correct antibiotic dose and duration of prophylaxis.
Results Total number of patients: 201 in July/August and 81 in November/December. Prophylaxis was needed for 94 (47%) patients in July/August and 53 (65%) in November/December. 14 (15%) in July/August and 16 (30%) patients in November/December didn't receive prophylaxis although it was indicated in the guidelines.

Prophylaxis was too early in 13 (16%) patients in July/August, 9 (24%) in November/December; on time: 40 (50%) in July/August and 17 (46%) in November/December, too late (started during or after surgery): 21 (26%) in July/August, 10 (27%) in November/December. No information about time: 6 (7%) in July/August, 1 (3%) November/December.

64 (87%) patients received a single dose in July/August and 32 (86%) in November/December; multiple doses within 24 h: 6 (8%) patients in July/August and 1 (3%) in November/December; prophylaxis >1 day: 7 (9%) patients in July/August and 4 (11%) in November/December.

Cefazolin dose was too low in 16/79 (20%) patients in July/August and 3/37 (8%) patients in November/December.
Conclusion Although the guidelines were discussed and accepted by surgeons and there had been a two-month introduction period as well, only low positive trends were observed, with antibiotic treatment guidelines not having a major impact on antibiotic use. There is a need for new ways of promoting adherence to guidelines and appropriate antibiotic use.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-071 ENZALUTAMIDE: EXPERIENCE IN METASTATIC PROSTATE CANCER

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Background Enzalutamide, an androgen receptor inhibitor administered orally, is approved for use in metastatic prostate cancer refractory to castration, when disease progresses during docetaxel treatment or after finishing it.
Purpose To describe the results of using enzalutamide in terms of effectiveness and safety.
Material and methods We conducted a retrospective study over eleven months (1/10/2014–30/09/2014), including every patient being treated with enzalutamide. Age, disease stage, previous treatment lines, enzalutamide start date and adverse effects were gathered from the patient's clinical history and our Farmatools outpatient records module. In order to assess enzalutamide effectiveness, baseline and end-of-study prostatic specific antigen (PSA) levels were measured to calculate percentage PSA decrease; a response higher than 50% was considered positive.
Results We gathered data from five patients (average age 67.8 years, 80 maximum and 61 minimum), all diagnosed with stage IV (bone metastases) prostate cancer, refractory to chemical castration and docetaxel chemotherapy. Before starting, all of them received abiraterone (1 g, average treatment length 5.8 months). Average enzalutamide dose was 160 mg. Three patients experienced a PSA decrease of greater than 50% compared to baseline (95.2% maximum), while the remaining two dropped out of treatment because of ineffectiveness. Average length of enzalutamide treatment was 5 months. With regard to safety and adverse events, diarrhoea and asthenia were found in one patient, improving after a 25% dose reduction for 2.5 months, returning to the original dose after complete recovery.
Conclusion In this study, enzalutamide showed a response rate and safety profile similar to those observed in clinical trials and other available clinical evidence resources.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-072 GOOD PRACTICE IN COMPLEX PARENTERAL IRON REGIMENS: A SURVEY IN 5 SURGICAL DEPARTMENTS

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Background Because of the risk of anaphylaxis, the national drug agency published guidelines for the prescription and administration of parenteral iron complexes. Two drugs have been available since 2013: iron sucrose generics and more recently ferric carboxymaltose (Ferinject).
Purpose To analyse prescriptions for intravenous iron treatment and biological follow up in 5 surgical units (urology, orthopaedics, digestive surgery, stomatology, kidney transplant unit).
Material and methods Over 2 months the biological monitoring of all patients hospitalised in surgery who received parenteral iron complex were analysed: haemoglobin, red blood cells count, blood iron status (serum ferritin, transferrin, iron, and transferrin saturation rate).
Results Among 70 patients, the majority of prescriptions were written in orthopaedics (83%, N = 58) of which 98% (N = 57) included iron sucrose. 14% (N = 11) were treated with ferric carboxymaltose principally prescribed by other surgery units (N = 10). The majority of patients had anaemia (N = 66) but only in 2 was it associated with microcytosis. Blood iron status was only done for 5 patients (7%) of whom 2 presented iron deficiency.

In this study, the majority of prescriptions were to reduce the need for transfusion in orthopaedic surgery, the efficacy of which has been proven.[1] Notice that the full market approval of iron sucrose includes post-surgical treatment when the oral route is not possible. The majority of ferric carboxymaltose prescriptions cause probably more controversy because of no information about blood iron status although absence of iron deficiency is a contraindication.

Conclusion Prescribers have to be reminded of the necessity for blood iron status assessment especially when ferric carboxymaltose is prescribed. Good practice in oral and parenteral iron treatment will be discussed in a multidisciplinary approach (physicians, pharmacists, and biologists). This work will be completed with a pharmacoeconomic study comparing costs between iron sucrose generics and ferric carboxymaltose, which seems to be better tolerated but more expensive.

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No conflict of interest.

CP-073 OPTIMISING INFLIXIMAB TREATMENT IN INFLAMMATORY BOWEL DISEASE

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Background Infliximab (INF) is a chimeric immunoglobulin antibody to tumour necrosis factor (A-TNF) approved for the treatment of Crohn's disease and ulcerative colitis.

Guidelines recommend a 5 mg/kg dose given as induction regimen in weeks 0, 2 and 6, followed by a maintenance regimen of 5 mg/kg every 8 weeks. However, a significant rate of patients with an initial response, later experience the return of the active disease despite ongoing INF maintenance treatment. International guidelines suggest intensifying the INF regimen if the treatment fails, by increasing the dose to 10 mg/kg, or decreasing the interval to 5 mg/kg every 6 weeks.

Purpose To analyse the different intensification strategies used in a tertiary university hospital, and their results.

Material and methods Single-centre, retrospective, observational study. Information was obtained from both the Farmatools application and clinical histories. Fifty-five patients were included in our study; all of them started INF treatment between 2005 and 2013.

Results Out of 55 patients enrolled: 60% (33) were responders, 9% (5) were non-responders, 27% (15) loss of response, and (4%) 2 didn't tolerate INF.

The treatment of the 22 patients who didn't respond satisfactorily was modified: in 73% (16) the interval was shortened, 9% (2) stepped up to 10 mg and 5% (1) the interval were shortened and the dose stepped up to 10 mg. The other 14% (3) were moved to another A-TNF.

In our study, shortening the interval was effective in 52% of cases (9/16), stepping up to 10 mg in 100% (2/2), and the combination of the two strategies in 100% (1/1).

Conclusion INF induces remission in most of the patients following the usual maintenance regimen.

In our hospital the favourite intensification strategy is to shorten the interval. The use of another A-TNF is reserved for hypersensitivity reactions or for failure of the previous intensification.

Both intensification strategies were effective, though more information is required to choose the best strategy.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-074 INTERVENTIONS TO IMPROVE MEDICINES ADHERENCE IN PATIENTS WITH SEVERAL CHRONIC CONDITIONS: AN OVERVIEW OF SYSTEMATIC REVIEWS

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Background Non-adherence in patients with multiple chronic conditions (PMCC) is associated with poor disease control, reduced quality of life and increased risk of morbidity and mortality

Purpose To assess the available scientific evidence regarding the efficacy of interventions aimed to improve medicines adherence that are applicable to PMCC.

Material and methods Overview of systematic reviews (SRs). The following databases were consulted (September 2013): PubMed, EMBASE, the Cochrane Library, CRD and WoS to identify SRs of clinical trials focused on PMCC, or otherwise, patients with chronic diseases common in the PMCC, or polypharmacy. SRs that compared the efficacy of any intervention aiming to improve compliance with medicines with clinical practice or other interventions were included. For every SR and type of intervention (behavioural, educational and combined) the percentage of clinical trials in which adherence improved was estimated. Rates were combined between SRs by means and ranges. Meta-analysis could not be conducted because of the heterogeneity of the data. This analysis was also applied to the components from those interventions described in ≥1 SR.

Results 566 articles were retrieved of which 9 SRs were included. None was specifically focused on PMCC but considered patients with chronic diseases common in PMCC, patients with more than one chronic disease and polypharmacy.

Seven, three and six SRs reported behavioural, educational and combined interventions, respectively. The mean efficacy rates were 49% [0–100], 51% [0–100%] and 53% [44–75]. The components from those interventions which reported higher efficacy were: counselling about the patients' target disease, the importance of treatment and compliance with treatment (5 SR, 79% [47–100]), reminders (4 SR, 70% [50–100]), simplified dosing (3 SR, 90% [75–100]) and special pill packaging (2 SR, 83% [66–100]).

Conclusion There is a large heterogeneity in the efficacy of interventions aimed to improve medicines adherence that are applicable to PMCC. Nevertheless, they seem to have a modest impact on adherence. Some components of the interventions appear to have greater efficacy.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

CP-075 NATALIZUMAB: EFFECTIVENESS AND SAFETY IN PATIENTS WITH RELAPSING-REMITTING MULTIPLE SCLEROSIS IN A TERTIARY HOSPITAL

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Background Natalizumab is indicated in relapsing-remitting multiple sclerosis (RRMS) that remains highly active despite treatment with interferon B and glatiramer acetate, and in rapidly evolving severe RRMS.
Purpose To analyse the effectiveness, safety and results in comparison with the reference clinical trial (CT) in natalizumab patients.
Material and methods Retrospective observational study including patients on natalizumab at the time of data collection (August 2014). Variables included: demographics, time from diagnosis, time with natalizumab, indication, previous treatments, pre/post disability (EDSS), outbreaks before/after change, JC virus antibodies, adverse reactions (ADRs), discontinuations and causes.

Data were obtained from medical records and the electronic prescription software.
Results We analysed 24 patients. 58.3% were women. Mean age was 37.8 years, median time from diagnosis 9.3 years and time on natalizumab 36.6 months.

Previous treatments received were: 13/24 interferon B 1A SC (INF), 10/24 INFB 1A IM, 10/24 glatiramer acetate (GA), 3/24 INFB 1B, 1/24 fingolimod, 1/24 azathioprine and 1 no immunomodulators.

Before natalizumab, mean EDSS was 4.3. EDSS after treatment was 4.6.

33.3% patients had JC + antibodies.

11 patients reported ADRs: 5 infections, 4 skin disorders, 4 fatigue, 3 headaches, 2 insomnia and 1 diarrhoea.

Mean flare-ups before changing were 2.1. Only 6 patients had flare-ups during treatment.
Conclusion Our baseline characteristics and selected variables were not always comparable with the reference CT. Moreover, our small sample size and the daily clinical practice characteristics of our patients made an exhaustive comparison difficult. However, as in the CT, our population presented a maintained EDSS, with a decrease in outbreaks and the ADRs were consistent with the most frequent observed in the CT.

With these results, and according to the published studies,[1,2] we have demonstrated that natalizumab is an effective alternative to immunomodulators for non-responders.

Notified ADRs in our population are consistent with the known safety profile.

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No conflict of interest.

CP-076 POST-MARKETING ACTIVE PHARMACOVIGILANCE IN A CENTRAL HOSPITAL

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Background Hospital settings are of great value in collecting pharmacovigilance data. Introduction of innovative drugs in hospital settings raises safety concerns, but allows the study of these drugs' safety profile in real life. Hospital Pharmacists may play an important role in these activities.
Purpose To assess the adverse drug reactions (ADRs) profile of 3 recently marketed drugs, introduced in a central hospital.
Material and methods As part of our active pharmacovigilance programme, a prospective, observational study was carried out on patients receiving fingolimod, telaprevir or boceprevir, between January 2012 and September 2014. ADRs encountered were analysed for age, sex, ADR category and seriousness. Severe, unexpected, frequent, uncommon or rare ADRs were reported to the National Pharmacovigilance System (NPS).
Results A total of 41 patients were enrolled, median age 44 years, 41% male and 59% female. 253 ADRs were observed In 37 patients. 28 reports regarding 173 ADRs were sent to NPS. As defined by the Naranjo causality assessment of ADRs, 90 were considered to have a possible, 53 a probable, and 1 a definitive causal relation with the studied drugs (NPS response rate: 83%). Most frequently observed ADRs (n = 159) in boceprevir/telaprevir regimens were: anaemia (70%), thrombocytopenia (78%), and pruritus (57%). Regarding fingolimod (n = 94), most frequently observed ADRs were: lymphopenia (60%) and paresthesia (24%); initial dose ECG monitoring was performed in all patients, but symptomatic bradycardia was seen in only two cases, without stopping treatment.

Severe ADRs occurred in 5%, and moderate ADRs in 16% of the patients. Some patients had to stop taking the drug in all drugs studied.
Conclusion ADRs were common in patients taking the triple drug regimen for hepatitis C, while fingolimod was relatively well tolerated, which is in line with international literature data. Frequency and severity of ADRs can be managed by laboratory and clinical vigilance and instituting appropriate measures.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-077 ANALYSIS OF COSTS AND PRESCRIPTION GUIDELINES OF ETANERCEPT AND ADALIMUMAB IN PATIENTS OF RHEUMATOLOGY, DERMATOLOGY AND GASTROENTEROLOGY SERVICES ON THE PHARMACY OUTPATIENT UNIT

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10.1136/ejhpharm-2015-000639.76

Background Nowadays the physicians are changing TNF-blockers prescribing guidelines which influence the pharmaceutical expense.
Purpose To analyse adalimumab and etanercept prescriptions practice on the outpatient unit.
Material and methods Retrospective observational study in which patients of Rheumatology, Gastroenterology and Dermatology services were included. After analysing the total cost of etanercept and monoclonal antibodies used in these services during 2011 and 2013, a large variation was observed in expense, seeing a decrease of 18% in Rheumatology, an increase of 85% in Gastroenterology and an increase of 10% in Dermatology service. Therefore, in a first phase, we decided to analyse prescribing patterns of adalimumab and etanercept. The information was obtained from outpatient internal program, Global Clinic® and SAP®.

Results

Abstract CP-077 Table 1

Service	Number of patients		Proportion of patients with a different prescription from the usual one		Administration schedules (difference)
	2011	2013	2011	2013	
Rheumatology	161	172	20.5%	59.3%	Less frequently
Gastroenterology	17	26	17,6%	11,53%	More frequently
Dermatology	15	17	20%	47%	Less frequently

Regarding the expense on the outpatient unit, Reumathology service was the only one that reduced it between these years with a decrease of 15.1%. In Dermatology, an increase of 10% was observed; partly due to ustekinumab's dispensation (6 patients were treated in 2011 and 7 in 2013; moreover, in 2013 the administration regimen was more frequently than in 2011). In Gastroenterology service an increase of 63% was observed. The reason of this was the change in number of patients and in prescription guides, as noted in table 1.

Conclusion After analysing Hospital's prescribing guidelines of these two drugs, we could observe we have treated more patients in rheumatic diseases without increasing spending because of the less frequently administration of these drugs. In Dermatology service, we have more expense not due to adalimumab or etanercept drugs, probably ustekinumab instead. With the studied drugs we only treat two more patients administering them less frequently. Finally, in Gastroenterology service the expense has increased probably because more patients have been treated and not due to administration schedules.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No

No conflict of interest.

CP-078 OPTIMISING RESOURCES IN COMPOUNDING PREPARATIONS: SIMPLE MEASURES AIMED AT REDUCING COSTS

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Background The growing use of expensive drugs has brought about the introduction of new strategies to optimise financial resources in hospital pharmacy. Some sterile preparations of expensive drugs are reconstituted in medical wards. Frequently, available preparations don't match with patient doses, therefore part of the reconstituted drug is lost.

Purpose To assess the financial impact of pharmacy reconstitution of preparations for individual patients, in order to improve the drug reconstitution process.

Material and methods A prospective study was carried out in a university hospital between June 2013 and June 2014. We studied drugs reconstituted in a laminar fluid cabinet (LFC) excluding cytotoxics, biological drugs and parenteral nutrition solutions. Additionally, we reviewed the most expensive drugs reconstituted in out-patients, chosen after a pilot financial study. These drugs were reconstituted by pharmacy staff by a volumetric method of preparation instead following the manufacturer's instructions, using the entire volume of the vial, including overfill and without discarding drug leftovers. Data collected: number of treatments, type of drugs, time of preparation and savings.

Results The most expensive drug reconstituted in outpatient wards was levosimendan. In LFCs ganciclovir and foscarnet were chosen. Total of treatments: 44, levosimendan 12 (27.27%), ganciclovir 26 (59.09%), foscarnet 6 (13.64%). Savings: €9,100.68; levosimendan: €3,629.4 (39.88%), ganciclovir €2,249 (59.09%), foscarnet: €3,221.84. Pharmacy compounding time: 5 (3–8) minutes. In terms of the technician's annual salary, average cost per preparation was €0.75 (0.45–1.35). Total cost of technician per year: 33€. Total savings: € 9,067.68.

Conclusion Preparation by the Pharmacy staff represents an efficient strategy. The estimated annual savings were up to €9000, with only €40 of investments. The implementation of strategic cost management in the process of drug reconstitution is key to improve efficiency and profitability.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-079 RELATIONSHIP BETWEEN ADHERENCE TO HEPATITIS C TREATMENT AND RAPID, EARLY AND SUSTAINED VIRAL RESPONSE

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Background The level of adherence to hepatitis C virus (HCV) treatment is associated with response. High adherence throughout the initial 12 weeks is related to better virological outcomes. Several factors can influence adherence.

Purpose To assess HCV treatment adherence and to evaluate the relationship between adherence and rapid (RVR), early (EVR) and sustained virological response (SVR).

Material and methods Retrospective observational study of HCV-infected patients receiving pegylated interferon (peg-IFN) + ribavirin (RBV) ± protease inhibitor (PI) from January 2011–December 2013. Demographic and clinical data recorded: age, sex, weight, HIV infection, HCV genotype; quantitative HCV RNA; peg-IFN, RBV and PI doses, frequency and quantities dispensed; psychiatric disorders.

Results 183 patients (31.1% women); 14.2% HIV co-infected; 71.2% genotype 1. IL28B CT/TT genotype rate: 33/46.

79.8% were treated with peg-INF + RBV and 20.2% with peg-INF + RBV + PI. 11.7% received reduced RBV/peg-IFN doses. 3.3% required growth factor.

RVR: 97.4% (mean reduction: 1.91 log IU/ml). EVR: 46.1%. SVR: 57.3% (genotype 1: 47.1% vs. others: 73.8%; p = 0.011). SVR among PI treated patients: 72.7%.

Overall adherence according to quantities dispensed and the Morisky-Green test were 97.35% (95.8% with >80% adherence) and 99.56% (100% > 85% adherence), respectively. Mean adherence according to quantities dispensed at 4 and 12 weeks was 100% and 99.8%, respectively.

Sex, HIV co-infection or psychiatric diseases were not associated with lower adherence.

No relationship was found between RVR and adherence but the EVR was found to be significantly greater with adherence levels >85% (11.1% vs. 48.3%). Adherence ≥80% was associated with (not significantly) higher rates of SVR (57.7% vs. 50%).

Conclusion Adherence >80% is associated with higher cure rates and adherence >85% at 12 weeks is related to greater EVR. No relationship was found between HCV-RNA decrease at 4 weeks and adherence. Neither psychiatric disorders nor HIV co-infection influenced adherence.

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No conflict of interest.

CP-080 THROMBOPOIETIN RECEPTOR AGONIST TREATMENT IN IDIOPATHIC THROMBOCYTOPENIC PURPURA

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Background Idiopathic thrombocytopenic purpura (ITP) is a disease characterised by decreased platelet count. Romiplostim and eltrombopag are thrombopoietin receptor agonists (TRAs) that stimulate platelet production.

Purpose To evaluate the effectiveness and safety of TRAs in patients with ITP in a university hospital.

Material and methods Retrospective observational study including patients with ITP who were treated with TRAs.

The information collected was: age, gender, previous treatments, length of treatment, response to treatment and side effects.

Results From October 2009 to July 2014, fourteen patients with ITP [10 women (71.4%) and 4 men (28.6%) with an average age of 48.0 ± 16.7 years] were treated with TRAs.

Patients were classified according to treatment received: 7 patients with eltrombopag (50.0%), 2 patients with romiplostim (14.3%), and 5 patients with both drugs in succession (35.7%).

Four patients (28.6%) had received one previous treatment line, nine patients (64.3%) two previous lines and one patient (7.1%) had received three.

Only one patient had been splenectomised before the treatment.

The average treatment duration was 6.6 ± 5.3 months in the romiplostim group and 7.1 ± 5.9 months in the eltrombopag group.

The responses to eltrombopag were: 4 complete responses (57.1%) and 3 responses (42.9%); and to romiplostim: 1 complete response (50.0%) and 1 response (50.0%); in the group with both drugs: 3 complete responses (60.0%), 1 no response (20.0%) and 1 complete remission sustained and prolonged after having stopped the treatment (20.0%).

No side effects were observed, with the exception of one deep venous thrombosis (DVT) with eltrombopag.

Conclusion Our results, as well as previous studies, show that patients with ITP, despite having received multiple lines of treatment, respond well to TRAs, including complete remissions and sustained remissions after having stopped the treatment.

Tolerance of TRAs is good although DVT may appear.

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No conflict of interest.

CP-081 MANAGEMENT OF UNCONTROLLED BLOOD PRESSURE IN PATIENTS WITH MULTIPLE DRUG INTOLERANCE REFERRED TO A SPECIALIST HYPERTENSION CLINIC

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Background The management of hypertension in patients with known multiple drug intolerance (MDI) is a fundamental challenge. Our hypertension specialist centre has devised an alternative protocol to standard dosing for patients referred with MDI. This includes use of fractional tablet dosing, liquid formulations and trans-dermal formulations of standard anti-hypertensive (s).

Purpose To assess the effects of an innovative approach to blood pressure (BP) control in patients with known MDI.

Material and methods We retrospectively analysed clinic letters for the first 25 patients with a diagnosis of MDI who had at least 3 clinic visits. Clinic BP and any modification to treatment were extracted. A change in clinic BP from baseline through subsequent visits was analysed. Data are expressed as mean ± Standard deviation.

Results 25 (15 female) patients (mean age 62.1 ± 12.0 years) were intolerant of 6.3 ± 3.6 anti-hypertensive medicines at the first visit with baseline clinic BP of 170 ± 21/98 ± 15 mmHg. Patients had 4.6 ± 1.5 follow-up visits over 1.2 ± 1.0 yrs. Clinic systolic/diastolic BP (SBP/DBP) were reduced compared to baseline over the period of follow-up ($p < 0.001$, $p = 0.05$ respectively, table 1).

Abstract CP-081 Table 1 Change in clinic systolic and diastolic BPs compared to baseline

Visit (n)	2 (25)	3 (25)	4 (19)	5 (13)	6 (8)
Δ SBP	–3.9 ± 17.9	–14.6 ± 28.1	–20.0 ± 20.8	–27.2 ± 21.9	–25.6 ± 31.7
Δ DBP	–0.9 ± 13.1	–5.2 ± 15.0	–8.6 ± 17.5	–13.3 ± 19.3	–7.1 ± 21.1

Conclusion Fractional tablet dosing may target multiple physiological pathways but minimise dose-dependent adverse effects. Liquid formulations avoid excipients that may contribute to adverse effects and trans-dermal patches overcome gastro-intestinal intolerance associated with tablets. This is the first dedicated anti-hypertensive protocol for high-risk patients with multiple medicines intolerance and application of our novel strategy. It demonstrated BP control improving consistently over subsequent visits.

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No conflict of interest.

CP-082 DIFFERENCE IN EFFECTIVENESS AND SAFETY OF TRIPLE THERAPY-BASED TREATMENT BETWEEN MONO AND CO-INFECTED HEPATITIS C PATIENTS

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Background Triple therapy-based treatment with protease inhibitors in infected genotype 1 hepatitis C (HCV) patients improves efficacy measured as sustained virological response (SVR).
Purpose To compare the effectiveness and safety of triple therapy-based treatment in mono-infected and co-infected HCV-HIV patients.
Material and methods All treatments started between 2012/07/01 and 2013/12/31 were analysed. A retrospective evaluation was made of electronic medical records and outpatient pharmacy records. SVR was defined as undetectable viral load at week 60.
Results 83 patients were included, 80 treated with telaprevir and 3 with boceprevir, 58 mono-infected and 25 co-infected patients. Baseline characteristics in mono-infected patients were: 83% male, mean age 54 years; 26 genotype 1a, 30 1b, 2 untypable; 64% F4; 40% were treatment-naive, 14% relapsers, 12% partial responders, 31% null responders and 3% no data. In co-infected patients: 84% male, mean age 50 years; 17 genotype 1a, 71b, 1 untypable; 92% F4; 40% were treatment-naive, 28% relapsers, 12% partial responders, 12% null responders and 8% no data.

We were able to assess the effectiveness of treatment in 71 patients, who achieved 60 weeks of treatment: 51 mono-infected and 20 co-infected.

In the mono-infected group: 21 (41%) achieved SVR (86% treatment-naive or relapsers), 20 (39%) had a detectable viral load (50% null responders) (3 boceprevir-treated) and 10 (20%) discontinued treatment due to toxicity or disease progression. This compared with 11 (55%) (73% treatment-naive or relapsers), 8 (40%) (38% null responders) and 1 (5%) in the co-infected group.

Adverse events were: anaemia 58%, neutropenia 81% and thrombocytopenia 36% in mono-infected vs. 44%, 80% and 52% in co-infected patients.
Conclusion The rate of SVR was about 50%, higher in co-infected than in mono-infected HCV patients. However, it may have been affected by a greater proportion of null responders in the mono-infected group ($p > 0.05$), because as in published trials, the rates of SVR differed among patients with different responses to previous treatments.

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No conflict of interest.

CP-083 PREVALENCE OF MALNUTRITION AND ASSOCIATED RISK FACTORS

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Background Malnutrition is a serious disorder that is frequently underestimated in patients hospitalised for other conditions.
Purpose The principal objective was to assess the prevalence of malnutrition in elderly patients hospitalised to the Internal Medicine ward. The secondary objective was to determine the possible association between this condition and patient's clinical characteristics in terms of comorbidity, functional status, cognitive impairment and dysphagia.
Material and methods Descriptive, observational and cross-sectional study including 122 patients over 3 months (May–July 2014). We recorded: general data (age, sex, length of stay, Body Mass Index [BMI]), comorbidity (Charlson), cognitive impairment (Pfeiffer), functional status (Barthel), analytic parameters of interest (albumin, total protein, lymphocyte count and cholesterol) presence or not of dysphagia and pressure ulcers. Results were expressed in mean, standard deviation and percentages.
Results The age of our group was 76.8 ± 6.2 (53.3% men). 55.7% of the elderly were malnourished when they were admitted. The Charlson index showed that 59% of them had comorbidity. The Barthel index was 34.7 ± 4, where 64.4% had severe or total dependence, and 28.7% had mild to severe cognitive impairment (Pfeiffer). The BMI was 22.9 ± 3.4 kg/m^2. The prevalence of dysphagia was 35%. We found an association between malnutrition and weight/BMI ($p = 0.001$ for both), age ($p = 0.013$), Pfeiffer ($p = 0.003$), Barthel ($p = 0.000$), dysphagia ($p = 0.001$), total protein ($p = 0.015$), lymphocyte count ($p = 0.008$) and presence of pressure ulcers ($p = 0.002$).
Conclusion Malnutrition is a problem of high prevalence and impact in our population and our results are similar to those of other studies. It is of paramount importance to correctly evaluate the presence of risk factors and diagnose this condition in order to prevent/treat it correctly.

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No conflict of interest.

CP-084 USE OF INFLIXIMAB FOR STEROID-REFRACTORY GRAFT-VERSUS-HOST DISEASE

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Background Corticosteroids are the standard care in graft-versus-host disease (GVHD). However, when the condition becomes refractory to steroids, one alternative is the off-label use of Infliximab.
Purpose To evaluate the use of Infliximab in the treatment of Steroid-Refractory GVHD, in a tertiary care hospital.
Material and methods Retrospective observational study of patients with Steroid-Refractory GVHD after stem cell transplantation (SCT), who received infliximab between Jan/2013 and Sep/2014. Data collected from medical records and the electronic prescribing database were: age, gender, underlying disease, SCT characteristics (date, sources of hematopoietic stem cells), GVHD characteristics (start date, stage and affected organs), infliximab dosage, duration of treatment, adverse events (AEs) and clinical results.

Results Five patients (60% men) with an average age of 51.8 years [22–68] were included. The underlying diseases were myelodysplastic syndrome (n = 2), multiple myeloma (n = 1), Hodgkin's lymphoma (n = 1) or acute myeloid leukaemia (n = 1). Patients underwent bone marrow (n = 4) or peripheral blood (n = 1) HLA-matched allogeneic SCT. In all but one patient stem cells were obtained from unrelated donors. The onset of GVHD was acute in 3 patients and chronic in 2, was classified as stage II (n = 2), III n = 2) or IV (n = 2) and the main organs involved were the gastrointestinal tract (100%) and skin (60%). Infliximab 10 mg/kg/week was administered after failure of corticosteroids and photopheresis. The average number of doses administered was 3.8 [1–6]. 3 patients failed to respond (2 died due to complications of GVHD) while the other two achieved a partial and a complete response. Infliximab intravenous infusion was well tolerated and the most common AEs were infections.

Conclusion Infliximab could be a feasible option for treating Steroid-Refractory GVHD in the opinion of the literature and our findings. Its administration has been shown to be related to an increased risk of infections. Future research with larger populations is needed to obtain stronger conclusions.

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No conflict of interest.

CP-085 COMPARISON OF BILIRUBIN LEVELS WITH TWO INTRAVENOUS LIPID EMULSIONS IN PREMATURE INFANTS REQUIRING PARENTERAL NUTRITION

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Background Soybean lipid emulsions in parenteral nutrition (PN) are associated with liver disease. This has led to the development of alternative intravenous lipid emulsions (ILEs).

Purpose To compare the effects of two new ILEs: Lipoplus (soybean with fish oil) and Clinoleic (soybean with olive oil).

Material and methods Retrospective observational study using pharmacotherapeutic records of premature infants who started PN between December 2012 and May 2014 in a tertiary care hospital. We included infants requiring ≥5 days of PN with a gestational age <34 weeks and birth weight between 0.5 and 2 kg. Clinical information included gender, gestational age and body weight. Laboratory data recorded included total (TB), conjugated (CB) and unconjugated bilirubin (UB) (mg/dL). Either Lipoplus or Clinoleic was used as the clinician requested. Comparisons were done using t-tests.

Results 24 children were included (16 male and 8 female); 17 (70.8%) treated with Lipoplus and 7 (29.2%) with Clinoleic. Mean gestational age was 29 weeks for both treatments. Average weight at the beginning of PN was 1.23 kg for Lipoplus and 1.32 kg for Clinoleic.

No differences were detected in bilirubin levels between groups at baseline (Lipoplus: CB: 0.9; UB: 8.7; TB: 8.7. vs. Clinoleic: CB: 0.3; UB: 7.8; TB: 9.0; p = n.s.) or at completion of treatment (Lipoplus: CB: 0.7; UB: 9.8; TB: 8.7 vs. Clinoleic: CB: 0.5; UB: 9.2; TB: 9.4; p = n.s.). No decrease in TB, CB or UB vs. baseline was observed for either treatment.

Conclusion We found no significant difference in benefit or less persistent hyperbilirubinaemia between infants treated with Lipoplus or Clinoleic. Treatment with soybean emulsion vs. new ILEs has resulted in a significant decrease in total/conjugated bilirubin vs. baseline.[1] However previous studies also showed no significant differences in total/conjugated bilirubin levels between the new ILE treatments.[2]

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No conflict of interest.

CP-086 PHARMACEUTICAL INTERVENTION IN NUTRITIONAL SUPPORT IN POSTOPERATIVE INTENSIVE CARE UNIT

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Background One activity of the Hospital Pharmacist is the monitoring and adjustment of nutritional support in hospitalised patients.

Purpose To describe the interventions of the Pharmacy Service in the adjustment of Parenteral Nutrition (PN) in patients hospitalised in a postoperative intensive care unit.

Material and methods Retrospective six-month study. All pharmaceutical care for patients being treated with TPN were recorded in the electronic patient medical record and in an Excel database.

Results PN was initiated in 40 patients. 29 cases of postsurgical paralytic ileus, 6 peritonitis and 5 gastrointestinal bleeding.

All patients were interviewed and were screened to estimate the prior nutritional status. We also considered the presence of stress factors and based on all these factors, we estimated our patients' caloric and protein requirements.

During this period 442 interventions were performed. A median of 11 interventions per patient was described:

- Detect food allergy (n = 4, 1%)
- Prevent refeeding syndrome: start nutritional support with 25% of caloric requirements and 100% of micronutrients and electrolytes in patients with moderate to severe malnutrition (n = 48, 11%).
- Adjust the ratio of non-protein kilocalories/gram of nitrogen to be 80–100 to achieve protein anabolism (n = 80, 18%).
- Skew caloric intake in favour of lipids in patients with respiratory distress (n = 30, 7%).
- Restrict lipids in hypertriglyceridemia (n = 14, 3%).
- Prevent and treat hepatobiliary complications (lipid restriction, nutrition cycling). (n = 22, 5%).
- Restrict carbohydrates in hyperglycaemia (n = 18, 4%).
- Administer glutamine and Omega 3 fatty acids according to hospital protocol (n = 60, 14%).
- Correct electrolyte imbalances. (n = 136, 31%).
- Restrict fluids and electrolytes in nephropathy and heart disease (n = 26, 6%).

Conclusion These results show a high demand for pharmaceutical attention in patients with TPN.

Incorporation of the pharmacist in this unit makes it possible to monitor patient nutrition during hospitalisation.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-087 ANTIRETROVIRAL THERAPY: ARE WE USING THE MOST EFFICIENT TREATMENT?

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10.1136/ejhpharm-2015-000639.86

Background The arsenal of drugs available to antiretroviral therapy (ART) is extensive. It's important to optimise HIV treatment basing on recommendations established by experts.
Purpose To analyse prescription profile, treatment changes, causes and financial impact of the changes in a first level hospital.
Material and methods Observational retrospective study from January 2013 to March 2014. The variables studied included: demographics (age, gender), clinical data (age at diagnosis, HCV/HBV co-infection, stage, HLAB5701 allele, viral load (VL) and CD4 cells before/after the change, reason for change) and financial analysis (cost per month before/after the change). Data were obtained from medical records and the electronic prescription programme.

GESIDA 2014 recommendations were considered as therapeutic strategies to improve efficiency and safety.
Results Out of the 178 patients receiving ART, 40 (22.5%) patients, who switched treatment were analysed.

The average age was 44.7 (22–57), 72.5% were male, 60% co-infected with HCV. The most frequent stage was C3 (40%). The average time since diagnosis was 14.6 years.

Before changing treatment 62.5% patients had undetectable VL (68% for at least six months) and the mean CD4 cell was 596.68 cells/mm^3. HLAB5701 determination was available only in 15% (100% negative).

Reasons for change were: 52.5% adverse reactions (ADRs) (38% renal failure), 12.5% prevention of ADRs, 10% virological failure, 10% development of resistance, 7.5% reduction in the number of tablets, 2.5% immune failure, 2.5% unknown reason and only 2.5% therapeutic simplification.

These changes assumed an average cost increase of 21% per patient/month.

With these data 25% of our patients could be candidates for monotherapy and 17.5% for changing the combination of NRTI (Tenofovir/Emtricitabine for Lamivudine/Abacavir).
Conclusion ART has a high impact on the hospital budget. It is necessary to include efficiency strategies in changes of treatment and ART initiation.

We suggest developing with the infectious unit a protocol consistent with the existing recommendations, including an algorithm to support medical decision-taking in the light of safety and efficiency criteria.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-088 EVALUATION OF STANDARD PARENTERAL NUTRITION IN SURGICAL PATIENTS

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Background Surgical patients are especially susceptible to nutritional disorders; additionally an adequate nutritional status is important in achieving prompt recovery.
Purpose To describe and analyse possible shortcomings related to nutritional status of surgical patients associated with an inadequate prescription of parenteral nutrition (PN).
Material and methods A prospective, observational study, lasting two months, of post-surgical patients in a third level hospital with PN support.

Estimated calorie requirements (CR) of surgical patients were calculated. The Harris-Benedict formula was the method used to evaluate CR taking into account the degree of metabolic stress in each surgical patient.

Data were collected from the medical history of each patient: age, diagnosis, duration of PN support, glycaemia, electrolytes, total proteins and other haematological parameters.

An assessment was made of how many blood tests were requested for every patient, at the beginning, during and at the end of parenteral support.
Results A total of 75 patients were studied. In 19.2% of cases the CR were successfully supplied. In 72.6% of cases the prescribed caloric intake was insufficient compared to their estimated CR. In the remaining 8.2% of cases the caloric intake exceeded their estimated CR.

23.2% of the patients studied were obese. In 76.5% of them, the prescribed caloric intake differed from the estimated CR, despite the body weight calculation being adjusted for these patients.
Conclusion Our study showed that 80.8% of patients were not given sufficient nutritional support, missing their estimated CR. It shows the lack of a structured protocol to addresses the nutritional assessment in surgical patients.

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No conflict of interest.

CP-089 TIME EFFECTS OF INTRAVENOUS LIPID EMULSIONS ON PREMATURES

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Background Liver disease is associated with soybean lipid in parenteral nutrition (PN). This has led to the development of alternative intravenous lipid emulsions (ILEs).
Purpose Here we compare the effects of Lipoplus (medium chain triglyceride combined with soybean and fish oil) in treatments of 7 days vs. longer treatments.

Material and methods Retrospective observational study using pharmacotherapeutic records of premature infants who initiated PN between December 2012 and May 2014 in a tertiary care hospital. Infants were Included with a gestational age <34 weeks and birth weight between 0.5 and 2 kg. Data recorded included gender, gestational age, body weight and total (TB), conjugated (CB) and unconjugated bilirubin (UB) (mg/dL). Comparisons were made with t-tests.

Results Of the 17 infants selected, 10 (58.8%) (7 male, 3 female) were treated for 5 to 7 days (Group A) and 7 (41.2%) (5 male, 2 female) were treated for more than a week (Group B). Mean gestational age was 29 weeks for both groups. Average weight at the beginning of PN was 1.37 kg for Group A and 1.03 kg for Group B.

Differences vs. baseline were observed between the two treatments:

Group A = CB: 0.35 vs. 0.39; p = n.s. UB: 7.9 vs. 11.25; p = 0.04. TB: 8.25 vs. 11.61; p = 0.04.

Group B = CB: 1.71 vs. 1.5; p = n.s. UB: 7.74 vs. 6.15; p = n.s. TB: 9.46 vs. 4.47; p = 0.04.

A significant increase in CB and TB was observed in group A, therefore a significant decrease in TB was detected in group B.

Conclusion We found that treatments longer than 7 days with new ILEs significantly lowered TB levels in premature infants as described previously.[1] On the other hand, shorter treatments with alternative ILEs might have an effect similar to the use of soybean oil–based emulsion in that previous study, where CB even showed a significant increase.

REFERENCES AND/OR ACKNOWLEDGEMENTS

1 Rayyan *et al*. 2012

No conflict of interest.

CP-090 CLINICAL RELEVANCE OF DRUG INTERACTIONS DETECTED IN HEPATITIS C (GENOTYPE 1) TRIPLE THERAPY PATIENTS

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Background Protease inhibitors (PIs), i.e. boceprevir (BOC) and telaprevir (TLV), are metabolised by CYP3A and they are CYP3A inhibitors. This predisposes them to many drug interactions. The identification and management of potential drug interactions with PIs is necessary to optimise the treatment in Hepatitis C (HC) patients.

Purpose To describe drug interactions and clinical management in HC (genotype 1) patients, at the beginning and during triple therapy.

Material and methods Descriptive study involving recording the patient's initial treatment using PI and the addition of new drugs throughout the treatment. A drug-interaction analysis of the different PI-based treatments was conducted. Interactions were classified into four categories: Category 1: No clinically significant interaction; Category 2: possible interaction but manageable with dose adjustment or monitoring; Category 3: Co-administration is not recommended; Category 4: no classification due to lack of data.

Results A total of 47 patients was treated (8 with BOC and 39 with TLV), 32 (68%) men, average age of 54 ± 8.5 years, 25 (53%) with advanced fibrosis and 33 (70%) previously treated. A total of 211 drugs prescribed together with triple therapy were studied. Average number of drugs was 4.49 ± 2.61, only 3 (6%) patients did not need a drug interactions study. According to the classification, there were 102 (55%) category 1, 72 (34%) category 2, 9 (5%) category 3 and 13 (6%) category 4 drug interactions. Regarding clinical management of interactions: none of the drugs included in categories 1 and 2 was suspended, while 8 (89%) from category 3 and 2 (15%) from category 4 were (in this last case due to lack of data, always with medical-pharmaceutical consensus).

Conclusion The study reveals a high number of drug interactions when PIs are used as well as HC treatment, but only a low number of these interactions required drug suspension. Categorising the drug interactions aids both clinical management and doctors' decision-making.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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2 http://www.micromedexsolutions.com/

No conflict of interest.

CP-091 DOSE ADJUSTMENT IN CANCER PATIENTS WITH RENAL OR HEPATIC IMPAIRMENT

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Background Treatment outcomes and tolerability are not easily predicted in cancer patients receiving chemotherapy, especially in those patients with renal or hepatic dysfunction, where dose modifications become necessary.

Purpose To evaluate drug dose modifications made in cancer patients with renal and hepatic impairment receiving antineoplastic treatment.

Material and methods A review of several dose modification protocols was previously made (Cancer Care Ontario, UpToDate and the EMA product information).

A prospective, observational study was done (March 2014–June 2014). All adult cancer patients being treated with antineoplastic treatment (chemotherapy, hormonal or biological therapy) were included.

Gender, age, tumour type, protocol, drugs given, dose, body surface area and liver (bilirubin and transaminases) and renal (creatinine clearance) function tests were recorded for each course of treatment.

Prescribed dose and recommended dose modification according to protocols were also analysed.

Results 370 patients were evaluated (51.6% male; mean age 65.2 years).

1.764 blood tests were reviewed. Liver and renal impairment was observed in 37.7% of blood tests (19% liver impairment only, 13% renal impairment only and 6% both).

According to protocols, only 10.2% of these altered blood tests would make dose modifications necessary. But of these patients, the dose was modified in only 53.7% of the administrations and protocols dosage recommendations were followed in just 38.8% of these dose modifications.

Conclusion The rate of protocol-guided dose modifications of antineoplastic treatment in patients with renal and hepatic impairment was low.

A dose modifications protocol, based on published guidelines and agreed with the departments involved, should be implemented in all units administering treatment to cancer patients.

Other considerations apart from laboratory tests, such as tolerability and tumour response, should be taken into account.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-092 ESTIMATED RATE OF THERAPEUTIC FAILURE WITH PALIVIZUMAB IN THE PROPHYLAXIS OF RESPIRATORY SYNCYTIAL VIRUS

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Background There is doubt about the criteria for selection of patients eligible to receive palivizumab prophylaxis for respiratory syncytial virus (RSV) and the potential therapeutic failures.
Purpose To estimate the rate of therapeutic failure with palivizumab and drug use profile in the study centre.
Material and methods Observational, retrospective study. Patients who received palivizumab in 3 seasons (2006–2009) were selected and medical records were reviewed.

Variables:

- Dependent: Rate of therapeutic failure with palivizumab.
- Independent: Profile of drug use in the study centre.

Results Data were obtained from 104 patients: 15/104 were children <2 years with hemodynamically significant congenital heart disease, 10/104 children <2 years with bronchopulmonary dysplasia (BPD), 65/104 patients were preterm born before the 35th week of gestation and 14/104 patients did not fit the approved indications.

In 100% of patients, palivizumab was prescribed according to the recommended dosage, and the number of doses prescribed was correct in 99% of cases. 81.7% of patients received all prescribed doses.

Other risk factors analysed:

- 66/104 were male.
- 13/104 had a chronological age <10 weeks at the start of the season and 9/104 were born in the first 10 weeks of the season.
- 40/99 had low birth weight (1,500–2,500 g), 45/99 very low birth weight (<1,500 g), 14/99 the right birth weight, 5/104 unknown birth weight.
- Breastfeeding was continued for at least 2 months in 42/93 patients.

The rate of therapeutic failure with palivizumab was 3.8%, of the total 104 patients receiving prophylaxis with palivizumab, 4 required hospitalisation for RSV infection.
Conclusion

- The drug use profile in the study centre matched the licensed indications in the SmPC. A protocol that allows an annual review of the criteria for selecting patients for treatment with palivizumab was developed.
- The rate of therapeutic failure in our study context was very low, so the drug can be considered effective.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-093 USE OF FAMPRIDINE IN MULTIPLE SCLEROSIS PATIENTS

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10.1136/ejhpharm-2015-000639.92

Background Fampridine is a drug indicated to improve walking in adult patients with multiple sclerosis (MS). Patients should be evaluated after two weeks and treatment should be stopped for those who have not shown any improvement.
Purpose To evaluate walking improvement in multiple sclerosis patients treated with fampridine and compliance with the condition of stopping the drug at two weeks in the absence of improvement.
Material and methods Retrospective study in MS patients treated with fampridine (January/2014–September/2014). Timed 25-Foot Walk (T25FW) and Twelve Item MS Walking Scale (MSWS-12) were used to evaluate drug response. Data recorded were age, gender, and results of T25FW and MSWS-12 at baseline and after two weeks of treatment. Drug discontinuation in non-responders was evaluated. Means were calculated and comparisons were performed by using Wilcoxon Signed Rank test.
Results 10 adult MS patients were included in the study (40% male; mean age 55 ± 9.7 years). 90% improved their walking tests. Baseline mean time for T25FW was 12.2 ± 5.9 s initially and 8.96 ± 3.8 s after 2 weeks ($p = 0.007$).

MSWS-12 reflected a significant improvement in the following items: balance, time standing, walking speed and distance ($p \leq 0.05$). No difference was detected for the following items: ability to run ($p = 0.317$) and the need for using a walking support outdoors ($p = 0.590$) or indoors ($p = 0.157$).

There was only one non-responding patient who didn't stop drug treatment.
Conclusion The walking of most patients on fampridine had improved at two weeks especially regarding balance, distance and time standing. The stopping criterion was not observed in one non-responder.

REFERENCES AND/OR ACKNOWLEDGEMENTS

1 EMA Product information fampridine

No conflict of interest.

CP-094 THE EFFECT OF ADDING ANTI-HCV TO ANTIRETROVIRAL TREATMENT ON ADHERENCE

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Background The addition of anti-HCV treatment to highly active antiretroviral treatment (HAART) in HIV/HCV co-infected patients leads to an increase in the treatment complexity which may result in reduced adherence.
Purpose To determine whether the number of patients adherent to HAART decreased after the addition of anti-HCV treatment to HAART.
Material and methods We conducted a prospective two-centre observational study. HIV/HCV co-infected patients on HAART who started anti-HCV dual or triple therapy between January 2011 and December 2013 were included. Patients were excluded if they were virologically uncontrolled (>50 copies RNA VIH/mL) or their HAART had been modified in the six

months before starting anti-HCV treatment. Variables collected were: demographics, anti-HCV treatment, weeks on anti-HCV treatment and adherence. Medicines adherence was assessed using electronic pharmacy repeat dispensing records. The threshold for optimal adherence was ≥95%. McNemar`s test was applied to compare adherence before and after the addition of anti-HCV treatment to HAART using SPSS-20.

Results 66 patients were included (86% male, mean age 47 ± 5). 53 (80%) patients were on dual therapy with peg-interferon and ribavirin, 11 (17%) patients were on triple anti-VHC treatment with telaprevir and 2 (3%) were treated with boceprevir. The median duration of the anti-HCV treatment was 45.6 (IQR: 20.4–49.1) weeks. 50 (76%) patients were considered adherent to HAART before starting anti-HCV treatment. After the addition of anti-HCV treatment, the number of adherent patients decreased to 45 (68%), $p > 0.05$. Subgroup analysis based on the anti-HCV treatment showed that patients adherent on anti-HCV dual therapy decreased from 42 (64%) to 37 (56%), $p > 0.05$. The number of adherent patients did not change in those on anti-HCV triple therapy.

Conclusion The introduction of anti-HCV dual therapy to HAART is associated with a tendency towards a decrease in the number of adherent patients.

REFERENCES AND/OR ACKNOWLEDGEMENTS

1 *AIDS Behav* 2013;**17**:94–103

No conflict of interest.

CP-095 KETOCONAZOLE IN CHEMO-NAIVE PATIENTS WITH METASTATIC CASTRATION-RESISTANT PROSTATE CANCER

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Background Ketoconazole has been extensively used in chemo-naive patients with metastatic castration-resistant prostate cancer (mCRPC) due to the absence of therapeutic alternatives.

Purpose To determine the effectiveness of ketoconazole in chemo-naive patients with mCRPC.

Material and methods Retrospective observational study of chemo-naive patients treated with ketoconazole for ≥3 months for mCPRPC between 06/2010–06/2014 in a tertiary hospital. Patients with insufficient information in their medical records were excluded.

The following variables were collected: age, baseline PSA, % PSA decrease from baseline to nadir, PSA response rate (PSA-RR) at 12 weeks defined as the percentage of patients with a ≥50% PSA decline from baseline maintained for ≥3 weeks. Biochemical progression-free survival (bPFS) was defined as the time between ketoconazole initiation and PSA (or radiological) progression according to PCWG2 criteria.

Means ± standard deviation or the median and the 25th–75th percentiles summarise results. Kaplan-Meier analysis was performed to determine the bPFS. Data analysis was performed using SPSS Version 20.0.

Results Twenty-eight patients (age 76 ± 11 years) were included. The median baseline PSA was 29 [14–89] ng/ml. The % PSA decrease from baseline to nadir was 54% ± 29. PSA-RR to ketoconazole was 31% (9 patients). Eleven patients (39%) experienced a ≥50% reduction from baseline PSA. The mean time to achieve this reduction was 13 ± 15 weeks. Baseline PSA increased after starting ketoconazole in five patients (15%).

The bPFS for the 23 patients in whom baseline PSA declined after starting ketoconazole was 87 [IC95%: 35–139] weeks. The bPFS in patients with a ≥50% PSA decline at 12 weeks was not estimated because it have not been reached at the time of data analysis.

Conclusion Approximately one third of patients treated with ketoconazole experienced rapid PSA declines close to those observed with abiraterone (37–42%). The PSA-RR, the significant bPFS, its low cost and the possibility of starting abiraterone after ketoconazole explain why ketoconazole is an alternative in chemo-naïve patients with mCRPC.

REFERENCES AND/OR ACKNOWLEDGEMENTS

1 *Eur J Cancer* 2014;**50**:2399–407

No conflict of interest.

CP-096 FEASIBILITY STUDY ON IMPLEMENTATION OF DOSE BANDING IN A TEACHING HOSPITAL

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Background Dose banding (DB) is a system whereby, through agreement between prescribers and pharmacists, chemotherapy doses calculated on body surface area (BSA) are rounded up or down to predetermined standard doses (SD) with a variance limit of ±5%. In our hospital, over 30,000 chemotherapy preparations are made per year. Implementation of DB could reduce patient waiting time and improve capacity planning of our cytotoxic preparation unit (CPU).

Purpose To conduct a feasibility study on the implementation of DB in our CPU.

Material and methods Phase I – literature review of DB: to identify selection criteria and method of assigning dose bands. Phase II – retrospective analysis of doses prepared in CPU in 2013: to identify candidate cytotoxic drugs and select SD.

Results In accordance with the literature review, drugs were selected using the following criteria: frequency of preparation above 250 preparations per year, sufficient long-term physicochemical stability after reconstitution and opportunity for savings. "Target dose" banding was chosen for the selection of SD. In order to guarantee a good turnover, 5 SD should cover at least 60% of preparations.

Of the 70 pharmaceutical specialties prepared in our CPU, six candidate drugs were eligible: paclitaxel, 5-fluorouracil (5-FU), cyclophosphamide, gemcitabine, cytarabine, calcium folinate. A simulation was made with paclitaxel, 5-FU bolus injection (400 mg/m²), and 5-FU 48 h continuous infusion (2400 mg/m²) with percentage standardisations of 65% (SD: 105, 120, 135, 150 and 165 mg), 69.5% (DS: 500, 600, 700 and 800 mg) and 79.5% (SD: 3,500, 3,900, 4,300 and 4,700 mg) respectively.

Conclusion Before implementation, this DB project should be approved by the medical staff and some practical constraints such as software, system management, storage, control should be developed. On the other hand, the status of these preparations has not been clearly established by the health authorities in France. They can be considered hospital preparations (authorisation request, statement, and compliant with Good Manufacturing Practice) or compounded medicines requiring an early prescription.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-097 DOSE ADJUSTMENT OF TENOFOVIR IN HIV PATIENTS WITH RENAL IMPAIRMENT

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Background Tenofovir (TDF) is used in combination for first-line treatment in HIV infection due to its efficacy and tolerability. However, the use of TDF may be associated with renal toxicity, so it is recommended to tailor the dose in patients with CrCl < 50 mL/min.

Purpose To determine the number of patients receiving TDF with CrCl < 50 mL/min, and to evaluate whether dose adjustment is being performed properly in accordance with the recommendations.

Material and methods A retrospective and observational study in HIV-infected adult patients treated with TDF (January 2010–December 2012) was carried out in a tertiary General Hospital (600 beds). The Inclusion criteria were: baseline normal CrCl, more than six months on TDF treatment and three CrCl determinations. Potential risk factors analysed were: age, gender, baseline CD4 and HIV RNA, previous treatment, comorbidities and use of co-formulated presentation. The CrCl was calculated using the MDRD formula. The prevalence of renal insufficiency (CrCl < 50 mL/min) and the degree of compliance with the GESIDA guidelines (300 mg/48 h for patients with CrCl < 50 mL/min and 300 mg/72–96 h for patients with CrCl < 30 mL/min) were calculated.

Results 451 patients were included (68.2% male, mean age = 46.2 ± 8.2 years). 4.8% of patients had renal impairment with CrCl < 50 mL/min. 14% of patients had CrCl < 30 mL/min. The comorbidity rates were: 40.9% hypertension, 63.6% hepatitis C co-infection and 54.5% were smokers. Mean number of treatment lines prior to TDF was 2.4 ± 2.1.

59.1% of patients were treated with combined TDF and boosted protease inhibitor (PI) treatment. 100% of patients used a co-formulated TDF presentation.

No doses were tailored in any patients according to renal impairment, while 40% of patients changed the treatment to TDF-free combinations.

Conclusion Patients on treatment with TDF rarely need a dose adjustment due to renal impairment. Moreover, the dose was not adjusted for any patients with renal impairment, while a change of treatment was preferred.

REFERENCES AND/OR ACKNOWLEDGEMENTS

1 GeSIDA/National AIDS Plan: Consensus document on antiretroviral therapy in adults infected by the human immunodeficiency virus

No conflict of interest.

CP-098 RISK FACTORS OF URINARY TRACT INFECTION IN PATIENTS TREATED WITH ABIRATERONE

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Background Abiraterone is indicated for the treatment of metastatic castration-resistant prostate cancer. One of the most common side effects (affecting more than 10% of patients) associated with abiraterone is urinary tract infection (UTI).

Purpose To assess abiraterone-associated UTI prevalence in cancer patients and the potential factors that contribute to this adverse effect.

Material and methods Retrospective observational study (September 2011–September 2014). All patients on treatment for at least one cycle of 28 days with abiraterone were included. The data recorded were: age, duration of treatment with abiraterone, whether patients suffered UTI during treatment with abiraterone, the urinary pathogen and the treatment of the infection. The potential risk factors found were: pre-infection surgical manipulation of the urinary tract, previous use of antibiotics and urinary catheterization. Categorical variables were compared by Chi-square test. Multivariate analysis was performed on parameters with $p < 0.10$ in univariate models. The p-values <0.05 were regarded as significant.

Results 31 patients were included in the study. The mean duration of treatment was 195.28 days. 5 patients suffered UTI (16%).

In the univariate analysis, variables related to UTI were urinary catheterization (OR = 10.67; CI 95% 1.91–59.62; p = 0.007) and surgical manipulation of the urinary tract (OR = 14.67; CI 95% 1.83–117.68; p = 0.011). In multivariate analysis, none of these factors were significantly associated with UTI (urinary catheterization: OR = 8.07; CI 95% 0.7–96.52; p = 0.099); surgical manipulation: OR = 9.17; CI 95% 0.97–87.25; p = 0.054).

Nonetheless, there was a trend towards a higher risk of UTI in patients with previous urologic surgery.

Abstract CP-098 Table 1

		Urinary pathogen		Risk factors		
	UTI	UTI-pathogen	*Non typical UTI-pathogen	Surgical manipulation	Use of antibiotic	Catheter
Number of patients	5	2 (Proteus) 1 (E.coli)	2	3	3	5
*SARM and Enterococcus						

Conclusion There are patients treated with abiraterone who suffer UTI, but it is necessary to consider other possible risk factors before thinking of it as a direct side effect.

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No conflict of interest.

CP-099 FAMPRIDINE, A NEW APPROACH IN THE TREATMENT OF MULTIPLE SCLEROSIS: EFFICACY IN IMPROVING WALKING AND QUALITY OF LIFE

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10.1136/ejhpharm-2015-000639.98

Background Multiple Sclerosis (MS) is a neurological disease in which myelin is destroyed, impairing nerve impulse conduction.

Fampridine is the first drug authorised for improving walking. It is a potassium channel blocker that improves electrical transmission for muscle stimulation.

Purpose To describe changes in quality of life of patients receiving fampridine regarding health perception (subjective change) and improved walking (objective change).

Material and methods Prospective study during the first two weeks of patient treatment. Patients received fampridine 10 milligrams every 12 h plus their usual MS drugs. Health perception was measured by MS Quality Of Life-54 questionnaires and point-in-time assays of physical and mental health before and after taking fampridine. Changes in walking were measured by the Timed 25-Foot Walk (T25FW) test (time to walk 7.5 metres).

Sample population was characterised by age, type of MS, and Expanded Disability Scale System (EDSS) point-in-time assays (disability due to MS from 1 to 10, 10 being death). Results before and after treatment were analysed with Student's t-test. Statistically significant relationships between variables were evaluated by applying appropriate tests.

Results 39 patients, mean age 49, standard deviation (σ) 12.6. 15.4% had Relapsing-Remitting MS, 69.2% Secondary Progressive MS and 15.4% Primary Progressive MS. Mean EDSS score 5.5, σ 1.15.

Physical health improved 9.05 points, confidence interval CI (5.57–12.52), $p < 0.05$. Mental health improved 6.62 points CI (3.58–9.68) $p < 0.05$. TW25F was reduced by 9.04 s CI (–11.93, –6.14), $p < 0.05$. Improvement was independent of MS type and EDSS punctuation, $p < 0.05$. Physical and mental improvement were directly related.

Conclusion The rapid effect of fampridine was obvious. Improvement in physical health (both subjective and objective measures) was observed. This might be because the mechanism of action directly targets the motor system. The relationship between physical and mental improvement is coherent, because personal autonomy raises self-esteem. Evaluation in larger samples and over a longer period is needed in order to substantiate a maintained benefit.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-100 PHARMACEUTICAL INTERVENTION IN NUTRITIONAL SUPPORT IN POSTSURGICAL INTENSIVE CARE UNIT

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10.1136/ejhpharm-2015-000639.99

Background The clinical pharmacist's main functions in parenteral nutrition (PN) are to ensure the appropriate assessment and monitoring of nutritional support according to the type of illness and the patient's condition and to verify the quality and safety of the solutions prepared.

Purpose To describe the pharmaceutical interventions (PIs) made in patients hospitalised in a postsurgical intensive care unit.

To find the degree of acceptance of the PIs and their relevance to patient care.

Material and methods Retrospective six-month study (January–June 2014).

All PIs were recorded in each patient's electronic medical record and in a special data sheet which included the indication for PN, laboratory data, type of nutrition, type of intervention and acceptance.

Results Nutritional monitoring was performed in 40 patients. 442 PIs were carried out during the study period, with a mean of 11 PIs/patient.

The PIs were categorised as the following:

Nutrition assessment (n = 158; 36%)
Intravenous fluids needs (n = 26; 6%)
Electrolyte imbalances (n = 136; 30%)
Prevention of liver disease caused by PN (n = 34; 8%)
Others (food allergies, glucose management, laboratory monitoring, administration of glutamine and omega 3 fatty acids) (n = 88; 20%)

The overall degree of acceptance of the interventions was 99%.

Conclusion The high number and variety of types of PI performed by the pharmacist contributed to improving nutritional support and reducing complications, ensuring a more effective and safer use of PN.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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2 *Clin Nutr* 2009;**28**:359–479

No conflict of interest.

CP-101 COLLABORATION BETWEEN HOSPITAL PHARMACY AND PRIMARY CARE PHARMACY: ASSESSMENT OF ANTIRETROVIRAL AND ANTINEOPLASTIC TREATMENT PRESCRIBED WITH ANTIULCER TREATMENT

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10.1136/ejhpharm-2015-000639.100

Background Some patients get prescriptions from the Primary Care Physician (PCP) and the Specialist Attention Physician (SAP) at the same time, without pharmaceutical validation to detect potential interactions between them.

One example is antiretroviral and antineoplastic drugs given concomitantly with antiulcer treatment. Combination of these drugs leads to the decreased absorption and the consequent loss of efficacy of antiretrovirals and antineoplastics.

Purpose To identify patients who are under antiretroviral/antineoplastic and antiulcer treatment concomitantly.

To suggest suitable antiulcer treatment to PCPs and SAPs.

To evaluate the effect of this strategy.

Material and methods Patients on treatment with rilpivirine, erlotinib, gefitinib, dasatinib and lapatinib were identified from the Hospital Pharmacy Outpatient Unit.

Patients on treatment with proton pump inhibitors (PPI) and H_2 receptor antagonists (H_2RA) were identified from the Primary Care Information System, from May 2014 to September 2014.

Once our target patients were identified, the Primary Care Pharmacy Department reported the interaction to the PCPs involved, suggesting either a switch from PPI to H_2RA, a dosage modification or treatment termination.

Results 16 patients were identified.

Mean age was 66.8 years (range 49–82); 68.75% men.

Treatments: 1 patient rilpivirine plus PPI, 6 erlotinib plus PPI, 1 erlotinib plus antiH_2, 4 gefitinib plus PPI, 2 dasatinib plus PPI and 2 lapatinib plus PPI.

After notification, 4 patients had a change in their treatments (25%), mean age 64.8 years (range 59–68) 75% men: 2 PPI treatment terminations and 2 switches from PPI to H_2RA.

Conclusion It is necessary improves coordination between Primary Care Pharmacy and Hospital Pharmacy to identify and minimise drug-related problems.

Moreover, it would be advisable to develop a unique medicines record in order to provide effective pharmaceutical care. A better tool of communication with physicians should be investigated because the effect of the intervention was moderate (25%).

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-102 SUCCESSFUL ANTIDEPRESSANT TREATMENT WITH AN ORAL SOLUTION OF IMIPRAMINE DURING A SHORTAGE OF IMIPRAMINE TABLETS: A CASE REPORT

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10.1136/ejhpharm-2015-000639.101

Background Psychiatric patients are generally thought of as having low rates of treatment adherence. Simplification of treatment regimen often improves compliance.

Purpose To report a case of major depressive disorder in maintenance treatment with imipramine during a shortage of imipramine tablets.

Material and methods We report the case of an 82-year-old woman diagnosed with major depressive disorder with psychotic features since 2005. Current treatment: imipramine 150 mg/day, quetiapine 150 mg/day, clonazepam drops (0–5–10), valproic acid 200 mg/day, trazodone 100 mg/day, lorazepam 2 mg/day, candesartan/hydrochlorothiazide 32/12.5 mg/day, atorvastatin 20 mg/day.

In October 2013, the supplier of imipramine 50 mg tablets announced a shortage of the drug. Our national Drug Agency began to import tablets of Imipramine chlorhydrate 10 mg. Our patient was told to take 15 tablets a day.

Two months later the psychiatrist observed that the patient was suffering delusions again. The principal caregiver informed them that her mother had abandoned treatment 2 weeks ago because of the number of tablets.

The psychiatrist contacted the Pharmacy Service to evaluate another alternative. We suggested compounding an oral solution of imipramine 25 mg/ml to simplify the treatment regimen (6 ml/day).

Materials Imipramine chlorhydrate: 2.5 g; sodium methylparaben 99%: 100 mg; simple syrup: 30 ml; saccharin solution: 0.5 ml; orange oil: 0.05 ml; distilled water (DW) q.s 100 ml; Method of preparation: Dissolve the methylparaben with 70 ml of DW. Add the imipramine and mix well. Incorporate the saccharin and orange oil. Mix. Add the simple syrup and DW to final volume.

Results Ten days later, we measured plasma levels of imipramine to check the adherence. Results: Imipramine: 72 ng/ml, desipramine: 31 ng/ml, imipramine + desipramine: 103 ng/ml; (Therapeutic range: 150–250 ng/ml).

At the next consultation, 50 days later, the psychiatrist observed a significant clinical improvement in our patient.

Conclusion Drug shortages are an increasing problem that is forcing both physicians and pharmacists to seek therapeutic alternatives. Pharmaceutical compounding can be a valuable option when changes of drug or dosage form are not desirable.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-103 OPTIMISATION OF ANTIBIOTIC TREATMENT IN GENERAL SURGERY

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Background Epidemiological studies have shown an association between antibiotic consumption and the emergence of resistance. Clinical results depend on the host, the organism and an appropriate treatment. Institutional antibiotic use policies have an important role in reducing the selective pressure for resistance, improving the quality of outcomes and patient safety.

Purpose To analyse the impact of a stewardship programme focused on the appropriateness of antibiotic treatment for the treatment of intra-abdominal infections (IAI).

Material and methods A pre-post intervention study was undertaken during October–November 2013 ("PRE" period) and January–February 2014 ("POST" period). General Surgery patients on active antibiotic treatment were included, excluding prophylactic antibiotics administered preoperatively. The variables analysed were:

1. Demographics: age, sex, comorbidities and risk factors for extended-spectrum beta-lactamase (ESBL)-producing Enterobacteria.

2. Suitability of treatments: inappropriate treatment was defined as: excessive length, incorrect dose and/or route of administration, and the use of a broad-spectrum antibiotic when de-escalation was possible in targeted treatment.

3. Consumption: Defined Daily Dose (DDD)/100 bed-days).

Data was extracted from blood tests, clinical records and microbial culture records.

Results PRE study: n = 74 (60% male); mean age 60 years, average treatment length 7 days, length of stay 4.9 days and overall consumption 75.9 DDD/100 bed-stays. In 59% no cultures were performed. IAI type: complicated 26% vs. 74% non-complicated. Of 111 total treatments, 84% were empirical and 20% were inappropriate.

POST study: n = 57 (50% male), mean age 57 years, average treatment length 9 days and length of stay 5.1 days. The overall consumption was 80.1 DDD/100 day-stays. In 50% cultures were not requested. IAI type: complicated 32% vs. 68% non-complicated. Of 76 total treatments, 78% were empirical. In 20% of the cases, a pharmaceutical intervention was performed,

of which 75% were accepted, eventually resulting in 11% inappropriate treatments.

Antibiotic prescription patterns had changed during the POST-period. There was a reduction in overall carbapenem use with an increased narrow-spectrum prescription (DDD-100 bed-days): amoxicillin-clavulanate (37.3 vs. 32.6); piperacillin-tazobactam (2.7 vs. 1.6), ciprofloxacin (7.6 vs. 6.9) and metronidazole (4.7 vs. 4.3). Carbapenems consumption went down to 15.2 DDD/100 bed-days in the post-period vs. 18.5 DDD/100 bed-days in the Pre-period.

Conclusion

- Use of broad-spectrum antibiotics is reduced and de-escalating has been promoted.
- Taking samples prior to initiation of antibiotic treatment is encouraged.
- The increased treatment length (26%) was probably due to more serious infections.
- The multidisciplinary approach is one of the main tools of optimisation-antimicrobial-use-programs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

1 The PAMACTA team

No conflict of interest.

CP-104 ROLE OF STATINS ADDED TO INTERFERON TREATMENT IN PATIENTS WITH RELAPSING-REMITTING MULTIPLE SCLEROSIS: A META-ANALYSIS

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Background Multiple sclerosis is a chronic inflammatory disorder of the central nervous system. Statins have demonstrated anti-inflammatory and immunomodulatory properties in this setting. Several clinical studies of different statins, given alone or in combination with interferon, for relapsing-remitting multiple sclerosis (RRMS) have been conducted with conflicting results.

Purpose To review the efficacy and safety of statins in combination with interferon treatment in patients with RRMS.

Material and methods A systematic review of the literature and meta-analysis was performed by searching in MEDLINE, Cochrane CENTRAL Registry and EMBASE, to October 2014. Trials comparing the use of interferon alone or combined with statins in adult patients with RRMS were identified. Trials with a score ≥3 according to the Jadad scale were considered. Pooled effect was calculated for the following outcomes: risk of relapse, treatment withdrawal due to adverse effects and risk of myalgia.

A DerSimonian-Laird random-effects model was used to calculate pooled Odds Ratios. Statistical heterogeneity was examined using the I^2 statistic. For significant differences, publication bias was estimated by using the Rosenthal index.

Results Six trials were included in the analysis (n = 1,484; range of follow-up = 6–36 months). The evaluated statin was simvastatin in three trials and atorvastatin in two trials. The other trial also included pravastatin, lovastatin and fluvastatin. No significant difference was found between the statin and control group regarding the risk of relapse (OR, 1.06; 95% confidence interval [CI], 0.64 to 1.74; p = 0.82), risk of myalgia (OR, 1.56; 95% CI, 0.59, 4.11; p = 0.36) or risk of withdrawal due to adverse effects (OR, 1.37; 95% CI, 0.57 to 3.30; p = 0.49). I^2 test revealed that heterogeneity was low for all the analyses performed.

Conclusion Our results revealed that the addition of statins to interferon treatment did not significantly affect the risk of relapse, myalgia or treatment withdrawal due to adverse effects in patients with RRMS.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-105 EFFECTIVENESS AND SAFETY OF PROTEASE INHIBITORS TELAPREVIR AND BOCEPREVIR IN THE TREATMENT OF HEPATITIS C VIRUS INFECTIONS IN CLINICAL PRACTICE

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10.1136/ejhpharm-2015-000639.104

Background The efficacy of triple therapy (pegylated-interferon/ribavirin with boceprevir (BOC) or telaprevir (TVR) in phase III trials is known but not the effectiveness of HCV treatment in clinical practice.

Purpose To investigate the effectiveness and safety of triple therapy with protease inhibitors TVR or BOC in the treatment of patients with Hepatitis C Virus (HCV) in clinical practice.

Material and methods A retrospective observational study with HCV-infected patients treated with TVR or BOC who had completed 60 weeks from the start of treatment in six public hospitals serving 1,100,000 inhabitants. Patients who started treatment between January 2012 and March 2013 were included. We assessed the percentage of patients with a 12-week sustained viral response (SVR12) and the percentage of treatments discontinued due to adverse effects.

Results 160 patients were treated; 9 patients were excluded as SVR12 had not been recorded, leaving 151 patients for analysis.

Characteristics: male 66%, age 51 years (range 28–70); 98% genotype-1; 73% HCV-RNA > 800,000 IU/ml; Previous treatment: 48% treatment-naïve, 25% relapsers, 13% partial responders, 11% null responders, 1% post-transplant reinfection and 1% unknown. Fibrosis stage: 55% F4, 33% F3, 9% F2, 2% F1, 1% unknown. 87% with TVR and 13% with BOC.

Of the patients, 57% achieved SVR12 (60% naïve, 68% relapsers, 40% partial responders, 37% null-responders or unknown, 100% post-transplant reinfection). According to fibrosis stage the response was 0% F1, 28% F2, 62% F3, 61% F4.

Treatment was discontinued in 17 patients (11.3%) due to severe adverse effects.

Conclusion Although the treated population presented an advanced stage of fibrosis (88% F3–F4), 57% achieved SVR12, lower than the pivotal TVR study. Compared to the International Telaprevir Access Program (similar to this cohort), we achieve a lower response in almost all types of patients, especially in partial responders (15% lower response rate). The side effect profile was slightly lower than other published series.

REFERENCES AND/OR ACKNOWLEDGEMENTS

None

No conflict of interest.

CP-106 OSELTAMIVIR USE

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Background Oseltamivir is an antiviral approved for treatment and chemoprophylaxis of uncomplicated illness caused by influenza A or B virus for people of all ages over 3 months.
Purpose With the increase in the incidence of influenza A in Guadalajara in the winter of 2013–2014, reaching epidemic proportions, it was decided to analyse the use of oseltamivir in the treatment of influenza A.
Material and methods Retrospective observational study of patients treated with oseltamivir between November 2013 and February 2014.

Variables: age, sex and risk factors (RFs), ward, dose, duration and confirmation of influenza vaccination status. It was felt that the treatment was completed after 5 days of treatment in the case of 75 mg and 10 days of 150 mg.

The information was obtained from the Farmatools drug history and Mambrino and Turriano electronic medical records.
Results 174 patients were collected on treatment with oseltamivir. 51% were male and 49% female with a mean age of 63.61 years (2–92). 82% of patients had some RFs. The main RFs were age >65 years (53%), respiratory failure (36%), diabetes (25%), heart failure (22%), obesity (17%), immunosuppression (17%) and renal failure (15%).

The main prescriber service was Internal Medicine (37%).

The dose was 75 mg/12 h in 87% of patients, and 150 mg/12 h in 13%. 7% required titration to 30 mg/12 and 2% changed regimen during hospitalisation. 67% of patients completed the treatment.

57% (n = 93) had a confirmed diagnosis of influenza A. In this subgroup 10% did not complete the treatment with oseltamivir, 40% had been vaccinated previously for influenza and 18% had no RFs. In the subgroup of patients without influenza (n = 81) 36% completed treatment with oseltamivir.
Conclusion Oseltamivir has been used in a similar percentage for both treatment and prophylaxis and it has mainly been used in patients with advanced age and associated RFs.

Most patients were treated as uncomplicated influenza A. In the subgroup of patients with a diagnosis of influenza A were patients whom the vaccine didn't protect against influenza A and others who did not complete the treatment.

It would be interesting to analyse the efficacy of the vaccine against influenza in a second phase of the study.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-107 MANAGEMENT OF CHEMOTHERAPY-INDUCED NAUSEA AND VOMITING IN OUR INSTITUTE: PRACTICE EVALUATION

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Background In France, the arrival of a new antiemetic (palonosetron) forced us to define its place in chemotherapy-induced nausea and vomiting (CINV) management.
Purpose To review prescription practice in our institute and to find out what guidelines are applied. The efficiency of treatments was evaluated.
Material and methods Evaluation was performed on patients receiving moderately emetogenic chemotherapy. Questionnaires were given to patients. They had to report on which antiemetics they were treated with for three days following chemotherapy. Physicians noted which antiemetic treatment had been administered to the patient in the acute phase. Criteria of evaluation were:

- Type of guidelines applied (AFSOS, ASCO) according to the drugs reported.
- Effectiveness in controlling the number of nausea and vomiting episodes in the acute and delayed phases.

Questionnaires were distributed for two months.
Results 231 questionnaires were analysed. The AFSOS and ASCO guidelines were followed for the management of CINV in the acute phase for 184 patients (79.7%). For the delayed phase, 120 questionnaires (51.9%) were in accordance with the AFSOS guidelines and 16 with those of the ASCO guidelines (6.9%). During the delayed phase, 46 patients (19.9%) reported they had received setrons and 27 (11.7%) indicated they had had no antiemetic treatment. 110 (47.6%) of them took an adjunctive drug.

Among patients interrogated, 139 (60.2%) were not controlled on nausea and 40 (17.3%) had vomiting.

40 patients were (chemotherapy) treatment-naïve. 22 (55%) reported having nausea and 3 had vomiting in the days following chemotherapy.
Conclusion Great heterogeneity in prescribing practices in the same institute was noted. Results highlight a greater proportion of uncontrolled patients than expected. Thus, CINV still represents an important adverse effect and it is necessary to continually evaluate efficiency of prophylactic antiemetic treatments in the hope of improving treatment.

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No conflict of interest.

CP-108 INFECTIONS CAUSED BY CARBAPENEM-RESISTANT KLEBSIELLA PNEUMONIAE IN A TERTIARY HOSPITAL

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Background The increasing incidence of carbapenem-resistant Klebsiella pneumoniae (CR-KP) has become a significant problem and treatment of infections caused by these pathogens is a major challenge for clinicians.
Purpose To describe infections caused by CR-KP in the setting of a single tertiary Spanish hospital outbreak between June 2012 and February 2013.
Material and methods Eighty-one patients with confirmed KPC-producing isolates were included. Demographic and clinical records, antibiotic use and patient outcomes were collected retrospectively.
Results Eighty-one patients with confirmed CR-KP-producing isolates were included. Post-antibiogram treatment data were

collected from 69 patients. The most used antibiotics were tigecycline (n = 44, 63.8%), gentamicin (n = 36, 52.2%), meropenem (n = 13, 18.8%), fosfomycin (n = 11, 15.9%) and colistin (n = 8, 11.6%). In 28 patients (40.6%) the regimen consisted of a single drug. Most patients (n = 41, 59.4%) received ≥2 drugs against the CR-KP isolate. The most common combination was tigecycline plus gentamicin, which was used in a total of 23 cases, alone (n = 19), or with a third drug (n = 4).

The most active agent against CR-KP was tigecycline (72.8% susceptibility). Resistance rates to gentamicin, fosfomycin and colistin were 64.2%, 82.7% and 93.8%, respectively.

The mean initial dose of gentamicin was 4.1 ± 1.4 mg/kg/day with a mean Cmax = 10.7 ± 5.6 mcg/ml and mean Cmin = 0.9 ± 1.3 mcg/ml. The pharmacokinetic monitoring of gentamicin allowed the mean daily dose to be increased to 5.5 ± 1.2 mg/kg reaching a mean Cmax = 16.5 ± 2.7 mcg/ml and mean Cmin = 0.6 ± 0.4 mcg/ml.

We recorded a clinical cure or improvement in 44 patients (54.3%) and microbiological cure in 14 patients (17.3%). The overall mortality of the 81 patients was 27.2%, but just 13.6% of deaths were considered attributable to infection.

Conclusion To our knowledge this is the largest reported series of infections caused by CR-KP in the setting of a single-centre outbreak with such high levels of resistance and provides further input on the clinical management of this type of infection.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-109 IMPLEMENTING CLINICAL PHARMACY ON A HEPATOLOGY WARD: FIRST STEPS

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10.1136/ejhpharm-2015-000639.108

Background Patient-centred clinical pharmacy is still in its early stages in _, despite its well evidenced positive impact worldwide. Studies show that clinical pharmacists are valuable members of the healthcare team in improving medicines outcomes in patients with liver disease and liver transplant recipients.

Purpose To assess the results of the introduction of clinical pharmacy services on the hepatology ward of a tertiary care teaching hospital in _.

Material and methods The prospective observational study was conducted on a hepatology ward from March to July 2014, at Gastroenterology and Hepatology Clinic, _. The clinical pharmacist evaluated medicines use during a 4 h visit once per week, and made recommendations to the prescribing physician. The interventions to optimise prescribing were classified according to type and acceptance by the physician.

Results A total of 107 medicines-related interventions were made for 57 patients (investigated or treated for alcohol-related liver disease, non-alcohol-related steatohepatitis, viral hepatitis, autoimmune hepatitis, biliary cirrhosis, sclerosing cholangitis, liver transplant recipients), of which the clinical pharmacist initiated 84 (78.5%) interventions, while 23 (21.5%) interventions were initiated by other health care professionals. The most frequent drug related problems requiring interventions were: incorrect dose (14.7%), inappropriate choice of medicine (11.9%), adverse drug reaction (10.1%) and unavailability of necessary drug (8.9%). The most common type of recommendation was dose adjustment (22.7%), change (15.5%) or discontinuation (11.9%) of a drug, followed by a consultation with a healthcare professional regarding potential adverse drug reactions, interactions and other available treatment options (10.7%). Acceptance rate by physicians was 87.3%.

Conclusion Involving a clinical pharmacist in a hepatology team led to clinically significant and embraced optimisation of medicines use. This approach may serve as a baseline and the support for further development of clinical pharmacy in

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-110 IMPACT OF A PHARMACEUTICAL PROGRAM ON ANTIRETROVIRAL TREATMENT SIMPLIFICATION

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Background Treatment of human immunodeficiency virus (HIV) infected patients usually involves the use of complex regimens and adverse effects. Current guidelines recommend treatment simplification in patients with effective infection control by switching from Boosted Protease Inhibitors (PI/r) to another group of drugs and by using once daily (qd) schedules where possible in order to improve tolerance and adherence.

Purpose To analyse the results of a pharmaceutical intervention program to promote the simplification of antiretroviral treatment (ART) in HIV+ eligible patients and to assess associated cost savings.

Material and methods Prospective study (July 2013 to April 2014). Adult patients on ART with PI/r-based combinations for more than 6 months, undetectable viral load and no known resistance mutations for Reverse Transcriptase Inhibitors Nucleoside analogues (NNRTIs) were selected. After evaluating the patient, the pharmacist suggested switching the current regimen to a simpler one according with patient characteristics.

Based on the annual cost for each combination, switch-derived savings were calculated.

Results 488 HIV+ patients were treated during the study period, 32% with PI/r combinations. 66 potential candidates for simplification were selected. Pharmaceutical intervention was accepted in 10 patients (15.2%). Of these, 40% were taking atazanavir, 50% lopinavir and 10% fosamprenavir. Main reason for non-acceptance was the lack of updated drug resistance studies. All patients switched, swapped an IP/r for a qd NNRTI (90% rilpivirine and 10% efavirenz). 60% of patients changed to a single tablet regimen.

Overall calculated cost savings were €17,500 per year.

Conclusion A pharmaceutical intervention program of antiretroviral treatment simplification led to cost savings in HIV infection treatment. However the rate of acceptance was low due to lack of updated resistance reports.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-111 EFFICACY OF TELAPREVIR IN TREATMENT OF CHRONIC HEPATITIS C

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Background The use of protease inhibitors in the treatment of hepatitis C virus (HCV) infection has significantly increased the recovery rate.
Purpose To analyse the efficacy of triple therapy – telaprevir (TVP), peginterferon (P-IFN) and ribavirin (RBV) – as treatment for HCV genotype 1.
Material and methods Retrospective and observational study of patients who finished the triple therapy from September 2012 to January 2014.

The following data was gathered: age, sex, genotype, stage of hepatic fibrosis (FibroScan), frequencies of IL28B polymorphisms, response in case of pre-treatment, viral levels before starting treatment and 4, 12, 24 and 48 weeks afterwards (RT-PCR), as well as sustained virological response (SVR).

Data was obtained from the Electronic Clinical History (Jimena), Outcome Patients Program (Farmatools) and the laboratory program (Omega 3000 and 4000).
Results Of the 24 patients studied – 19 of whom were men – 2 were co-infected with HIV and another one with HBV. 33.33% of them were treatment-naïve, 25% null responders, 20.83% partial responders, 16.67% relapsers and 4.17% unknown. Genotypes 1a, 1b, 1c corresponded to 8, 9 and 1 patients respectively, 6 unknown. Hepatic fibrosis stage F4/F3/F2/F0–1 corresponded to 54.16%, 37.5%, 4.17% and 4.17% respectively. Two patients started the treatment with F < 3 because of several extrahepatic symptoms (MALT lymphoma and Porphyria Cutanea Tarda). IL28B polymorphisms were 50% CT, 33.33% CC, 12.5% TT and 4.16% not specified. The average viral load pre-treatment was 3,496,125 IU/ml (log = 6.54).

83.33% of patients achieved an undetectable viral load after 4 weeks, maintained after 12, 24 and 48 weeks, except for one patient. Two patients achieved viral suppression in the 12th week. The load did not decrease for the other two patients, therefore it was stopped. All of them improved, by at least one fibrosis stage.
Conclusion The introduction of TVP in HCV genotype 1 treatment increased the SVR rate for all patients, and was effective for 87.5% of them. There is a relationship between SVR and IL28B polymorphism, being 100% effective for CC patients and 80% for T allele carriers (CT and TT)

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-112 EFFECTIVENESS AND SAFETY OF LONG-ACTING OCTREOTIDE IN THE TREATMENT OF CHRONIC BLEEDING FROM GASTROINTESTINAL ANGIODYSPLASIA

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Background Angiodysplasia (AD) is the most common vascular malformation of the gastrointestinal (GI) tract and causes significant morbidity. Long-acting octreotide, administered intramuscularly once per month might be useful for controlling chronic bleeding from angiodysplasia as an off-label use. Some case reports have demonstrated a significant benefit.
Purpose To evaluate the effectiveness and safety of long-acting octreotide as an off-label use in patients suffering from chronic GI bleeding from AD.
Material and methods A retrospective observational study of all patients treated in our hospital with long-acting octreotide for chronic GI bleeding because of AD was performed. We analysed three time periods: one year before starting long-acting octreotide (t_0), one year after (t_1) and two years after (t_2) starting long-acting octreotide treatment. Data, collected from the patient's medical record, included: demographic data, treatment-related data, haemoglobin levels and number of hospitalizations as efficacy data, and side effects. The statistical analysis was performed with SPSS.
Results Twenty five patients were included, 85% men with a mean age of 76.1 years [58.7–91.7]. Dosage pattern used was: 10 mg (48%), 20 mg (40%) and 30 mg (12%). Mean treatment duration was 31.1 months [3.2–97.4]. The mean of haemoglobin levels was: t_0 9.14 (Standard deviation (SD): 1.12), t_1 10.37 (SD: 1.69) and t_2 10.37 (SD: 2.02). There was statistical differences in haemoglobin levels between t_1-t_0 ($p = 0.001$) and between t_2-t_0 ($p = 0.05$). Furthermore, hospitalizations decreased when compared at t_1 (3.61 ± 2.69) to t_0 (5.29 ± 4.26), $p = 0.028$; and t_2 (2.43 ± 2.44) to t_0 (5.29), $p = 0.042$. No major adverse events were recorded; two patients experienced cholelithiasis and another two glycaemic alteration.
Conclusion Patients treated with long-acting octreotide had a significant reduction in hospitalizations and higher mean haemoglobin concentrations after treatment, with an acceptable safety profile. Besides, case reports by Bon *et al*. 2012, Scaglione *et al*. 2007 and Molina Infante *et al*. 2009, showed a significant reduction in transfusion requirements and iron supplementations.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-113 FINANCIAL IMPACT OF THE USE OF REDUCED DOSES OF TOCILIZUMAB IN THE TREATMENT OF RHEUMATOID ARTHRITIS

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Background The use of biological drugs such as tocilizumab for rheumatoid arthritis (RA) is very expensive. However, some observational studies and recommendations from guidelines (BBF) suggest the possibility of reducing the dose of biologicals to the minimum effective dose in patients with good control of the disease.
Purpose To assess the financial impact, measured as direct costs, of the use of reduced doses of tocilizumab for the treatment of RA in a tertiary hospital.
Material and methods Observational, descriptive and retrospective study with patients diagnosed with RA. We included patients

who received low doses of tocilizumab, because they had achieved remission or low disease activity with standard doses of tocilizumab (8 mg/kg every 28 days).

Results 7 patients were included, all of them treated with tocilizumab 6 mg/kg every 28 days. The average weight was 75 kg (55–100). The average annual cost per patient with a dose of 6 mg/kg every 28 days was €9,394 (6,647–13,899). The average annual cost for the same patient in the previous year, with doses of 8 mg/kg every 28 days, had been €12,178 (8,863–16,115). The average saving per patient/year was €2,784 (2,215–3,939). The use of reduced doses of tocilizumab for these 7 patients resulted in annual savings for the hospital of €19,490.

Conclusion Reducing the dose of tocilizumab in patients who have achieved remission or low disease activity having previously been treated with standard doses of tocilizumab provided direct savings for the hospital. Therefore, we are aware of the need to implement optimisation strategies in relation to the treatment of RA with tocilizumab in selected patients. However, more studies should be performed in order to determine the effectiveness of these dose reduction strategies and their financial impact on both direct and indirect costs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-114 DIFFERENCES IN TREATMENT COMPLEXITY BETWEEN MULTIMORBIDITY PATTERNS IN THE OLDER POPULATION

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Background In the context of population ageing, polypharmacy is strongly associated with multimorbidity. Studies have revealed the existence of multimorbidity patterns. No studies have evaluated whether the complexity of the medicines regimen varies with the multimorbidity patterns.

Purpose To analyse the extent to which treatment complexity differs between multimorbidity patterns in the older population.

Material and methods We conducted a retrospective observational study. We included patients ≥65 years with more than one chronic condition (according to the Quality and outcomes framework database) and with criteria of polypharmacy (>5 medicines/day) who were admitted to an internal medical unit between September/October 2014. Patients who were assigned to more than one multimorbidity pattern were excluded. Variables collected were: demographic, multimorbidity pattern, number of chronic conditions and chronic medicines, and the medicines regimen complexity index (MRCI). Multimorbidity patterns were identified as cardiometabolic, mechanical and psychogeriatric.[1] MRCI was calculated using a 65-item tool[2] which comprised the dosage forms, the dosing frequencies and additional directions. Student's T test was applied to compare MRCI in the multimorbidity patterns using SPSS-20.

Results 51 patients (52.9% male) were included. 15 (29.4%) aged 65–74 years, 29 (56.9%) 75–84 and 7 (13.7%) >85 years. The average number of diseases and medicines were 5.6 ± 2.5 and 10.5 ± 4.0, respectively. The average MRCI was 32.5 ± 15.2. The most decisive factor contributing to the complexity was the dosing frequency (13.7 ± 6.8), followed by the dosage form (12.7 ± 5.5) and the additional directions (6.0 ± 4.3). 31 (60.8%) patients were assigned to a cardiometabolic pattern (5.8 ± 2.8 diseases, 11.2 ± 3.9 medicines, 35.3 ± 15.7 MRCI); 13 (25.5%) patients presented a mechanical pattern (5.4 ± 2.25 diseases, 10.2 ± 4.7 medicines, 30.9 ± 16.4 MRCI) and 7 (13.7%) were assigned a psychogeriatric pattern (5.1 ± 1.6 diseases, 8 ± 1.3 medicines, 23.5 ± 4.8 MRCI). There were no significant differences between the MRCI in the patterns of multimorbidity.

Conclusion Treatment complexity does not differ between multimorbidity patterns in the older population.

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No conflict of interest.

CP-115 CHANGING TREATMENT IN HIV PATIENTS TREATED WITH EFAVIRENZ/EMTRICITABINE/TENOFOVIR TO RILPIVIRINE/EMTRICITABINE/TENOFOVIR

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Background Rilpivirine is a non-nucleoside reverse transcriptase inhibitor approved for use in a highly active antiretroviral therapy combination. A single-tablet formulation of rilpivirine, tenofovir and emtricitabine is commercially available, and the same for efavirenz, tenofovir and emtricitabine. There are many articles comparing their effectiveness but not many about their use in routine practice.

Purpose To evaluate the impact, in terms of effectiveness and safety, of replacing emtricitabine/tenofovir/efavirenz by emtricitabine/tenofovir/rilpivirine in HIV patients.

Material and methods Retrospective observational study in a tertiary hospital. HIV patients were included who had changed from antiretroviral therapy based on emtricitabine/tenofovir/efavirenz combination to emtricitabine/tenofovir/rilpivirine between February and April 2013.

Both demographic and laboratory variables (HIV viral load, count and CD4 percentage and lipid profile) were measured twice: at the moment of change and 24 weeks after it.

Undetectable viral load was defined as two consecutive determinations of viral load lower than 20 HIV copies/mL.

Data were obtained from medical records and from the outpatient dispensing module of ATHOS-APD Pharmacy Service software.

Results Twenty patients (three women) were included. The mean age was 47 (minimum 38, maximum 79) years old. The results of laboratory variables at baseline and 24 weeks of change were: undetectable viral load [18 (90%) patients vs. 19 (95%)]; and percentage of CD4 lymphocytes count [652 cells/uL (35%) vs. 675 (37%)].

Regarding the lipid profile, the mean value of cholesterol (mg/dL) before and after changing was 195 and 175, respectively. The average triglyceride levels (mg/dL) were 126 and 116.

Conclusion Our results suggest that emtricitabine/tenofovir/efavirenz and emtricitabine/tenofovir/rilpivirine can be exchanged without affecting the effectiveness and safety of antiretroviral

treatment. This strategy could be useful in the future to provide a treatment based on efficiency criteria.

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No conflict of interest.

CP-116 APPROPRIATENESS OF TICAGRELOR AND PRASUGREL USE AFTER THE IMPLEMENTATION OF AN ANTIPLATELET PROTOCOL IN ACUTE CORONARY SYNDROME

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Background Due to the inclusion of new antiplatelet treatment in the pharmacotherapeutic guide, the Cardiology Department developed a protocol for management of antiplatelet treatment in Acute Coronary Syndrome (ACS) in May 2013.
Purpose To check whether the new antiplatelet drugs ticagrelor (T) and prasugrel (P) were being used in accordance with a protocol for managing antiplatelet treatment in ACS.
Material and methods Prospective, observational study of patients receiving T or P. Study period: October 2013–March 2014. In ACS patients with ST-segment elevation (STEACS) the protocol required the location of the myocardial area affected, increased ST visualisation in at least a 3-lead electrocardiogram (ECG), and a score of ≥3 on the TIMI scale. Treatment of patients with non-ST-segment elevation SCA (NST-ACS) required a TIMI score ≥3. Sex, age, weight, presence of diabetes mellitus (DM), history of stroke/transient ischaemic attack (TIA), kidney failure (KF), pharmacotherapeutic history and prior antiplatelet treatment were recorded. A database was created with the variables described.
Results 92 patients were included, 77 males (83.69%), mean age 61.92 ± 10.73 years. 27 patients (29.35%) received ticagrelor and 65 (70.65%) prasugrel. In 12 patients T and P were the usual treatment and they were not considered. Diagnosis: 57/80 (71.25%) STEACS; and 23/80 (28.75%) NST-ACS. Of the 57 patients with STEACS, the infarcted area was anterior/anterolateral in 22 patients, inferior/inferoposterior in 33 and lateral in 2. ST-segment elevation in ≥3 ECG leads (84.21%) was observed in 48 patients. TIMI ≥3 in 44 patients (77.20%). Of the 23 patients with NST-ACS, TIMI score was ≥3 in 20 (86.95%). No patients had stroke/TIA background. However, 18.75% and 1.25% had DM and KF respectively. The total percentage of appropriate use of T and P was 91.25%, reaching 94.55% for P and 84.00% for T. The reasons for non-compliance with the protocol were: in the case of P, not meeting the infarct area (1 patient) or no diagnosis of NST-ACS (1 patient); and in the case of T: no diagnosis of STEACS (2 patients) or NST-ACS with TIMI <3 (1 patient).
Conclusion The use of this management protocol has facilitated both medical prescription and pharmaceutical validation of antiplatelet treatment in patients with ACS.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-117 PROSPECTIVE STUDY OF NECROTIZING ENTEROCOLITIS (NEC) TREATMENT IN NEONATAL INTENSIVE CARE UNIT (NICU)

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Background Necrotizing enterocolitis (NEC) affects the gastrointestinal part of premature infants and results in inflammation and bacterial invasion of the bowel wall; there isn't yet a well-established preventative treatment for this disease. Despite advances in the care of premature infants, NEC occurs in 5–10% of all very low birth-weight infants (<1,500 g). Medical treatment typically consists of bowel rest and decompression, antibacterial treatment, and management of other haematological or electrolyte imbalances. Risk factors for NEC are prematurity, enteric nutrition, gut microbial colonisation; moreover antibiotic treatment, frequently used to prevent sepsis, may develop resistant strains, delay colonisation and reduce microbial diversity predisposing to later intestinal disease.
Purpose To identify NEC incidence and treatment in NICU.
Material and methods The pharmacist monitored the antibiotic treatment of preterm infants and NEC incidence and treatment, from 01/09/2013 to 30/06/2014.
Results Antibiotic treatment (ampicillin/sulbactam, cefotaxime, amikacin, amphotericin B, cefepime, teicoplanin, gentamicin and ceftriaxone, cefotaxime and gentamicin, ampicillin/sulbactam and gentamicin, ceftriaxone and amikacin and teicoplanin) was prescribed to all (90) preterm (under 37 weeks of gestation) infants admitted. NEC affected 17 preterm infants, who were treated with metronidazole. When the first NEC symptoms appeared (protruding abdomen, gastric or enteric retention) metronidazole was administered, in off-label (15 mg/kg loading dose followed by 7.5 mg/kg at different intervals depending on gestational age), intravenously or orally for 3 weeks on average. In 6 cases it was necessary to administer other antibiotics (fluconazole, imipenem/cilastatin, teicoplanin, amikacin). In 4 cases the patients on average did not evacuate for 8 days, probably due to NEC and also the administration of metronidazole. All patients recovered except two: one died from NEC and the other from sepsis.
Conclusion The incidence of NEC was 19% of preterm infants. Treatment with metronidazole and antibiotics made it possible to prevent the complications of NEC and all patients but one recovered.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-118 WOUND INFECTION IN PATIENTS WITH SILVER DRESSINGS

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Background Wound infection diagnosis should be based on signs and symptoms of wound and surrounding skin such as exudate, bleeding surface, necrotic tissue, smell, erythema and oedema. The evaluation of local signs and the clinical evaluation of the patient are important to decide the best treatment.

Purpose To investigate clinical records regarding the wound, local signs of infection and antimicrobial treatment in patients with silver dressings.
Material and methods A retrospective observational epidemiological study was conducted between January and July 2014. All patients with prescriptions for silver dressings were identified using the Pharmacy systems Hosix and Sivsa. Data from clinical records were collected from Soarian and recorded in Excel. Data were analysed using SPSS.
Results We identified 62 patients with silver dressings (66.1% male; average age 71.1). Silver dressings were prescribed mainly for surgical wounds (27.4%) and stage 4 pressure ulcers (27.4%). The average length of treatment was 20.9 days. Rubor of the skin around the wound in 40.3% of wounds and purulent exudate in 67.7% were the main signs of infection identified. Necrotic tissue that can encourage bacterial growth was found in 85.5% of the wounds. In 25.8% of the patients, nurses used an antiseptic solution to clean the wound between dressings. Systemic antimicrobials were prescribed in 79% of patients, 53.2% of whom had a diagnosis of wound infection. The group of patients to whom antiseptics were administered locally had fewer days of treatment with silver dressing, although it was not statistically significant ($p = 0.26$). Also, the group of patients with prescriptions for silver dressings for longer than 10 days was statistically associated with wound complications ($p = 0.05$).
Conclusion All patients had clinical signs of wound infection that supported the use of silver dressings and most of them (79%) also needed systemic antibiotic treatment. We found it crucial that clinical records should be more complete regarding odour, local pain, oedema and other local signs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-119 EFFECT OF TREATMENT COMPLEXITY ON TREATMENT PERSISTENCE IN HIV PATIENTS

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Background The complexity of highly active antiretroviral treatment (HAART) may be one of the main causes of discontinuation of HAART. Martin *et al*. in 2007 developed a score which calculates a complexity index considering number of pills taken per day, dosing schedule, dosage form and any specific instructions related to drug use.
Purpose To determine the effect of treatment complexity on medicines persistence in treatment-naive HIV patients.
Material and methods We conducted a retrospective observational study. Treatment-naive HIV patients who started HAART between January 2012 and December 2013 in a secondary hospital were included. The data collected were: age, gender, antiretroviral treatment, complexity index and persistence with the HAART regimen. The complexity index was calculated based on the score developed by Martin *et al*. Persistence was defined as the length of time from initiation to discontinuation of treatment. Data were collected through outpatient electronic medical records and by reviewing each patient's medical history. The Kaplan-Meier method was performed using SPSS 20.0.
Results 68 patients were included (93% male, mean age 37 ± 10 years). The most common treatments were a nucleoside reverse transcriptase inhibitor (NRTI) in combination with a non- nucleoside (NNRTI) (72%) followed by a NRTI with a protease inhibitor (PI) (22%). The mean complexity score for the combination of NRTI + NNRTI, 2.1 ± 0.5, was significantly lower than that of the combination NRTI + PI, 4.4 ± 0.5 (difference -2.3, 95% CI: -2.5 to -2.05, $p < 0.001$). 36 (53%) patients discontinued treatment. The median overall persistence was 55 [95% CI: 37–73] weeks. Persistence with HAART was significantly higher ($p = 0.006$) for NRTI + NNRTI, 57 [95% CI: 54–60] weeks, in comparison with NRTI + PI, 28 [95% CI 23 to 34] weeks.
Conclusion Patients treated with less complex antiretroviral treatment are significantly more persistent with HAART.

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No conflict of interest.

CP-120 COMPARISON OF ANTIBIOTIC CONSUMPTION AND BACTERIAL RESISTANCE IN TWO TEACHING HOSPITALS: IMPACT OF A MULTIDISCIPLINARY ANTIBIOTIC MANAGEMENT PROGRAM

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Background Hospital 1 (H1) implemented an antibiotic management program in 2006: every antibiotic prescription is reviewed by a pharmacist before dispensing to medical units. Complex cases are reviewed with an infectious diseases specialist. In hospital 2 (H2), only carbapenems are prescribed in this way.
Purpose To identify the program's possible impact on H1's antibiotic consumption and bacterial ecology by comparing them to H2's.
Material and methods Both hospitals' consumption and resistance data from 2011 to 2013 were extracted from pharmacy management and bacteriology laboratory software, then uploaded on the ConsoRes tool to shape them. Resistance rates were compared using a Fisher's exact test, mean antibiotic consumptions were compared using Student's t test.
Results H1's mean antibiotic consumption was lower than H2's (572.1 Defined Daily Dose [DDD]/1,000 patient-days; standard deviation [SD], ±22.1, vs. 600.1 DDD/1,000 patient-days; SD, ±15.3; $p = 0.012$). Out of 19 organism/antibiotic couples, none showed an increasing rate of resistance over time in H1. In H2, the rates of E.coli and E. cloacae resistance to cefotaxime increased (12.7% to 18.4%; $p = 0.024$; 29.9% to 42.2%; $p = 0.002$, respectively) and H1's rates decreased or remained constant (E. coli: 10.5% to 5.9%, $p = 0.075$; E. cloacae: $p = 0.455$). The rate of methicillin-resistant S. aureus was higher in H2 than H1 ($p = 0.004$). H2's ciprofloxacin consumption was lower than H1's ($p < 0.05$). The rate of E. coli resistance to ciprofloxacin decreased in H2 ($p = 0.004$), and remained constant in H1. These results (consumption and resistance) are consistent with current available literature.
Conclusion Bacterial ecology of the two hospitals evolved differently over time; this might be a consequence of H1's antibiotic

management program. The program might also have had an impact on antibiotic consumption.

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No conflict of interest.

CP-121 ADVERSE DRUG REACTIONS FROM ANTIPSYCHOTICS CONTRIBUTING TO ADMISSIONS IN AN ACUTE GENERAL HOSPITAL

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Background Antipsychotic medicines are associated with an increased risk of falls, delirium, cerebrovascular and cardiovascular fatalities.[1] These adverse drug reactions (ADRs) have a negative impact on patient quality of life and are often implicated in hospital admissions; as such they can be a significant burden on health services.[2]
Purpose To investigate how adverse drug reactions (ADRs) from antipsychotic medicines may contribute to admission in an acute general hospital.
Material and methods We undertook a prospective study of all patients in our institution who were prescribed antipsychotics. Patients were identified from real-time dispensing information which was used by a specialist pharmacist to drive a ward-based clinical pharmacy review. If an ADR was suspected, consent was gained and a referral to the liaison psychiatric team generated. Results were recorded in line with national [Caldicott] ethical guidelines.
Results During the study period (17/09/2012 to 28/10/2013), 312 patients prescribed antipsychotic medicines were admitted. Thirty-one patients (10%) were referred due to concerns over ADRs, the majority of which (24, 77%) were generated by the specialist pharmacist (figure 1). Following referral, 21 of the 31 patients had their antipsychotic drug altered. It was stopped in 11 patients and doses reduced in a further 10.
Conclusion An admission-related ADR was identified in 10% of the patients prescribed antipsychotic medicines. The pharmacist was pivotal in this process and detected the majority. Early identification and psychiatric referral is essential to facilitate a decision that balances the patients' mental and physical health needs. Pharmacists working in the acute sector should be mindful that antipsychotic medicines may contribute to admissions. A close relationship with psychiatric services can facilitate medicines review and prevent harm.

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No conflict of interest.

CP-122 IMPROVING ACCESS TO SPECIALIST PHARMACEUTICAL CARE: AN ALTERNATIVE MODEL TO WARD-BASED CLINICAL PHARMACY SERVICES

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Background As clinical pharmacy develops pharmacists are becoming more specialised. The international model is that specialist pharmacists have their own caseload, working with particular clinics or wards according to geographical location.
Purpose To examine an alternative model of hospital clinical services that allows a specialist pharmacist to see all patients admitted taking medicines for mental health conditions.
Material and methods A real-time email was sent to the specialist pharmacist every time a medicine listed in BNF chapters 4.2 and 4.11; [antipsychotic and antimanic drugs, and drugs for dementia] was dispensed. Ward pharmacy teams also notified the pharmacist of a patient's admission directly by pager. The specialist pharmacist then conducted a clinical pharmacy review. Data were recorded in line with national [Caldicott] ethical guidelines.
Results During the study period (17/09/2012–28/10/2013) the specialist pharmacist received 688 alerts concerning 385 patients and 426 hospital admissions. The email system generated most alerts [630 (91%)]. 11% (68) alerts in 27 patients were not received due to holiday and illness. Of the alerts received 81% (291) of patients were successfully reviewed. Reasons for non-review were the patient had already been discharged, was an outpatient or on a ward that was closed due to an outbreak of norovirus.
Conclusion We have demonstrated the feasibility of an alternative model for clinical pharmacy services which targets pharmaceutical services according to clinical need rather than hospital geographic location. Although the model was demonstrated in mental health, we feel that it could have wider clinical use to target specialist pharmacist reviews when any high-risk medicine is prescribed.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-123 IMPROVING ACCESS TO MENTAL HEALTH SERVICES: A NEW PHARMACY ROLE IN GENERAL HOSPITAL PSYCHIATRY LIAISON

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10.1136/ejhpharm-2015-000639.122

Background When mentally ill patients are admitted to general hospitals, effective psychiatry liaison results in better patient outcomes and reduced length of stay.[1] However, studies in our institution suggest that routine referrals can take 14 days from hospital admission, and only occur in a third of patients taking drugs for mental health conditions.[2]
Purpose To determine if a novel, pharmacist-driven, referral pathway can improve patient access and reduce the time delay associated with referrals.
Material and methods A pharmacist referral system using real-time dispensing information and direct reports from ward

pharmacy teams was developed to identify hospital in-patients receiving antipsychotics, mood stabilisers or dementia medicines. A specialist pharmacist reviewed the patient and referred him/her to psychiatric liaison services if indicated. Data were recorded in line with national [Caldicott] ethical guidelines.

Results Between 17/09/2012 and 28/10/2013 the pharmacist made 41 referrals to psychiatric liaison services, accounting for 45% of the total number of referrals in this patient cohort. The mean time from hospital admission to pharmacist referral was 4.4 days (107 h, SD: 110 h). Increased access to psychiatric services was also seen with 47% (n = 138) patients being referred representing a 14% absolute increase from baseline.

Conclusion A specialist pharmacist linking acute and psychiatric services in an acute, general hospital improves access and reduces delays from admission to psychiatric expertise.

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No conflict of interest.

CP-124 IMPACT OF HOSPITAL PHARMACIST INTEGRATION ON PATIENT SAFETY IN A GENERAL SURGERY SERVICE AND THE RELATED DIRECT FINANCIAL SAVINGS

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Background In recent years, patient safety has become a Healthcare Systems' priority. An expert panel has established the presence of a Hospital Pharmacist in hospital settings and their direct collaboration with nurses and doctors as a key factor in the safe use of medicines.[1]

Purpose We wanted to investigate the effect that this integration is having on patient safety and whether cost savings are directly related.

Material and methods A pharmacist worked full-time on the General Surgery service for two months. The pharmacist took part daily in clinical sessions, patients' visits, drug monitoring advice, discharge information, home medicines reconciliation, among other duties. All work carried out by the pharmacist was recorded. Cost saving derived from switching treatment and non-necessary drugs stopped by the pharmacist were calculated as (cost of initial treatment × days with the new treatment) – (cost of new treatment × days of treatment).

Results 166 patients were admitted to the Surgery Service during this period. The Pharmacist made at least one treatment recommendation in 56% of these patients which ended in a treatment change or drug monitoring by doctors. 108 treatment reconciliation reports were made (65% of patients) by pharmacist-patient interview. Because of these reports, 106 drugs were added to patients' hospital treatment, 18% were drugs that guidelines recommended not to stop at admission. The treatment was changed for 37 drugs, and 19 unnecessary drugs were stopped. Direct cost savings derived from that switching and non-necessary drugs were in total €1,372 (€686/month).

Conclusion Hospital pharmacists play an important role as part of multidisciplinary teams, improving medical care and increasing treatment safety. Direct cost savings are also related to pharmacist clinical practice.

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No conflict of interest.

CP-125 EVALUATION OF COMPLIANCE AND TOLERABILITY IN TREATMENT-NAÏVE PATIENTS SUFFERING FROM IDIOPATHIC PULMONARY FIBROSIS (IPF) AND TREATED WITH PIRFENIDONE

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Background Idiopathic pulmonary fibrosis (IPF) is a rare disease with significant morbidity and mortality, with a 18.07/1,00,000 prevalence in our Region. Pirfenidone is an orally administered antifibrotic approved for the treatment of mild-to-moderate IPF.[1] Pirfenidone is generally well tolerated, the most common side effects being on the gastro-intestinal (GI) tract and photosensitivity. However, side effects may partly offset treatment benefits and reduce compliance.

Purpose To assess side effects (tolerability) and compliance in (treatment-naïve) IPF patients receiving pirfenidone.

Material and methods In this prospective observational study, adherence was examined in patients treated between September 2013 and September 2014. Side effects and treatment compliance were recorded in a database. Adherence data were compared with the incidence of side effects occurring in the studied population.

Results 34 IPF patients were evaluated during a 12 month follow-up.

Abstract CP-125 Table 1

Study population (# 34)	
Male	30 (88%)
Female	4 (12%)
Mean Age (yrs)	70 (±16.5)

Comparison between prescribing and dispensing data showed that 19 (56%) of patients received 100% of the prescribed treatment, 22 (65%) received more than 90%, and only 3 (9%) received less than 50%.

Abstract CP-125 Table 2

	Treatment adherence	
	Compliant population (# 19)	Non-Compliant population (# 15)
Interruption (#)	6	2
Causes of Interruption:		
- disease progression		
- toxicity	3	
- death	1 (neoplasia related)	
- missed	1	1 (photosensitivity)
- not specified	1	1
Suspension (#)	0	3
Causes of suspension:		
- toxicity		2 photosensitivity, 1 gastrointestinal effects
- smoke		1

Side effects led to only 15% of patients discontinuing pirfenidone and were more evident during the first six months of treatment, as observed in clinical trials.
Conclusion Tolerability: most side effects were manageable with supportive measures.

Compliance: overall it was good. Closer pharmacist/physician interaction could further improve patient compliance.

REFERENCES AND/OR ACKNOWLEDGEMENTS

1 EMA summary of product characteristics

No conflict of interest.

CP-126 VALIDATION OF INHALATION TECHNIQUE VIDEOTAPED IN ASTHMATIC CHILDREN UNDER 5 YEARS

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Background Asthma and virus-induced wheezing are among the most common diseases in childhood, with the special problem that the response to treatment relies heavily on the correct use of the inhalation device to deliver the drug. However correct delivery of inhaled drugs is difficult for the majority of caregivers and patients, particularly for pressurised metered dose inhalers (pMDI) with spacer. Clinical inhalation situations recorded by video in conjunction with the use of a point-to-point checklist of correct inhalation technique could help to train caregivers and patients.
Purpose The aim of the study was to test the reliability and validity of a video of inhalation technique in the clinical setting using a 10-step checklist.
Material and methods Three experts in paediatric pulmonology (clinical nurse, clinical pharmacist and respiratory consultant), and one new observer scored 40 videoed inhalation sessions using pMDIs with spacer to assess inter- and intra-observer reliability. Intra-observer reliability was assessed for each observer after 1 month by scoring the inhalation demonstrations a second time. Both inter- and intra-observer reliability were expressed by mean Kappa scores.
Results All individual steps revealed a high mean percentage agreement and a substantial or almost perfect Kappa scoring for both inter- and intra-observer reliability. The 10-step checklist was precise enough to allow a new observer to evaluate the videotaped demonstrations by herself.
Conclusion The use of a videotaped recording plus a 10-step checklist represents a reliable and reproducible method for the evaluation of inhalation techniques in a clinical setting. It also represents an educational opportunity.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-127 ONE-STOP DISPENSING: SELF-ADMINISTRATION OF MEDICINES IN HOSPITAL – PATIENTS' PERSPECTIVES

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Background The patient role is changing to include further patient involvement, control and empowerment. Little is known about patients' perspectives on self-medication or nurse administration of medicines and the use of Patients Own Drugs (PODs). With respect to tailoring a patient-specific clinical pharmaceutical service to this new patient profile, the One-Stop Dispensing (OSD) medication system was tested.
Purpose To determine patients' perspectives about self-medication within the OSD system on an acute orthopaedic ward.
Material and methods The pilot project ran from April to December 2013. Before inclusion, a nurse or senior doctor assessed whether individual patients were suitable for self-medication according to the regional medicine guidelines. Medicines including PODs were placed in a bedside locker, after a pharmacist had taken a medicines history, performed quality assurance and provided drug information to the patient. After surgery, patients were discharged with all prescribed medicines in the original packages to cover treatment to 10 days. Structured telephone interviews were conducted with 35 patients. The interviews were recorded, transcribed and analysed qualitatively and quantitatively.
Results All OSD patients were satisfied with administering their own medicine during admission. Of the OSD patients, 89% (n = 31) felt they had been provided with sufficient drug information and been empowered regarding their drug treatment during hospitalisation. Of the OSD patients 92% (n = 32) were satisfied with the drug information provided at discharge. The majority (97% (n = 32)) of the OSD patients felt secure and comfortable due to provision of medicine to cover treatment for 10 days from discharge. However, some (9% (n = 3)) OSD patients reported that they were left by themselves by the nursing staff, and some (11% (n = 4)) missed a medicines reminder system.
Conclusion This study found that the patients who were capable of self-administration benefitted from the OSD system during hospitalisation and at discharge, but some challenges have to be addressed in the interdisciplinary culture to improve the OSD system.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-128 ASSESSMENT OF ERROR AND PHARMACEUTICAL INTERVENTION IN PARENTERAL NUTRITION PRESCRIBING IN NEONATOLOGY

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Background Parenteral Nutrition (PN) prescriptions are not free from error. To validate a PN prescription the pharmacist is responsible for assessing the prescribed intake of nutrients, based on the information regarding the newborn (NB), such as gestational age (GA), weight, medical record and lab test results, in order to reduce medication errors.
Purpose To evaluate errors detected during validation of the PN prescriptions from Neonatology and the acceptance by the physicians of the pharmaceutical interventions.
Material and methods Retrospective study of pharmaceutical interventions in PN prescriptions from Neonatology, carried out between July 2012 and August 2014. The parameters used were:

number of PN prescriptions, number and type of errors detected and number of interventions accepted by the physician. Errors were categorised in relation to the PN prescription data, NB identification, NB data (weight, GA, birth date), enteral nutrition, micronutrients intake, Ca/P ratio, addition/omission of heparin, osmolarity, addition/omission of the volume and type of serum used in the infusion. The statistical analysis was performed in Excel.

Results From 953 PN prescriptions, 78 errors were detected, corresponding to 8% of all pharmaceutical interventions made. Of these, 3 were in PN prescription data, 6 in NB identification, 11 in NB data (weight, GA, birth date), 3 in enteral nutrition, 19 in micronutrient intake, 3 in Ca/P relation, 18 in addition/omission of heparin, 4 in osmolarity, and 11 in addition/omission of the volume and type of serum used in the infusion. Seventy pharmaceutical interventions (90%) were accepted by physicians.

Conclusion The number of errors detected was relatively low, the main errors being found in micronutrient intake and in addition/omission of heparin. The pharmaceutical interventions were accepted by the physicians in the majority of the cases. Therefore, the Pharmacist has an indispensable role in PN prescription validation, in order to reduce medication errors and increase the efficacy and safety of drugs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-129 ANALYSIS OF THE IMPACT ON THE RATES OF NOSOCOMIAL INFECTION (NI) AFTER THE IMPLANTATION OF A FAST TRACK (FT) PROTOCOL IN ELECTIVE COLON SURGERY

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Background The incidence of NI in colon surgery in our hospital in 2012 was a 27.3% so it was decided to introduce a FT protocol in order to reduce that incidence and to establish new guidelines of antibiotic prevention and new recommendations for the use of venous central catheters.

Purpose To analyse and to compare information of NI and data about the fulfilment of antibiotic prevention, the use of venous central catheters, parenteral nutrition (PN) prescription as well as the pharmaceutical expense before and after the implantation of a FT protocol in such procedures of elective colon surgery.

Material and methods Retrospective review of the clinical histories of patients who undergo elective colon surgery between Oct-13 and Jul-14 in order to get the data for the analysis. The pharmaceutical expense is compared in the above mentioned period opposite to the expense in the same period of the previous year. Out of 58 procedures of colon surgery carried out, 28 were patients included in the FT programme.

Results The overall rate of NI in colon surgery during the analysed period is 22.4% whereas the rate of infection in the FT group is 10.7%.

The inadequate antibiotic prevention has diminished from 26% to 14.3% (FT group).

The number of patients with venous central catheters has diminished from 57% to 25%.

The number of patients with PN has diminished from 29% to 14.3% and also the number of days of patients treated with PN has diminished from 6 to 4.5 days.

The overall pharmaceutical expense for these patients has also diminished a 12.4%.

Conclusion FT program has considerably reduced nosocomial infection data associated with this surgery and the inappropriate use of anti-infectives, which has affected the spending.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-130 ANALYSIS OF THE EFFECTIVENESS AND SAFETY OF INFLIXIMAB IN THE TREATMENT OF PSORIASIS IN A TERTIARY HOSPITAL

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Background Psoriasis is an inflammatory skin disease characterised by increased cell signalling via cytokines and chemokines. A wide variety of treatment options are available including systemic biological treatments such as tumour necrosis factor antagonist infliximab.

Purpose To evaluate the effectiveness and safety of infliximab for the treatment of psoriasis in adults.

Material and methods Observational, retrospective study, from 2008 to 2014, in patients with psoriasis treated with infliximab in a tertiary hospital.

Data were obtained from the electronic medical history supported by Selene Clinical Station. Data collected were demographics, average treatment dose and duration, previous treatments, dose escalation and Psoriasis Area and Severity Index (PASI).

Results The study included 27 patients (66.7% males), mean age 49.7 years (25–88). The treatment protocol was infliximab 5 mg/kg infused as indicated in the Summary of Product Characteristics. The average dose and duration were 393.38 mg (300–585.22) and 4.074 years (1–6), respectively. Previous treatments used were 44.4% topical corticosteroids, 14.8% phototherapy, 18.5% ciclosporin, 44.4% methotrexate, 18.5% adalimumab and 7.4% etanercept.

Regarding treatment effectiveness, 7.4% of patients showed some resistance, 33.33% experienced some outbreaks and 59.2% became totally asymptomatic. The average PASI at baseline was 6.83 (0–50) and 1.9 (0–16) at the end. Intensification of treatment was indicated in 25.9% of patients who changed their infusion from every 8 to 6 weeks. Dose reduction was possible in 7.4% of patients with a dose of 4 mg/kg.

During treatment, 7.4% of patients had lower respiratory tract infections, 7.4% tonsillitis and 3.7% herpes zoster.

Conclusion

- Most of the patients had a good response to treatment. Infliximab should be considered in patients who have failed to respond to, have a contraindication for, or are intolerant of, other systemic treatments.
- Some of the patients developed infections. Risks and benefits of infliximab must be carefully considered prior initiating treatment in patients with chronic or recurrent infections.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

CP-131 REVIEW OF NEUTROPENIC FEVER AND MUCOSITIS IN PATIENTS UNDERGOING PERIPHERAL BLOOD STEM CELL TRANSPLANTATION

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Background Peripheral blood stem cell transplantation (PBSCT) has reduced morbidity and mortality and it is probably one of the most important of the autologous transplantations.
Purpose The objective is to describe the complications (neutropenic fever and mucositis) and progress observed in haematological patients undergoing a PBSCT.
Material and methods Observational, descriptive and retrospective study carried out during 2013 in a 500-bed university hospital. All patients undergoing a PBSCT were included in the study.

Two different groups were established, depending on the conditioning regime administered, depending on the usual clinical practice.

- Group A: Patients treated with BCNU, etoposide and cytosine arabinoside and melphalan (BEAM)
- Group B: Patients treated with melphalan

Data collected included: sex, age, types of conditioning regimen, NF and mucositis during the bone marrow aplasia phase, as well as the patients' situation three months after the PBSCT.
Results During the bone marrow aplasia phase patients presented neutropenic fever and mucositis (Table 1).

Three months after the PBSCT, nine patients in group A presented a complete response, two patients partial response, and one patient success. In group B, ten patients presented complete response and one patient partial response.

Abstract CP-131 Table 1

	Number of patients Group A	Number of patients Group B
1. Neutropenic fever	10	11
1.1. No microbiological isolation	7	10
1.1.1. Non-persistent	5	7
1.1.2. Persistent	2	3
1.2. Microbiological isolation	3	1
1.2.1. Bacteraemia	2	1
2. Mucositis	11	9
2.1. Required parenteral nutrition	7	4

Conclusion Most of the patients undergoing a PBSCT presented neutropenic fever and mucositis. Eight of them required an antimicrobial treatment of high complexity and 11 required parenteral nutritional support.

Three months after the PBSCT, the number of complete responses in group B was superior to those in group A.

REFERENCES AND/OR ACKNOWLEDGEMENTS

I wish to acknowledge the help provided by the pharmacy members.

No conflict of interest.

CP-132 IMPACT OF IMPLEMENTING A CARBAPENEM STEWARDSHIP PROGRAM

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Background A carbapenem stewardship program was developed by a multidisciplinary team of specialists in Infectious Diseases, Critical Care, Pharmacy, Microbiology and Preventive Medicine. It expects to promote and improve the appropriate use of carbapenems.
Purpose To analyse the stewardship recommendations regarding the use of carbapenems.
Material and methods This prospective study lasted four months (May–August 2014) and was conducted in a tertiary hospital. The stewardship pharmacist selected patients who started carbapenem treatment, then a medical infections specialist recommended continuing or not with carbapenems, at the beginning and on the fifth and the tenth days of treatment, through oral and/or written communication with the prescriber. Resuscitation and paediatric patients were excluded. The variables analysed were: number and timing of interventions; type of recommendations and level of acceptance; cost (€) and defined daily dose (DDD) of carbapenems/100 stays of the period studied and compared with the same period last year; impact on other antimicrobials DDD/100 stays index.
Results A total of 210 recommendations were made, of which 69% were at the beginning, 22% on the fifth day and 9% on the tenth day. The recommendations were: antibiotic de-escalation (42%), continuation (38%), suspension of carbapenem (15%) and change of regimen (5%). 89.3% of the recommendations were accepted. Cost and DDD/100 stays of carbapenems were reduced by 63% and 58% over the same period in 2013. Regarding other antimicrobials, we must highlight the increase of DDD/100 stays for cloxacillin (74.6%) and piperacillin/tazobactam (27.4%) over the same period in 2013.
Conclusion The implementation of the carbapenem stewardship program has identified more than 60% of carbapenem prescriptions that could be improved. The high level of acceptance of recommendations has significantly reduced the use of carbapenems because many inappropriate treatments were suspended and the use of narrow-spectrum antimicrobials increased. In future analyses, the impact on the Hospital's resistance profile should be considered.

REFERENCES AND/OR ACKNOWLEDGEMENTS

1 SEFH

No conflict of interest.

CP-133 NAME PATIENT PROGRAM WITH SILTUXIMAB IN MULTICENTRIC CASTLEMAN'S DISEASE: A CASE REPORT

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Background Multicentre Castleman's disease (MCD) is a rare lymphoproliferative disorder driven by dysregulated interleukin-6 (IL-6) production. MCD can be associated with human immunodeficiency virus (HIV) and Herpes Virus 8 (HHV8) infections. Siltuximab is a chimeric monoclonal antibody with high binding affinity for IL-6, blocking the abnormal growth of immune cells. Siltuximab was designated an orphan drug on November 2007. FDA (April 2014) and EMA (May 2014) approved siltuximab in subjects with HIV-negative, HHV8-negative MCD. In Italy siltuximab can currently only be requested as part of a named patient program (NPP), supplied free of charge by the manufacturing company.
Purpose To describe a case report and analyse current treatment options for MCD and the safety profile of siltuximab.
Material and methods We examined siltuximab treatment prepared by the Pharmacy from February to September 2014.
Results One 65-year-old man, 107 kg, was diagnosed with MCD in our centre and treated with siltuximab 11 mg/kg IV every 3 weeks for 10 cycles with a good response. A computed tomography (CT) check showed reduction of mediastinal nodal enlargement **without** new disease locations. Siltuximab was well tolerated and demonstrated a consistent safety profile.
Conclusion Current results strongly suggest that siltuximab, the first drug approved for MCD, is effective and safe. Further studies are needed in order to confirm the validity of these results.

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No conflict of interest.

CP-134 ANALYSIS OF STRUCTURED AND COMMENTED INDIVIDUALISED DRUGS REVIEWS MADE BY HOSPITAL PHARMACY DEPARTMENT

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Background Structured and commented reviews (SCREVs) are individual assessments for drugs not included in the Pharmacotherapeutic Guide (NIPG) and off-label drugs requested by prescribers, in order to approve their use.
Purpose To describe the SCREVs performed and to estimate the financial impact of the pharmacy recommendations.
Material and methods A three-year retrospective descriptive study was designed with SCREVs performed in this period. SCREVs contained information about indications (NIPG or off-label), efficacy, safety, convenience, costs, including alternatives and cost/utility analysis, with a limit of €40,000/QALY. The final pharmacy recommendation included A (approval), B (conditional approval), C (refusal) or D (non-opposition with negative opinion). In case C the savings achieved using the average treatment time were estimated. In case D the effectiveness and the financial impact associated with the use of the drug were calculated.
Results 48 SCREVs were analysed: 17 off-label and 31 NIPG. The highest number of requests came from Oncology (48%). The pharmacy recommendations were: 16.6% A, 54.2% B, 18.75% C and 10.45% D.

Abstract CP-134 Table 1

SCREV	A	B	C	D
N = 48	(Approval)	(Conditional	(Refusal)	(Negative
	16.6%	approval)	*18.75%*	opinion)
	N = 8	*54.2%*	**N = 9**	*10.45%*
		N = 26		**N = 5**
€40,000/QALY	**N = 2**	**N = 8**	**N = 8**	**N = 1**
	Not	Not		
	calculated:	calculated:		
	N = 6	N = 10	Lower	Not
		Lower cost:	cost:	calculated:
		N = 8	N = 1	N = 4
No alternative treatments	**N = 3**	**N = 13**	**N = 0**	**N = 2**

The savings achieved with recommendation C were €229,324. The financial impact of recommendation D (all of them offered to the patients before request) was €63,447. Their effectiveness measured by overall survival (OS) and progression-free survival (PFS) were OS < 2 months, PFS < 5 months in all cases.
Conclusion Individual SCREVs were useful for taking complicated decisions about off-label and NIPG drugs use at the hospital, with important savings achieved. More than half of the drugs requested were approved with adjusted conditions of use. The cases with negative pharmacy opinions showed low effectiveness.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Authors

No conflict of interest.

CP-135 PREVENTION AND TREATMENT OF CHEMOTHERAPY-INDUCED NAUSEA AND VOMITING IN BREAST CANCER PATIENTS

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Background Pharmacists prescribe and monitor, in consensus with Oncology, individualised Post-Chemotherapy antiemetic regimes for all patients in our Hospital.
Purpose To evaluate the quality and the acceptance of the antiemetic treatment prescribed to breast cancer (BC) patients in the last five years.
Material and methods Retrospective observational study of BC patients treated with standard chemotherapy who received antiemetic treatment between 2008 and 2013. Depending on the emetogenic potential (EP) of the chemotherapy scheme, the pharmacist assigned and explained to the patient/family the most suitable antiemetic regime as:

- Low EP: metoclopramide 10–20 mg tds as needed (PRN).
- Moderate EP (Kit-1): dexamethasone 4 mg tds 2 days, then 4 mg bid 2 days, then 4 mg od 2 days, and metoclopramide 10–20 mg tds PRN.

- High EP (Kit-3): Kit-1 plus granisetron 1 mg in the evening following chemotherapy.

If the patient had no emesis on the previous cycle, the regime was reduced, but if nausea/vomiting were felt, the regime was stepped up. Patient/family was always involved in treatment decisions. Patient data, prescriptions and monitoring were collected from the Oncofarm application and Pharmacy Database and analysed using SPSS.

Results 93 BC patients (all female) received a total of 400 chemotherapy cycles. 357 antiemetic prescriptions were dispensed, so 89.25% of the time a patient received chemotherapy, came to pharmacy for antiemetic drugs. 87.3% of anti-emesis patients started with Kit-3, and 12.9% with kit-1. Antiemetics were reduced in 63.4% of patients, 15.1% continued with the same regime and 21.5% required reinforcement: taking metoclopramide around-the-clock (16.1%), stepping up from kit-1 to kit-3 (3.2%) or adding lorazepam due to anticipatory nausea/vomiting (2.2%).

Conclusion The large number of antiemetic prescriptions states the good acceptance from patients of the healthcare provided by the pharmacy. Progressive reduction of antiemetics in more than 60% of patients shows the good control and monitoring of nausea/vomiting with the antiemetic treatment prescribed.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-136 INAPPROPRIATE PRESCRIBING IN OLDER PATIENTS: ASSESSMENT OF A SCREENING TOOL BASED ON THE STOPP AND START CRITERIA

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Background Inappropriate prescribing is a problem of major concern in older patients, given the increased risk of adverse drug events and mortality. In this context, a 24-item tool based on the Screening Tool for Older Person's Prescriptions (STOPP) and Screening Tool to Alert doctors to Right Treatment (START) criteria[1] was developed and applied in the geriatric unit.

Purpose To find out whether the implementation of this screening tool led to a reduction in potentially inappropriate medicines (PIMs) and potential prescribing omissions (PPOs) during the hospitalisation.

Material and methods We conducted a retrospective interrupted time series analysis. Four periods were selected between February and September 2013: (1) baseline evaluation; (2) the tool was made available in the unit; (3) three months later; and (4) a clinical pharmacist held weekly meetings with interns to review treatments using the tool, which was incorporated in the electronic medical record. Data were collected from the discharge letter. The primary outcome was the rate of PIMs discontinued and PPOs corrected during hospitalisation.

Results 120 patients (median age 85 years) were included. The prevalence of PIMs and PPOs on admission were 56% and 51% respectively. At baseline (period 1), one fifth of PIMs were discontinued during hospitalisation while 22% of PPOs were corrected. The reduction in PIMs and amendment of PPOs increased when the screening tool was made available in the unit (period 2; 26% and 38% respectively), but three months later this effect had disappeared (period 3; 15% and 19% respectively). We observed the greatest reduction in PIMs and PPOs for the last study period (period 4; 58% and 43% respectively).

Conclusion The use of a screening tool contributes to improving appropriateness of prescribing in older patients. A multidisciplinary approach provides the greatest reduction in PIMs and PPOs.

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No conflict of interest.

CP-137 IMPACT OF THE PHARMACIST IN THE OPTIMISATION OF ANTIRETROVIRAL TREATMENT IN HIV PATIENT CONSULTATIONS

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Background HIV is an expensive disease. Therefore, multidisciplinary collaboration is essential to improve treatment efficiency.

Purpose To evaluate the impact of the integration of a pharmacist in HIV consultations to optimise antiretroviral treatment (ART).

Material and methods Quasi-experimental prospective study in HIV patients with ART in a university hospital. The resident pharmacist was integrated in the HIV specialist consultations for one month (October 2013). Viral load (VL), CD4, duration and treatment lines, resistances and comorbidities were evaluated. The pharmacist reviewed the ART and possible switches to optimise it in order to reach the pharmacoeconomic indicator set by the Health System in 2013 (683 euros/month per patient). Costs were assessed using ex-factory prices.

Results 70 patients (75% male) were included, mean age 47 (range 28–73) years old. 9 patients had detectable VL (VL ≥ 50 copies/ml): 4 non-adherent (adherence < 90%), 2 treatment-naive patients, 2 blips and 1 resistant to ART. Mean CD4 cell count was 583 (49–1.484)/mm^3. Regarding ART, 5 patients were on monotherapy, 4 dual therapy, 59 triple therapy and 2 with four drugs. Monthly drug costs per patient were between 358 and 1,483 euros.

40% (28 patients) did not reach the pharmacoeconomic indicator goal. Of them, after the pharmacist's intervention, in 18% (5 patients) one ART drug was modified or suspended and in 32% (9 patients), although the interventions were accepted, the ART changes depended on the next blood test. In the other 50% (14 patients), a change was not appropriate: 6 low adherence, 2 on treatment less than 6 months, 2 psychiatric conditions, 2 resistant patients and 2 HBV co-infections. The drug savings due to the pharmacist's interventions were 14,615 euros/year in our hospital.

Conclusion The inclusion of the pharmacist for a month, extrapolated to the total of patients on ART in our hospital (661 patients), would yield annual drug savings of €138,005. Therefore, pharmacist integration into the medical team improves ART efficiency.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

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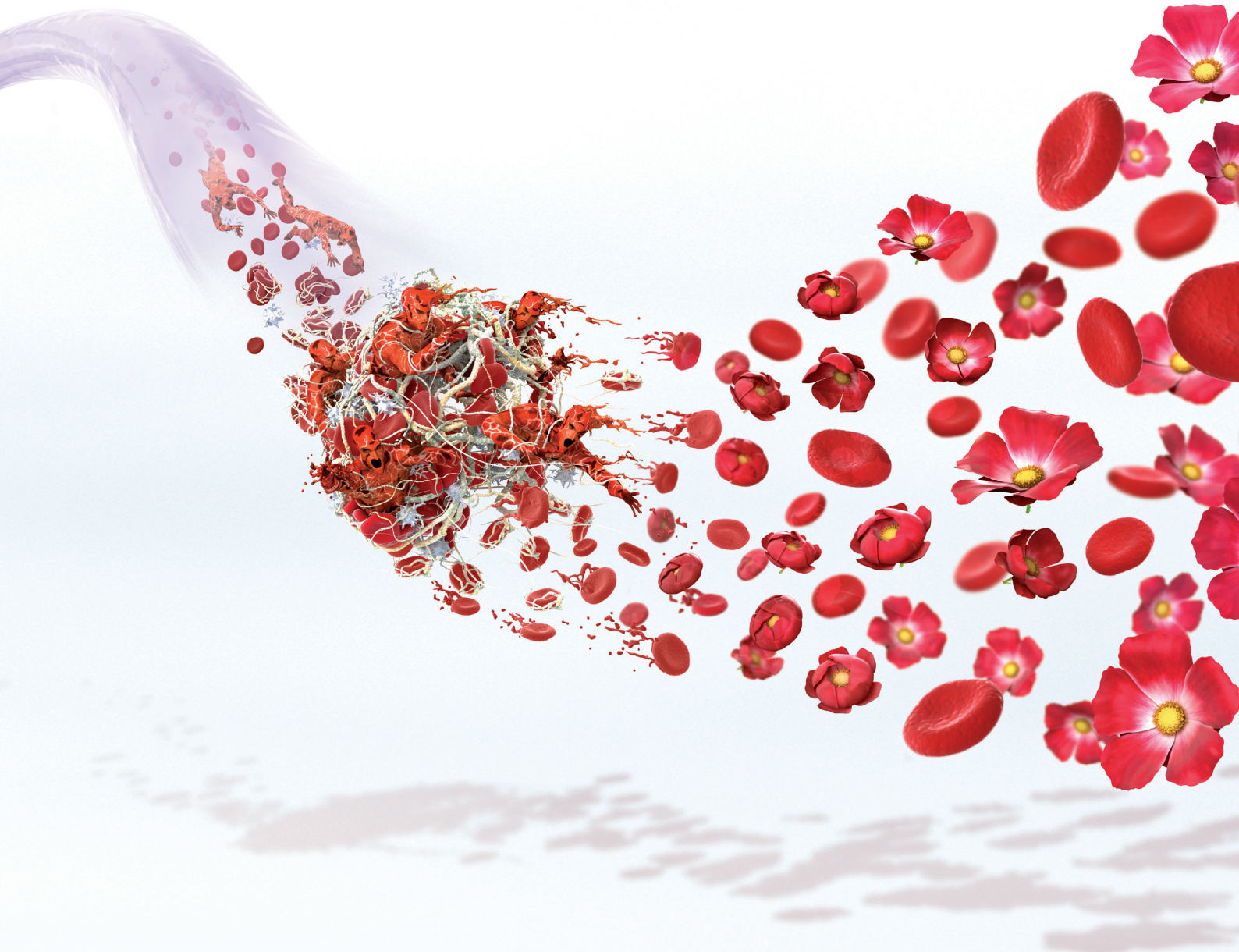

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CP-138 SUCCESSFUL OFF-LABEL USE OF ELTROMPOBAG IN PREGNANT WOMAN WITH CONGENITAL THROMBOPENIA

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10.1136/ejhpharm-2015-000639.137

Background Congenital thrombopenia is a rare disease. We report the case of a pregnant 25-year-old woman, suffering from a new form of severe congenital thrombopenia due to an autosomal recessive mutation in the PRKACG gene, found in 2014. The patient was advised not to plan such a high-risk pregnancy. A medical termination of pregnancy was rejected by the couple.
Purpose To report the off-label use of eltrombopag in a pregnant woman with congenital thrombopenia, allowing reaching a suitable platelet count for a safe delivery (vaginal birth: 30–50 G/L, caesarean: 50 G/L), scheduled at 35–37 weeks of amenorrhea (WA).
Material and methods Several off-label drugs were successively tested: intravenous immunoglobulin G (1 g/kg/day), and two thrombopoietin receptor agonists, romiplostim by the subcutaneous route (250 μg/week) and eltrombopag by oral route (50 to 125 mg daily). A multidisciplinary committee including haematologists, internists, obstetricians, pharmacists and pharmacologists from the Centre for Teratogenic Agents took the decision based on a risk-benefit approach. Twice-monthly platelet counts were performed and the dose was adjusted accordingly.
Results Intravenous immunoglobulin G showed an initial efficiency, raising the platelet count up to 115 G/L, but a relapse was observed after 1 month. This treatment was replaced by romiplostim, 6 months before pregnancy. Romiplostim stabilised the platelet count (275 G/L) until 6 WA and then lost progressively its effectiveness. The change to eltrombopag occurred at 20 WA. Platelet count increased up to 335 G/L at 24 WA and decreased gradually while keeping enough platelets until delivery. The patient gave birth by caesarean at 35 WA and 2 days, without haemorrhagic complications and platelet count was 80 G/L. The newborn was not affected by the disease.
Conclusion Eltrombopag was the most effective treatment in the management of this patient's thrombopenia and it enabled a high-risk pregnancy to achieve a successful outcome.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-139 EFFECT OF CANCELLING ELECTIVE CARDIOVERSION AND CATHETER ABLATION IN PATIENTS WITH ATRIAL FIBRILLATION

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Background Electrical cardioversion (ECV) and catheter ablations are elective non-pharmacological approaches that aim to restore sinus rhythm (SR) in atrial fibrillation (AF) patients. Patients require anticoagulation peri-procedurally to prevent thrombo-embolic events.
Purpose To evaluate the reasons behind procedure cancellations in patients with AF and investigate the impact on patient outcome post-procedure, including its association with procedure waiting time and cost.
Material and methods A retrospective service evaluation was conducted at a UK teaching hospital. Appointments for ECV and ablation procedures from August 2012 to August 2013 were studied; 72 patients (cancellation group) experienced cancellations and 89 patients (control group) experienced none. 'Electronic Patient Records' and 'TOMCAT' software were used to obtain data. For the Mann-Whitney U and chi-squared tests, $p < 0.05$ was considered significant.
Results Of the 98 reasons identified for cancellations, high and low international normalised ratio (INR) ranges were the most common at n = 14 (14%) and n = 12 (12%), respectively. Patients who experienced a longer waiting time were more likely to experience subsequent cancellations ($p = 0.006$); more patients from the cancellation group breached the 18-week target waiting limit ($p < 0.001$). Procedure cancellations showed no significant impact on reaching sinus rhythm or experiencing recurrences of arrhythmia ($p = 0.946$) however a total loss in revenue resulted of around €215,000.
Conclusion Prescribing direct-acting oral anticoagulants (DOAC) may prevent INR-related cancellations and this is an expanding area of use. Post-marking surveillance is still ongoing but the risk of poor patient adherence to treatment and post-procedure bleeding needs to be balanced with the potentials gains to the hospital department.

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No conflict of interest.

CP-140 IMPLEMENTATION OF ANTIBIOTIC TREATMENT PROTOCOLS IN THE ICU: RESULTS AFTER A YEAR

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Background In 2012, treatment protocols were agreed for the most common infections (pneumonia, urinary tract, bacteraemia and intra-abdominal catheter), approved by the relevant Committees and implemented in the Intensive Care Unit (ICU).
Purpose This study aims to assess the impact on mortality, the financial situation and the profile of antimicrobial prescribing in the ICU before and after implementing the protocols.
Material and methods Retrospective observational study comparing 2012 with 2013.

The average cost of drugs was used for the financial assessment; we did not include associated indirect costs, nor the possible variation between the number of stays.

The number of defined daily doses per 100 admissions (DDD/100 BD) was used to assess the prescription profile. DDD/Total 100 bed days were calculated, including all antimicrobials of the J01, J02 and J03 groups, and antimicrobials considered particularly relevant: carbapenems (imipenem and meropenem), linezolid, daptomycin, tigecycline and echinocandins (caspofungin and anidulafungin).
Results The overall antimicrobial consumption was reduced by 17.3% (221.5 vs. 183.2 DDD/100 BD) and costs decreased by 23.9% (€257,476 vs. €195,891).

The consumption of all antimicrobials studied reduced in 2013: 17.4% carbapenems (36.99 vs. 30.55 DDD/100 BD), linezolid 38.6% (3.76 vs. 2.31 DDD/100 BD), daptomycin 82.2% (2.86% vs. 0.51 DDD/100 BD), tigecycline 64.9% (4.98 vs. 1.75 DDD/100 BD) and echinocandins 13.8% (3.61 vs. 3 11 DDD/100 BD).

ICU mortality was 12.8% in 2012 and 10.9% in 2013.

Conclusion Antibiotic treatment protocols in the ICU have resulted in significant antibiotics savings, not only in financial terms but also in number of doses, without increasing mortality. This effect may be relevant to the need to optimise their use in order to prolong their useful life and reduce the selection of resistant organisms. In turn, protocols might be useful to reduce the variability of prescriptions.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-141 BOSENTAN TREATMENT FOR AUTOIMMUNE DISEASES

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Background Bosentan, an orphan drug, is a dual endothelin receptor antagonist indicated in pulmonary hypertension and in the prevention of new digital ulcers (DU) in patients with systemic sclerosis and ongoing digital ulcer disease.

Purpose To evaluate the effectiveness and safety of bosentan in the treatment of clinical manifestations associated with underlying autoimmune disease (Raynaud's phenomenon (RP), DU and other location skin ulcers (SU)), all of them considered rare diseases.

Material and methods Retrospective observational study including patients treated with bosentan from January 2012 to September 2014, on compassionate use.

Variables collected were: sex, age, underlying disease, indication, previous treatments, dose and follow-up time.

Effectiveness was evaluated as: absence of new ulcers, improvement of the basal ulcers and decrease in the number of RP episodes.

The safety profile was determined according to the adverse reactions.

Results 14 patients were included; follow up (median, range): 22 (2–55) months; sex: 10 (71%) female; age: 52 (25–81) years.

All of them had previously been treated with first-line treatment until resistance or intolerance had developed.

In 11 cases bosentan was indicated to treat RP and prevent/treat DU (4 systemic sclerosis, 3 pre-systemic sclerosis, 2 systemic lupus erythematosus (SLE), 1 dermatomyositis and 1 Buerger´s disease. Getting the next results: 63.6% effective (7), 18.2% ineffective (2) and 18.2% could not be evaluated.

In the other 3 cases, bosentan was used to treat other location SUs (1 polyarteritis nodosa,1 SLE and 1 necrobiosis lipoidica) with 100% effectiveness.

The treatment was discontinued in two cases due to digestive intolerance. In another two cases, the dose was adjusted as a consequence of an initial increase in the hepatic enzymes.

Conclusion Bosentan may be considered an appropriate alternative in these diseases which have been refractory to conventional treatment. The number of patients is limited due to the low prevalence of these diseases and to the off-label use of the drug. Therefore, it could be said that value of research lies in the possibility of opening new therapeutic perspectives with this drug.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-142 BIOLOGICAL TREATMENTS FOR PSORIASIS: FINANCIAL IMPACT OF DOSE MODIFICATION

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Background Biological drugs are effective treatments for chronic plaque psoriasis. The doses tend to be reduced when the drug has demonstrated sustained effectiveness.

Purpose The main objective was to assess the average cost per patient of each anti-TNF drug based on its prescribed doses. The secondary objective was two-fold: to estimate the annual costs per responder and the incremental cost.

Material and methods A cross-sectional observational study was conducted from January to June 2014. Patients with psoriasis who had received biological treatment for at least six months were included. The effectiveness endpoint was the proportion of patients with at least 75% improvement in the psoriasis area-and-severity index (PASI75). Mean prescribed doses of each anti-TNF drug were calculated and translated into a percentage of the label doses. The average cost per patient for each drug was assessed with the mean prescribed doses (real costs, RC) and the theoretical costs (TC) were estimated based on the label doses of the drugs. The incremental cost (IC) was calculated by comparing the theoretical vs. real costs. For the purpose of calculating the annual costs, the real costs of six months of treatment were extrapolated. This study was performed from the pharmacoeconomic perspective of the hospital.

Results We included 143 patients.

Abstract CP-142 Table 1

	Adalimumab (N = 45)	Etanercept (N = 44)	Ustekinumab (N = 32)	Infliximab (N = 22)
Cost per patient based on the doses prescribed	€4,777.06	€4,722.38	€5,337.34	€6,546.82
Cost per patient based on its label doses	€6.245.72	€5.788.19	€5,689.02	€6,546.82
Proportion of patients with PASI75	98%	90%	90%	100%
Estimated annual real costs per responder	€9,771.27	€10,389.24	€11,778.95	€13,093.65
Estimated TC	€12,491.44	€11,576.38	€11,378.05	€13,093.65
Estimated RC	€9,554.13	€9,444.76	€10,674.68	€13,093.65
IC	€-2,937.30	€-2,131.62	€-703.36	0€

Conclusion The average RC of each biological drug was lower than TC, except for infliximab. Both the annual RC and the IC of adalimumab were better than the other drugs, followed by etanercept and ustekinumab. Infliximab did not allow dose reduction. Reducing doses of biological treatments permits cost minimisation while maintaining clinical effectiveness.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-143 INVOLVEMENT OF MICROBIAL FLORA IN AETIOLOGY OF SURGICAL SITE INFECTIONS

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Background The most common complications of surgical wounds are abscesses and necrosis.
Purpose To establish the aetiology of surgical wound infections in post-surgery patients from the hospital and to assess the resistance of the germs isolated to antimicrobials. Variations in antibiotic resistance profile in relation to the type of suppuration and surgical wards were compared in order to establish the most effective therapeutic protocols.
Material and methods From 165 hospitalised and ambulatory patients we collected: pus from abscesses/phlegmons, ear, nose and throat suppurations, discharge from superficial and deep surgical wounds. We performed classical bacteriological diagnosis and Kirby Bauer testing.
Results Staphylococcus aureus was isolated in 41.15% of cases, coagulase-negative staphylococci in 4.31% and in the remainder Gram-negative bacilli: Klebsiella spp. (13.88%), *Escherichia coli* (13.40%), Pseudomonas (8.13%), Proteus (6.22%), non-fermentative Gram-negative bacilli (4.78%), Enterobacter (1.91%) and Citrobacter (0.48%).

Staphylococcus aureus was resistant to ceftriaxone (100%), penicillin (91.36%), amoxicillin (83.33%), amikacin (80.00%) and ampicillin (67.92%). *E. coli* strains were resistant to chloramphenicol (100.00%), amoxicillin clavulanate (87.50%) and ampicillin (64.50%). Klebsiella was resistant to ampicillin (100%), amoxicillin clavulanate (87.50%) and amikacin (50.00%). Pseudomonas was found to be highly resistant to cefpirome (87.50%), meropenem (66.67%) and tigecycline (66.67%).

36.84% of all strains were resistant to more than five antibiotics. The average resistance index of strains isolated from the superficial suppurations was higher than those isolated from the deep suppurations (Student's $t = -3.025$, $p = 0.0014$). The resistance index also indicated that the strains isolated from hospitalised patients were more resistant than those from ambulatory patients (Student's $t = -3.4237$, $p = 0.0008$).
Conclusion This study shows the prevalence of multidrug resistant strains in our hospital and their involvement in surgical wound infections. Continuous microbiological surveillance of germs isolated from surgical suppurations and their resistance to antimicrobials is essential for defining antibacterial policies on surgical wards.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-144 ANALYSIS OF THE USE AND EFFECTIVENESS OF PALIVIZUMAB IN A TERTIARY HOSPITAL

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Background Respiratory syncytial virus (RSV) infections can be prevented by good hygiene and prophylactic palivizumab, a monoclonal antibody against the fusion protein of VRS. The criteria for selecting patients for palivizumab prescription in our hospital are: <28 weeks preterm infants (PI) and age <12 months (criterion 1), <32 weeks PI and age <6 months (criterion 2), age <2 years with bronchopulmonary dysplasia (criterion 3), age <2 years with haemodynamically significant congenital heart disease (criterion 4).
Purpose To describe the use of palivizumab in the vaccination campaign in our hospital, evaluating the appropriateness of its use by the established criteria and its effectiveness.
Material and methods We performed a retrospective observational study. All patients who received palivizumab between 01/10/2013 and 31/03/2014 were included. The data collected using the clinical records were: sex, gestational age, selection criteria, and number of hospitalizations due to acute bronchiolitis between 01/10/2013 and 30/09/2014. RSV was analysed in these patients by Polymerase Chain Reaction (PCR).
Results Palivizumab was administered to 68 patients (48.5% female) with a median gestational age of 209 days (176–287). 24 patients (35.3%) fulfilled criterion 2, 14 (20.6%) criterion 1, 10 (14.7%) criterion 4, 5 (7.3%) criteria 1 and 3, 4 (5.9%) criteria 2 and 4, 3 (4.4%) criterion 3, 2 (2.9%) criteria 3 and 4. 4 patients did not meet any criteria and 2 had no data. Only 6 patients who received palivizumab were hospitalised with a diagnosis of acute bronchiolitis and their RSV PCRs were negative.
Conclusion Palivizumab is used under the established criteria in our hospital. The study data show that immunising these at-risk patients with the palivizumab vaccine was an effective strategy for at least one year. Although the study period was 1 year, it would be desirable to measure effectiveness over a longer period.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-145 EFFECT OF A TRAINING INITIATIVE TO IMPROVE ADHERENCE TO THE RECOMMENDATIONS FOR THERAPEUTIC MONITORING VANCOMYCIN EFFECT OF A TRAINING INITIATIVE TO IMPROVE ADHERENCE TO THE RECOMMENDATIONS FOR THERAPEUTIC MONITORING VANCOMYCIN

[1]C Gallego Muñoz*, [1]M Domínguez Cantero, [1]M Rodríguez Mateos, [1]MV Manzano Martin, [1]I Moyano Prieto, [2]F Guerrero Sánchez, [1]F Suárez Carrascosa, [1]G Blanco Sánchez, [1]F García Martín, [1]R Bulo Concellón. *[1]Hospital Universitario Puerta Del Mar, Pharmacy Department, Cádiz, Spain; [2]Hospital Universitario Puerta Del Mar, Infectious Disease Department, Cádiz, Spain*

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Background Up to 50% of antibiotic treatments prescribed have been estimated to be incorrect.[1] This is probably caused by the high level of knowledge required for the appropriate use. Training may be a way to improve antibiotic use.
Purpose To analyse the impact of training on the correct use of trough vancomycin plasma concentrations as a tool for monitoring effectiveness and safety in a teaching hospital.
Material and methods The training was conducted by disseminating local antibiotic guidelines including the recommendations contained in the consensus document on therapeutic monitoring of vancomycin.[2] A before-after study was conducted comparing before the training period (January–April 2012) with a later

period (September–December 2013). We selected patients treated with vancomycin and we collected data on duration and concomitant treatment, demographic variables, serum creatinine before and during treatment. Creatinine clearance was calculated by MDRD-4, considering impaired renal function ?? <80 ml??/min. To compare the two periods the McNemar-Bowker test (SPSS v.15) was used.

Results 85 patients were treated with intermittent infusion of vancomycin, 30 patients before vs. 45 after the training. The median age was 66 vs. 65 years. Mostly men, 70% vs. 55.6%. Median days of treatment were 7 [7 (1–46) vs. 7 (1–24)]. No levels were requested in 90% vs. 73.3% for the two periods, which met one or more criteria; monitoring was 63% vs. 51.1%, no statistically significant difference (p = 0.379). The criterion of more than five days duration was 100%; monitoring was 86.9% in both periods.

Conclusion The implementation of an educational activity did not meet expectations in terms of an increase in adherence to recommendations. *It is necessary to intensify these training activities and the role of the clinical pharmacist on the usefulness and advantages of monitoring vancomycin, particularly during prolonged treatment.*

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No conflict of interest.

CP-146 THE PHARMACOTHERAPEUTIC MANAGEMENT OF PARAPNEUMONIC PLEURISY

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Background Confirmation of infectious aetiology of pleurisy requires a complete microbiological diagnosis. An antibiogram is mandatory for correct and effective treatment.

Purpose To investigate the resistance pattern of the flora involved in parapneumonic pleurisy.

Material and methods We attempted to identify possible causative organisms and their sensitivity to antibiotics in the pleural fluids collected from 150 patients hospitalised between 01.05.2010 and 01.05.2014.

Results In 43.33% of pleural fluids germs were detected such as: Pseudomonas spp., anaerobic bacteria, non-fermentative Gram negative rods, Staphylococcus aureus, MRSA, Escherichia coli, Klebsiella, Streptococcus pyogenes, Enterococcus, Candida albicans.

Pseudomonas strains were 100% resistant to ampicillin, amoxicillin, cefpirome, ceftriaxone (91.67%), penicillin (90.00%), cefuroxime (87.50%), ceftazidime (85.00%), amoxicillin with clavulanic acid (75.00%), gentamicin (73.33%) cefepime (71.43%), teicoplanin (9.09%) and linezolid (11.11%).

Staphylococcus aureus was 100% resistant to ampicillin, amoxicillin, amoxicillin with clavulanic acid, cefuroxime, cefepime, cefpirome (90.91%), ceftriaxone (87.50%), ceftazidime (87.50%), penicillin (80.00%), amikacin (11.1%) and rifampicin (20.00%). No resistance to linezolid, teicoplanin or piperacillin with tazobactam was observed.

Non-fermentative Gram-negative rods were 100% resistant to ampicillin and amoxicillin, cefuroxime (90.91%), cefpirome (88.89%), amoxicillin with clavulanic acid (75.00%), ceftriaxone (75.00%). We found low resistance to piperacillin with tazobactam (20.00%), amikacin (25.00%), and tigecycline (33.33%).

Klebsiella pneumoniae was 100% resistant to ampicillin, amoxicillin, clavulanic acid, amoxicillin, ceftazidime, gentamycin, cefpirome, cefuroxime, penicillin (75.00%), rifampicin [JM1] (75.00%), oxacillin (66.67%), tigecycline (66.67%). All strains were 100% susceptible to linezolid, meropenem and teicoplanin.

These resistance patterns show the nosocomial potential of these strains.

In the evolution of pleurisy, especially due to Pseudomonas, there was a correlation between prolonged hospitalisation and rapid development of resistance to drug treatment once it has started.

Conclusion It is recommended to research and evaluate the effectiveness of strategies to prevent the emergence of microbial strains resistant to drug treatment in the case of parapneumonic pleurisy.

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[JM1]

No conflict of interest.

CP-147 METASTATIC BREAST CANCER: COST ANALYSIS AND SUSTAINABILITY OF TREATMENT WITH ERIBULIN IN MULTI-TREATED PATIENTS

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Background The prognosis for metastatic breast cancer is unfavourable but the treatments available today allow us to control the development of the disease. Eribulin is approved for use in pretreated patients. Eribulin has shown to increase OS by 2.5 months and PFS by 1.5 months compared to other drugs, contributing to the OS.

Purpose To make a pharmacoeconomic analysis of new therapeutic options from a hospital perspective.

Material and methods We analysed the treatment of patients treated in the 3rd and 4th line for metastatic disease. PFS, average cost of treatment (drug cost) per patient, per cycle were calculated. We assumed reimbursement by the pharmaceutical company in accordance with the arrangements negotiated with AIFA equal to 100% of the cost of the vials for patients who did not respond within the first 3 months of treatment.

Results Treatment for these patients cost €121,859.8. The average cost of treatment per cycle was €1,934.28, for each patient in our sample and totalled €9,373.83. Considering the PFS, the average cost of a day's PFS was equal to €83.64. Evaluating the repayments by the pharmaceutical company, they amounted to €22,992.4 for non-responding patients. Payment was according outcome, the average cost per patient was reduced to €7,605.2 (a reduction of €1768.6), the cost per cycle was reduced to €1,569.32 (a reduction of €364.9) and the net cost for each day of progression-free survival was €67.86 (a reduction of €15.78).

Conclusion This therapeutic opportunity in pretreated metastatic patients on their III/IV line of treatment, is missed by a

high percentage of non-responding patients who already died before this point. Pay By Result, helping to make the cost of treatment more sustainable for the NHS, offers responding patients another chance. Using left-over drug prepared for other treatments when it has been shown to be microbiologically and physicochemically stable, contributes to reducing the government's spending on pharmaceuticals by enabling greater sustainability of treatment.

REFERENCES AND/OR ACKNOWLEDGEMENTS

1 Eribulin SPC

No conflict of interest.

CP-148 SURVIVAL BENEFIT WITH LENALIDOMIDE AND DEXAMETHASONE IN PATIENTS WITH MYELOMA: AREA UNDER THE CURVE-BASED REANALYSIS

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10.1136/ejhpharm-2015-000639.147

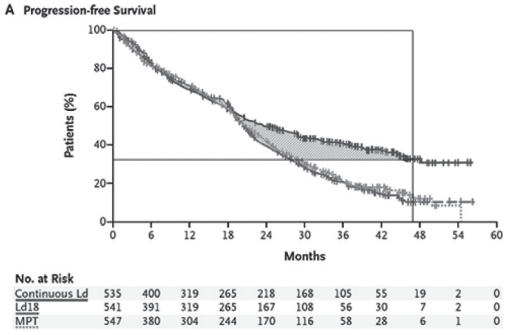
Background Benboubker *et al*. recently reported the results of lenalidomide + dexamethasone (Ld) in transplant-ineligible patients with melanoma versus the standard treatment, with a difference between medians of 4.3 months in progression-free survival (PFS). Nevertheless, as seen in the shape of the curves, difference in median survival (DMS) may not provide a good estimate of the survival benefit.

Purpose To reanalyse the survival benefit of lenalidomide from the PFS curves using an area-under-the curve (AUC)-based method.

Material and methods Kaplan-Meier PFS and OS curves were extracted from Benboubker *et al*.'s article. Graphical AUC methods were applied to continuous Ld vs. standard treatment curves and compared to DMS. The AUC was calculated according to a previously published method.[1] Vertical cutting lines at the tail ends of the graphs were made based on the number of patients at risk. It was agreed that this cut-off point was defined as placing at least 10 at-risk patients in each group or 30 in total. The AUC method quantified the difference between areas, and the results were expressed in time units. Photoshop-CS6 was used for graphical AUC calculation.

Results AUC-based reanalysis of PFS curves included 67.5% patients with 47 months of follow-up, at least 30 patients remaining at risk. PFS was 17.0 vs. 14.3 months, a benefit of 2.7 months in favour of continuous Ld. For OS, with 43.5% patients analysed and 50 months of follow-up, the AUC method showed a benefit of 5.3 months (25.5 vs. 20.2).

Conclusion AUC-based analysis showed a shorter survival benefit than the difference in median survival. This is probably related to the shape of the curves, which diverged at the medium zone of the graph. OS reanalysis is very limited because the observation time is insufficient to provide mature data.



Abstract CP-148 Figure 1

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No conflict of interest.

CP-149 INFLUENCE OF CLINICAL TRIALS ON THE CONSUMPTION OF ANTIBIOTICS IN HOSPITAL

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Background Defined daily dose per 100 occupied bed-days (DDD/100 OBD) is a quality indicator used for controlling antimicrobial use in the hospital setting. Information is lacking about the impact of clinical trials (CT) focused on infectious diseases in the overall consumption of antimicrobials.

Purpose To assess the impact of the antibiotic consumption (AC) from CT performed in Infectious Diseases (ID), General Surgery (GS) and Intensive Care Unit (ICU) departments on the AC of these settings.

Material and methods Retrospective study performed in an university hospital from June 2012 to April 2014. Data collected: Nº CT with antibiotics in ID, GS and ICU wards; number of patients for each CT. Overall DDD/100 OBD of AC from the hospital and CTs were calculated and compared for each department by means of the standard WHO formula.

DDD/100 OBD for investigational drugs were estimated from the available antibiotics used as comparators.

Results Nº CT:5. ID:3, GS:1 and ICU:1. Nº patients: ID:18, GS:6 and ICU:1.

Abstract CP-149 Table 1

	DEPARTMENT			
		DDD/100		
ANTIBIOTIC		OBD	PROPORTION	
		CT	HOSPITALCT	HOSPITAL
CEFTAZIDIME	ID	0.66	0.74 47.03%	52.97%
	GS	0.09	0.50 15.22%	84.78%
VANCOMYCIN	ID	0.63	2.56 19.83%	80.17%
AZTREONAM	ID	0.25	0.94 20.89%	79.11%
	ID	0.15	5.84 2.52%	97.48%
MEROPENEM	ICU	0.23	16.35 1.37%	98.63%
	GS	0.12	3.03 3.76%	96.24%
METRONIDAZOLE	GS	0.06	12.08 0.49%	99.51%
CIPROFLOXACIN	ID	0.47	3.27 12.66%	87.34%
SULFAMETHOXAZOLE-TRIMETHOPRIM	ID	0.07	3.29 1.97%	98.03%
TOTAL	ID+GS+ICU	2.72	48.59 5.31%	94.69%

Conclusion

- DDD/100 OBD of investigational antibiotics from CT should be added to the overall hospital AC data to avoid an underestimation of the antibiotic selection pressure mainly from ceftazidime consumption.
- This indicator should be also used to calculate more accurately the AC in those departments that conduct a high number of CT like the ID.
- Further studies should be designed to know which actions should be triggered from these results.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

CP-150 INCIDENCE OF LACTIC ACIDOSIS IN PATIENTS TREATED WITH METFORMIN

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Background Metformin is one of the most commonly prescribed drugs for the treatment of type 2 DM. A potential complication of metformin is lactic acidosis (LA). This potential increased risk remains controversial.

Purpose To evaluate the occurrence of LA in type 2 DM patients treated with metformin. To study the prevalence of acute renal failure in these patients and the final outcome.

Material and methods Retrospective observational study in a general hospital. Discharge certificates including codes for LA and DM (ICD–9) during 2013 were classified; we selected those under treatment with metformin.

Exclusion criteria: Patients with decompensated diabetes/ketoacidosis and patients with chronic renal failure.

Results 126 discharge certificates coding LA, DM, and treatment with metformin were classified. 87 of these patients met some exclusion criteria. Among the 39 remaining patients, in 14 of them "LA related to the use of metformin" was specifically described in the discharge certificate.

Distribution in sex and age was 58% men and 81 ± 10 years.

In 100% of the cases acute renal failure was observed.

One patient died, the rest of them were discharged after a median stay of 8 ± 3 days.

According to data provided by the health service, 9,713 patients were being treated with metformin in our area. This equates to an incidence of 14/10,000 patient-years.

Conclusion We found a much higher incidence of LA than that described in the literature. This potentially fatal complication should be avoided by controlling risk factors. We consider education of physicians and patients essential; in this point, pharmacists have an important role.

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2 Misbin RI, Green L, Stadel BV, *et al*. Lactic acidosis in patients with diabetes treated with metformin. *N Engl J Med* 1998;**338**:265–6

No conflict of interest.

CP-151 ANALYSIS OF BIOLOGICAL TREATMENTS ALLOWED BY A LOCAL DERMATOLOGY COMMITTE IN A THIRD LEVEL HOSPITAL

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Background The high economic impact of biologic therapy justifies the need of supervising and monitoring patients treated by the requesting department (Dermatology) and service responsible of dispensing (Pharmacy).

Purpose To analyse biological therapy resolutions submitted by a commission formed by dermatologic experts.

Material and methods Descriptive, retrospective study. Applications emitted by a local commission were reviewed between September 2013 and March 2014.

The variables collected were: treatment suggestion, diagnosis, resolution, therapeutic alternative in case of refusal, PASI (>10 as initial criterium) and BSA (%) at the beginning.

Treatment adherence's was also checked, using dispensations made by pharmacists.

Results 43 applications were collected from 38 patients. 5 were evaluated twice after a previous rejection.

Regarding to applications, 54% were Adalimumab, 19% Ustekinumab, 14% Infliximab, 7% Etanercept, 4% Metotrexate and 2% Infliximab + Metotrexate. Diagnosis included: serious plaque psoriasis (9), moderate-severe (4), severe (21); psoriasis with artropathy (4) severe hidradenitis suppurative (2). This last two requiered an Adalimumab's use which were "off-label".

Nine proposal were rejected: 4 with Adalimumab in serious plaque psoriasis (1), moderate-sever (1), severe (1) and with artropathy (1), 2 with Etanercept in psoriasis and artropathy and 1 Infliximab in serious plaque psoriasis.

In 89% of refusal, a therapeutic alternative was proposed: cyclosporine (2), methotrexate (4) or phototherapy (2). In another one no treatment was proposed.

From the 34 approvals, 25 patients accomplished the PASI criteria greater than 10, 3 did not and 7 did not reveal that information. Checking adherence treatment, 88% of patients continue with their treatment, 6% did not collect medication and another 6% have discontinued therapy due to incompatibility with other pathology.

Conclusion The work made by these experts can help to regulate the use of biological therapies, restricting them to patients for whom there is solid evidence to support its use, and offering a therapeutic alternative in case of refusal. The Pharmacy Service reviews patient progress and adherence treatment, thus promoting rational drug use.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-152 EFFECTIVENESS AND SAFETY OF BRENTUXIMAB IN HODGKIN'S AND NON-HODGKIN'S LYMPHOMA

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Background Brentuximab vedotin (SGN-35) is a treatment option for patients with relapsed or refractory Hodgkin's lymphoma (HL) and systemic anaplastic large-cell lymphoma (ALCL), with only two phase II studies.
Purpose To evaluate the effectiveness and safety of SGN-35 in patients with relapsed or refractory HL and ALCL.
Material and methods Type of study: retrospective observational cohort study.

Inclusion criteria: patients with relapsed or refractory HL and ALCL, treated with SGN-35 in monotherapy from 05/2012 to 09/2014.

Variables: age, sex, type of lymphoma, stage and International Prognostic Index (IPI score); number of prior courses of chemotherapy, autologous stem-cell transplantation (auto-SCT) and clinical response to prior treatment; number of cycles, dose reductions, clinical response according to the Revised Response Criteria for Malignant Lymphoma: complete remission (CR), partial remission (PR), stable disease (SD) and progressed disease (PD). Incidence and severity of side effects (CTCAE v4.03 criteria).
Results We included 5 patients (3 women, 2 men) aged 47 (30; 52) years. 4 patients suffered from HL, stages II-A, II-B, III-A, IV-B, and 1 ALCL stage IV-A. The IPI score was: III 2 patients, IV 1 patient (2 patients not specified).

Our patients had received 2 (2; 4) chemotherapy cycles before SGN-35 and 3 of them had undergone an auto-SCT. Clinical response to prior therapy was CR in 2 and PR in 3 patients.

After 4 (2; 16) cycles (1 patient with a 17% reduction of dose because of his previous hepatic impairment) 2 patients achieved CR, 1 PR and 1 PD. At the end of the follow-up period, 3 patients carried on with the treatment (1 without evaluation of the response) and 2 patients had died (1 CR and 1 PD) with a time to progression of 2.5 (2; 3) months.

1 patient suffered from side effects: facial rash and a post-infusion reaction grades I-II.
Conclusion In our population 3 of 5 patients treated with SGN-35 achieved an objective response for 2.5 months, with favourable safety profile.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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2 JCO30 (18):2183–9

No conflict of interest.

CP-153 CLINICAL EXPERIENCE WITH FIDAXOMICIN FOR TREATMENT OF CLOSTRIDIUM DIFFICILE INFECTION

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Background The increasing prevalence, morbidity and mortality rates of Clostridium difficile infection (CDI) turn its treatment into a challenge for researchers. Fidaxomicin is a new treatment option which has been shown to be effective for treating both primary and recurrent CDI in clinical trials but there is limited clinical experience.
Purpose To evaluate the use and outcome in patients with CDI treated with fidaxomicin in a tertiary hospital.
Material and methods Between May 2013 and September 2014 patients undergoing treatment with fidaxomicin were assessed. Demographic and clinical data were collected from the patient electronic medical record. The outcome measure was Symptom-Free Interval (SFI), calculated in patients who were monitored for at least 1 month.
Results Thirteen patients were analysed (n = 13), 53.8% male, median age 54 years (range 27–83) and all had baseline disease which increased the risk of recurrent CDI, so fidaxomicin treatment was indicated by current clinical guidelines. Seven had a history of recurrent CDI and eleven had received previous treatment with vancomycin and/or metronidazole. Treatments with fidaxomicin were 200 mg twice daily for 10 days. Recurrence was found in 30.8% patients after the first treatment with fidaxomicin, but 6 patients were lost to follow-up (died). SFI varied with number of courses received. After the first treatment, the median SFI was 75 days (range 15–395). After the second course (2 patients) SFI was 66 and 180 days and following the third treatment (2 patients) SFI was 133 and 64 days.
Conclusion Use of fidaxomicin is more common in patients with recurrence or non-responders to standard treatment (84.6%); the recurrence rate was high (30.8%). This study was limited by the number lost to follow-up and high inter-individual variability in SFI. More clinical experience is needed to determinate which patients may benefit most. Alternative dose regimens should be considered to improve treatment outcomes.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest

CP-154 EFFECT OF REGIMEN COMPLEXITY ON THE PREMATURE DISCONTINUATION OF TREATMENT WITH BOCEPREVIR OR TELAPREVIR IN HEPATITIS C VIRUS-HIV COINFECTED PATIENTS

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10.1136/ejhpharm-2015-000639.153

Background Medication regimen complexity index (MRCI) has been identified as a predictor of sustained virologic response in patients treated with peginterferon and ribavirin for chronic hepatitis C.
Purpose To determine the influence of the MRCI in the premature discontinuation of triple therapy treatment with boceprevir or telaprevir in hepatitis C virus-HIV (HCV/HIV) coinfected patients.
Material and methods We conducted a multicentre and prospective study that included HCV/HIV coinfected patients treated with triple therapy with boceprevir or telaprevir in combination with peginterferon-alpha plus ribavirin between January and December 2013. Basal variables colleted were: age, gender, hepatits C treatment-naïve or previously treated, presence of cirrhosis, psiquiatric disorder. We evaluated the proportion of patients achieve extended rapid virologic response (RVRe), defined as HCV RNA negative between 4 and 12 weeks of treatment with telaprevir and between 8 and 24 weeks of treatment with boceprevir. The rate of premature therapy discontinuation with the PI and reasons were collected. To calculate the MRCI, we considered all prescribed drugs and used the tool developed by McDonald *et al*.[1] To determine the independent predictors of therapy discontinuation, we performed a multivariate logistic regression analysis.

Results 55 patients of three different centres were included (86.4% were men and the mean age was 48 years (SD = 3.7)). 68.0% were non-naive. 90.7% had cirrhosis. 83.1% achieved RVRe. 18 patients (30.5%) prematurely discontinued the treatment. Reasons for treatment discontinuation included adverse events (50.0%), lack of efficacy (33.0%) and refusal to continue the medication (17.0%). The mean MRCI was significantly higher in patients who discontinued the therapy (31.11 vs. 26.16). In the multivariate analysis, the only predictor of premature discontinuation of the therapy was the MRCI (OR = 1.17, p = 0,009; 95% CI (1.04–1.53).

Conclusion The MRCI is an independent predictor of premature discontinuation of the triple therapy with boceprevir and telaprevir in HCV/HIV coinfected patients.

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No conflict of interest.

CP-155 COMPARATIVE PHARMACOECONOMICS STUDY: TUMOUR NECROSIS FACTOR -ALPHA ANTAGONITS TREATMENT FOR RHEUMATOID ARTHRITIS

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Background Treatment with Tumour Necrosis Factor (TNF-α) antagonists in patients with Rheumatoid Arthritis (RA) is expensive for the National Health Service.

Purpose To analyse the financial impact of this group of drugs and identify discrepancies between the theoretical cost and the actual cost.

Material and methods A retrospective, descriptive study of all patients with RA treated with adalimumab, etanercept or infliximab for the last three years in a tertiary hospital. The variables studied were: number of patients, number of units dispensed and cost per patient per year for each drug. Financial calculations used the official price of drugs plus VAT and took discounts into account.

Results The total cost generated of etanercept, adalimumab and infliximab was €4,053,861 in the study period. 92 patients were treated with adalimumab: 3,717 units were dispensed (mean 13.46 units/patient/year), mean cost €8,333/patient/year. 69 patients were treated with etanercept: 5,239 units were dispensed (mean 25.3 units/patient/year), mean cost €6,837/patient/year. 59 patients were treated with infliximab: the number of administrations was 1,050 (mean 5.9 administrations/patient/year), mean cost €8,431/patient/year. Theoretical cost calculated per (70 kg)/patient/year was €6,977 for infliximab (3 mg/kg), €11,254 for etanercept (50 mg/week) and €12,120 for adalimumab (40 mg/2 weeks). The underspend was €4,417/patient/year and €3,787/patient/year for etanercept and adalimumab respectively, whereas the actual cost of infliximab represented an increase of €1.454/patient/year compared to the theoretical cost.

Conclusion The actual cost of treatment with adalimumab and etanercept per patient/year was less than theoretically calculated, unlike infliximab, where the true cost per patient/year was greater than the theoretical cost.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-156 EVALUATION OF THE INCIDENCE AND EFFECTIVENESS OF ANTI-TNF-A DRUG DOSE INTENSIFICATION IN CROHN'S DISEASE PATIENTS

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10.1136/ejhpharm-2015-000639.155

Background There are two approved biological drugs, infliximab and adalimumab, for the treatment of Crohn´s disease (CD). For patients who lose their initial response, consideration can be given to dose intensification (DI) to regain therapeutic benefit.

Purpose Evaluation of the occurrence and effectiveness of DI of infliximab and adalimumab in CD patients who were primary responders.

Material and methods Observational retrospective study in a second level hospital, which included patients with CD on treatment with infliximab or adalimumab, from January 2004 to December 2013, and who responded to an induction regimen of the anti-TNF-α drug.

The variables collected were: anti-TNF-α drug, patient's response, requirement for DI and time of follow-up.

The effectiveness of DI was determined by the numbers of patients responding to anti-TNF-α drugs at an intensified dose. This variable and the numbers of DI were calculated as the percentage of patient-years of follow-up.

Results A total of 40 primary responders to infliximab and 15 to adalimumab were included, who provided 125.2 and 23.1 patient-years of follow-up, respectively.

The proportion of patients who required intensified infliximab treatment was 8.8% (11/125.2) per patient-year and for adalimumab 8.6% (2/23.1) per patient-year. The times with intensified treatment were 18.8% and 5.3% patient-years follow-up, for infliximab and adalimumab, respectively. The percentage of patients maintaining a response to intensified doses of the drugs was 16% (3/18.8) per patient-year for infliximab and 37.7% (2/5.3) per patient-year for adalimumab.

Conclusion The proportion of patients who required DI was similar for the two drugs and it was less than 10% per patient-year. The effectiveness of DI was relatively low, due to the fact that the proportion of patients maintaining a response to DI was less than 40% per patient-year.

In other studies (Gisbert and Billioud *et al*.), the proportion of patients who needed intensified infliximab was similar to our results (13% per patient-year) and the annual risk of DI for adalimumab was greater (24.8% per patient-year).

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-157 EVALUATION OF FAMPRIDINE EFFECTIVENESS IN ADULT MS PATIENTS

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Background Multiple sclerosis (MS) is a chronic and progressive inflammatory disease that attacks the central nervous system.

Impaired walking is the most significant disability; about half the patients suffer from this pathology 20 years after diagnosis.

Fampridine has been approved for the improvement of walking capacity (WC) in adult MS patients with Expanded Disability Status Scale (EDSS) 4–7.

Purpose To determine the effectiveness of fampridine in improving the walking of adult MS patients 15 days and 45 days after starting the drug.

Material and methods Retrospective study by reviewing patient clinical records from the Neurology department and pharmacist reports.

Parameters measured: timed 25-foot walk test (T25FW), 12-item MS walking scale (MSWS-12) questionnaire at baseline, 15 days and 45 days after the first dose.

Response criteria were defined as an improvement of at least 20% in the T25FW and 6 points of the MSWS-12.

Results We included 22 patients in the study. Mean age: 50.95 years, 61.9% women, 61.8% Relapsing Remitting MS and 38.1% Secondary progressive MS. Of the patients taking fampridine (10 mg twice daily), 1 was excluded because he switched from 3, 4-diaminopyridine.

Twelve patients (57.1%) were found to be responders, T25FW decreased on average by 39.8% at 15 days and 41.1% at 45 days from the baseline. The average WC improvement in MSWS was 13.33 points at 15 days and 17.18 at 45 days.

Conclusion Fampridine has been shown in clinical trials to improve WC in approximately one third of MS patients (42.9 and 35% in the pivotal clinical trials). In our study we've found a significantly greater improvement.

In responders this increase was maintained across the treatment period or even improved.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

CP-158 OUR EXPERIENCE WITH FAMPRIDINE IN PATIENTS WITH MULTIPLE SCLEROSIS AFTER 2 YEARS OF TREATMENT

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Background Fampridine is indicated for the improvement of walking in patients with multiple sclerosis (MS) (EDSS 4–7).

Purpose To assess the effectiveness, undesirable effects and adherence to fampridine.

Material and methods A 30-month retrospective study was conducted, including MS patients receiving fampridine 10 mg BID. Medical records were reviewed for data on Timed 25-Foot Walk (T25FW) and 12-item MS walking scale (MSWS-12), from baseline over a 24-month period (screening at baseline, day 15, months 3, 12, 18 and 24). Adverse events (AEs) were also recorded from medical records and hospital admissions and emergency department (ED) visits were analysed in order to identify suspected AEs. The adherence rate was calculated from pharmacy dispensing records.

Results 19 patients (68.4% women), mean age 61.9 (40–80) years with different forms of MS (relapsing remitting 26.3%, primary progressive 42.1% and secondary progressive 42.1%) were included. Effectiveness data are shown in Table 1. 58.9% of patients (11/19) were hospitalised or visited the ED. The AEs identified were mostly urinary tract infections (37.3%) and dizziness, causing falls, (36.4%) (causal relationship not established). A high level of adherence (97.5%) was achieved.

Conclusion More than a half of the patients treated with fampridine experienced a clinically relevant improvement in walking ability (increase of over 20% in T25FW and MSWS-12 scale reduction ≥6), which was sustained for at least 24 months. Side effects were mild and acceptable.

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No conflict of interest.

CP-159 ASSESSMENT OF EFFECTIVENESS IN WALKING ABILITY AND SAFETY OF FAMPRIDINE IN MULTIPLE SCLEROSIS PATIENTS

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Background Fampridine is a voltage-dependent potassium channel blocker. It´s indicated to improve walking ability (WA) in patients with multiple sclerosis (MS). Patients should be evaluated after two weeks and treatment should be stopped for those who have not shown an improvement.

Purpose To assess the effectiveness of fampridine in patients with multiple sclerosis (MS) with walking impairment. Secondary endpoint is evaluation of safety.

Material and methods Observational retrospective study (November 2013 to September 2014) that included patients with MS who started treatment with fampridine 10 mg twice daily, in a second level hospital.

Abstract CP-158 Table 1

	Baseline (n = 19)	15 days (n = 17)	3 months (n = 17)	1 year (n = 16)	1.5 years (n = 16)	2 years (n = 15)
T25FW (seconds)	21 ± 16.4	13.2 ± 10.2	14.9 ± 16.4	14.4 ± 14.5	9.8 ± 6.5	10.6 ± 6.6
Average increase in T25FW speed from baseline (ΔV) (%)		62.2 ± 57.9	59.8 ± 44.6	50.4 ± 23.3	61.7 ± 23.7	49.7 ± 25.8
% patients with ΔV ≥20%		94.1	88.2	87.5	100	92.9
MSWS-12 (points)	47.9 ± 9.2	37.4 ± 8.8	36.7 ± 7.6	40 ± 9.8	43.3 ± 10.2	38.6 ± 10.41
MSWS-12 reduction (points)		11.9 ± 8.2	12.7 ± 7.8	9.2 ± 7.3	6.4 ± 5.8	10.7 ± 9.13
% patients with MSWS-12 reduction ≥ 6 points		70.6	82.4	75	50	57.1
% responding patients		64.7	70.6	62.5	50	58.3
EDSS	5.9 ± 0.6			5.9 ± 0.79	5.67 ± 0.8	5.9 ± 0.78

The main measure of effectiveness was based on improvements in walking speed along a path of 25 feet (7.5 metres) (T25FW) and in the 12-item Multiple Sclerosis Walking Scale (MSWS12) questionnaire that measures the patient's impression of the effect of their MS related walking disability on their ability to perform activities of daily life. Assessments were performed at baseline and after 2 weeks of treatment.

Effectiveness was defined as 20% improvement in T25FW or a minimum reduction of 6 points in the MSWS-12 score. The results were compared with the efficacy results of the pivotal clinical trials (CT).

The safety of fampridine was evaluated through side effects (SE).

Results 11 patients were included (mean age, 47 years; mean EDSS 6; mean T25FW, 47 s and mean MSWS-12, 40 points).

After 2 weeks, 54% (6/11) of patients walked ≥20% faster (mean 26 s), and 72% (8/11) of patients MSWS-12 (mean 32 points). 81% (9/11) of patients improved WA after two weeks.

The most common SE were constipation, balance disorder, dizziness and difficulty speaking. Due to this SE, two patients left treatment.

Conclusion Fampridine has been demonstrated to be effective in improving the WA of patients with MS, with an acceptable SE profile. Rate of response after two weeks was 81%, greater than the results of the CT (43% and 35%).

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-160 HOSPITAL PHARMACIST-LED PROJECT TO IMPROVE ANTIBIOTIC USE IN THE HOSPITAL SETTING

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Background Inappropriate use of antibiotics has become a serious problem in the hospital setting. We implemented a stewardship programme in order to optimise antimicrobial treatment at our hospital.

Purpose

1. To analyse the contribution of an antibiotic pharmacist after the introduction of the antimicrobial stewardship programme.
2. To analyse the economic impact of pharmacists' recommendations.

Material and methods An antibiotic pharmacist designed a protocol to optimise antibiotic treatment in agreement with infectiologists and microbiologists. The programme started running in December 2013.

On a daily basis, the pharmacist obtains a list of inpatients prescribed antibiotics from the computerised prescription order entry system and recovers information from the electronic health record. The pharmacist checks the following items: (1) conformity of empirical and targeted antimicrobial treatment to clinical practice guidelines; (2) local flora and culture results; (3) dose adjustment to the clinical situation; (4) appropriate duration and (5) route of administration. If treatments are susceptible to improvement, the pharmacist contacts physicians to propose recommendations. The recommendations are recorded in a database. Additionally, the financial impact is evaluated in antimicrobial or dose changes.

Results We analysed 2,250 prescriptions (32% of total) over a 10-month period. Physicians were contacted on 347 occasions; 96% related to antibiotics and 4% to antifungals. In 86% of the cases they agreed with the proposals. Reasons to act were: 36% administered for too long, 20% inappropriate antibiotic selected, 18% unadjusted dose, 14% inappropriate empirical treatment, and 11% unestablished sequential treatment.

Direct costs could be estimated in 32% of the antibiotic and antifungal recommendations, leading to net savings of €9,566 (49%) and €10,041 (51%).

Conclusion

1. The contribution of an antibiotic pharmacist, as part of an antibiotic stewardship programme, resulted in a reduction of excessively prolonged antimicrobial courses and improvements in accordance with culture results, dose to patient condition, adjustment of empirical treatment to recommendations, and selection of a suitable route for administration.
2. Interventions in antifungal treatment were associated with greater savings.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-161 PEGYLATED LIPOSOMAL DOXORUBICIN IN THE TREATMENT OF RECURRENT OVARIAN CARCINOMA. LONG-TERM EFFECTIVENESS

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10.1136/ejhpharm-2015-000639.160

Background Pegylated liposomal doxorubicin (PLD) can be used for the treatment of advanced ovarian cancer in women who have failed a first-line platinum-based chemotherapy regimen.

Purpose To analyse the effectiveness of PLD in the treatment of recurrent ovarian carcinoma (ROC) in terms of overall long-term survival.

Material and methods Retrospective observational study of all patients treated with PLD for ROC over a period of seven years (2006–2012). Data were collected from medical records which also stored patient characteristics, their disease, treatment received and results obtained. Effectiveness was mainly evaluated in terms of overall survival (median OS). Descriptive statistical analysis, survival analysis and cohort comparison (Kaplan–Meier method and log-rank test) were applied using SPSS 19.0 software.

Results 109 patients were included, with a mean age of 60.6 years (95% Confidence Interval: 58.4–62.9). Stage III or higher was present in 88.1% of patients at diagnosis. 56.0% of all tumours were platinum resistant (PR), 35.8% platinum sensitive (PS) and the remaining 8.2% presented intermediate sensitivity (IP), for subgroup analysis IP was considered together with PS. The DLP-gemcitabine combination was used in 73 cases, 13 patients received carboplatin combination and the remainder (n = 23) received DLP monotherapy. In more than 90.0% of cases PLD was used as second-line treatment. The median OS observed was 78.0 weeks. The only factor directly associated with overall survival in a significant statistically way was

increased sensitivity to platinum. The median overall survival in PS was 172.9 weeks versus 69.7 in PR (log rank $p < 0.005$).

Conclusion The addition of PLD when treating ROC was associated with significant increases in the long term median OS. The benefit obtained in this population (median OS 78.0 weeks) was higher than that reported in the literature (median OS 62.7 weeks)[2] and was found to be even greater in the subgroup of patients with platinum-sensitive disease (including intermediate sensitivity).

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No conflict of interest.

CP-162 EVALUATION OF BENZODIAZEPINE USE IN HIV-POSITIVE PATIENTS

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Background The prevalence of anxiety in human immunodeficiency virus (HIV)-positive people on antiretroviral therapy is higher than that of the general population and also than in other chronic incurable conditions. Benzodiazepine are often prescribed inappropriately long-term and benzodiazepines are commonly prescribed with antiretrovirals although contraindicated.

Purpose To evaluate the use of benzodiazepines in HIV patients receiving antiretroviral treatment.

Material and methods Retrospective study evaluating the medical records of HIV-positive patients aged 18 years or older, both sexes, enrolled at a University Hospital.

Results Of 782 HIV-positive patients on antiretroviral treatment, 193 had benzodiazepines prescribed in electronic medical records in 2014. Of these patients who had benzodiazepine prescriptions, 179 had been diagnosed with HIV before 2013 and 14 in 2013. Only 10.3% of them had been diagnosed with insomnia or anxiety in the medical record. The discovery of HIV seems not to be the reason for the use of these drugs, since most patients had been diagnosed before 2013.

Conclusion These data suggest the need for intervention by the pharmacist with other health professionals to clarify the necessity and quality of use of these anxiolytics. In addition, pharmacotherapeutic follow-up and pharmaceutical education by a pharmacist may promote the rational use of benzodiazepines in these patients.

REFERENCES AND/OR ACKNOWLEDGEMENTS

1 Ciências sem Fronteiras - CNPq – Brasil

No conflict of interest.

CP-163 EVALUATION OF EFFECTIVENESS AND SAFETY OF RILPIVIRINE/EMTRICITABINE/ TENOFOVIR

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Background The combination rilpivirine (RPV)/emtricitabine (FTC)/tenofovir (TDF) has been approved for the treatment of patients with HIV infection with a viral load (VL) ≤100,000 copies/mL.

Purpose To evaluate the effectiveness and safety of RPV/TDF/FTC in treatment-naïve and pretreated patients with HIV infection in a second level hospital.

Material and methods Retrospective observational study (June 2013–September 2014). We included patients with HIV infection, treatment-naïve and pretreated, being treated with RPV/TDF/FTC. The effectiveness was measured by the virological and immunological response. Virological response was considered when VL was undetectable (VL <50 copies/mL) and immunological response when CD4 count was greater than 200 cells/mm^3 after 6 months of treatment. VL and CD4 count were collected at baseline and 6 months later. Patients who had less than 3 months on treatment were excluded, because no analytical data are available to assess the effectiveness. Safety was evaluated through side effects (SE).

Results 15 patients were included, 3 treatment-naïve and 12 pretreated. 42% (5/12) of pretreated patients switched treatment to RPV/TDF/FTC due to SE, 25% (3/12) to simplify treatment, 25% (3/12) for psychiatric reasons and 8%(1/12) for poor adherence.

67% (8/12) of pretreated patients had an undetectable baseline VL, 8% (1/12) had VL 50–100 copies/mL and 25% (3/12) had VL > 100 copies/mL. Baseline CD4 count average was 377 cells/mm^3 (79–655). Baseline VL average of treatment-naïve patients were 31,043 copies/mL (3,530–49,000) and baseline average CD4 count was 329 cells/mm^3 (200–430).

After 6 months, treatment were effective in 75% (9/12) of pretreated and 67% (2/3) of treatment-naïve patients.

13% (2/15) reported SE. 1 patient reported insomnia and another patient insomnia, fatigue, gastrointestinal disorders and dyspnoea due to which he left treatment.

Conclusion RPV/TDF/FTC has been shown to be effective in treatment of HIV infection, in treatment-naïve (67%) and in pretreated patients (75%). The SE profile is low, however one patient had to leave treatment for this reason.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-164 USE OF IVERMECTIN FOR STRONGYLOIDOSIS: AN APPROACH TO CLINICAL PRACTICE

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Background Strongyloides stercoralis is one of the most common parasites in tropical areas. Nowadays, the treatment of such parasite is based on ivermectin. However, ivermectin is not marketed in Spain. Hospital pharmacists are responsible for permitting this treatment to patients, only after drawing up an exhaustive report. In this article, we have reviewed all the reports as well as classified the information in order to present our clinical practice.

Purpose To present our clinical experience regarding the treatment of strongyloidosis.

Material and methods Descriptive observational study. Patients' data were obtained from their clinical history. Variables examined: age, sex, nationality, doses, diagnostic methods (ELISA and coproparasitological test), co-infections, eosinophilia and immunosuppressed patients.
Results Ivermectin was first used in February 2012.15 patients were analysed 8 men and 7 women. The average age was 36. Nationality: 12 patients from Bolivia, 1 from Guinea-Conakry, 1 from Cuba and 1 with unknown nationality. Posology: 1 oral dose of 200 mcg/kg/day of ivermectin for two days in 100% of patients. The ELISA test and the coproparasitological test were used in 100% and 86% of the patients respectively. The ELISA test result was positive in 93.3% of patients, whereas the coproparasitological test result was negative in 84.3%. Co-infections: Chaga's disease, toxocariasis, tuberculosis, schistosomiasis, intestinal amoebiasis, uncinariasis (hookworm) and hymenolepis (tapeworm). Top of Form.

Before [JM1] the treatment, the average eosinophilia was 15.99%. However, after the treatment, it decreased to 4.67%. No patients were diagnosed with HIV-1 or treated with corticosteroids.
Conclusion The decrease in eosinophilic cells reveals that ivermectin is effective for the treatment of strongyloidiasis. As our study shows, most of the patients also carry other coexisting parasitic diseases, likewise transmitted by the faecal-oral cycle. Therefore, pharmaceutics could play an important role in the prevention of this type of diseases. both by ensuring the appropriate use of this drug as well as by providing some useful advice on healthy practices.

REFERENCES AND/OR ACKNOWLEDGEMENTS
[JM1]

No conflict of interest.

CP-165 EFFECTIVENESS OF TRIPLE THERAPY WITH BOCEPREVIR IN CHRONIC HEPATITIS C PATIENTS

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Background Observational studies in clinical practice have revealed lower rates of effectiveness than those achieved in clinical trials. Therefore it is of particular interest to evaluate the success of treatment in our clinical practice as well as the results in underrepresented populations such as cirrhotic patients.
Purpose To evaluate the effectiveness of treatment with ribavirin, boceprevir and peginterferon alfa in our clinical practice in patients with chronic hepatitis C who had completed the treatment.
Material and methods Retrospective observational study (January 2012–June 2014). All patients with HCV genotype 1 were included who had completed treatment with boceprevir. Variables were collected to characterise patients and treatment.

Effectiveness evaluation: viral load <15 IU/ml at week 24 post-treatment. A descriptive and comparative statistical analysis was performed with SPSS version 15.0.
Results 57 patients (66% male) were included with a mean age of 53.5 ± 8.8 years and 70% with genotype 1b. Results at 24 weeks: 63.2% cures, 24.6% treatment failures, 10.5% suspensions due to toxicity and 1.8% discontinued treatment. Regarding treatment failures, 17.5% of failures occurred during triple therapy and 7.0% during the 12 weeks after the end of treatment.

In patients who completed treatment (n = 50), overall effectiveness was 72%. Effectiveness according to degree of fibrosis: 91.7% for grade F2, 80% for F3 and 60.7% for F4. Greater effectiveness in non-cirrhotic patients (86.4% vs. 60.7% p = 0.044). Higher effectiveness in patients younger than 45 years (100% vs. 68.2% p = 0.123), men (72.7% vs. 70.6% p = 0.562) and genotype 1b (77.1% vs. 60% p = 0.185), although not statistically significant. No differences about effectiveness were apparent between mono-infected patients (71.7%) and those co-infected with HIV (75% p = 0.690).
Conclusion Our effectiveness results are within the range established by the major publications of efficacy and effectiveness. We conclude that cirrhosis of the liver is the primary factor that determines the effectiveness.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-166 FACTORS ASSOCIATED WITH PERSISTENCE WITH ANTIRETROVIRAL TREATMENT IN HIV INFECTED PATIENTS

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Background Short persistence with antiretroviral treatment (ART) is associated with worse clinical outcomes. Persistence with single-tablet regimens (STRs) and less-drug regimens (LDRs) in HIV-infected patients has been insufficiently assessed in current research.
Purpose The main objective was to compare persistence with the two strategies and identify factors associated with non-persistence.
Material and methods This was a retrospective study that included HIV-infected patients treated with a STR or LDR between January 2007 and June 2014. STRs were based on efavirenz/emtricitabine/tenofovir or emtricitabine/tenofovir/rilpivirine combined in a fixed-dose tablet administered once daily and LDR consisted of protease inhibitor (PI/r) or dual treatment with a PI/r plus another drug. Data collected included age, gender, risk of transmitting HIV, hepatitis C virus (HCV) coinfection, treatment-naive, presence of a psychiatric disorder and drug abuse consumption during the treatment. Persistence with treatment was defined as the time from start of treatment to discontinuation. Reasons for discontinuation were collected. To identify independent predictors of non-persistence we developed a multivariate Cox regression analysis.
Results 348 patients were included, 280 with STR and 68 with LDR. The mean age was 44.9 years (SD = 10.45), 82.4% were men and 29.9% were treatment-naïve. 30.2% had HCV coinfection, 10.3% presented a psychiatric disorder and 7.20% abused drugs. 86 (30, 1%) patients discontinued in the STR group and 13 (19.1%) in the LDR group. The Cox regression model showed that the only variable associated with higher risk of non-persistence was the drug abuse [Hazard ratio = 2.58, p = 0.002, 95% CI (1.39–4.67)]. There were no statistically significant differences according to type of regimen. Adverse events

were the main reason for ART discontinuation in the STR group and virological failure in the LDR group.
Conclusion Persistence with STR and LDR seems to be similar in HIV-infected patients. Drug abuse is the only factor identified with a higher risk of non-persistence.

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No conflict of interest.

CP-167 SUITABILITY OF THE "BELIEFS ABOUT MEDICINES" QUESTIONNAIRE FOR HIV PATIENTS ON COMBINED ANTIRETROVIRAL TREATMENT

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Background Non-adherence to combined anti-retroviral treatment (cART) is one of the key factors leading to treatment failure, higher morbidity, mortality, and health costs. Tools to evaluate adherence are beneficial since they allow health care workers to focus on patients with adherence problems. "Beliefs about Medicines Questionnaire" (BMQ) is a tool that evaluates the patient's awareness of the "need" for and "concerns" about their medicines.
Purpose To evaluate whether the findings of the BMQ questionnaire correlated with adherence in HIV patients.
Material and methods BMQ was applied to HIV-infected patients on cART with three or more pharmacy visits who gave informed consent. Adherence was evaluated through refill date records.
Results Of a total of 175 patients, 80 (45.7%) were women, 97 (55.4%) were previously treatment-naïve, and the median age was 44 years old. Average BMQ-specific "need" and "concerns" scores were 22.6 [Standard Deviation (SD) = 2.7] and 18.6 [SD = 5.0], respectively. The average difference between "need" and "concerns" scores (N-C) was 4.0 [SD = 6.1]. Average refill adherence was 101% [SD = 9.1%] with values between 59% and 129%. The majority of patients (86.3%) had refill adherence between 80% and 110%, and 2.3% had refill adherence below 80%. Although we observed a tendency for higher values of N-C in patients with higher refill adherence, it was not possible to establish a correlation due to lack of statistical significance.
Conclusion It wasn't possible to correlate the results of the BMQ-specific questionnaire with adherence, probably due to the fact that there was a high proportion of treatment-naïve patients. We observed higher refill adherence rates in treatment-naïve patients, which may be due to the fact that these patients are most likely to be aware of the "need" for cART. It's possible that the BMQ-specific questionnaire is more useful in treatment – experienced patients in order to identify causes of non-adherence.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-168 ADDING VALUE: PHARMACIST INTERVENTIONS IN ONCO-HAEMATOLOGICAL OUTPATIENTS

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Background The continuing launch of new oral antineoplastic agents (OAAs) is changing the management of chemotherapy. Onco-haematological outpatients have acquired more autonomy and responsibility since OAAs require self-administration by patients at home. Therefore, hospital pharmacists are the latest health professionals in touch with patients and should detect the problems related to these drugs (DRPs).
Purpose To assess a pharmaceutical care program based on pharmacist interventions that aims to increase the effectiveness and safety of OAAs.
Material and methods The pharmaceutical care program, performed in November 2012, was evaluated in outpatients who started treatment with OAA during 2013. Pharmacist interventions took place during pharmacist interviews at the beginning of the treatment, after one and six months. Other variables were: demographics, ECOG, type of tumour, OAA and concurrent medicines.
Results 134 patients (mean age = 68.5 years old, 63.4% male) were included. 10.8% of patients had ECOG ≥ 1. Renal cancer (20.1%), prostate cancer (19.4%) and multiple myeloma (17.9%) were the most common tumours and the most frequent OAAs were abiraterone (20.1%) and lenalidomide (15.7%). On average, patients were taking 5 drugs concurrently.

362 pharmacist interventions were performed (84.3% with patients and 15.7% with doctors): 111 at the beginning of the treatment, 173 after the first month and 78 after six months. Interventions were classified as follows: 38.1% reinforcement of health education and literacy (management of side effects and improvement of healthy lifestyle); 30.4% drug-drug interactions (mainly with omeprazole and antihypertensives, 30.3% were type D or X according to the FDA); 9.9% correcting inappropriate drug administration; 6.1% dose modification; 3.8% adding, removing or substituting a drug and 11.7% others. The percentage of acceptance was 87.6% (range 62–100%).
Conclusion Pharmaceutical interventions and follow-up succeeded in detecting DRPs and improved the treatment of onco-haematological outpatients with high acceptance. The most frequent interventions consisted of improving the management of side effects and identifying drug interactions.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-169 DEXMEDETOMIDINE FOR SEDATION IN CRITICALLY ILL PATIENTS: A SINGLE CENTRE EXPERIENCE

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Background The use of dexmedetomidine (dex) in Spanish intensive care units (ICU) patients is still unusual.
Purpose To describe the use of dex as a sedative agent and asses the adherence to the 2013-SEMICYUC guideline recommendations, in a 20-bed Spanish ICU.
Material and methods Retrospective six-month study (10/13–03/14) of patients treated with dex for sedation. The variables analysed were: indication for and duration of dex use, starting-maximum-maintenance doses, time to reach maintenance dose, co-administration of other sedatives, proportion of time in target sedation range (defined as a RASS score between −3 and 0) before and after dex initiation, duration of mechanical ventilation, % of patients with adverse events (AE) and causes of dex discontinuation.
Results 14 patients were included. Dex indications were: to facilitate weaning (8; 57%), patient-ventilator synchrony (5; 36%), or to reduce other sedatives (1; 7%). The mean length of the treatment was 4.1 days (0.2–14.5). The mean starting/maximum/maintenance doses were 0.36 ± 0.15/0.91 ± 0.34/0.87 ± 0.33 μg/kg/h. The starting dose was 51% lower than the recommended (0.7 μg/kg/h) and it took over 53 h (3–192) to reach the maintenance dose. All patients received other sedatives prior to dex, and in 6 (43%) those sedatives could be discontinued. No patients were in the target sedation range >50% of the time prior to dex, 8 (57%) reached this status after dex. The mean duration of mechanical ventilation was 17.1 ± 13 days. All patients suffered several AE (28 AE recorded). Hypotension (8; 57%) and bradycardia (6; 43%) were the most common. The causes of dex discontinuation were extubation (8; 57%), death (2; 14%), lack of efficacy (2; 14%) and AE (2; 14%, extreme bradycardia).
Conclusion All the dex indications met the SEMICYUC guidelines. It seems to be useful to reach the sedation range and facilitate successful weaning. The high rate of predictable AE and the need for dosage optimisation make dex a target drug for pharmaceutical monitoring.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-170 ACCEPTANCE OF PHARMACEUTICAL INTERVENTIONS IN DRUG DOSING IN RENAL DISEASE

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Background A drug adjustment programme for patients with renal disease was started in 2013 in our hospital.

In this system, information from the electronic prescription programme is linked (using an Access application) with information sent by the laboratory (creatinine) and with a list of drugs that may require renal adjustment. Afterwards, an adjustment warning for the physician is added to the electronic prescription programme.
Purpose To assess the acceptance by the physicians of pharmaceutical interventions in drug dosing in renal disease.
Material and methods This prospective descriptive study was conducted in a tertiary university hospital with 1,200 beds. The study period was 39 days (from January 21st to March 20th, 2014).

The pharmaceutical interventions were recorded during daily practice.

The following data were collected: date of pharmaceutical intervention, clinical chart number, medical service, age, sex, creatinine, glomerular filtration rate, adjusted drug, adjustment warning.

Finally, the degree of acceptance of these interventions by the physicians was reviewed.
Results During the study period, 153 patients (mean age 75.3 years, 78 male and 75 female) were included and 271 renal adjustment interventions were performed (mean: 7 interventions per day).

The degree of acceptance of the interventions was: accepted 84 (31.0%), partially accepted 25 (9.2%), not assessable 49 (18.1%), not accepted 112 (41.3%) and other (not an appropriate intervention) 1 (0.4%). Excluding not assessable and inappropriate interventions (finally 221 interventions), the result was: accepted 84 (38.0%), partially accepted 25 (11.3%) and not accepted 112 (50.7%).
Conclusion The acceptance of pharmaceutical interventions by the physicians is approximately 40%, which is relatively low. One of the reasons of this low acceptance could be the location of the adjustment warning.

Finally, it is necessary to consider what could be done to improve the acceptance of this type of pharmaceutical interventions.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-171 MEDICINES RECONCILIATION ON ADMISSION: A PATIENT SAFETY STRATEGY

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Background Medicines Reconciliation on Admission (MRA) aims to identify and solve Unintended Medicines Discrepancies (UMDs) defined as differences between the home treatment prescription and the first hospital prescription.
Purpose To assess the impact of MRA on UMDs and to identify risk factors for the development of UMDs.
Material and methods This retrospective study was conducted in six services: vascular surgery, geriatrics, haematology, infectious diseases, nephrology and urology. Pharmacy students, who were supervised by clinical pharmacists, performed MRA within 48 h of the patient's admission. Students asked the patients about the treatment prescribed at home, self-medication, allergies, adverse events and therapeutic adherence. Students called community pharmacists to get information on the drugs dispensed in the last 3 months and collected further information from other sources: the patient's medical record, an interview with the family, letters from community doctors. Two pharmacists retrospectively assessed the potential harm of each UMD (high, moderate or minor risk). Correlations between the parameters were tested statistically.
Results In 2013, 645 patients were enrolled (5,673 medicines analysed). 23.4% of patients had at least one UMD and 10.1% of patients had at least three UMDs. Of the UMDs detected, 47.3% were associated with a moderate to major risk for the patient. The number of lines on the home treatment

prescription was a risk factor for UMD, as was the type of service in which the activity took place (R = 0.1918; p < 0.0001). Medicines adherence did not correlate with the incidence of UMDs.

Conclusion/h3> MRA is a useful process for detecting UMDs. Pharmacy students sometimes have trouble identifying UMDs, so it is necessary to supervise them. MRA will develop in parallel with the use of new information technologies for communications. It plays a role in structuring the "community-hospital" link.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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CP-172 CYTOMEGALOVIRUS INFECTION AFTER ANTI-THYMOCYTE GLOBULIN IMMUNOSUPPRESSION IN KIDNEY TRANSPLANTATION

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Background Immunosuppressive treatment for kidney transplantation is tailored to the clinical and immunological features of donors and recipients.

Purpose To describe the incidence of infection with cytomegalovirus (CMV) after immunosuppressant treatment with rabbit anti-thymocyte globulin (ATG) in kidney transplant patients, and the relationship with CMV serology and ATG dose.

Material and methods A retrospective descriptive study was carried out that included all kidney transplant patients who received ATG immunosuppressant induction treatment in 2012. The following variables were collected:

- Patient data: weight, sex
- Transplant data: type of donor: living donor or dead (brain death or asystole)
- Treatment data: dose and cumulative dose
- CMV: donor and recipient serology, CMV viral load

All ATG protocols include ganciclovir or valganciclovir prophylaxis from the third day post-transplant for three months.

Results 36 patients (25 men) were included. Regarding the type of donor: 19 were from brain death, 12 from asystole and 5 were from living donors.

12 of the 36 patients (33.33%) who received ATG developed CMV infection. 20 transplants were donor positive – recipient positive (D+/R+), and 4 of them were infected (20%). 10 patients were (D-/R+) and 3 of them were infected (30%). Only one patient was (D-/R-) and was not infected.

The most important result was in the high risk group (D+/R-) because 4 patients were included and all of them developed primary infections. Another R+ patient was infected but we didn't know the donor serology.

No differences were found in the average dose received in infected patients (0.97 mg/kg/day) versus non-infected patients (1.01 mg/kg/day).

The dose of ganciclovir and valganciclovir were switched from prophylaxis to treatment until viral load control was achieved in all of them.

Conclusion There was a high percentage of kidney transplant patients with ATG immunosuppression. Despite prophylaxis with ganciclovir or valganciclovir they had CMV infections, mainly in the D+/R- serology group, in which all of them developed CMV infection.

No relationship were found with CMV infection and ATG dose received.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-173 ASSESSMENT OF EFFICACY OF MULTIPLE ANTIRETROVIRAL THERAPY

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Background Patients with multiple antiretroviral therapy (MAT), defined as a combination of at least 3 drugs with different mechanisms of action, are on a difficult and costly treatment which may also affect treatment adherence.

Purpose To describe characteristics of HIV patients with multiple antiretroviral therapy and to evaluate the efficacy and adherence to the treatment.

Material and methods Retrospective observational study from June to December 2013. The inclusion criteria for our study were: MAT patients without changes in their treatment in the last 24 weeks. Data collected: demographics, current MAT, duration of treatment for HIV, adherence, resistance profile, viral load (VL) and CD4 count. Patients were classified as adherent (>90%) and non-adherent (<90%) by two independent methods: pharmacy dispensing records and SMAQ (simplified medicines adherence questionnaire) interview. Efficacy was evaluated by CD4 cells count and VL < 50 copies/mL, however we also considered CV < 200 copies/mL as a good indicator of treatment response.

Results A total of 49 patients were eligible in this study, 76% male, mean age 46.5 ± 9.9 years. The mean no. of MAT drugs was 4 (range 3–6) and the mean duration of treatment for HIV was 12 (range 1–17) years. Regarding resistance studies: 9 patients were resistant to some antiretroviral, it was not possible to perform resistance studies in 10 patients (20.4%) due to the low VL (<1,000 copies/mL), it was not requested in 28 patients (57.1%) and 2 patients did not show resistance. Seven, eight and two patients showed resistance to analogues, non-analogues and protease inhibitors, respectively. The mean adherence was 94% and 40 patients (81.6%) had a percentage adherence superior to 90%. As to the efficacy variables: 32 (65.3%) and 46 (93.8%) patients had VL < 50 copies/mL and <200 copies/mL, respectively and 40 patients (81.6%) had a CD4 cell count >250 copies/mL.

Conclusion Most patients had effective treatments. The complexity of the treatment did not have a negative impact on adherence. All patients with a resistance profile had their treatment optimised according to it.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

CP-174 HEALTHCARE PROFESSIONALS' KNOWLEDGE OF INTRAVENOUS FLUID TREATMENT

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Background Intravenous (IV) fluid treatment is a routine but essential part of care for a significant proportion of hospitalised patients. However one in five hospitalised patients suffer from fluid-related complications with associated morbidity and mortality. In 2013, a NICE clinical guideline was published with the aim of improving IV fluid management. A lack of knowledge was identified as a key factor contributing to poor fluid management.
Purpose To assess the knowledge among nurses, junior doctors and pharmacists of IV fluid treatment in adults. Knowledge was assessed of the daily fluid and electrolyte requirements and composition of commonly-used IV fluids.
Material and methods The study was conducted as a self-administered questionnaire survey. An anonymous questionnaire in multiple-choice format was designed based on the NICE guideline and existing questionnaires. Data collection was carried out over a four-week period in June 2014. Responses were marked as correct, incorrect or unsure.
Results 193 healthcare professionals including 96 nurses, 45 junior doctors and 52 pharmacists completed the questionnaire. 17%, 33% and 54% of nurses, junior doctors and pharmacists correctly identified the daily water requirements. Respectively 8%, 33% and 68% of nurses, junior doctors and pharmacists accurately estimated the daily sodium requirements. Only 16% of nurses, whereas 71% of junior doctors and 94% of pharmacists correctly identified the daily potassium requirements. The knowledge of the composition of commonly used IV fluids was poor, which is of particular concern as this guides fluid prescription. The inadequate knowledge of junior doctors confirms the findings of previously published studies, whereas to current knowledge no studies have been published with regards to nurses and pharmacists.
Conclusion Despite the development of a new guideline, knowledge of IV fluid treatment remains poor. Measures are needed to increase awareness and reduce the high number of fluid-related complications.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

Drug distribution

DD-001 EFFECT OF AUTOMATED DISPENSING CABINETS ON DRUG DISTRIBUTION IN 5 HOSPITALS

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Background As hospital pharmacies face an ever-changing landscape with new responsibilities, the need to find more efficient drug distribution methods becomes increasingly important. Omnicell conducted a comprehensive time and motion study at five large U.S. hospital sites of varying bed number, which were operating different cabinet-based drug distribution systems.
Purpose To determine whether the use of automated dispensing cabinets (ADCs) helped in creating more efficient drug distribution systems.
Material and methods In each facility, 5 to 6 days were spent recording time and motion to compare medicines management using a traditional patient-specific fill model and an ADC-based model. The times and costs associated with filling first doses, missing doses, batch doses and returning medicines were compared between the two models.
Results Cost and time savings were adjusted for a 350-bed facility. First doses filled via ADC took 111 s less per dose. First doses filled via ADC cost US $0.23 per dose, compared to US $1.93 per dose via traditional methods. This resulted in an eight times lower first dose cost when dispensed from the ADC. Missing doses took 64 s less in the ADC model. Returns took 25 s per dose in the patient-specific fill process. The time savings associated with using ADCs accounted for a total decrease of 35 labour hours per week, which resulted in a savings of US $64,300 in labour annually.
Conclusion Healthcare facilities can realise clear and measurable time and cost-saving benefits by using ADCs in their medicines distribution model. The change can significantly increase efficiency for both nursing and pharmacy.

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Conflict of interest.

DD-002 AN INTERVENTION IN AN ANTIBIOTICS DISTRIBUTION SYSTEM: UNIT-DOSE VS. BULK EVALUATION IN A COUNTY HOSPITAL

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Background This study was performed in a medium-sized public hospital of 460 beds, which supports the 150,000 inhabitants. Until August 2010, only restricted–use antibiotics were distributed as unit doses; the rest were distributed in bulk. Since September 2010 all antibiotics have been administered as unit doses per patient.
Purpose To evaluate the effect of this intervention on antibiotic administration.
Material and methods We investigated the amount of antibiotics used, expressed in DDDs/100 patient-days, for the years 2009 and 2011. Antibiotics were classified according to the ATC system, excluding J05, J06 and J07. The mean amounts administered the first year and the other year were tested for statistical significance using the paired-sample t test. Difference in use for each antibiotic were tested by the Bonferroni t test.
Results In total, in 2009 71 antibiotics were used (153.28 DDDs/100 patient-days) while in 2011 64 (145.31 DDDs/100 patient-days): mean difference was not statistically significant ($t = 0.78$, $p = 0.44$). 36 antibiotics were administered in both years (mean difference in DDDs/100 patient-days: 0.38, statistically significant, $t = 2.91$, $p = 0.0063$). In 16 of these antibiotics, the use of which was more than 1 DDD/100 patient-day, the mean difference was not statistically significant (difference: 0.69, $t = 2.56$, $p = 0.22$). When the Bonferroni t test was applied for each antibiotic, a statistically significant difference was observed

for 6 infrequently prescribed antibiotics (DDD/100 patient-day < 1): erythromycin, phenoxymethylpenicillin, streptomycin, ketoconazole, ofloxacin and benzathine benzylpenicillin.
Conclusion Unit dose intervention led to a reduction in the use of specific antibiotics, although it did not prove statistically significant for antibiotics of DDD/100 patient-day > 1. A significant difference was only observed in infrequently prescribed antibiotics, which could be justified by the small number of patients. Nevertheless, all antibiotics are still distributed in a unit dose system in hospitalised patients as it contributes decisively to pharmaceutical patient care and records.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DD-003 ANALYSIS OF THE USE OF AUTOMATED MEDICINES DISPENSING CABINETS WITHOUT ELECTRONICALLY ASSISTED PRESCRIBING

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Background Automated medicines dispensing cabinets (ADCs) have recently been introduced in all areas of a tertiary hospital.
Purpose To analyse the changes made by nurses when using the ADCs to the prescriptions made by physicians without electronically assisted prescribing.
Material and methods A retrospective observational study was made looking over the computerised clinical histories of inpatients from the Internal Medicine and Traumatology wards. These were compared to the records of drug withdrawals, analysing consumption per patient, classes and length of treatment. Consumption per patient was the net amount, taking into account withdrawals, returns to stock and drawer returns.
Results 22 patients were included, 15 belonged to Traumatology and 7 to Internal Medicine. The mean hospital stays were 13.9 and 7.6 days, respectively. 145 drugs were prescribed in Traumatology (9.6 per patient) and 117 in the Internal Medicine Service (16.7 per patient). The study was conducted on the drugs contained in the ADCs (124 and 83). The rest belonged to restricted drugs and those not included in the hospital guidelines.

The consumption per patient and dose were changed in 40.32% of the cases in Traumatology and in 39.7% of cases in Internal Medicine. Moreover, in Traumatology a mean of 2.46 medicines per patient were taken from the cabinets without having being prescribed in the clinical history (4.3 in the case of Internal Medicine).

In Internal Medicine (though not in Traumatology) we found that on 67 occasions the quantities of drugs withdrawn from the ADCs exceeded the corresponding quantities administered.
Conclusion The improper use of the ADCs calls into question the correct administration of the drug treatment to the patients.

So as electronically assisted prescribing is being phased in throughout the hospital, it will be necessary to train the nursing staff to withdraw only the medicine prescribed per patient per shift in order to improve safety and to prevent drug errors.

REFERENCES AND/OR ACKNOWLEDGEMENTS

None

No conflict of interest.

DD-004 QUALITY INDICATORS IN A UNITARY DOSE DRUG DISPENSATION SYSTEM: MEASUREMENT, ANALYSIS AND IMPROVEMENT

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Background Quality indicators (QIs) are measures of health care quality in order to achieve the planned results in a Quality Management System.
Purpose To evaluate the results of some QIs in a Unitary Dose Drug Dispensation System (UDDDS) in a Hospital Pharmacy Deparment (HPD).
Material and methods Prospective observational 3-weeks study (September '14) performed in a second level hospital (411 beds, 52.8% of them with UDDDS and manual transcription by nurses and validation by pharmacists). QIs and standars to achieve maximum quality were established by a working group.

- QI1: %Filling errors = [errors/number of dispensed drugs (nºDD)]*100; SV < 1%
- QI2: %Transcription errors = [errors/number of prescription lines (nºPL)]*100; SV < 3%
- QI3: %Validation errors (by a second pharmacist) = [errors/nºPL]*100; SV < 0.5%
- QI4: %Returns = [returned drugs/nºDD]*100; SV < 5%

Three days a week a "pilot cart" (PC) was selected by a random method (extraction balls) and checked by a pharmacist. Data were recorded and analysed using a form designed for that purpose, Farmatools-Dominion® programme and Microsoft Office Excel®.
Results 9 PC were checked (474 PL, 1736 DD, 207 patients). QIs real values were: QI1 (5.9%); QI2 (8.2%); QI3 (1.4%); QI4 (7.8%). Major error types during filling UDDDS-carts and transcription were treatment omission (44 vs. 11, respectively). Another common errors: a) filling: different amount (26) and commission (16) – drug should be discontinued but remained in patient´s treatment; b) transcription: different dose/dosage regimen (14). The mean causes of returns were: not administered drug (88), transfer/discharge (30) and finished treatment after cart distribution (16).
Conclusion Even though UDDDS may reduce medication errors, the QIs analysed were superior to SV previously defined. The measurement of QIs showed non-compliance and required corrective actions to resolve mistakes in order to improve patient security: regular training sessions for HPD staff, instructive note for nursing, technical instructions for nursing assistant and design of a specific form for returned drugs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No.

No conflict of interest.

DD-005 DEVELOPING A MANAGEMENT STRATEGY FOR MEDICATION UNITS FREE OF SECONDARY PACKAGING IN A HOSPITAL PHARMACY

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Background Our pharmacy has recently purchased an automated storage and dispensing robot (Rowa VMAX). While offering greater safety and better management of pharmaceuticals, automated globalised distribution encounters limits: unit doses and bulky pharmaceuticals cannot be stored in this type of robot contributing to the loss of the benefits of automation.

Such a system is not suitable for the management of Medication Units Free of Secondary Packaging (MUF-SP) when drugs are returned from the wards to the pharmacy.

Purpose To present an original management system for MUF-SP and to measure its financial impact.

Material and methods We developed software that enabled us to print a DATAMATRIX specific label recognised by our robot when we entered the drug reference, an expiry date and the batch number.

Boxes were purchased to allow the Recycling of Drug Units (RDU) and were identified by their label. Returned drugs put in one of these boxes join the conventional automated system of globalised distribution.

Eligibility criteria for the RDU were: a unit price between €0.50 and 5 (for medicines distributed at least once a week); units over €5 and all the antibiotics.

Over one month, the amounts saved by not discarding the units eligible for the RDU and the costs of the whole process were estimated.

Results 1576 drug units were returned to the pharmacy from the wards.

40.6% were MUF-SP. Of these units, 45% were eligible for the RDU and saved €615.43 (86% of the price of the MUF-SP).

22 different drugs were recycled, of which 19 were antibiotics.

The estimated average time required to generate the whole system was 108 s per item and cost €0.84 per item (including staff and consumables costs). The total cost of the process was €19.14.

Conclusion This solution enables savings (compared to the described process costs), better safety and management. Such a method could reasonably be extended to other hospitals.

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No conflict of interest.

DD-006 STANDARDISATION OF ANTISEPTIC PRODUCTS DISTRIBUTION IN A PHARMACY DEPARTMENT

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Background Antiseptic products are currently supplied at random over the week. Wards send their orders when their stock is almost used.

Purpose The objectives are a) to standardise the drug chain supply (DCS) of antiseptic products to weekly replenishment by the pharmacy, b) to validate the method of calculating the quantities needed, and c) to set the quantities to have in stock in each ward in collaboration with the nursing team using the LEAN principles.

Material and methods The time taken by the pharmacy to supply antiseptics was recorded per ward for four weeks before standardisation. After calculating the quantities of products required by the "Kanban" calculation method and validation with the nursing team, one ward tested the new method of supply. Finally, time data were again collected for four weeks to compare them with those collected before standardisation.

Results First, the total time spent on supplying antiseptics was 2 h, 31 min and 19 s for all wards included. Before standardisation, we counted 5 prescriptions for the test ward over a 4-week period spread over Wednesday, Thursday and Friday. The total time spent for this ward by the pharmacy was 26 min 37 s. After standardisation and explanations to the nursing and pharmacy teams, we received 4 prescriptions over 4 weeks and spent 12 min 49 s on this activity.

Conclusion This method is suitable for the supply of antiseptics in our institution. The calculation method is appropriate. Moreover, a considerable time saving was observed for the pharmacy and assigned to other activities. It has therefore been decided to standardise the whole institution using this method.

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No conflict of interest.

DD-007 PHARMACEUTICALS INTERVENTIONS IN THE DRUGS DISPENSATION PROCESS BY AUTOMATED CABINETS IN A SPECIALTY HOSPITAL

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Background Appropriate, accurate and timely distribution of medicines to patients is a pharmacist's responsibility. Automated dispensing cabinets (ADCs) improve efficiency in distribution; but patient safety may be compromised if they are used incorrectly.

Purpose To analyse pharmaceutical interventions in ADC dispensing, in order to adopt steps that improve patient safety.

Material and methods A descriptive study was conducted in a 470-bed specialist hospital. Over 8 months (April–December 2013) pharmaceutical interventions in drugs dispensing to 9 infirmary units with ADC were collected. Interventions were made and recorded during ADC drug replacement in hospital wards, or during incident resolution at the pharmacy cabinet control point. All interventions made during the study period were analysed to determine their category and frequency. Interventions were recorded according Hernández and Poveda's classification of medicines errors in ADC.

Results 290 interventions were collected. The most frequent type of intervention was that related to incorrect ADC procedures and handling (59.7%). In this category, interventions were due to stock discrepancies (79), medicine devolutions discrepancies (35), lack of concordance with opiate stocks (25), wrong medicine location (17), and drug load (17). Another category identified was intervention related to the structure and functioning of the ADC (29.3%), and includes the following events: door blockage (29), drawer break/obstruction (14), other mechanical structural fault (19), mistakes in the ADC-hospital census connection (8), system breakdown (7), refrigerator failure (7) and electric supply failure (1). The less frequent intervention categories were those related to inappropriate handling and

storage (11.0%), and included interventions caused by expired medicines (15), lack of opiate prescriptions (6), damaged medicines (3), cabinet start-up (1), quarantine drug unload (19), and other reasons (6).

Conclusion The most common interventions on automated dispensation process are related to handling of cabinets. Therefore it's necessary to remind nurses periodically that correct handling of ADCs is essential to guarantee medicine availability and optimal storage, both necessary for safe drug use.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DD-008 MONITORING OF THE ADHERENCE TO THERAPIES FOR THE TREATMENT OF PULMONARY HYPERTENSION

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Background Adherence to the treatment for pulmonary arterial hypertension (PAH) is an important aspect of chronic disease management to improve the efficacy of treatment.[1]

Purpose The study aimed to evaluate adherence to long-term drug treatments for PAH.

Material and methods From 01/01/2010 to 04/01/2014 a retrospective analysis was done on therapeutic plans and prescriptions related to patients in treatment for at least one year by the Pneumology Unit. Items dispensed by the Clinical Pharmacist were analysed through data entered into the database F file. Mean therapeutic adherence, according to the literature,[2] was calculated using the "pharmacy-refill" method: days of dispensed treatment/(days between the first and the last prescription dispensed + 90 days)*100.

Results In the study period, 80 patients were treated with drugs for PAH. Of them, 34% (27/80) were on treatment with sildenafil, 20% (16/80) with bosentan, 10% (8/80) with ambrisentan. The remaining 36% (29/80) were treated with a combination of drugs. Twenty-nine patients received at least one year of treatment: 41% (12/29) male and 59% (17/29) female. 16.7% (2/12) of males aged >60 years had adherence of 88%; 41.6% (5/12) aged between 40 and 60 years were 91% adherent; 25% (3/12) aged between 30 and 40 years were 92% adherent and 16.7% (2/12) aged <30 years were 98% adherent. With regard to the females treated, 35% (6/17) of them aged >60 years showed 96% adherence; 47% (8/17) aged between 40 and 60 were 96% adherent; 11.7% (2/17) aged between 30 and 40 years were 100% adherent and 6% (1/17) aged <30 years were 100% adherent. All female patients showed adherence of >95%, while male patients in all categories had an adherence >80%.

Conclusion Analysis showed that patients more adherent to therapy were those who were younger and of female gender. Data were shared with physicians, and it was decided to carry out more specific training sessions targeted at patients aged >60 years in order to ensure greater adherence to treatment.

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No conflict of interest.

DD-009 LEAN MEDICINE ROOM SAVES TIME AND IMPROVES PATIENT SAFETY

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Background The healthcare sector is constantly challenged to achieve the most health care for the money and increase patient safety. Medicines dispensing is a very time-consuming process for nursing staff and a process with a high risk of errors. LEAN concepts are commonly used in The Capital Region Pharmacy to optimise and safeguard processes. In the future, it is recommended that new/reconditioned ward-based medicines rooms are designed according to LEAN concepts.

Purpose The objective of this pilot project was to investigate whether a medicines room designed according to LEAN concepts could save nursing staff time and improve patient safety.

Material and methods The pilot project was conducted on a cardiology ward during Spring (2014). The nursing staff was introduced to the LEAN concepts via an interdisciplinary workshop.

Before and after the LEAN implementation the nursing staff (n = 24) answered a semi-structured questionnaire including: Time spent on medicine dispensing in day shift, general overview in the medicines room and the occurrence of disturbances related to arrangement of medicines. Usage rates of the barcode verification in the medicines dispensing process were used as a proxy for patient safety.[1,2]

Results LEAN implementation freed time in the medicines dispensing process as described in the literature.[3] After LEAN implementation 40% (n = 10) of the nursing staff took more than 30 min during a day shift on medicines dispensing compared to 76% (n = 18) before. By optimising the arrangement of medicines, the barcode verification rate increased from 22% to 39% after six months (proxy indicator for patient safety). The nursing staff reported that LEAN implementation resulted in a better overview and reductions in interruptions in the medicine room. Similar results are found in the literature.[3,4]

Conclusion A medicines room adapted to the ward workflows in line with LEAN concepts has cut down on time spent in the medicines dispensing process and increased patient safety by encouraging barcode verification.

REFERENCES AND/OR ACKNOWLEDGEMENTS

See poster

No conflict of interest.

DD-010 DRUGS SUPPLIED TO PATIENTS DISCHARGED FROM HOSPITALS: THE EXPERIENCE OF AN ITALIAN HOSPITAL TREVIGLIO-CARAVAGGIO

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Background The supply of medicines by direct distribution to patients discharged from hospital is an important part of health care delivery.

In accordance with law n. 405/2001, in 2004 our hospital began to distribute treatment after discharge. Initially, it established a delivery service for custom packs of drugs, however only a few hospital departments participated in this procedure and not all the patients received the drugs.

At the beginning July 2014 our hospital set up a pharmacy dedicated to hospital discharges.

Purpose To verify the increase in number of hospital departments and patients following this new method of dispensing and the savings gained by distributing the first cycle of treatment.

Material and methods The analysis was performed by comparing drugs supplied in the period July–September 2013 vs. the same period in 2014. We assessed all requests to which the hospital pharmacies responded and the hospital departments that sent them. We also analysed the number of items dispensed and the cost of the drugs. (hospital vs. regional pharmaceutical expenditure).

Results Hospital pharmacies received 311 requests during 2013 vs. 629 in 2014, an increase of 67%. The number of hospital divisions that requested drugs went from 8 to 12.

In all, 1,157 items were supplied vs. 1,595 items, an increase of 58%.

We distributed about 90 active drugs and the drugs most commonly distributed were enoxaparin 15%, pantoprazole 11% and ramipril 7%.

The pharmaceutical cost for the delivery of medicines to citizens was €4,336. An estimated €21,239 was saved comparing with the cost of drugs from community pharmacies (€25,575).

Conclusion The supply of medicines by direct distribution has increased the number of patients receiving the first cycle of treatment.

This method of dispensing is significant not only for cost reduction but above all for the clinical care of the patient and the guarantee of continuity of care between hospital and the surrounding region.

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No conflict of interest.

DD-011 PATIENT COMPLIANCE WITH BIOLOGICAL DRUGS: EFFECTIVENESS OF DRUG SWITCHING IN MULTIPLE SCLEROSIS

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Background Multiple sclerosis develops differently in different patients (P), demands personalised drug treatment and is difficult to manage. Biological drugs (BD) may reduce symptoms and modify the progression of the disease.

Purpose We sought to measure P compliance when prescribed BDs, and to evaluate whether switching drugs could increase their compliance.

Material and methods Patients were interviewed in the period from January to April 2014.

Specifically:

24 P with INTERFERON BETA1a (9 Avonex, 15 Rebif)

6 P with INTERFERON BETA1b (4 Betaferon, 2 Extavia)

14 P with GLATIRAMER (Copaxone)

2 P with FINGOLIMOD (Gilenya).

Results Only 9 P expressed dissatisfaction with the treatments listed above.

5 of the patients complained of adverse drug reactions, 3 objected to the number of administrations and 1 lamented the poor efficacy.

Specifically:

The side effects of AVONEX and BETAFERON were well tolerated with 1 dissatisfied patient.

The side effects of REBIF and EXATVIA were less tolerable with 5 patients reporting flu-like symptoms (in accordance with SPC data on side effects) which caused them to miss days at work. Differences in efficacy and tolerability were observed between these interferons, in agreement with literature.

COPAXONE caused minimal side effects, but P complained about the multiple administrations.

GILENYA as second-line treatment was the best tolerated with no side effects.

In twenty cases, in response to P complaints, treatment was switched to a different drug. Thirteen of these P subsequently exhibited better compliance, while 7 were dissatisfied with the different treatment as well.

The treatments of these twenty P were switched for two reasons. In fifteen cases, the switch was motivated by side effects, while in the remaining five, the change was due to reactivation of the pathology.

Conclusion Compliance with all the MS treatments is generally very high. The same active ingredient has given different outcomes therefore it is recommended to switch the treatment.

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No conflict of interest.

DD-012 DESIGNING SUPPLY QUOTAS OF DRUGS IN CARE UNITS: HOW CAN WE IMPROVE THE METHODOLOGY FOR DOUBLE BIN REPLENISHMENT SYSTEMS?

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Background In our hospital, Double Bin Replenishment Systems (DBRS) are being progressively introduced into care units. For each DBRS, a supply quota of medicines is defined based on the unit's consumption during 6 months before the installation.

Purpose In September 2014, 43 care units were equipped by DBRS. Many qualitative and quantitative readjustments of the supply quotas are needed after installing them all. The purpose of this study was to analyse the supply quotas already established in order to critique our method of designing and to find a way to improve it.

Material and methods Qualitative analysis of drugs present in supply quotas in the care units where DBRS are already set up, according to the Anatomical Therapeutic Chemical classification (ATC) system.

Results There are 956 different drugs throughout the 43 supply quotas, which represent 45% of the drugs available in our hospital. None of them is found in every supply quota but 40 pharmaceutical specialties are present in more than 80% of care units and 139 in more than 50%.

Qualitatively, all classes of the ATC classification system are represented in these 139 drugs, except for the antineoplastic and immunomodulating drugs and for the sensory organs' drugs, which are expensive drugs that are not commonly used in every medical ward.

Based on these observations, we could improve the design of the supply quotas for the list of the 139 most represented pharmaceutical specialties. We propose developing a "standard supply quota" that could be used in all care units. These core supplies could then be added to by drugs specific to the unit.

Conclusion Supply quotas that are already implemented contain drugs of all ATC classes and may serve to define a "standard supply quota" that would be common to every care unit.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DD-013 DRUG SUPPLY CHAIN: HOW TO PREVENT OUT OF STOCK DUE TO INDUSTRIAL FAILURE? RETROSPECTIVE STUDY IN THE CENTRAL PHARMACY OF A UNIVERSITY HOSPITAL

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Background The central pharmacy orders 2,100 different drugs from over 80 suppliers. Its main mission is to ensure the continuous delivery of drugs in care units. Backorders are daily verified in order to avoid out of stock situation.

Purpose The objectives are to identify classes of drugs most frequently impacted and to present an organisational pattern to prevent interruption in patient's treatment.

Material and methods We retrospectively analysed all stock-outs between January 2014 and September 2014 in the central pharmacy, based on warnings notes we sent to care units. We identified classes of drugs most frequently impacted, we listed the solution implemented in each case, then regarding to most suitable solution we built an organisational pattern to overcome out of stock.

Results During the study, 63 stock-outs occurred; 36% of stock-outs involved anti-infective agents, 21% involved nervous system drugs, remaining 43% equally affected 9 other classes of drugs.

5 different solutions were identified, ranked toward their pertinence and future place in the organisational pattern:

- 12% solved by changing primary packaging (volume, number of tablet in the package)
- 32% solved by a drug switch (princeps/generic) including 9% solved by an importation managed by national agency of medicines
- 18% solved by changing pharmaceutical form
- 18% solved by changing dosage
- 20% solved by a drug substitution (same ATC class)

Conclusion The study resulted in a classification of the solutions regarding their priority and the development of an organisational pattern to face efficiently future stock-outs. It's also important to get the information as soon as possible to act quickly. In fact, 11 stock-outs were notified on the national agency of medicines website. In this context, tracking orders and minimum stocks are very useful tools to prevent out of stock situation and discontinuity in patient treatment.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DD-014 EVALUATION AND OPTIMISATION OF THE USE OF ALBUMIN BY RESTRICTED PRESCRIPTION IN A GENERAL HOSPITAL

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Background A number of studies have shown that albumin is used wrongly in hospitals, basically related to its use in hypoalbuminaemia-hypoproteinaemia. Therefore, prescription of albumin should be limited to specific indications. Until recently, pharmacists didn't know the indication for the use of albumin at the time of dispensing in our hospital.

Purpose To find out what albumin is commonly used for in clinical practice. To design and introduce a permission form bearing specific indications for albumin. To find out whether the implementation of this monitored prescription has affected the amount of albumin dispensed.

Material and methods In order to make the application form, we formed a working group including the main hospital services that use albumin. After introducing it, we examined how much albumin was dispensed during the first 6 months of using the application form, contrasting data with the previous 6 months.

Results This working group reviewed literature recommendations for the use of albumin, developed a permission form, including data about the physician and the patient, and the indications authorised for albumin: bacterial peritonitis, paracentesis, hepatorenal syndrome, hyponatraemic hypervolemia, multiple myeloma and hypoalbuminaemia associated with other factors. It was decided that only three days of treatment would be dispensed.

The most common indications were: paracentesis and hypoalbuminaemia.

The amount of albumin dispensed was reduced to 37.9% of the use over the previous 6 months, when the permission form had not yet been introduced.

Conclusion Up to now, in our hospital we dispensed albumin without knowing the indication for which it was prescribed. Since the introduction of pharmaceutical validation of the prescription by the permission form, there has been a decrease in and optimisation of its use.

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No conflict of interest.

DD-015 HOW SHOULD DRUG SHORTAGES BE DEFINED? A REVIEW

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Background Drug shortages are currently on the rise. In-depth investigation of the problem of drug shortages is necessary; however, a variety of definitions for 'drug shortages' are adopted by different organisations, e.g. Food and Drug Administration (FDA) and the American Society of Hospital Pharmacies (ASHP). For international comparison, it is important to clearly denote which definition is used by the national authorities or by (inter) national organisations.
Purpose To identify and compare different definitions and analyse the overlap and missing info in each definition.
Material and methods A literature review was performed searching the scientific databases MEDLINE and Embase for definitions of drug shortages. Grey literature, such as websites and documents of (inter)national drug agencies, was also incorporated.
Results More than 15 different definitions for drug shortages were identified. Articles in the scientific literature often refer to existing definitions. Only a few articles describe their own definition. After comparison of the definitions some overlap was observed. Sometimes drug shortages are defined as situations in which a drug is undeliverable for a certain period; this period ranges from one day to 20 days. However, delaying treatment of infectious diseases for 20 days will have a serious effect on patients. Other definitions only consider those drugs used for the treatment of serious diseases or drugs for which no alternative is available; this underestimates the size of the problem.
Conclusion The ultimate goal is to formulate a general European definition for reporting drug shortages, which is essential for international comparison. Indicating a time limit in the definition is an essential element for the comparison of nationally reported drug shortages. This time limit might be even one day if the patient's health warrants it. A definition of drug shortages covering all types of drugs is crucial to acknowledge the size of the problem.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

Drug information and pharmacotherapy

DI-001 ANALYSIS OF THE USE, EFFECTIVENESS AND SAFETY OF TREATMENT WITH TRASTUZUMAB-EMTANSINE IN METASTATIC BREAST CANCER

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Background Trastuzumab-emtansine (TDM1) is designed to inhibit the HER2 pathway and directly release DM1 chemotherapy inside HER2-positive cells.
Purpose To analyse the use, progression-free survival (PFS) and adverse drug reactions (ADRs) in patients with metastatic breast cancer treated with TDM1.
Material and methods Retrospective observational study including all women treated with trastuzumab-emtansine from March to October 2014. To obtain data, the electronic medical record (XXI Mambrino) was reviewed and analysed using SPSS. The variables were age, line of treatment, ADRs and PFS. ADRs were classified according to Common Toxicity Criteria v4.0. The effectiveness variable was PFS.
Results Five women (median age 51 years old (39–64)) were included at the beginning of the treatment. In 2 of them trastuzumab-emtansine was used in 1st line treatment of metastases; while in the rest it was used in 3rd, 5th and 6th line. The most frequent ADRs according to their severity were thrombocytopenia G2 and enzymatic hepatic alterations G3. The rest of the ADRs were mild and as described in the literature. Regarding PFS, 2 of the 5 patients progressed, obtaining a median PFS of 6 months. The other three patients have a median follow-up of 5 months to the time of writing.
Conclusion The use of TDM-1 is off-label in 2 of the 5 cases. One is being used first line with a progression time exceeding 6 months (10 months) and the other due to the inability to use the combination pertuzumab-trastuzumab-docetaxel due to prior taxane-induced neuropathy. The median PFS (6 months) was lower than that obtained in clinical studies (EMILIA 9.6 months, compared to lapatinib-capecitabine and TH3ERESA 6.2 months, compared to a medical treatment choice in patients who have previously been treated with both trastuzumab and lapatinib). Currently 3/5 patients continue with the treatment, thus, the median PFS will increase. TDM-1 by its toxicity profile has been a safe drug in our cases.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-002 DRUG INTERACTIONS: AN EXAMPLE OF SCIENTIFIC COOPERATION BETWEEN THE HOSPITAL PHARMACIST AND GENERAL PRACTITIONERS (GPS)

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Background Interactions frequently occur between drugsand can generate Adverse Drug Reactions (ADRs). In 2013, pharmacists from the Local Health District joined a project with 48 General Practitioners (GPs), who chose drug combinations for which they invited monitoring of their prescriptions for interactions: verapamil + simvastatin (i1), potassium chloride + potassium canrenoate (i2), calcium carbonate + Proton Pump Inhibitors (PPIs) (i3A), sevelamer + PPIs (i3B), levothyroxine + PPIs (i3C), fluconazole + PPIs (i3D), amoxicillin + lansoprazole (i3E), verapamil + simvastatin + ezetimibe (i4), amoxicillin clavulanic acid + lansoprazole (i5), calcium carbonate + vitamin D + PPIs (i6).
Purpose To evaluate GPs opinions of the efficacy and applicability of the cooperation project between pharmacists and GPs using a questionnaire.
Material and methods Strategies included: verifying the prescribing habits before the project, a literature review, consulting the Codifa database for practical solutions for the management of interactions, monitoring prescriptions in 2012, meetings and the questionnaire which was submitted to GPs. Reports with results obtained were given to the GPs.
Results 75% of the GPs contacted answered the questionnaire. Results were as follows: i) literature analysis was considered interesting by 94%, while 6% did not answer, ii) solutions were useful as follows: 20% i3C, 18% i5, 13% i3A and i3E, 10% i3D, 9% i1, 4% i2, i4, i6, and 1% i3B, while 4% did not

answer, iii) clinical improvement after the solutions were applied were observed in 34%, and iv) 80% of patients were satisfied. Such clinical improvements were monitored with blood tests, where possible (i1, i3A, i3C, i4, i6), by 30% of the GPs. 1/36 GPs found ADRs related to the drug interactions.
Conclusion The multidisciplinary approach was effective in increasing GP awareness of drug interactions. Furthermore, we learned of clinical improvements and patients' satisfaction from GP questionnaires. The project is continuing, monitoring prescriptions in 2013 and 2014.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-003 EVALUATION OF PROFESSIONAL PRACTICE ON THE MANAGEMENT OF CHEMOTHERAPY-INDUCED NAUSEA AND VOMITING

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Background In 2009, new guidelines were issued on the prevention and treatment of nausea and vomiting induced by chemotherapy. In the context of V2010 certification, a first evaluation was performed of professional practice in drug treatment for patients with lung cancer.
Purpose To evaluate the effectiveness of the improvements made following the first evaluation.
Material and methods In 2013, a prospective study was performed over two months using the same questionnaire as in 2010. Data collection was done by the pharmaceutical team during day care or conventional hospitalisation of patients. The results were analysed and compared to those obtained in 2010 using the Chi square and the Fischer test methods at α risk of 5%.
Results 33 questionnaires were identified. The proportion of women (36%) was higher than previously (15%) but no differences were observed in average age or mean creatinine clearance. Distribution of diagnoses, emetic power of protocols followed (high, medium and low), average number of days in hospital, number of drugs per protocol, duration of treatment and cisplatin fractionation were no different. Nausea and vomiting were better assessed and reported in patient records (58% in 2010 to 76% in 2013). An improvement in application of the American Society of Clinical Oncology recommendations for antiemetic treatment including an increase in the prescription of aprepitant were observed ($p < 0.001$). Less difference between the reference antiemetic protocol and actual prescriptions was observed ($p < 0.001$).
Conclusion The modifications made in 2010 (change of antiemetic protocols in the Chimio software and implementation of a prescribing model, based on the emetic protocol) have had a positive effect and helped improve drug treatment of nausea and vomiting. The new recommendations are being followed more closely including the prescription of aprepitant, optimising care. However, standardisation of care must not compromise the individual adaptability of anti-emetic treatment.

REFERENCE

1 www.asco.org/guidelines/antiemetics

No conflict of interest.

DI-004 STUDY ON PRESCRIPTION PATTERN AND COST ANALYSIS OF ANTIRETROVIRAL DRUGS IN A TERTIARY CARE HOSPITAL

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Background Antiretroviral treatment for human immunodeficiency virus type 1 (HIV-1) infection has improved steadily since the advent of combination therapy.
Purpose To assess the prescription patterns and cost of antiretroviral treatment in a tertiary care hospital.
Material and methods Drug treatments for HIV-1 were compared in adult patients affiliated to a tertiary care hospital of the Spanish Health System. All had been in treatment for more than six months (January–June 2014). The data were collected from the institution's medical records. Annual cost data were calculated by multiplying the monthly up-to-date antiretroviral treatment cost by twelve.
Results 604 patients were treated in this period using a total of 71 different combinations. The age range of patients was from 18 to 65 years and 73.01% were men. The total expenditure for the hospital was €4,267,561 accounting for 16.77% of the whole budget for outpatient treatments. The average cost per patient was €7,065. The seven most common combinations (number of patients,%), their costs (€) and their financial impact on the hospital of the antiretroviral treatments (€, %) were:

1. Emtricitabine/tenofovir/efavirenz (155, 25.66%), €5,805, (€899,794, 21.08%),
2. Emtricitabine/tenofovir/rilpivirine (64, 10.60%), €6,723, (€430,241, 10.08%),
3. Emtricitabine/tenofovir + lopinavir/Ritonavir (52, 8.61%), €8,125, (€422,523, 9.90%),
4. Emtricitabine/tenofovir + atazanavir/Ritonavir (48, 7.95%), €8,629, (€414,184, 9.71%),
5. Emtricitabine/tenofovir + darunavir/Ritonavir (28, 4.64%), €8,617, (€241,265, 5.65%),
6. Emtricitabine/tenofovir + nevirapine (25, 4.14%), €4,489, (€112,218, 2.63%),
7. Emtricitabine/tenofovir + raltegravir (22, 3.64%), €9,263, (€203,792, 4.78%).

Conclusion Despite the fact that a wide variety of combinations is used for HIV-1, the emtricitabine/tenofovir/efavirenz combo has been by far the most used. It is also one of the cheapest options among the most common therapies. These seven aforementioned options account for almost 64% of antiretroviral costs and cover 65% of the HIV-1 treatments. Additionally it is highly remarkable that all of them are emtricitabine/tenofovir-based therapies.

REFERENCES AND/OR ACKNOWLEDGEMENTS

We thank the hospital pharmacists for their support.

No conflict of interest.

DI-005 RESPONSE TO REPLACEMENT ENZYME TREATMENT IN PATIENTS WITH TYPE 1 GAUCHER'S DISEASE

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Background Enzyme Replacement Therapy (ERT) is the current standard treatment which significantly improves the quality of life of patients with type-1 Gaucher's Disease (GD-1).
Purpose To evaluate the use of ERT in patients with GD-1.
Material and methods Retrospective observational study with review of the patient's clinical history. Adult patients were included with GD-1 treated with imiglucerase or velaglucerase. ERT response based on: haemoglobin (≥11–12 g/dl), platelets (≥120 × 109/L), chitotriosidase (<600 nmol/mL h), liver volume (<1.25 times normal), spleen volume (<5 times normal) and bone pain (none/mild/moderate/severe). The type of response was established according to compliance with these criteria: OR optimal response (5/6), SR suboptimal response (3–4/6) and none ≤2. Detection of Adverse Drug Events (ADEs).
Results We included 3 patients (2 treated with imiglucerase and 1 with velaglucerase). Previously with thrombocytopenia and/or anaemia, hepato-splenomegaly and associated bone pathologies. They started treatment with imiglucerase and velaglucerase at equal dosage 60 IU/kg/2 weeks with reductions of up to 25% or 15 IU/kg. Median follow-up time: 7 years. We currently have 2 patients with ERT, 2 changed to substrate reduction treatment with miglustat but 1 patient returned to ERT therapy due to intolerance. All patients met the haematological criteria and maintained the following averages over time: Hb 14.7 (13.2–15.8), platelets 207 (174–312), optimal levels of chitotriosidase and reduction of hepatic and splenic volumes. Bone pain was not resolved in all patients with associated bone pathologies (1 patient with an episode of generalised bone pain). Clinical Response: OR all 3 patients met 5/6 criteria. Similar safety profile and very well tolerated without unexpected adverse events. ADEs: 1 velaglucerase (rash and diarrhoea resolved) and 1 patient with imiglucerase (infusion-related warmth). We prepare infusion solutions in the pharmacy, optimising the use of vials of imiglucerase by arranging appointments for 2 patients on the same day.
Conclusion In patients studied with GD-1, ERT was shown to be effective and safe. Imiglucerase and velaglucerase presented similar responses and maintained optimal blood levels and liver-spleen volume, with improvements in the quality of life in these patients. Patients reached and maintained the OR with good tolerance. Communication between the medical and pharmaceutical professionals is essential for appropriate dose adjustment and optimisation of the vials.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-006 PHARMACOVIGILANCE: ANALYSIS OF REPORTING OF ADVERSE REACTION TO MEDICATION FOR THE PREVENTION OF CARDIOVASCULAR DISEASE

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Background Around the year 2000, cardiovascular diseases were the direct cause of death of more than 4 million people in Europe. Cases of sudden cardiac death outside the hospital constitute a large part of cardiovascular mortality, from which it is necessary to identify the adverse drug reactions (ADRs) that have generated a cardiovascular episode.
Purpose To monitor ADRs related to cardiovascular events, in order to increase prescription appropriateness and patient safety.
Material and methods We analysed all ADRs that generated an Emergency Department Acceptance (DEA), exhibiting cardiovascular symptoms. The ADRs were collected and classified on the basis of frequency of occurrence and the type of drug suspected.
Results We analysed 98 reports in 2013, and 63 in 2014 (January–August). The reactions were stratified on the basis of the incidence of cardiac 32.6%–49.2% (2013–2014) and vascular events 67.4%–50.8% (2013–2014). The reactions with a higher incidence that resulted in vascular episodes were: orthostatic hypotension 28.2%–37.5% (2013–2014), syncope, pre-syncope and orthostatic syncope 17.9%–16.07% (2013–2014), haematoma 10.25%–10.7% (2013–2014). The reactions with a higher incidence that resulted in cardiac episodes were: bradycardia 34.14%–15.78% (2013–2014), syncope, pre-syncope and orthostatic syncope 19.51%–10.52% (2013–2014), atrial fibrillation 12.19%–8.77% (2013–2014) and tachycardia 21.95%–7.01% (2013–2014). The drugs most involved: warfarin 19.6%–12.6% (2013–2014), aspirin 9.8%–8.5% (2013–2014) and furosemide 6.55%–12.6% (2013–2014).
Conclusion This type of analysis allows the collection of data useful for the construction of a constantly updated database, through which it can appropriately monitor the patients, obtaining prescription appropriateness. Patients also can be followed in appropriate and relevant centres, resulting in reduction of cardiovascular events.

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No conflict of interest.

DI-007 ASSESSMENT OF THE EFFECT OF PATIENT EDUCATION ON COMPLIANCE WITH ANTIBIOTIC TREATMENT IN AMBULATORY PATIENTS

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Background Compliance has a crucial role for better therapeutic outcomes. Patient education correlates with compliance because informed patients are more conscious of their medicines. Many studies have highlighted the importance of taking antibacterial agents properly.
Purpose To evaluate the effect of patient education on compliance with prescribed antibacterial agents.
Material and methods A prospective, controlled trial was performed with 99 and 100 participants in a study group (better informed and educated) and control group (basic information), respectively. Participants completed a two-part questionnaire. The first part recorded socio-demographical info, diagnosis and details of prescribed antibiotics of the patients. The second part was presented one day after the end of the treatment. To measure the non-compliance, questions were asked about the number of pills remaining in blisters or containers, omitting the treatment or missing a dose, at what time patient took the drugs, feeling better or not and whether the patient leaflet had been read. Non-compliance was assessed both objectively using "tablet count" and subjectively using a "self-report".

Results The non-compliance rate was found to be statistically significantly higher in the control group compared to the study group ($p < 0.05$). Patients in the study group educated by a pharmacist did not quit antibiotic treatment ($p < 0.05$). Patients who reported not having recovered from their infection were more commonly observed in the control group ($p < 0.05$). Patients who used antibiotics at the right dose and time were also more numerous in the study group than the control group. There was a significant difference between study and control group in terms of age, with a younger study group.
Conclusion Higher compliance rates with antibacterial treatment and improved clinical outcomes were found in the study group.

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No conflict of interest.

DI-008 EVALUATING THE LEVEL OF KNOWLEDGE OF MEDICINES AND NEED FOR INFORMATION AMONG PEOPLE CARING FOR PAEDIATRIC CANCER PATIENTS

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Background Paediatric cancer patients visiting outpatient clinics are often prescribed several medicines. However, there is limited data describing the caregivers' knowledge about the patients' medicines and their need for information.
Purpose To evaluate the level of knowledge of medicines and need for information among caregivers of paediatric patients in the outpatient clinics of a comprehensive cancer centre.
Material and methods After receiving medicines counselling from the outpatient pharmacy, caregivers of paediatric cancer patients were asked to complete a self-administered questionnaire. The questionnaire consisted of 11 questions with a 4-point Likert scale, ranging from excellent to very poor. The survey assessed the caregivers' level of knowledge about the indications, dosing, side effects, drug-food interactions and storage requirements. The educational needs were assessed by asking questions related to the caregivers' ability to administer the medicines safely and correctly to their paediatric patients.
Results Out of 103 caregivers, 87 (84.5%) completed the questionnaire. Sixty-six caregivers rated the counselling provided by the pharmacists as excellent. Excellent/very good understanding of the indications for the medicines, dosing and storage requirements was reported by 83 (95%), 86 (99%), and 81 (93%) caregivers, respectively. Knowledge reported about drug-food interactions was excellent/very good in 57 (66%) caregivers and poor/very poor by 30 (35%) caregivers. With regard to educational needs, 68 (78%) caregivers reported excellent/very good ability at using oral syringes to administer medicines, whereas 19 (22%) caregivers reported poor/very poor ability. Ability of patients to swallow oral capsules or tablets was reported excellent/very good in 67 (77%) patients and poor/very poor in 20 (23%) patients.
Conclusion There is a great need to improve caregivers' knowledge of drug-food interactions. About one-third of our caregivers reported poor/very poor ability to use oral syringes to administer medicines and poor/very poor ability of paediatric patients to swallow medicines.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-009 VITAMIN K ANTAGONIST/NEW ORAL ANTICOAGULANT IN ATRIAL FIBRILLATION: MONITORING OF HAEMORRHAGIC RISK

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Background 2 years after obtaining marketing authorisation for the prevention of stroke and systemic embolism in patients with non-valvular atrial fibrillation (AF), the new oral anticoagulants (NOAs) are trying to establish their market position against the Vitamin K antagonists (VKAs).
Purpose To compare the side effects, in particular bleeding, of the NOAs versus VKAs in the treatment of AF in hospitalised patients.
Material and methods 100 cases of hospitalised patients treated by oral anticoagulants (50 VKAs, 50 NOAs) were analysed using an assessment table (Table 1). An interview with the patient and with his doctor, assessing his compliance, completed the observation. The data were then entered for statistical processing by Sphinx.
Results

Abstract DI-009 Table 1

Oral anticoagulant (OA)	VKA	NOA	VKA + NOA
Population and haemorrhagic risk factors			
Average age	83.1	78.9	81
Sex ratio (female/male)	1.08	1.5	1.29
BMI < 18.5	10%	2%	6%
Kidney failure	42%	26%	34%
Hypertension	66%	72%	69%
Heart failure > 2NYHA	18%	12%	15%
CHADS2-VASc score	4.38	4.12	4.25
HAS BLED	2.52	2.26	2.39
Prescription			
OA	62% fluindione	74% rivaroxaban	50% VKA
	38% warfarin	26% dabigatran	50% NOA
Introduction to hospital	7%	22%	14.5%
Class Switch OA	28%	12%	20%
Continued OA	65%	66%	65.5%
Number of non-recommended drug interactions	2.32	0.42	1.37
Side effects			
Gastrointestinal bleeding	10%	6%	8%
Renal haemorrhage	2%	0%	1%
Stroke	10%	10%	10%
Other	8%	4%	6%

Conclusion This study shows that patients treated for AF with VKAs/NOAs appear to have the same risk of haemorrhage. These results correlate with those obtained by the RELY and ROCKET studies,[1] while our population was more at risk (CHADS2-VASc was higher). Population treated for AF was an elderly population, polymedicated, with many risk factors. It is pertinent to validate the anticoagulation by AVK, except for

patients whose INR is unstable, where NOA becomes a real therapeutic alternative. The question of first-line use of an NOA in the Hospital is increasingly discussed for polymedicated elderly patients, all the more since VKAs are less easy to use in term of drug interactions, compliance and stability of INR.

REFERENCE

1 RELY and ROCKET studies

No conflict of interest.

DI-010 FACTORS INFLUENCING THE APPEARANCE OF HAEMATOLOGICAL AND THYROID ADVERSE EFFECTS IN PATIENTS WITH HEPATITIS C VIRUS GENOTYPE 1 TREATED WITH TELAPREVIR/BOCEPREVIR PLUS PEG-INTERFERON AND RIBAVIRIN

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Background Telaprevir (TVR) or boceprevir (BOC) with peg-interferon/ribavirin (PR) to treat HCV genotype 1 is associated with haematological adverse effects like anaemia, neutropenia or thrombocytopenia and alterations in thyroid function. Factors influencing the appearance of these adverse effects remain undefined.

Purpose We aimed to assess the relationship between the characteristics of our population undergoing triple therapy (TT) and those adverse events.

Material and methods 61 patients with hepatitis C genotype 1 treated with triple therapy (TT) during the period between January 2012 to June 2014 were included. We collected demographic data (age, sex), HCV genotype 1 (1a, 1b), fibrosis stage at the beginning of treatment (Metavir score) and TT treatment with TVR or BOC. The adverse effects analysed were: anaemia, thrombocytopenia, decreased granulocyte count and hypothyroidism/hyperthyroidism. Fisher exact test was used to study the associations between adverse effects and factors corresponding to patients' characteristics. Statistical analysis were conducted using the statistical software R.

Results The characteristics of the patients were: 47 men (14 woman), mean age 57 ± 9.3 years, 49 genotype 1b, 53 patients in TT with TVR (9 BOC) and 55 patients fibrosis stage F3–F4.

Anaemia (haemoglobin ≤ 10 g/dL) appeared in 29 (47.5%) patients. Neutropenia (granulocytes ≤ 0.75×10^9/L) appeared in 15 (24.6%) patients. Thrombocytopenia (platelet count ≤ 0.50×10^9/L) appeared in 5 (8.2%) patients. Hyper or Hypothyroidism (THS levels ≤ 0.4 or ≥ 4 mIU/mL respectively) appeared in 18 (29.5%) patients.

Only statistically significant relationship was observed between age and anaemia ($p = 0.013$).

Conclusion Age and not fibrosis stage was the main factor associated to the development of anaemia during triple therapy.

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No conflict of interest.

DI-011 PHARMACIST'S ROLE ON ADHERENCE AND LITERACY IN A CANCER OUTPATIENT SETTING

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Background Oral anticancer agents (OAAs) require self-administration by patients at home, increasing the risk of non-adherence and consequently, costs and decreasing overall patient survival.

Purpose To assess the impact of a comprehensive pharmaceutical care service on oncology outpatients' adherence. Secondary objectives were to analyse influencing factors and to compare different adherence tests.

Material and methods A comprehensive care program was developed in 2012. Pharmacist interviews and literacy reinforcement took place at the beginning of the treatment, after one and six months. A pre-post study was conducted. Patients starting treatment with OAAs in 2011 formed the control group and the ones who started in 2013, the intervention group. Demographics, tumour, OAA, current drug treatment, adherence evaluated by dispensing records and by Morisky-Green and Haynes-Sackett test data were collected at every visit. A patient was considered adherent when reaching 90% adherence.

Results 115 patients formed the control group and 134 the intervention group (158 men and 91 women; mean age of 66.9). The most common diagnosis was lung cancer (26%). On average, patients were taking 5 drugs concurrently.

The adherence rate in the first month was 94.7% in the control group and 95.7% in the intervention group ($p > 0.05$); after 6 months on treatment, it was 87.7% in the control group and 95.0% in the intervention group ($p = 0.025$). Moreover, the percentage of adherent patients increased in the intervention group after 6 months of treatment by 20% (60.5% vs. 80.8%, $p = 0.001$). In the intervention group, self-reported measurements depicted higher adherence rates that did not correlate with the record of prescriptions issued. Age and gender did not affect adherence. In contrast, differences were observed between OAAs ($p = 0.008$): sunitinib and pazopanib had the lowest rate of adherence (88.0%) in the first month and sorafenib (82.8%) in the 6th month.

Conclusion A comprehensive pharmaceutical care program improves adherence, resulting in a 20% increase in adherent patients after 6 months of treatment. Differences in adherence were observed between OAAs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-012 RITUXIMAB EFFICACY IN THE TREATMENT OF AUTOIMMUNE DISEASES

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Background The treatment of rare autoimmune diseases presents for patients the additional problem of limited therapeutic options, which are usually reduced to corticosteroids and immunosuppressants. The use of rituximab could be an effective alternative.
Purpose To determine the efficacy of treatment with rituximab in autoimmune diseases.
Material and methods Retrospective observational study of patients with autoimmune diseases who were treated with rituximab between January 2008–March 2014. Data was collected from electronic prescription records. Diagnosis, reason for prescribing, previous and concomitant treatments, dose, recurrence and treatment outcome were collected as study variables.
Results 11 patients (36% male), mean age 47 years were analysed. The diseases were lupus erythematosus (36%) autoimmune thrombocytopenia (9%) and a miscellaneous group: vasculitis, pemphigus, scleroderma, cryoglobulinaemia, Sjögren's syndrome, antiphospholipid syndrome (55%). The reason for using rituximab was: treatment failure with pre-treatments in 81% of cases or first choice in the remaining 19%. 81% of administrations followed the pattern 375 mg/m²/week for 4 weeks while 19% followed the pattern of 1,000 mg on days 1 and 15 of each cycle. With respect to previous treatment, 81% of patients had received high doses of corticosteroids, 54% corticosteroids with immunosuppressant; 1 patient was on prior treatment with intravenous immunoglobulin. Rituximab was administered concomitantly with corticosteroids for the majority of patients (91%). Treatment efficacy was assessed according to the response as: complete response (27%), partial response (54%) and no response (18%). Of the 11 patients studied, 6 (54%) received only one cycle of rituximab, 3 (27%) currently remain in treatment and 2 patients (18%) died due to progression of their disease.
Conclusion Although its efficacy is variable, rituximab may be a valid therapeutic option in autoimmune diseases. Randomised controlled studies are necessary to ensure the various indications of rituximab.

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No conflict of interest.

DI-013 BOCEPREVIR VS. TELAPREVIR: RESULTS IN THE CLINICAL MANAGEMENT AFTER 24 AND 48 WEEKS

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Background No

Purpose To evaluate the prescription pattern and efficacy of telaprevir (TLP) and boceprevir (BOC) in the clinical management of chronic hepatitis C (HCV) infection in a region.
Material and methods Multicentre observational cohort study of HCV patients treated with protease-inhibitor triple therapy from September 20012 to April 2014. The information extracted from electronic health records was: age, gender, comorbidity and previous experience of HCV treatment. The virological response (VR) was assessed in patients who reached 24 and 48 weeks treatment; quick virological response rate (QVR) and discontinued treatment rates were also assessed.
Results 124 patients were included (TLP = 82; BOC = 42), 65% were male (63.4% treated with TVR and 69% with BOC p = 0.533). There was no difference between the selection of treatment according to comorbidity, with the exception of HIV co-infected patients (total: 8.9%; TVR: 13.6% vs. BOC: 0%; p = 0.012) or with mental illness (21.2%; 27.3% vs. 10.5%; p = 0.044). The distribution of patients according to previous experience was: treatment-naïve patients (total: 41.1%; TLP: 36.6% vs. BOC: 50%; p = 0.151), null responders (18.5%; 14.6% vs. 26.2%; p = 0.117), partial responders (12.9%; 11% vs. BOC = 16.7%; p = 0.371), relapsers (26.6%; 36.6% vs. 7.1%; p = 0.0001). At week 24, 83 patients achieved VR: 62.7%; (TLP = 66.7% BOC = 55.2%; p = 0.346). QVR rates were 53.1%; (62.2% vs.50.7%; p = 0.023). According the previous treatment experience, VR were: relapsers 81.8%, treatment-naïve patients 63.8%, partial responders: 58.3% and null responders: 37.5% (p = 0.048). At week 48, 61 patients achieved VR or 57.4% (TLP: 62.2% vs. BOC: 50%; p = 0.348). Discontinuation rate was 13.6% (TLP: 20% vs. BOC: 3.8%, p = 0.062).
Conclusion TLP was the preferred treatment in HIV co-infected patients, mentally ill patients or relapsers. The statistical trend shows higher efficacy and discontinued treatment rate with TLP, but the differences are statistically irrelevant. Both drugs showed worse results in clinical management than reported in clinical trials.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-014 OFF LABEL USE AND ECONOMIC IMPACT OF BIOLOGIC THERAPY IN NON-INFECTIOUS UVEITIS

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Background Non-infectious uveitis represents a heterogeneous group of inflammatory intraocular diseases. Conventional treatment with corticosteroids and immunosuppressive agents may not be sufficient in refractory patients. Off-label use of biological response modifiers has been studied as an alternative.
Purpose To describe the use and financial impact of biological treatment in refractory non-infectious uveitis.
Material and methods Retrospective, observational study. We included patients with non-infectious uveitis treated with biological agents between 2009 and June 2014. Patients were identified by reviewing off-label uveitis authorizations and data was collected from electronic medical records. Individual costs were calculated using the hospital acquisition prices.
Results 79 patients (117 biologicals) were identified: 75% women, 41 ± 16 years old. Anatomic diagnosis was: posterior (46.8%), anterior (32.9%), panuveitis (13.9%) and intermediate (6.3%) uveitis.

Of the biological agents prescribed to the 85.5% of patients with anti-TNF (14.5% tocilizumab), the most prescribed was adalimumab (55%), followed by infliximab (33%), golimumab (9%) and certolizumab (3%).

Over 80% of patients received one drug, 10% two, 9% three and only one patient received four.

The main reason for switching was: loss of efficacy (18.2% infliximab, 44.4% golimumab, 33% certolizumab, 11.8% infliximab) and side effects (9.1% adalimumab, 11.8% tocilizumab).

23.1% of anti-TNF and 20% of tocilizumab could be discontinued for stable disease.

In the financial analysis (n = 54), overall cost/patient varied from €2,030 to 98,250 (median €12,940). The cost associated with each drug was: €23,430, €21,100, €12,320, €3,960, and €21,025; with a mean duration of 15.4, 18.6, 13.6, 4.9, and 11.3 months, until the final follow-up date, for infliximab, adalimumab, golimumab, certolizumab and tocilizumab respectively.

Conclusion TNF blockers and tocilizumab may benefit patients when conventional immunosuppressive treatment has failed or has been poorly tolerated. Given their cost as well as the lack of studies related to effectiveness and long-term safety, they cannot be used routinely.

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No conflict of interest.

DI-015 EVALUATION OF PHARMACOLOGICAL PAIN CONTROL MANAGEMENT IN CANCER PATIENTS: A PATIENT-CENTRED APPROACH TO PREVENT EXPOSURE TO INEFFECTIVE MEDICATION

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Background Pain experienced by patients with end-stage cancer represents a continuing source of frustration for them, their families and the healthcare team. While some patients over-report pain, the reverse is often true, so these patients could be over/under treated for pain.

Purpose To evaluate the pharmacological management of pain in cancer patients, being nursed in an internal medicine clinic without previous experience in palliative care.

Material and methods Given the increased numbers of end-stage cancer patients being admitted to this clinic, it was decided in 2014 that all pharmacological choices for pain alleviation for inpatients who remained more than one week should be systematically reviewed. A brief questionnaire was prepared to identify both patients' satisfaction with analgesic treatment and the quality of relevant information imparted to them by the healthcare team.

Results During the first six months of 2014, 42 end-stage cancer patients participated in the study (82% of patients admitted). 26% did not need any analgesics, while an indwelling system for intravenous infusion of morphine was inserted for one patient. 45% of patients' pain management involved some mild opioid (codeine ± paracetamol) or tramadol, 38% transdermal/transmucosal fentanyl, 26% adjuvant therapy with an antidepressant/anticonvulsant agent. Full satisfaction was reported by 68% of patients, 32% declared themselves adequately satisfied, while 60% were very pleased with the quality of information they received about their analgesic treatment.

Conclusion Since per os normal or modified release morphine formulations are not widely available in our country, tramadol (in contrast to nonsteroidal anti-inflammatory drugs) seem to be most preferred before moving to increased doses of fentanyl. In order to prevent overexposure to analgesics any pain control strategy in cancer patients should ensure that both the individual needs are being met and the ever-changing expression of pain is being captured.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-016 DEVELOPMENT OF A QUICK REFERENCE GUIDE FOR SYRINGE DRIVER DRUG COMPATIBILITIES

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Background Drug administration via syringe driver is safe, simple, non-invasive and cost effective. A continuous subcutaneous (SC) infusion is used to provide symptom control in patients unable to tolerate oral administration, particularly in the palliative care setting. Various drug combinations are used in clinical practice and typically include opiates, anti-emetics, anxiolytics and anticholinergics.

Many parenteral formulations of drugs may be suitable for subcutaneous administration however evidence and clinical experience with their use is lacking. In particular, information on the inherent risk of physical and/or chemical incompatibility associated with the process of mixing multiple parenteral drugs is neither readily accessible nor easily interpretable for frontline staff. In 2012, Medicines Information (MI) received 57 enquiries pertaining to the compatibility of parenteral drugs prescribed for continuous SC infusion via syringe pump, reflecting the need for a local reference compatibility chart.

Purpose To develop continuous SC infusion compatibility charts for the administration of 2- and 3-drug combinations.

Material and methods

1. Review of previous MI enquiries relating to drug compatibility in syringe drivers.
2. Search for available stability data on specific 2- and 3-drug combinations using past MI enquiries and palliative care resources.
3. Compile the data and develop compatibility charts for commonly prescribed 2- and 3-drug combinations.

Results A continuous SC infusion 2- and 3-drug combination compatibility chart was developed. The 3-drug compatibility charts focused on morphine and fentanyl in combination with another two drugs.

Conclusion The administration of continuous SC infusions via syringe driver has become fundamental in symptom management within the palliative care setting. It is anticipated that these charts will enable frontline staff to readily access compatibility data at the time of prescribing. Monitoring of MI queries will continue to direct updating the resource to reflect hospital practice.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-017 USAGE PROFILE, EFFECTIVENESS AND SAFETY OF COFORMULATED RILPIVIRINE/EMTRICITABINE/TENOFOVIR

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Background Rilpivirine/Emtricitabine/Tenofovir (RPV/FTC/TDF) is a single tablet regimen recommended for treatment-naïve HIV patients with baseline viral load (VL) < 100.000 copies/mL.[1]
Purpose To analyse the usage profile, effectiveness and safety of RPV/FTC/TDF.
Material and methods Retrospective study conducted in a Primary Hospital between May 2013–Sept 2014. Patients included were those with HIV infection who started RPV/FTC/TDF treatment. Data were collected from electronic medical records: Demographics, previous antiretroviral therapy (ART), reason for treatment, immunovirological status, laboratory data (VL, CD4, c-LDL, Total Cholesterol) and adverse effects before/after start of RPV/FTC/TDF. Adherence was assessed by the dispensing records and the Simplified Medication Adherence Questionnaire (SMAQ) (patients were considered adherent with scores over 95%).
Results RPV/FTC/TDF was initiated in 21/390 (5%) patients with ART. Age (years): 45 (range: 31–70); Male: 14/21 (68%). Patients with previous ART: EFV/FTC/TDF: 7; FTC/TDF/ATV/r: 2; 3TC/AZT/NVP: 1; 3TC/AZT/LPV/r: 1; ABC/AZT/LPV/r: 1; TDF/FTC/NVP: 1; FTC/TDF/ETV: 1; FTC/TDF/DRV/r: 1; DRV/r: 1; FTC/TDF: 1. Reasons for prescription: 17 ART-experienced (81%) and 4 ART-naïve (19%). Pretreated reasons: 9 (53%) simplifications, 6 (36%) to avoid previous ART toxicity (EFV: 4, Protease Inhibitors: 2) and 2 (11%) others. Three patients were withdrawn (low adherence: 2, pantoprazole interaction: 1). Pre-treatment data: Adherence > 95% 7/17 (41%), VL < 50 copies/mL: 8/21 (38%), pretreated VL < 50 copies/mL: 8/17 (47%), CD4: 507, c-LDL: 114 mg/dL, Total cholesterol: 180 mg/dL. Post-treatment data: Adherence > 95%: 17/21 (80%), patients simplified to RPV/FTC/TDF who achieved >95% adherence: 6/9 (66%), VL < 50 copies/mL: 18/21 (85%), pretreated VL < 50 copies/mL: 16/17 (94%), CD4: 563, c-LDL: 102 mg/dL, Total cholesterol: 164 mg/dL. Reduction in c-LDL and Total Cholesterol was 10% and 9% respectively, which is consistent with previous studies.[2] Only one patient experienced headaches during the first week with RPV/FTC/TDF.
Conclusion RPV/FTC/TDF was used primarily as a strategy for simplification and to avoid ART toxicity, mainly due to EFV. All patients had undetectable VL, improved adherence (+39%), effectiveness (11% increase in CD4) and treatment was well tolerated. Lipid profile was improved too.

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No conflict of interest.

DI-018 SIMPLIFICATION TO SINGLE-DRUG REGIMEN WITH A RITONAVIR-BOOSTED PROTEASE INHIBITOR FOR HIV PATIENTS

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Background Single-drug regimens (SDR) with ritonavir-boosted protease inhibitors (PI) could potentially be a regimen simplification to avoid nucleoside reverse transcriptase inhibitor (NRTI) toxicities in patients carrying human immunodeficiency virus (HIV) who fulfil several requirements: virological suppression, high level of medicines adherence, no previous IP virological failure and high CD4 count (>100 cell/mcL).
Purpose To evaluate the effectiveness and safety of SDR with ritonavir-boosted lopinavir (Lp/r) and ritonavir-boosted darunavir (Dr/r) in HIV-positive patients pre-treated with three-drug regimens (TDRs) including an NRTI.
Material and methods Retrospective observational study of HIV-positive patients with treatment switches from TDR to SDR in a second-level hospital.

Data were collected from the Farmatools-Dominion program and medical records. Variables included: sex, age, duration of previous TDR, plasma viral load (PVL) pre- and post-treatment switching, virological failure with PIs, CD4 cell count before switching and months of SDR to date (June'11–September'14).
Results Twenty-two patients were identified, 9 treated with Lp/r (5 men) and 13 with Dr/r (all men). Mean age at the time of the study: 48 + 6 years. 4 patients (2 with Lp/r and 2 with Dr/r) were co-infected with Hepatitis C virus and all subjects had been treated with TDR for a minimum of 12 months prior to treatment change. In all subjects basal PVL was undetected for at least 6 months before switching and remained undetectable during the entire study. One exception was a single patient with confirmed viral rebound which led to treatment re-intensification with two NRTIs included in the previous TDR.

No patients presented virological failure with the previous PI and the median CD4 counts at treatment switch were normal (825 ± 583 cell/mcL). All subjects were treated with SDR for a median period of 22 months and both adherence and tolerance were considered successful before and after switching.
Conclusion SDR with a ritonavir-boosted PI might be an alternative as effective as traditional combinations. It involves a clear benefit for HIV-positive patients because it simplifies treatment with minor toxicity and a small number of interactions.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-019 STUDY OF ADHERENCE TO THE USE OF INHALED COLISTIN

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Background Treatment with inhaled colistin (IC) in our health area has increased in recent years; requiring learning and retention by the patient.
Purpose To relate the adherence to treatment with IC with the efficacy in patients with non-cystic fibrosis bronchiectasis colonised with Pseudomonas aeruginosa (PA).
Material and methods Retrospective observational study in a university hospital between January 2010 and January 2014. We selected those patients who started treatment with IC during this period including those of whom we could monitor by obtaining data from the I-neb inhalation device. The information obtained was: average duration of the complete treatments, management of the device and the adherence of each patient for the first 3 months of continuous treatment. We obtained the demographic, diagnostic and microbiological data of each patient, considering in each case whether it was initial colonisation, intermittent or chronic.

Results Of 44 patients treated with IC, 19 of them met the study inclusion conditions as they could be monitored when visiting the Pharmacy Service with the I-neb device. The average age was 69.4 years (SD: 17.4) and 52.6% were women. Regarding the type of colonisation it was initial in 6 patients (31.6%), intermittent in 2 (10.5%) and chronic in 9 (47.4%). Only two patients had no culture and treatment was initiated empirically.

The data from the nebulization system were: 1. Complete treatment took on average 6.1 min (SD: 3.8), exceeding 10 min with only two patients. 2. 95.5% of patients used the device correctly. 3. Adherence to treatment was 93.9%, being less than 80% in one patient. After completion of the treatment, which lasted 3.5 months (SD: 2.2), cultures became negative in 9 patients (42.1%).

Conclusion Most of our patients were adherent to the treatment (73.7%) which suggests that the I-neb was easy to use.

The role of the pharmacist is relevant because in the few cases where the average length of complete treatments was higher or adherence was low, the importance of these concepts was reinforced during the monthly clinical interview.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-020 EFFECTIVENESS OF SORAFENIB IN ADVANCED HEPATOCELLULAR CARCINOMA IN REAL-LIFE CONDITIONS

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Background Sorafenib is an oral multikinase inhibitor used for the treatment of hepatocellular carcinoma (HCC). It is the only systemic treatment indicated for advanced HCC and was included in our Hospital´s formulary in 2007.

Purpose To assess the characteristics of the patients receiving sorafenib for the treatment of HCC in our hospital and to describe the treatment effectiveness in real-life conditions.

Material and methods Retrospective observational study. We included all patients who had started treatment with sorafenib for HCC in our hospital between 1st January 2007 and 31st December 2013. Demographic and clinical variables (tumour stage according to BCLC, ECOG PS, Child Pugh, presence of macroscopic vascular invasion and/or extrahepatic spread) were recorded. The main outcomes were time to progression and overall survival, assessed by Kaplan-Meier plots. Results were also analysed with the log-rank test stratified by BCLC stage.

Results 72 patients were included. They had predominantly BCLC stage C HCC (77.8%), PS between 0–1 (88.9%) and compensated cirrhosis. At the end of the study, 53 patients had discontinued the treatment. The most common reasons for treatment discontinuation were clinical worsening (35.1%) and occurrence of uncontrollable adverse events (24.6%). The median time to progression was 4.8 months (95% CI 3.8, 5.9). The median time to progression was 3.1 months (95% CI 2.5, 3.7) in the BCLC B group, as compared with 5.3 months in the BCLC C group (95% CI 4.4, 6.1), p = 0.024. At the end of the study, 44 deaths had occurred. Median overall survival (OS) was 15.2 months (95% CI 11.2, 19.3). There was no significant difference between the two groups in the median OS:19.5 months (95% CI 9.6, 29.4) in the BCLC B group vs. 14.2 months (95% CI 8.9, 19.5) in the BCLC C group, p = 0.75.

Conclusion The effectiveness of sorafenib in the treatment of advanced HCC under real-life conditions is consistent with the data from the clinical trials. Our results seem to indicate that in patients with BCLC stage C, sorafenib is more likely to delay disease progression. Nevertheless, overall survival was longer in the patients with BCLC stage B carcinoma.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-021 IMPROVEMENT STRATEGIES IN QUALITY PRESCRIBING INDICATORS ON A HEALTHCARE AREA

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Background Our Public Healthcare Service have developed some quality indicators (QI) based on the selection of drugs that support better evidence of efficiency in areas of prescribing where more deviations were detected in the past.

Purpose To describe the strategies for improving the indicators, measuring compliance with them after three years and evaluating their financial impact on the public budget.

Material and methods Retrospective observational study. The percentage of prescriptions of three QIs (omeprazole versus total PPIs, simvastatin versus total lipid-lowering drugs and ACE inhibitors versus total renin-angiotensin-aldosterone-system inhibitors) was evaluated before and after an educational program consisting of clinical sessions, meetings with the head of medical team (HMT) and Medical Director, periodic written reports for doctors and interviews with low-compliance-rate doctors. Prescription rates were measured in March 2011 and February 2014. Prescribing data and financial impact were obtained from the reimbursed drugs Program (Microstrategy), which enabled us to calculate the possible savings if the optimal level of prescriptions were to be reached.

Results 24 clinical sessions were held in 2011, 17 in 2012 and 10 in 2013. Meetings with the HMT and Medical Director were biannual in 2011 and annual in 2012–13. 23 interviews were held, all in 2013. Reports were distributed in 100% of Units and possible periods. Omeprazole prescription was 69.3% at the beginning and increased to 85.4% three years later. Simvastatin prescribing also increased from 18.07% to 40.4%, and the percentage of ACE inhibitors rose from 28.44% to 52.82%. Regarding cost savings, in March 2011 drug expenditure in our Healthcare Area was €244, 717 more than with the theoretical optimum level of prescription, but in February 2014, this excess had reduced to just €44,803.

Conclusion The strategies adopted were well received by the doctors, resulting in a considerable improvement of the indicators evaluated. This improvement now produces direct annual savings of €200,000 in the public budget in our Healthcare Area compared to three years ago.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-022 NEW CHANCES IN MULTIPLE SCLEROSIS TREATMENT: SUSTAINED-RELEASE FAMPRIDINE

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Background Walking impairment is one of the major primary symptoms in patients with multiple sclerosis (MS), which greatly affects their quality of life and emotional state.

Fampridine is a new oral treatment used to improve walking ability in adults with MS. Its use was approved by the EMA in 2011 for patients with an Expanded Disability Status Scale (EDSS) score between 4 and 7. Patients who do not experience clinical benefits (reported by the physician and patient) after two weeks' treatment should discontinue fampridine. This condition was established due to the results of Phase III trials, which demonstrated improved walking ability in only 35–43% of the patients treated with fampridine and an increase in absolute walking speed in 20% of the patients.

Purpose To evaluate the effectiveness of sustained-release fampridine in patients with MS and walking disability, after 2 weeks of treatment.

Material and methods A one-year prospective, observational study. Patient characteristics (age, sex), clinical data (EDSS, clinical benefits perceived by the physician and patient) and treatment-related information (drug, dose and number of tablets dispensed) were obtained from the available databases in our hospital.

Results 91 patients started taking fampridine between October 2013 (when the Pharmacy Commission approved its use in our hospital) and October 2014. They were reviewed after two weeks of treatment by their neurologist and pharmacist to evaluate improvement in their walking ability and physical condition. In this reassessment, 71 patients (78%) showed an improvement in their walking ability and moving speed, and continued the treatment. Only 18 of these (25%) experienced a reduction of their EDSS (mean 0.5 points). None of them suffered adverse effects due to fampridine.

Conclusion Our patients responded better than anticipated from the clinical trials. Although fampridine has shown limited efficacy it covers a current treatment gap in this disease.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-023 EFFECT OF DIFFERENT ANTIFUGAL EYE DROPS ON HUMAN CORNEAL CELLS IN VITRO

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Background It is essential to determine the safety of ophthalmic drugs.

Purpose To demonstrate any *in vitro* cytotoxicity of antifungal eye drops manufactured by the Hospital Pharmacy Department.

Material and methods Three antifungal eye drops (voriconazole 28.67 mM, fluconazole 6.53 mM and amphotericin 1.62 mM) were tested in Human Corneal Keratocytes (HCK). Toxicity to these cells was assessed using the novel label-free and real-time monitoring xCELLigence system. Under this platform, the Cell index (CI) was used to represent cell status based on the measurement of electrical impedance. Briefly, 3,000 cells/well (E-plates 16 wells) were seeded and incubated for 24 h until the CI reached the range of 1.0–1.2 indicating about 60% cell confluence. At this stage, cell culture medium was aspirated to perform cell treatment using different concentrations of antifungal eye drops. CI values were recorded throughout the test, obtaining real-time graphs of the cells' behaviour in contact with the antifungal and IC50 was determined (corresponding to the concentrations of compounds that inhibit cell growth by 50% compared to controls).

Results The kinetic curves clearly showed that cellular response depends upon concentration and time in all antifungals tested. (These graphics will be displayed on the poster). The IC50 values obtained were 5.85 mM, 0.16 mM and 0.5 mM for voriconazole, amphotericin and fluconazole respectively.

Conclusion These results may be helpful in warning of cytotoxic effects of antifungal eye drops manufactured by Hospital Pharmacy Departments which are being used in concentrations that exceed the IC50 determined.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

DI-024 OFF-LABEL USE OF GABAPENTIN AND PREGABALIN IN A TERTIARY HOSPITAL

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Background Gabapentin and pregabalin are two GABA analogues, example of an evergreening strategy. Both have been associated with a markedly off-label use.

Purpose To describe the extent and nature of the off-label use of gabapentin and pregabalin.

Material and methods Prospective observational study performed in a tertiary hospital. We included patients being treated with gabapentin or pregabalin at any time between June and August 2014. The variables collected were: sex, age, drug, therapeutic indication, dose and cost per patient-month (according to retail prices). These data were used to describe the rate and nature of the overall use and off-label use by drug. Data were collected through review of medical records and by electronic pharmacy refill records. Statistical analysis was performed using SPSS Statistics 20.0.

Results Sixty-five patients (54% male, mean age 60 ± 14 years) were included. Eighteen (28%) were being treated with gabapentin and 47 (28%) with pregabalin. The overall off-label use was 43% (28 patients), with no differences between the drugs (44% gabapentin and 43% pregabalin). The off-label use was related to the therapeutic indication (25 patients) or the dose (3 patients). The off-label indications for gabapentin were: central neuropathic pain (6), subacute or chronic low back pain (3),

generalised anxiety disorder (3) and refractory visceral pain (1). The off-label indications for pregabalin were: subacute or chronic low back pain (6 patients), fibromyalgia (5), and essential tremor (1). The average cost per patient-month was €25 ± 11 for gabapentin and €156 ± 65 for pregabalin.

Conclusion Gabapentin and pregabalin are often prescribed for off-label use. Despite having failed to demonstrate clinically relevant differences over gabapentin, pregabalin holds a high prescription rate with consequent extra costs for the hospital, representing an area in which rational drug use could be promoted.

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No conflict of interest.

DI-025 DIMETHYLFUMARATE FOR THE TREATMENT OF MULTIPLE SCLEROSIS: DOSING REGIMEN AND SAFETY DATA

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Background Dimethylfumarate is an oral treatment recently approved in France for the treatment of relapsing forms of multiple sclerosis at the recommended dose of 120 mg twice daily for 1 week then 240 mg twice daily.

Purpose To compare the prescribed starting dose of dimethylfumarate to the recommended one and to evaluate tolerability.

Material and methods For 3 months (May to July 2014), each new patient with a prescription for dimethylfumarate was included in the study. For these patients, we collected data about the disease (with medical software); the starting dose and questioned them about possible adverse event.

Results 30 patients were included (6 men and 24 women) with mean age of 46. Dimethylfumarate is prescribed as a second-line (17/30) or a third-line (13/30) treatment. The main reasons for prescribers to choose this treatment were: ineffective or contra-indicated injectable drugs (37%), poor tolerability (23%) and fear of injections (20%). For 16 patients, the recommended starting dose was followed; the other 14 patients received a more gradual dosing regimen than that recommended. Regarding tolerability, adverse events reported more frequently by patients were flushing (50%), diarrhoea (20%) and abdominal pain (17%). 73% of patients had side effects whatever the starting dose (63% of those receiving the recommended dose and 85% of the others) but after one month, adverse events had stopped in 95% of these patients. During that study, 4 patients discontinued the treatment due to relapse of multiple sclerosis.

Conclusion This study shows that prescribers followed the recommended starting dose for only 53% of patients. A more gradual dosing regimen for the starting dose didn't seem to reduce the occurrence of side effects. It will be interesting to confirm this result by studying the frequency of occurrence of adverse events and using scales to assess quality of life compared to injectable treatments.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-026 IMPACT OF A TARGETED POLICY ON INTRAVENOUS OXYCODONE AND MORPHINE CONSUMPTION

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Background By analysing clinical units consumed, an increase in the consumption of IV oxycodone (+50%) instead of injectable morphine (-50%) between 2008 and 2013 was noted. However, the cost/benefit ratio of IV oxycodone compared to morphine is not favourable (ratio 10 times higher for oxycodone). The Committee for the Fight against Pain (CLUD) and the Medicines Commission (COMEDIMS) initiated targeted actions and specific recommendations on the proper use of these agents; these recommendations were relayed by our Hospital Medical Committee (CME).

Purpose To assess the medical and financial impact of recommendations issued by the CLUD and COMEDIMS.

Material and methods The recommendations focus on the use of morphine as first line treatment including postoperative, ICU and palliative care. Stock issued to clinical unit was changed, replacing IV oxycodone with IV morphine.

The quantities and costs of oxycodone and morphine consumed (oral and injection) were analysed six months after the action and compared to the same period before the action.

Results The results show a 38% decrease in quantity (-267 g) and 39% in cost (€22,050) of IV oxycodone consumption, with a carryover to the oral oxycodone (+30% in volume, +63 g, +28%/€1,490 cost increase) and morphine IV (+19% in volume, +52 g, 20%/€670 cost increase).

Overall consumption of strong opioids (oral and IV) decreased by 8.5% in quantity (-92 g) and 30% in cost (€20,170).

Conclusion Our policy has been effective with an overall cost reduction of 30% (€20,170) in six months. It is being maintained and extended to oral forms based on the results obtained.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-027 PEMETREXED USE IN PATIENTS WITH STAGE IV LUNG ADENOCARCINOMA WHO UNDERGO THYMIDYLATE SYNTHASE LEVEL INVESTIGATION

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Background Determination of thymidylate synthase (TS) levels in tumour tissue versus control tissue is useful in our hospital when selecting patients who can benefit from treatment with pemetrexed.

Purpose To compare patients with lung adenocarcinoma stage IV and low levels of TS with patients not previously investigated.

Material and methods We performed a retrospective observational study over a three-year period of patients with stage IV lung adenocarcinoma who were treated with pemetrexed.

Data collected: age, line of treatment, cycles received, ECOG, previous treatments, progression free survival (PFS) and levels of TS.

We compared patients who completed the treatment with those being followed up (routine determination of TS).

In the second group we measured PFS from the first cycle up to date (now in treatment).

Results 31 patients were enrolled on treatment: median age 62 years (56.5–66.5), median cycles of pemetrexed received 4 (3–7). 41.9% patients had ECOG 0, 48.4% ECOG 1, and 9.7% ECOG 2. 41.9% received pemetrexed in the first step, 41.9% in the second, 9.7% in the third and 6.5% in the fourth.

When the study finished: 21 patients had completed the treatment, median PFS being 1.3 months (1–3.4). Among this group, TS levels were not determined in 8 (38.1%). In the rest of patients, 12 showed low levels, only remaining high in 1 patient.

Of the 10 patients still being followed up, levels of TS were determined, with the exception of 1 (treatment initiated in 2011). All patients showed low levels, the median of stable disease being at least 6.5 months (5–13).

Conclusion Patients who start treatment without previous scoring of TS have a worse response to pemetrexed.

TS level determination is considered an indicator of the effectiveness of the treatment.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-028 OFF-LABEL USE: A DESCRIPTIVE RETROSPECTIVE ANALYSIS

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Background Off-label use is covered by the Spanish law, which establishes its evaluation and management in the hospital setting. Therefore hospital pharmacy budgets must include this financial burden.

Purpose To describe the frequency of off-label use, what drugs and indications are prescribed off-label and its financial burden in a hospital setting.

Material and methods A retrospective observational study was conducted. Off-label uses during 2013 were recorded. We collected the following variables: drug name, therapeutic use, number of patients and cost. The information was assessed by reviewing our Hospital Pharmacy off-label databases. Costs were calculated according to the purchase prices of our hospital.

Results We found 62 drugs in 131 off-label indications. These drugs were used by 809 patients. 18.3% were children. 29% of the drugs were used by 86% of the patients. The most frequent and the highest financial impact drug uses were: erythropoietins for myelodysplastic anaemia in adult patients (87 patients, €257,484) and sildenafil for children with pulmonary hypertension (87 patients, €143,460).

Other expensive off-label uses were: immunoglobulins for neuropathy (€283,863) and octreotide for angiodysplasia with bleeding (€142,489).

The most frequent diseases to be treated off label were: lupus (mycophenolate mofetil, 55 and rituximab, 75 patients), toxicity associated with hepatitis C treatment (filgrastim or erythropoietins, 88 patients) and pulmonary hypertension (sildenafil, 87 patients).

In all cases, there were no other therapeutic options.

Conclusion A large number of drugs are prescribed off-label and some of them are expensive. Therefore, off-label use is associated with a high financial burden.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-029 QUALITY OF INFORMATION ON MALE FERTILITY IN THE SUMMARY OF PRODUCT CHARACTERISTICS – CAUSE FOR CONCERN

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Background Reasons for male infertility are manifold and often not clearly identifiable; drug treatment can be a contributing factor. Retrospective analysis of 378 men wishing to father a child revealed drug consumption in 43.4%.[1] Detailed information about drugs affecting male fertility is essential for counselling of physicians and patients. According to European guidelines the Summary of Product Characteristics (SmPC) should include specific information on this topic.[2]

Purpose To study the quality of information given in SmPCs on the effect of drugs on male fertility.

Material and methods The SmPC should contain information on the effect on male fertility under headings 4.6 (Fertility, pregnancy and lactation) and 5.3 (Preclinical safety data).[2] The current German SmPCs of 124 drugs were examined for the required information and details were differentiated by gender. SmPCs were obtained from www.fachinfo.de or company web sites.

Results Of the 124 SmPCs 41 mentioned male fertility under heading 4.6. Under heading 5.3 82 mentioned reproductive studies, 29 gave no information, 8 times no studies existed and 5 gave incomplete information. Only 10 mentioned male fertility directly, 14 referred to male and female fertility, 35 used the term "fertility". In 12 cases data on fertility/reproduction were only presented elsewhere in the SmPC (not 4.6/5.3). SmPC contained no information at all on fertility in 47 cases, despite some of them mentioning reproductive studies.

Conclusion Data on the effect of drugs on male fertility presented in the SmPC are incomplete and in many cases not in line with requirements of the European guideline. General statements on "fertility" without male/female distinction are not helpful since the reproductive capability of women and men differs in many aspects.

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No conflict of interest.

DI-030 HEALTH OF THE COUPLE AND TRANSMISSION OF HIV INFECTION TO THE OFFSPRING: AN EPIDEMIOLOGICAL ANALYSIS OF CHILDREN BORN FROM SEROPOSITIVE PATIENTS IN SIRACUSA, SICILY

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Background About 50% of all HIV patients in the world are females. Monitoring of therapies is important to prevent renal failure and osteoporosis, to preserve the immune system in order to plan a pregnancy, to avoid the teratogenic effects, and to prevent vertical transmission of infection during labour.
Purpose The aim of this retrospective observational study is to analyse all pregnancies occurred among HIV patients treated in last decade.
Material and methods We examined all HIV-seroconcordant and -discordant couples taking ART. For patients we considered the number of pre-term/full-term pregnancies, spontaneous/caesarean deliveries, intrauterine deaths, miscarriages, and all cases of breast-feeding or bottle-feeding.
Results Overall, 76 couples were examined. In the 78.9% (60 couples) of cases an optimal compliance to the treatment were verified. Of these, 40 (52.6%) were couples without children. Of remaining 47.4%, 18 were multiparous (44 pregnancies). Full-term pregnancies occurred in 74% of cases, all from couples with optimal therapeutic compliance. Pre-term pregnancies occurred in 11% of cases, intrauterine death in 11%, miscarriages in 4%: all adverse events were reported in couples with poor compliance. Of all children, 29 (65.9%) were born spontaneously and 15 (34.1%) with caesarean delivery. Moreover, 38 (86.4%) children were bottle-fed and became seronegatives within first year. Only 6 (13.6%) children were breast-fed and seropositive, but in two cases mothers were not treated because undiagnosed before pregnancy.
Conclusion Our study showed that an adequate treatment of HIV is important to prevent the adverse events of pregnancies in HIV-couples. Although the therapeutic option is not conditioning in couples without born, our results demonstrate that in patients with an optimal compliance to the ART no miscarriages and other adverse events occurred. Social status and drug use are important factors determining the risk of infection in the offspring.

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No conflict of interest.

DI-031 ANALYSIS OF ADVERSE DRUG REACTIONS REPORTED IN A UNIVERSITY HOSPITAL FOR PREVENTABILITY

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Background Adverse drug reactions (ADRs) are an important cause of morbidity and mortality in health care. Studies have explored the ability of a hospital's ADR database to identify common and repeated patterns of preventable adverse drug events (ADEs).
Purpose To identify ADRs reported in a University Hospital over 2 years and to classify these ADRs according to the causative drug, drug class and the causality relationship.
Material and methods A retrospective analysis of ADRs reported to Medicine information services (MIS), over 2 years from April 2011 to March 2013. Reports were entered in a database for documentation and further analysis. ADRs were categorised according to: Causative drug (classified according to the WHO ATC classification), Drug class and Causality (analysis according to the WHO-UMC causality assessment system).

A random sample of ADRs during admission was selected for analysis of preventability and severity. Preventable ADRs (pADRs) were identified using preventability criteria adapted from Schumock and Thornton with modification. The severity of pADRs was determined according to the Hartwig Severity scale.
Results A total of 1,299 ADRs were reported and documented in the MIS database between April 2011 and March 2013. The highest number of ADRs was reported in adults (n = 848, 65%), followed by the elderly >65 years old (n = 241, 19%). Causality analysis of ADR's was completed for 1,061 ADR reports. The causality of the majority of ADRs (74%) was assessed as probable.

In preventability analyses, 860 ADRs were reported in the inpatient setting. A random sample of 162 ADRs was selected for the preventability analysis. Out of 135 ADR's, only 28 (20.7%) were considered preventable.
Conclusion Analysis of a hospital ADR database identified preventable adverse effects from medicines. Although this method is not representative of all preventable ADRs, it is a starting point to identify high-risk areas that can be targeted to improve the quality of the drug-use system.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-032 ANTIRETROVIRAL THERAPY, ADHERENCE AND QUALITY OF LIFE IN OLDER HIV-PATIENTS WITH MODERATE-HIGH CARDIOVASCULAR RISK

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Background The availability of more potent drugs, with fewer adverse effects, and new therapeutic strategies, such as simplification and ritonavir-boosted protease inhibitor (PI/r) monotherapy have changed the antiretroviral therapeutic profile of HIV patients.
Purpose To analyse the relationship between antiretroviral therapy (ART), adherence and health-related quality of life (HRQL) in HIV patients older than 50 years, with moderate-high cardiovascular risk (CVR), integrated in a pharmacotherapy follow-up service.
Material and methods Patients on antiretroviral therapy aged over 50, with a CVR ≥ 2 (assessed by the risk score), who signed an informed consent were included. Study variables were obtained through interview, clinical history and pharmacy records. The HRQL was assessed through the MOS-HIV questionnaire[1] and the adherence by the SMAQ questionnaire and electronic dispensing record.

Results We included 73 patients, 84% males, median age 54 years (IQR 52–59) who had been diagnosed with HIV for 17 years (IQR 13–20). Median CD4 count 684 cells/mm^3 (IQR 469–882) and 93% with undetectable viral load. Adherence according to dispensing records was 93% (89–98) and by SMAQ, 67% were adherent. The most prescribed antiretrovirals were darunavir and tenofovir, 32% of patients had been prescribed an unconventional regimen and 29% PI/r monotherapy, median of three tablets/day (IQR 3–4) and 75% once daily. The domains of HRQL, physical (PHS) and mental (MHS) were significantly higher in: patients over 60 years, patients with more than 10 years of ART and with fewer than 3 tablets/day. Patients not on IP/r had higher scores on all dimensions of HRQL with significant differences in cognitive functioning ($p = 0.015$).
Conclusion Patients presented antiretroviral therapy in unconventional combinations, more than 90% adherence and undetectable viral load. Antiretroviral treatment strategy could improve the quality of life perceived by the patient.

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No conflict of interest.

DI-033 DRUG-INDUCED SWEET'S SYNDROME (DISS): THE CASE OF ALLOPURINOL

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Background Sweet's syndrome (acute febrile neutrophilic dermatosis) is an uncommon, severe cutaneous condition. It may be induced by several drugs but it has not been previously associated with allopurinol treatment.
Purpose To describe a case of Sweet's syndrome in a patient treated with allopurinol.
Material and methods The case was identified within an active pharmacovigilance project.

PubMed and Micromedex databases were used to carry out a literature search. Diagnostic criteria for DISS reported in the literature were evaluated.

The Naranjo algorithm was used to evaluate the likelihood of causality between the DISS and allopurinol.
Results An 87-year-old woman with type 2 diabetes mellitus, obesity, arterial hypertension, osteoporosis and arthritis was prescribed allopurinol for hyperuricaemia. Eight days later she developed fever, painful oedema in the hands and lower limbs with non-pruritic erythematous plaques topped by pus-filled skin blisters, right eye conjunctivitis and joint pain. Two days later the patient discontinued the drug and went to the hospital. Blood tests showed neutrophilic leucocytosis ($20.58 \times 10^3/\mu L$), inflammatory state and altered liver function. Treatment with three different antibiotics was not effective; culture of pus samples was negative for bacterial, fungal, and mycobacterial organisms.

The levels of the main tumour markers were within the normal ranges. Splenomegaly was observed. The patient showed a rapid clinical improvement of symptoms after the administration of intravenous corticosteroids.

Conclusion The following observed symptoms are consistent with a diagnosis of Sweet's syndrome: 1) painful erythematous plaques or nodules of sudden onset, 2) pyrexia, 3) temporal relation between the drug ingestion and clinical presentation 4) rapid response to systemic corticosteroid therapy.

The Naranjo algorithm indicated the association as probable.

Because the symptoms of Sweet's syndrome resemble an infectious process, the correct diagnosis may be delayed and an inappropriate treatment regimen with antibiotics may often precede glucocorticoid therapy.

REFERENCE

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No conflict of interest.

DI-034 ELTROMBOPAG AS AN ALTERNATIVE FOR REFRACTORY APLASTIC ANAEMIA

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Background Aplastic anaemia comes from a bone marrow failure which affects all blood lineages. Treatment is based on immunosuppression or allogeneic transplant, but some patients are refractory to these options. Eltrombopag, a thrombopoietin receptor agonist administered orally, promotes megakaryopoiesis and platelet release.
Purpose To assess eltrombopag effectiveness as off-label treatment for immunosuppression-refractory aplastic anaemia.
Material and methods A 10-month (1/12/2013–30/09/2014) retrospective study was carried out including immunosuppression-refractory aplastic anaemia patients who weren't allotransplantation candidates. After approval by the Regional Committee for drug use under Special Circumstances, each patient received different eltrombopag doses. In order to assess the effect, data were gathered from platelet count at baseline and subsequently, considering the response positive when the platelet count increased enough to avoid transfusion. Clinical data were obtained from the patient's history and from Outpatient records.
Results We recovered data from two patients (male, aged 26 and 34) diagnosed with aplastic anaemia refractory to anti-thymocyte globulin, ciclosporin and high-dose steroids. Neither of them were candidates for allotransplantation. Initial dose was 50 mg/day, causing a platelet count increase of 7 and 272 mill/mm^3 after three weeks. Then, doses were modified according to current response to an average of 6.25 mg/day, reaching counts of 5–125 mill/mm^3 (average 44.33 mill/mm^3) in one patient and 1–553 mill/m^3 (average 139.76 mill/mm^3) in the other. The average treatment length was 6.75 months. Those results are similar, even better, to the ones shown in a phase-II study (Olnes *et al*, 2012) involving 25 patients with the same diagnosis and dose (response in 44%, average increase 44.0 mill/mm^3, nine of them transfusion independent).
Conclusion Both patients reached platelet counts higher than 100 mill/mm^3, avoiding transfusions and their associated risks, with an improvement in their quality of life. Because of the unavailability of other treatments for this kind of patients, the off-label use of eltrombopag is a promising alternative when there's little chance of cure.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-035 SHOULD WE MAKE PATIENTS AND NURSES AWARE OF THEIR DRUG ADMINISTRATION PROBLEMS AND TRAINING NEEDS?

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Background Medicines administration errors are a well-known safety risk for patients and a lack of knowledge is one major cause of errors. Therefore, every effort is made to close knowledge gaps among medicine users to make drug administration safe. However, rarely the medicine users were prospectively asked for specific drug administration problems and training needs.
Purpose The first step in preventing errors is to study their aetiology. Therefore, we qualitatively assessed the medicine users' drug administration problems in order to investigate causes of errors and training needs.
Material and methods Focus groups with patients, caring relatives, and nurses were conducted using semi-structured interview guides for a focused exploration of participants' drug administration experiences and training needs. All discussions were audiotaped and videotaped. After verbatim transcription, data were analysed using Mayring's qualitative content analysis. Ethical approval was obtained from the local ethics committee and informed consent was signed by all participants prior to the study.
Results We conducted three focus groups with eleven patients and caring relatives, two focus groups with ten nurses from a nursing home, and one focus group with four nurses from a university hospital. In accordance with the published literature, patients and nurses reported drug administration problems related to different dosage forms, and potentially at every step in the administration process. The qualitative content analysis revealed that patients frequently trivialised drug administration, were unaware of errors, and primarily blamed the dosage form for administration problems. In contrast, nurses also sought out the patient as potential causes of administration problems e.g. due to dysphagia.
Conclusion Patients who are unaware of problems will not ask for help, and hence might not be reached by a traditional educational intervention. For the implementation and evaluation of the success of an educational intervention it is crucial to ask the intended target group, i.e. medicine users, for training needs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Conflict of interest.

DI-036 INTRAVITREAL AFLIBERCEPT IN REFRACTORY AGE-RELATED MACULAR DEGENERATION

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Background Intravitreal aflibercept is approved in the treatment of neovascular age-related macular degeneration (AMD). The duration of its effect is higher than that of ranibizumab and bevacizumab but the effectiveness in patients who do not respond to these treatments is unknown.
Purpose To evaluate the efficacy of intravitreal aflibercept on best-corrected visual acuity (BCVA) and central retinal thickness (CRT) in refractory AMD.
Material and methods Prospective observational study in patients diagnosed with AMD treated with aflibercept, who didn't respond to ranibizumab and/or bevacizumab.

Variables: BCVA (ETDRS optotypes) and CRT obtained on optical coherence tomography (OTC 3-D).

Statistics: Wilcoxon test for paired data and Student t test for paired data, considering results significant if p value <0.05.
Results A total of 27 eyes from 24 patients were included, 20 of them were females. The median age was 76.98 ± 9.9 years old. 12.5% of the patients received bilateral treatment. 22.2% of the eyes were previously treated with photodynamic therapy (PDT), 70.4% with ranibizumab (average 7.5 injections/eye, range 2–24) and 77.8% with bevacizumab (average 8 injections/eye, range 1–33). 52% of the eyes had been treated with both ranibizumab and bevacizumab.

The average number of aflibercept injections per eye was 3.3 (1–10). In **63% of the eyes there was an increase in BCVA**, 7.5% of the eyes maintained the previous BVCA and 29.6% lost vision. ETDRS before and after treatment was **60.4 ± 2.5 vs. 62.3 ± 3.2 letters (p = 0.0504).** 89% of eyes experienced a decrease in the CRT measured by OCT, **324.9 ± 22.2 vs. 245.5 ± 13.4 mcm (p < 0.01).**
Conclusion Aflibercept is effective in refractive AMD. We obtained a better anatomical response than visual. Due to the duration of the study we expected a greater effect with repeated administrations.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-037 TOXIC EPIDERMAL NECROLYSIS PROBABLY DUE TO CHEMOTHERAPY: A CASE REPORT

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Background Toxic epidermal necrolysis (TEN) is a rare but severe cutaneous adverse reaction with a high rate of mortality and morbidity.
Purpose To report a case of TEN after abiraterone and zoledronic acid exposure.
Material and methods Retrospective review of the electronic medical record (Ianus) and records of chemotherapy ordered and dispensed (Farmis and Silicon).

A literature search was conducted of keyword terms "abiraterone AND toxic epidermal necrolysis" and "zoledronic AND toxic epidermal necrolysis" in PubMed and EudraVigilance database until March 2014.

The suspicion was reported to the pharmacovigilance centre.
Results The case involved a 74 year-old male without any history of drug allergies, diagnosed with prostate adenocarcinoma in 2004, who received a second-line treatment with abiraterone

1,000 mg/day, prednisone 10 mg/day and zoledronic with dose adjusted for renal function.

48 h after zoledronic administration (15 days after starting abiraterone) fever and pruriginous erythema appeared on the chest, but later extended involving the face, oral and nasal mucosa and back of the hands, sloughing of 70% of the body surface area.

SCORTEN scale, severity-of-illness score validated for TEN, was ≥4; mortality ≥60%.

The patient received supportive care without complications, after 2 weeks had been discharged.

No case reports were found in the published literature. This is the first case report in EudraVigivilance for abiraterone and the seventh for zoledronic.

He was not re-exposed to the suspected offending agents zoledronic and abiraterone.

The causality assessment of TEN was regarded as possible by pharmacovigilance centre for both drugs.

Conclusion TEN is a rare life-threatening reaction; it is important for health care professionals to evaluate and report any severe reactions that may be associated with newly-marketed drugs.

Post-marketing drug experience is needed to develop an accurate safety profile.

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No conflict of interest.

DI-038 APPROPRIATE USE OF ANTI-DEMENTIA DRUGS IN THE ELDERLY: PRESCRIPTION PRACTICE EVALUATION IN NURSING HOMES

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Background Anti-dementia drugs (ADDs), including cholinesterase inhibitors and memantine, are used to improve cognitive function in patients with Alzheimer's disease. However, the literature analysis shows only short-term efficiency of these drugs, with questionable clinical relevance and risk of drug interactions increased by polypharmacy.

Purpose To investigate the prescription practice of ADDs and assess the appropriateness of these medicines in nursing homes.

Material and methods A prospective study was carried out over 60 days, based on all prescriptions received in the pharmacy from 3 nursing homes. Each prescription was analysed and patient records were consulted.

Results Of the 416 patients, 145 were treated with at least one ADD. The stage of the disease was: 11% mild, 26% moderate, 36% moderately severe, 27% severe. 75 patients (52%), including 3 at the mild stage, were receiving memantine monotherapy, marketed for moderate-to-severe stages. 41 patients (28%), including 3 at the severe stage, were receiving anticholinesterase drug monotherapy, marketed for mild-to-moderately severe stages. 29 patients (20%) were taking two drugs, memantine + anticholinesterase, including 3 at the mild and 4 at the severe stage. The treatment had been introduced more than 12 months ago for 114 patients, usually without clinical reassessment. It was often associated with benzodiazepines (n = 63), sometimes with antipsychotic (n = 7) or atropinic drugs (n = 4).

Conclusion The choice of ADD was appropriate for 91% of patients, but the treatment is rarely reassessed and in almost half of cases was associated with a drug known to cause acute cognitive impairment. This study will help us to develop a cross-functional approach between physicians and pharmacists to improve the prescribing of ADDs in nursing homes.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-039 PRELIMINARY STUDY TO ESTABLISH A NEW LINK BETWEEN HOSPITAL AND RETAIL PHARMACISTS TO FOLLOW UP PATIENTS TREATED WITH VITAMIN K ANTAGONISTS

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Background Overdose of vitamin K antagonists (VKA) is the most common cause of iatrogenic adverse drug reactions in France. Since 2013, the French health authorities have asked retail pharmacists to conduct patient education sessions about VKA treatment.

Purpose To assess the operation of a new link between hospital pharmacists and retail pharmacists in order to improve patients' knowledge of VKAs.

Material and methods A consultation focused on VKA treatment management was implemented in the cardiology unit. All patients treated with VKAs were invited to attend an information session (led by a nurse or a pharmacist). A patient information form (comorbidities, indication, initiation date, target INR values, caregiver) and a 10-item questionnaire on knowledge of their medicine (name of VKA and indication, monitoring, risk of overdose, daily management) were filled in after each consultation. Then, all this information were sent to the retail pharmacist by email/fax. After 1 month, this questionnaire was taken again during a consultation with the patient at the retail pharmacy. The questionnaires were then compared (before and after hospital discharge).

Results 11 patients were enrolled in this 2-month preliminary prospective study. 9 retail pharmacies agreed to participate. We received 7 complete answers from retail pharmacists. 4 patients' knowledge of VKA treatment improved after the second consultation. How to deal with a missing dose and the importance of treatment monitoring were the 2 items least understood. Name of VKA, INR target values and time to take the drug were well understood. One of these 11 patients was hospitalised for drug overdose one week after hospital discharge.

Conclusion This first study is encouraging. To improve the follow-up of these patients, a link between pharmaceutical services and general practitioners should also be developed. More patients need to be enrolled to assess the efficiency of this collaboration in improving patient knowledge.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest

DI-040 LONG-TERM EFFECT OF AN INDIVIDUALISED MEDICATION PLAN WITH DRUG ADMINISTRATION RECOMMENDATIONS ON THE PATIENTS' DRUG KNOWLEDGE

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Background Inadequate patient knowledge of their drugs correlates with medication errors. An enhanced medication plan with recommendations about drug administration increased patients' drug knowledge at hospital discharge by 64% [Send *et al*. 2014]. However, because behavioural changes may soon be lost, the benefits of such patient education measures may be only short-term.
Purpose To assess the long-term effect of a medication plan with recommendations about drug administration in a prospective randomised controlled study in an outpatient setting.
Material and methods The study was conducted in four family practices with patients using five or more drugs. After inclusion, the patients' current knowledge of their drugs was assessed using three standardised questions about their pharmacotherapy. Thereafter, patients were randomised to receive a medication plan either containing only standard information (i.e. drug name, active ingredient name, strength, drug regimen, dosage form; control group) or enhanced with drug administration recommendations and indications (intervention group). After approximately two months, patients were contacted again and their drug knowledge was reassessed.
Results Of the 120 patients enrolled (60 per group), 42 patients in the control group (8.4 ± 3.3 drugs) and 45 in the intervention group (7.4 ± 2.8 drugs; $p = 0.12$) completed the study. Drug knowledge was similar in both groups at the beginning of the study (43.7% vs. 40.7% correct answers; $p = 0.63$). After 2 months, patient drug knowledge had increased in the intervention group compared to the control group (65.2% vs. 46.0% $p = 0.002$) with 14 patients in the intervention group answering all three questions correctly compared to only 4 patients in the control group ($p = 0.012$).
Conclusion Positive long-term effects of patient education in the form of an active intervention are possible. A personalised medication plan enhanced with drug administration recommendations persistently increased the drug knowledge of patients with polypharmacy.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-041 KETACONAZOLE: MEDICAL TREATMENT OF CUSHING'S SYNDROME

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Background In Cushing's syndrome (CS), when surgery is unsuccessful or contraindicated, ketoconazole is the drug most frequently used to treat hypercortisolism.

In July 2013, European Medicines Agency announced their negative risk-benefit assessment of oral ketoconazole as treatment of fungal infections, because it can cause liver damage and drug interactions due to cytochrome P450 inhibition. Ketoconazole was suspended as an antifungal in the European Union, but compassionate use is authorised for CS.
Purpose To analyse the hormonal effects and tolerance of ketoconazole in CS over the last year.
Material and methods Nine patients [32–83 years old] were treated in hospital. All patients were retrospectively studied with a follow-up of 26 months; their treatment had lasted from 12 days–25 years. One patient had ectopic ACTH production, two had pituitary adenoma, and six had adrenal neoplasia. Four patients had previously had surgery, but it was not effective in two cases. The dose of ketoconazole was between 200–1,200 mg/day.

Liver tests checked: transaminases, total bilirubin and alkaline phosphatase. Hormonal control was observed with Nugent's test and 24 h urinary free cortisol. The patient's current treatment was noted to check for drug interactions.
Results All patients were checked. No adrenal insufficiency was observed. Liver function tests were normal. Five patients stopped ketoconazole: two for surgery; two died of metastatic cancer; and one because of a potential drug interaction with calcium antagonism. 77.8% of the patients had some possible drug interactions, but only one stopped ketoconazole. Other interactions were with drugs metabolised by CYP450; or with proton pump inhibitors which reduce the pH-dependent absorption of ketoconazole. These problems were solved by changing the dose of the drugs concerned.
Conclusion Ketoconazole seems to be a safe and efficacious treatment in CS. However, it is necessary to perform a bigger study to get significant conclusions.

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No conflict of interest.

DI-042 ANTIBIOTIC CONSUMPTION IN PATIENTS WITH SEVERE PRESSURE ULCERS

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Background Pressure ulcers are a painful, debilitating and potentially serious outcome of failures of routine medical and nursing care, which represent a significant unnecessary cost to the healthcare system. In contrast with other adequately described guidelines (e.g. positioning, support surfaces, nutrition, wound dressings), limited data concerning the systematic use of antibiotics in these cases has been reported.
Purpose To investigate the use of antibiotics in patients with severe pressure ulcers (of grade 3 or 4) being nursed in a hospital ward, specialised in admitting patients who require prolonged continuation of treatment (after having been hospitalised in an acute care facility).
Material and methods Data concerning antibiotic consumption (converted to daily defined doses, DDDs) in this clinic in the year 2013 was extracted from the hospital pharmacy Data Information System. Data concerning antibiotic use in the group of patients under investigation, was compared to the total antibiotic

consumption in this clinic over the same period of time, to generate percentages of antibiotic use these patients.
Results Although only 2.5% of inpatients (though accounting for the 10% of occupied bed days) suffered from pressure ulcers of grade 3 or 4 at the time of their admittance for continuation of treatment, they required a significant percentage of the total DDDs of antibiotics consumed in that clinic, e.g. 90% of colimycin, 71.5% of piperacillin/tazobactam, 100% of teicoplanin, 100% of cefepime, 87% of amoxicillin/clavulanic, 62% of vancomycin, 37% of meropenem, 44% of ceftazidime and 43% of clindamycin.
Conclusion Given the concomitant morbidities in these patients, it is difficult to define pressure ulcers as the primary indication for the systematic use antibiotics; however the presence of an ulcer of such a grade is substantially equivalent to a life-threatening infection, hence is in accordance with the high antibiotic consumption reported.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-043 BIOLOGICS ARE A NEW CHALLENGE FOR HOSPITAL PHARMACISTS - PILOT STUDY OF PATIENT ADHERENCE

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Background Dispensing biological drugs has become an exclusive competency of hospital pharmacists both to in- and outpatients in recent years in Hungary. Biologicals are the most important treatment for patients with rheumatoid diseases, but poor adherence can undermine the effectiveness of these medicines. Although routine monitoring have been recommended, there are no standardised methods to track adherence to biologicals.
Purpose Pilot study to measure rheumatology outpatients' adherence to biologicals, to identify medicines errors, to improve storage and use so they are safe and effective and to identify critical intervention points for hospital pharmacists.
Material and methods A 31-item questionnaire using a four point Likert scale was developed based on the Rheumatology Compliance Questionnaire. Questions focused on factors modifying treatment and adherence. Patients were interviewed by a hospital pharmacist. The data were evaluated by descriptive analysis and chi-square test.
Results 106 rheumatology patients filled in our questionnaire; 21.7% of respondents were identified as non-adherent. Neither side effects ($p = 0.303$), therapeutic switch ($p = 0.578$) nor complexity of treatment ($p = 0.712$) correlated significantly with adherence category. Patient-centred care significantly influenced adherence ($p = 0.057$). A higher rate of adherence was measured amongst patients receiving an infusion in the hospital (67%), than those self-administering biologicals at home (59%, $p = 0.260$). Numerous medicines use errors were detected during the personal interviews. 29% of responders found patient education ineffective, 19% emphasised the lack of patient-centred care.
Conclusion Adding a pharmacist to the healthcare team has many benefits in improving adherence. Based on our findings hospital pharmacists must focus on:

- identification of non-adherent patients during personal interviews
- providing information about storage and administration of biologicals at home
- the elderly, who do not accept the invasive nature of administration

As an outcome of our study a specific patient leaflet has been developed aiming to optimise outcomes and minimise risks of biologicals used in rheumatoid diseases.

REFERENCES AND/OR ACKNOWLEDGEMENT

No conflict of interest.

DI-044 USE OF KETAMINE RINSING SOLUTION FOR REFRACTORY PAIN IN A PAEDIATRIC ONCOLOGY PATIENT: A CASE REPORT

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Background Refractory cancer pain is often difficult to manage. Ketamine is a drug with evidence of efficacy in the treatment of chronic cancer pain.
Purpose To evaluate the efficacy and safety of ketamine rinse solution in paediatric patients with refractory cancer pain.
Material and methods We report on a paediatric oncology patient who presented with painful conditions refractory to conventional analgesic treatment. Intravenous ketamine was diluted to a final concentration of 10 mg/mL in sterile water to rinse. Mouth rinses with 3 mL (30 mg) once daily was prescribed, specifying two rinses daily if required. Efficacy was measured on a visual analogue scale for pain (VAS pain), the Clinical Global Impression – Global Improvement (CGI-I) Scale, and the reduction of dose or withdrawal of analgesic drug base. Safety was measured in terms of variation in some clinical parameters (blood pressure, heart rate, oxygen saturation) and onset of drug-related symptoms (feeling drunk, drowsiness, nausea, vomiting, nystagmus or hallucinations).
Results The case of a male patient 13 years of age [33 kg and 143 cm] is presented. The patient was receiving morphine chloride rescues until the treatment; morphine rescue was no longer needed on the second day of initiating treatment. The VAS pain score before rinsing was 9 and remained on 2 for 24 h after the rinse was applied, achieving a score of 0 on day four. CGI-I Scale at the end of the treatment score was 1 (Very much improved). The patient had no changes in clinical parameters. The total rinsing treatment time was four days, requiring two rinses the first day only. The pain stopped within 10 min of beginning the rinsing.
Conclusion Ketamine rinsing was effective and safe in our paediatric oncology patient with painful conditions refractory to standard analgesic treatment. Further studies are needed to strengthen our results.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Specially thanks Dr Manuel Cortiñas

No conflict of interest.

DI-045 SHOULD PATIENTS OF THAI, HAN CHINESE AND HONG KONG CHINESE ORIGIN BE TESTED FOR THE HLA-B*1502 ALLELE PRIOR TO PHENYTOIN TREATMENT?

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Background The potentially fatal adverse drug reactions Stevens-Johnson Syndrome/Toxic Epidermal Necrolysis (SJS/TEN) are ten times higher in Thai, Han Chinese and Hong Kong Chinese (T/HC/HKC) than the Caucasian population. This is associated with the presence of the human leukocyte antigen HLA-B*1502 which is present in 6.1%/9%/7.2% of the T/HC/HKC populations respectively. It is already established that carbamazepine (CBZ)-induced SJS/TEN is greater in patients with HLA-B*1502. The Medicines and Healthcare products Regulatory Agency and the Food and Drug Administration advise testing for HLA-B*1502 prior to initiation of CBZ in T/HC/HKC patients. They recommend that phenytoin (PHT) should be avoided if the patient is known to have HLA-B*1502 but do not advise routine testing for the allele. However, there is increasing evidence regarding the link between HLA-B*1502 and PHT-induced SJS/TEN that may alter the management of patients of T/HC/HKC origin.
Purpose To assess the association of HLA-B*1502 and PHT-induced SJS/TEN in patients of T/HC/HKC origin.
Material and methods A literature search was performed on PubMed and ScienceDirect databases until October 2014, using search words "phenytoin", "HLA-B*1502", "SJS" and "TEN". Other articles used were those cited in papers identified via the literature search, and analysis was restricted to systematic reviews and meta-analyses to establish the odds ratio (OR).
Results In total, 45 cases and 217 controls were assessed. There was an increased risk of PHT-induced SJS/TEN in patients with the HLA-B*1502 allele compared to those who did not possess the allele. This was statistically significant with OR = 5.87, 95% confidence intervals, 2.87 to 12.04, p value < 0.0001.
Conclusion There is strong evidence associating PHT-induced SJS/TEN and individuals with HLA-B*1502 of T/HC/HKC origin. The occurrence of SJS/TEN could be prevented by routine testing for the HLA-B*1502 allele in patients of T/HC/HKC origin and avoiding use of phenytoin treatment in this subset of patients.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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DI-046 INTRAVITREAL BEVACIZUMAB VS. LASER PHOTOCOAGULATION IN RETINOPATHY OF PREMATURITY

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Background Laser photocoagulation (LPC) is considered the standard treatment for retinopathy of prematurity (ROP), but LPC is destructive, causes complications, and does not prevent all vision loss. Recently, bevacizumab (a vascular endothelial growth factor inhibitor) has been used with po-sitive results.
Purpose To evaluate the efficacy and safety of intravitreal bevacizumab vs. LPC in preterm infants with ROP grades 1 to 3+.
Material and methods Ten-month retrospective study that included patients with gestational age of less than 30 weeks diagnosed with ROP grades 1 to 3+, and weight <1,500 g. The subjects received either a single dose of bevacizumab 0.625 mg at three months post-gestational age, or LPC at four-to-eight weeks. The primary efficacy and safety endpoints for both arms of treatment were: complete vascularisation (CV) in both eyes, and absence of adverse events.
Results Twelve patients were included, six for each treatment arm The proportion of females was 50% for the bevacizumab group and 66.6% for the LPC group. Mean gestational age was 25 weeks [23–29] in both groups. Efficacy: CV was achieved in five cases (83.4%) in the bevacizumab arm, and in two patients (33.3%) of those receiving LPC. Safety: no adverse effects were observed in the antiangiogenic treatment arm. In the LPC group, two cases of retinal detachment (inoperable in one case), one of localised reversible haemorrhage, one of retinal fibrosis, and one of laser-related scarring were found.
Conclusion In this cohort, intravitreal bevacizumab was more effective and safer than LPC in the treatment of ROP grades 1–3+. This is consistent with previous published studies, and supports the use of the antiangiogenic over LPC in the treatment of ROP.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Dr Héctor Mateo

No conflict of interest.

DI-047 ANALYSIS OF THE USE OF LINEZOLID IN A TERTIARY LEVEL HOSPITAL IN SPAIN

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Background Linezolid is the first oxazolidinone available for clinical use. Linezolid is indicated in the treatment of nosocomial pneumonia caused by methicillin-resistant Staphylococcus aureus (MRSA) or Streptococcus pneumoniae; and complicated skin and skin structure infections without concomitant osteomyelitis, caused by MRSA, Streptococcus pyogenes, or Streptococcus agalactiae; Vancomycin-resistant Enterococcus faecium infections; uncomplicated skin infections caused by Staphylococcus aureus (methicillin-susceptible only) or Streptococcus pyogenes. To reduce the development of drug-resistant bacteria and maintain their effectiveness, linezolid should be used only to treat or prevent infections that are proven or strongly suspected to be caused by susceptible bacteria. When culture and susceptibility information are available, they should be considered in selecting or modifying antibacterial treatment.
Purpose To evaluate the appropriateness of linezolid prescribing in our hospital.
Material and methods Retrospective study of patients treated with linezolid from January 2013 to April 2014 who continued with linezolid at discharge. Demographic and clinical data included age, sex, previous treatment, indication for linezolid, duration, side effects, antibiogram and clinical outcome.

Results 69 patients were treated with linezolid (median age 67.4 years, 47/69 male). Median days with treatment was 20.41. The indication was the most prevalent infection of the skin and soft tissues (36/69 patients). In 42% of cases, indications did not conform to those adopted by the regulatory agency. Linezolid treatment was used as directed (38/69) mainly against coagulase-negative Staphylococcus. Clinical cure was obtained in 57/69 of cases, and microbiological cure in 36/69. Treatment-related adverse reactions were reported In 2 patients. Thrombocytopenia, classified as conditional by the modified Karch-Lasagna algorithm, forced the discontinuation of linezolid and change to amoxicillin/clavulanate. A pruritic urticarial rash resolved with hydroxyzine. 3 patients died during the infectious episode.
Conclusion The effectiveness and safety of linezolid is similar to that described in the assays. Off-label use and the large number of empirical treatments mean that treatment strategies should be developed.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-048 MANAGEMENT OF CYCLOPHOSPHAMIDE-INDUCED SYNDROME OF INAPPROPIATE ANTIDIURETIC HORMONE SECRETION IN A PATIENT WITH LYMPHOCYTIC B LYMPHOMA

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Background Cyclophosphamide is an alkylating agent widely used in haematology. Among its adverse effects we find infections, immunosuppression, hypersensitivity reactions, haemorrhagic cystitis and neurological toxicity. The appearance of syndrome of inappropriate antidiuretic hormone secretion (SIADH) has also been described rarely.
Purpose To report a case of SIADH induced by cyclophosphamide in an elderly patient with lymphocytic B lymphoma.
Material and methods An 87 year-old man was diagnosed with lymphocytic B lymphoma in June 2013. Treatment with chlorambucil 0.1 mg/kg/day was started with progression detected on day 9 of treatment. Second line with COP (cyclophosphamide 750 mg/m^2 and vincristine 1 mg) was then started resulting in severe neutropenia and a count of 640 cells/mm^3. On day 23 the patient was hospitalised with pneumonia, severe hyponatremia, decompensated cardiac insufficiency and hypoxemia. SIADH induced by cyclophosphamide was suspected.
Results Laboratory tests showed: $[Na_P^+]$ = 119 mEq/L and $Osmo_P$ = 282 mOsm/Kg. Cyclophosphamide was stopped and fluid restriction and administration of hypertonic saline was commenced. Off-label treatment with bendamustine 90 mg/m^2 day 1 and 2 was started on day 55 (not considering fludarabine because of the history of neutropenia and pneumonia in this patient), delivering a total of 3 cycles. On computerised tomography of day +139 adenopathies had disappeared. The Karl-Lasagna algorithm indicated a probable association between SIADH and cyclophosphamide administration. The case was reported to the Andalusian Pharmacovigilance Centre and given reference number OL-2819.
Conclusion It is highly important to closely monitor plasma sodium levels during treatment with cyclophosphamide for the possible occurrence of SIADH. Bendamustine treatment in monotherapy provided a safe and effective alternative in this patient.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-049 DRUG INTERACTION BETWEEN LINEZOLID AND SEROTONERGIC AGONISTS: THE APPEARANCE OF SEROTONIN SYNDROME

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Background Linezolid is an antibiotic which has been reported to possess monoamine oxidase (MAO) inhibitory effects. According to the prescribing information, it should not be used with MAO inhibitors, considering that such drugs may enhance its toxic effects, including side effects such as hypertension and serotonin syndrome (SS). SS is a potentially life-threatening condition associated with increased serotonergic activity in the central nervous system. It may include mental status changes, autonomic dysfunction and neuromuscular abnormalities.

Although this interaction is well reported, the MAOI properties of linezolid are not very well known.
Purpose To detect interactions between linezolid and serotonergic modulators (X risk according to the Lexi Comp classification) and the appearance of SS.
Material and methods An observational retrospective study of patients treated with linezolid was made over two months (January–February 2014). The clinical history of every patient was checked, looking for associated prescriptions with serotonergic agonists in order to detect symptoms related to the SS. The possibility of other drug interactions was ruled out.
Results In two months 90 patients received antimicrobial treatment with linezolid (aged 15 to 89 years, 63.3% were male).

18.8% of the patients were also taking serotonergic psychiatric drugs such as clomipramine, trazodone, citalopram, escitalopram, venlafaxine and aripiprazole.

Looking over the clinical history in these patients, it was found that four of them met clinical criteria for SS (confusional states, agitation and high heart rate). None of the symptoms were referred as having an iatrogenic cause.
Conclusion Although an interaction was detected that can lead to symptoms related to SS, neither of the drugs were referred to as possible sources of an interaction in the clinical history.

We strongly recommend a pharmacist check of the whole treatment with the purpose of informing the physician about any interactions of this type. Moreover, some patients will continue the treatment with oral linezolid at home, and they should be made aware of any possible symptoms.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-050 PAMIDRONATE TREATMENT FOR HYPERCALCEMIA IN A PREMATURE NEWBORN

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Background Hypercalcaemia can cause life-threatening complications. Pharmacological treatment of severe hypercalcaemia is complicated by lack of experience with some effective medicines such as bisphosphonates in newborns.
Purpose To describe the pharmacotherapeutic management of pamidronate in severe hypercalcaemia of a premature newborn.
Material and methods We report on a preterm infant [weight: 1.080 kg, length 38 cm] who had required total parenteral nutrition (TPN) since birth. In routine blood tests, serum calcium was 15.6 mg/dl on the seventh day of life, reaching as high as 17.2 mg/dl as a consequence of suspected adrenal insufficiency of central origin.
Results Hypercalcaemia persisted despite the conventional treatment for excessive calcium, including removal of calcium from the TPN. The patient received intravenous pamidronate (1 mg/kg) for 1 day. Pamidronate 6 mg was diluted in 30 millilitres of 5% dextrose saline solution, only 10 millilitres were infused in 4 h. His serum calcium level decreased significantly, and about 15 h later, his total calcium level normalised (10.6 mg/dl). His serum calcium concentration returned to normal without any adverse reactions.
Conclusion Intravenous pamidronate appeared to be a safe and effective treatment for severe hypercalcaemia in a premature newborn.

REFERENCES AND/OR ACKNOWLEDGEMENTS

To my pharmacist colleagues.

No conflict of interest.

DI-051 EFFECTIVENESS AND SAFETY OF TELAPREVIR AND BOCEPREVIR FOR HEPATITIS C IN LIVER TRANSPLANT PATIENTS

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Background There are limited data that tackle safety and effectiveness of the triple treatment based on protease inhibitors (telaprevir or boceprevir) in liver transplant patients.
Purpose To describe effectiveness and safety of the triple treatment used by liver transplant patients.
Material and methods We performed an observational retrospective study, from November 2012 to September 2014. Transplant patients who started triple treatment before May 2013 were included. Baseline variables included demographic data, treatment and infection related data, and laboratory data.

The effectiveness outcome was sustained virological response (SVR). Safety outcomes included haematological toxicity and skin toxicity. Moreover, we recorded the requirements to treat those side effects.
Results Seven patients were included; 100% were male. The average age of patients was 57.5 (standard deviation 4.2). Telaprevir was used in 3 (42.9%) patients and boceprevir in 4 (57.1%).

As far as grade of fibrosis was concerned, 6 (85.7%) patients were cirrhotic or F4 and 1 (14.3%) patient was F2. Median fibroscan value was 16.6 Kpa (IQR 12.1–28.6 Kpa). Two (28.6%) patients were treatment-naïve, 1 (14.3%) patient was a null responder and 4 (57.1%) patients were relapsers from previous treatment.

At the beginning of treatment the median haemoglobin level was 13.6 g/dL (IQR 12.1–16.4 g/dL), the median neutrophil count was 3.0/mL (1.2–4.8/mL) and the median platelet count, 164/mL (126–197/mL). Four (66.7%) patients achieved SVR. One patient died during treatment.

Haematological toxicity included anaemia (85.7%), neutropenia (28.6%) and thrombocytopenia (42.9%). Skin rash was present in 2 (28.6%) patients. Five (71.4%) patients required ribavirin dose reductions, erythropoietin and blood transfusions. The median number of red blood units administered was 28 (IQR 3–31).
Conclusion Despite the severe disease of the included patients, we found that response rates to triple treatment exceeded 60%. As the treatment-related anaemia was considerable, most of the patients required supportive care.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Conflict of interest.

DI-052 ANALYSIS OF HEPATITIS B VIRUS REACTIVATION AFTER CYTOTOXIC CHEMOTHERAPY WITH RITUXIMAB

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Background Reactivation of hepatitis B virus (HBV) is a well-recognised complication in patients with chronic HBV infection who receive cytotoxic or immunosuppressant treatment.

Patients undergoing rituximab treatment should be checked routinely for HBV serologic markers and serum HBV DNA levels and this is not a fully established practice.
Purpose To assess whether prophylaxis to prevent HBV reactivation in patients treated with rituximab is being initiated in line with the recommendations of reference guides.
Material and methods Patients treated with rituximab from January 2013 to May 2014 were selected, the HBV serology reviewed, and whether they received prophylaxis with antivirals.
Results 94 patients received rituximab, 9 patients were excluded due to death. Serology requested at baseline was HBs Ag and anti-HBc. 72/83 (87%) patients were seronegative. 11/83 (13%) were positive for HBsAg and anti-HBc. 6/11 (54%) had been given prophylaxis, two with lamivudine 100 mg/day, two with entecavir 0.5 mg/day, one with Tenofovir 245 mg/day and the last with tenofovir/emtricitabine. In two of the cases treatment began after rituximab had been started.

5/11 received no prophylaxis. In one HBV reactivation occurred within three months of the start of rituximab with blood tests becoming positive, significant increase in serology and DNA but without clinical involvement. This patient received entecavir 0.5 mg/day following reactivation.
Conclusion Every patient undergoing rituximab treatment should be checked for HBsAg and total anti-HBc before the initiation of treatment.

It is very important to identify patients who have a serological risk of developing fulminant hepatitis with associated HBV reactivation. These are patients with HBs Ag− with anti-HBc+. Prophylaxis should begin one week before and continue for up to 6–12 months after the end of rituximab treatment.

REFERENCE

1 Guidelines: *Journal of Hepatology*

No conflict of interest.

DI-053 EVALUATION OF TREATMENT ADHERENCE WITH RILPIVIRINE/EMTRICITABINE/TENOFOVIR

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Background Rilpivirine is a recently authorised antiretroviral. Adherence is essential in this kind of drug.
Purpose To evaluate treatment adherence with rilpivirine/emtricitabine/tenofovir (RPV/FTC/TDF) using the SMAQ questionnaire and pharmacy dispensing records (FDR) and the correlation between these in HIV/AIDS mono-infected patients.
Material and methods Prospective observational study. We included patients treated with RPV/FTC/TDF from September 2013 until September 2014 with adherence data available of at least 3 months. Demographics data and reason for treatment were collected.

Adherence was calculated across the SMAQ questionnaire (qualitative and semi-quantitative) and FRD, considering the patient adherent when any of these parameters was ≥95%. The correlation between the methods was assessed using the kappa (k) index.
Results 33 patients started treatment with RPV/FTC/TDF during the above-mentioned period. 21 were included in the study. 71% were men (average age: 40 ± 10 years). 38% were treatment-naïve and the rest were changes of therapeutic strategy (33% adverse reactions and 29% simplification of treatment strategies).

26% of patients were considered adherent from a qualitative point of view in the SMAQ questionnaire, 76% from a semi-quantitative perspective and 95% via the FRD. The results between the three analysis only coincided in 6 patients.

As for the results of k index, we observed the following strength of agreement: fair between the SMAQ quantitative and qualitative questionnaires (k = 0.22) and slight between the SMAQ qualitative questionnaire and FRD (k = 0.04) and between semi-quantitative SMAQ and FRD questionnaire (k = 0.01).
Conclusion Our study highlights a low adherence to treatment obtained with the SMAQ questionnaire (both qualitative and semi-quantitative). It may be due to both the inflexibility of the questions and because of the patient assessment. These results could be improved through a pharmacist intervention in the monthly clinical review.

Correlation between the three methods was low, so their use in isolation may give erroneous results in predicting adherence. However, with this way, "hidden" non-adherent patients (adherent FRD and non-adherent SMAQ) and "masked" non-adherent patients (non-adherent FRD and adherent SMAQ) could be detected.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-054 PHARMACIST PARTICIPATION IN THE COMPUTERISED MEDICAL RECORD: IMPLEMENTATION OF AN IMPROVEMENT ACTION

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Background To increase the pharmacist presence in the computerised medical record (CMR) emerged as one of the improvement actions (IA) when internal customer feedback (satisfaction surveys to medical staff) was examined during the implementation of a Quality Management System (QMS) based on ISO 9001:2008 standard in a Pharmacy Service.
Purpose To analyse the degree of acceptance (DA) of the pharmacotherapeutic recommendations (PRs) after pharmacist participation in the CMR.
Material and methods 4-week ambispective quasi-experimental study (pre-intervention (A) 15 August–30 August'14; post-intervention (B) 1 September–15 September'14) performed in the Unit-Dose Drug Dispensing System (UDDDS) with manual prescription, nurse transcription and subsequent validation by a pharmacist, in a level-II hospital (411 beds, 52.8% of them with UDDDS). During period B the pharmacist wrote an advisory note in the CMR (MambrinoXXIv5.4®) called "Pharmaceutical Care", in addition to submitting the printed PR form (PPRF) with the prescription; while during period A, only the PPRF was sent. End points: ward [medical, surgical, medical-surgical (MS)], drug, type of PR, degree of acceptance. Data collection and processing: Farmatools-Dominion, Excel.
Results 93 PRs were recorded [period A (38 PRs, 32 patients, 74.9 ± 13.4 years old; 63.2% male); period B (55 PRs, 47 patients, 72.8 ± 17.6 years old, 74.5% male)]. Type of ward: medical (39.5% A vs. 36.4% B), surgical (57.9% A vs. 52.7% B) and MS (2.7% A vs. 10.9% B). Main drugs involved: proton pump inhibitors (15.8% A vs. 9.1% B), potassium-fluid replacement treatment (15.8% A vs. 5.5% B), not included in guide (NIG) (42.1% A vs. 36.4%B). Major types of PR: substitution of medicines NIG for available therapeutic alternatives (36.8% A vs. 34.5% B), dose/dosage regimen modification (10.5% A vs. 16.4% B), drug interactions (10.4% A vs. 8.9% B), monitoring hypo/hyperkalaemia (21.1% A vs. 5.5% B). The degree of acceptance was 63.3% A vs. 79.5% B.
Conclusion The QMS identified weak points in order to establish IA. Moreover, sharing the CMR and making it accessible to health personnel was found to improve coordination and communication of care, creating an opportunity for pharmacists to develop a comprehensive patient-centred plan and to promote their integration in the interdisciplinary healthcare team.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-055 HAEMATOLOGICAL AND CUTANEOUS ADVERSE EVENTS ASSOCIATED WITH CHRONIC HEPATITIS C TREATMENT

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Background In the last few years, new drugs (boceprevir and telaprevir) have been approved for treatment of chronic hepatitis C (HCV) genotype 1 infection. Triple Therapy (TT) (boceprevir or telaprevir + peginterferon + ribavirin) has proved to be more effective than dual therapy (peginterferon + ribavirin), but TT is associated with high rates of adverse events (AEs), mainly cutaneous and haematological events, which can affect adherence to treatment.
Purpose To study the frequency of cutaneous and haematological AEs in patients treated for HCV in our hospital.

Material and methods Retrospective observational study in which the authors collected cutaneous and haematological AEs reported by all HCV patients between January 2013 and April 2014. The CTCAE V 4.0 scale was used to evaluate the severity of AEs.
Results 30 patients received HCV treatment, 18 men and 12 women. The average age was 46.5 ± 8.4 years. 13 (43.3%) were treated with TT: 6 with telaprevir and 7 with boceprevir. 15 patients (50%) had anaemia (7 with TT), which became grade 2 (<10 g/dL) in 5 patients (30%) treated with TT (2 with boceprevir and 3 with telaprevir). These five patients required ribavirin dose reduction. No patient required transfusion or erythropoietin treatment. 17 (56.7%) developed thrombocytopenia (10 treated with TT). Only one patient required peginterferon dose reduction to 135 mcg because he had a platelet count <50,000/μL. 21 patients (70%) had skin reactions, of which 10 (47.6%) were treated with TT. Skin reactions became grade 2 in 6 patients with TT in comparison with 2 patients with dual therapy.
Conclusion The frequency of observed cutaneous and haematological AEs in our study fits our expectations in the light of the published studies. Considering the higher cost of these treatments and the higher risk of non-adherence due to their AEs, pharmacotherapy follow-up on these patients is essential.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-056 DYSPNEA INVOLVING DIMETHYL FUMARATE: FIRST CASE REPORT

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Background Tecfidera (dimethyl fumarate, DMF) has recently been approved for multiple sclerosis. The most common adverse reactions reported in clinical trials are flushing and gastro-intestinal events. Indeed, dose reduction is necessary for the first 7 days from 240 mg to 120 mg bid to minimise the occurrence of these adverse effects.
Purpose We report on a patient treated with DMF who experienced dyspnoea after the dose was increased.
Material and methods An adverse reaction was reported from the Department of Neurology. The Naranjo algorithm was used to estimate the probability score.
Results A 48-year-old woman with no medical or surgical history was given DMF for multiple sclerosis started at a dose of 120 mg bid. The dose was increased on day 7 to a dose of 240 mg bid.

24 h later, she experienced dyspnoea that required hospitalisation on day 20. Dyspnoea was classified as NYHA stage III.

93% oxygen saturation, 68 mmHg p02, 48 mmHg pCO2 were observed during hospitalisation while electrocardiogram was normal. Biological assessment with negative troponin, D-dimer, CRP and a normal pulmonary radiography excluded pulmonary embolism.

DMF was reduced to 120 mg bid and complete resolution was achieved 24 h later. Two months later, pulmonary function tests were normal. New dose escalation led to a recurrence of dyspnoea with breathlessness in the next 24 h.

DMF was finally stopped. The Naranjo score was 9 so this ADR was considered as definite.
Conclusion This was the first case of dyspnoea reported to the French Pharmacovigilance system. Since this event, another case of dyspnoea involving DMF has been reported in our hospital. It seems important to monitor the tolerance of DMF treatment particularly after the dose escalation, whatever the symptoms. It may be necessary to manage some adverse reactions by reducing the dose.

REFERENCE

1 Naranjo CA, Busto U, Sellers EM, *et al*. A method for estimating the probability of adverse drug reactions. *Clin Pharmacol Ther* 1981;**30**:239–45

No conflict of interest.

DI-057 THE CONTRIBUTION OF THE HOSPITAL PHARMACY TO THE HEALTHCARE OF PATIENTS ON ANTIRETROVIRAL THERAPY: AN IDENTIFICATION OF PATIENT NEEDS AND AN EVALUATION OF SERVICES PROVIDED

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Background In our country, HIV-positive ambulatory patients are monitored by the Infectious Diseases Units of designated hospitals, monthly. Antiretroviral medication (ART) is prescribed in each Unit and dispensed at the hospital pharmacy. An extracurricular collaboration of the two departments, has been implemented, since November 2010 and its impact is assessed in this study.
Purpose To evaluate the contribution of the collaboration between the hospital pharmacy and the Infectious Diseases Unit to the healthcare of HIV-positive patients and identify their needs.
Material and methods 210 patients of the Infectious Diseases Unit, receiving ART from the hospital pharmacy participated in the study. A social worker employed by the Infectious Diseases Unit but offering services in the hospital pharmacy assisted in the dispensing of the medications. Demographic data and evaluation of provided services were collected through the use of a questionnaire and were analysed by EXCEL®.
Results Among the patients, 91% were male, 76% had an income, 11% were Welfare beneficiaries, 23% were unemployed and 7% had no insurance. An 80% reported difficulties in issuing and renewal of a Healthcare Card. An 86% considered the services offered either very good or exceptional. Moreover, 78% welcomed the presence of a social worker in the pharmacy, providing help in HIV related issues (88%) and solutions in socioeconomic matters (86%). An 83.5% wished that the pharmacy dispensed medication more than twice a week. Most of them worried about the possibilities of antiretroviral shortage due to the economic crisis (76%) and having to take generics (49%).
Conclusion The extracurricular cooperation between the two departments of the Hospital contributed to the improvement of the provided healthcare services to patients under ART in our country. Problems and needs were identified and most of them addressed. The presence of the social worker in the hospital pharmacy was considered effective and valuable. The collaboration is on-going.

REFERENCES AND/OR ACKNOWLEDGEMENTS

None

No conflict of interest.

DI-058 EXPERIENCE WITH DIAZOXIDE IN CONGENITAL HYPERINSULINISM

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10.1136/ejhpharm-2015-000639.246

Background Diazoxide is indicated for the treatment of symptomatic hypoglycemia hyperinsulinism of diverse aetiology and diazoxide is used in congenital hyperinsulinism in neonates and infants.
Purpose To describe the experience of diazoxide in the treatment of congenital hyperinsulinism in tertiary hospital.
Material and methods We describe the case of two infants with persistent hypoglycemia due to hyperinsulinism. The following data were collected: age, sex, blood glucose, pre-treatment, dose and duration of treatment, and side effects.
Results In both cases the starting dose was 10 mg/kg/day divided in three doses.

Case 1: Infant 9 month old with blood glucose of 30 mg/dL with a diagnosis of focal congenital hyperinsulinism by pancreatic hyperplasia. He received dextrose infusions maintaining persistent hypoglycemia in 40–55 mg/dL. Diazoxide had answer within 24 h with blood glucose above 65 mg/dL. Two years later, the patient presented hypertrichosis in back and arms, which did not reach result in suspension of diazoxide, but required dose adjustment to 5 mg/kg/day in three divided doses, with good glycemic control.

Case 2: Infant 6 months old who presented blood glucose of 37 mg/dL with a diagnosis of diffuse congenital hyperinsulinism. He received dextrose infusions and enteral nutrition with a high content carbohydrate with no increase in blood glucose. The treatment was initiated with diazoxide, but was necessary to increase the dose to 15 mg/kg/day for blood glucose levels above 65 mg/dL. Several days later, he presented low urine output and increased blood pressure, so the physician was decided to initiate treatment with hydrochlorothiazide 1 mg/kg/day. One year later, he presented a petechial rash and the treatment was discontinued. Finally, the treatment with diazoxide is reintroduced without presenting new episode of thrombocytopenia and with good glycemic control.
Conclusion In both cases the use of diazoxide was effective in controlling blood glucose levels in persistent hypoglycemia.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-059 PHARMACOTHERAPEUTIC MONITORING IN GROWTH-HORMONE TREATMENT ADHERENCE

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Background Treatment adherence is an essential requirement for achieving the main therapeutic goals. Adherence is particularly important in self-administered drugs, such as recombinant human growth hormone (r-hGH).

Easypo auto-injector is a medical device pre-programmed to deliver r-hGH, indicated for replacement of endogenous growth hormone due to growth disorders.

Easypod Connect software provides healthcare professionals with reports and data from the patient's injection history, and analyses patient treatment adherence.
Purpose To analyse treatment adherence of patients treated with Easypo-r-hGH and to assess the impact of pharmacist recommendations on patient adherence.
Material and methods Observational and retrospective study. It recruited patients to whom medicines were dispensed from the hospital pharmacy service in September 2014. We excluded patients treated for under 6 months. It analysed the overall adherence scores obtained from Easypod every 6 months, and the adherence reports were entered in the Electronic Medical Record. In patients with suboptimal adherence (<80%), corrective measures were implemented and data transfer was performed more frequently to check the impact of pharmacist intervention on adherence.
Results 17 patients were included, 52.9% male. Average age: 6.1 years (1–13). Overall adherence over 80% in 88.2% of patients, range 96.2–100%. Suboptimal adherence was only detected in 2 patients (77% and 52.2%). In both cases the treatment was not administrated by an adult. Pharmacists supplied appropriate advice. The data transfer device was set to report more frequently, finding in both cases an improvement in adherence after the intervention (increased by 5% and 7.6% in 5 and 3 months respectively).
Conclusion Monitoring r-hGH adherence can prevent noncompliance failures. Easypod is a direct and reliable method of measuring adherence. Pharmaceutical care for patients treated with r-hGH should include strategies to promote adherence, especially in cases where treatment is not administered by an adult. Monitoring adherence allows an appropriate pharmacist intervention when it is necessary.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-060 EVALUATION OF DRUG USE FOR OSTEOPOROSIS TREATMENT

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Background The Department of Health carried out an analysis of drugs for the treatment of osteoporosis (ATC:M05) and it found that our region consumes a lot of these drug. This finding is unusual because it runs counter to the climatic conditions. These requirements may result from unsuitable prescriptions and low patient compliance.
Purpose In our province, net spending for every 1,000 inhabitants of this therapeutic category in 2013 presented a deviation compared to the regional average of €490 and to the national one of €1,080. The pharmacists have analysed drug use and identified the unsuitability of prescriptions.
Material and methods We performed a retrospective study of National Health System (NHS), prescriptions for the therapeutic

class M05 in the year 2013. For this analysis the Italian Medicines Agency guideline (Nota AIFA 79) was followed, which regulates prescriptions of these drugs carried out at the expense of the NHS.

Results We examined all prescriptions dispensed to 11,471 patients: 96% women; mean age 71 years; 2% <50 years of age; 14% between 50–60 years; 32% between 61–70 years; 34% between 71–80 years; 16% between 81–90 years; 2% nineties. The Defined Daily Dose per 1,000 inhabitants was 77 for bisphosphonates (M05BA), 22 for strontium ranelate (M05BX) and 57 for the association alendronate/cholecalciferol (M05BB), the most prescribed (34% of prescriptions). 13% of patients were also having corticosteroid treatment (H02AB), 19% took cholecalciferol (A11CC) and 9% calcium/cholecalciferol (A12AX), 16% had collected only one pack of one of these drugs (21% of M05BA04 and 23% of M05BX03).

Conclusion The analysis performed shows that prescriptions were appropriate for age in 98% and for corticosteroid treatment in 13%. 16% of patients received only one pack of medicine, a sign of lack of adherence to treatment that affects clinical effectiveness and represents a waste of resources.

REFERENCE

1 NOTAAIFA 79

No conflict of interest.

DI-061 A CASE OF PROGRESSIVE MULTIFOCAL LEUKOENCEPHALOPATHY; CIDOFOVIR TREATMENT

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Background Progressive multifocal leukoencephalopathy (PML) is an opportunistic infection caused by reactivation of the JC polyomavirus (JCV). It is characterised by severe demyelination of the central nervous system, which is invariably fatal. PML mainly occurs in immunosuppressed individuals. Within the context of HIV infection, the prognosis with highly active antiretroviral therapy (HAART) is of only 50 percent of patients with PML surviving longer than one year.

No specific treatment exists for JCV infection. The main treatment approach involves HAART to reverse the immunosuppression. Cidofovir has been used in patients with HIV infection as treatment for PML, but the largest clinical studies have reported no benefit.

Purpose To describe and evaluate the efficacy of cidofovir for the treatment of PML in HAART-treated HIV patients.

Material and methods A 43-year-old man was diagnosed with HIV infection for 10 years without treatment. In June 2011 the patient began treatment with tenofovir/emtricitabine/efavirenz (11 cells/mm3 CD4, HIV-RNA 111,560 copies/mL). After three months the patient presented aphasia, hemiparesis and visual field deficits (almost blind).

His medical record was reviewed with a focus on drug treatments, laboratory results and clinical evolution.

Results On admission he had 68 cells/mm^3 CD4, HIV-RNA undetectable, JCV PCR of the CSF was 5,417,063 copies/mL. Toxoplasma gondii and BK virus were negative. He was diagnosed with PML, with magnetic resonance imaging supporting the disease. Treatment started with cidofovir 325 mg bi-weekly and optimised HAART (abacavir/lamivudine/efavirenz).

Cidofovir was withdrawn after 2 months; the result showed an improvement in his motor deficit. However dysphasia and visual loss continued. Three years after infection the patient is still alive with neurological deficits.

Conclusion In patients with HIV and PML, the main treatment approach should be the restoration of the host adaptive immune response by optimising the effective HAART. Cidofovir can be useful to help reduce the progression of PML.

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No conflict of interest.

DI-062 EVIDENCE-BASED MEDICINE AND CASE REPORTS: STUDY OF AN OPTIMISED METHOD OF REPORTING MATERNAL DRUG EXPOSURE CASES

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Background Case reports and case series are a widely-used source of scientific evidence. Although usually associated with a low strength of evidence, they are ideal for narrating events observed during clinical practice. On the other hand, the existing gap in the scientific literature relative to maternal drug exposure, due to several constraints, justifies the use of case reports and case series as a method for generating evidence in these situations.

Purpose To develop an optimised method of reporting clinical cases of maternal drug exposure, with the goal of increasing the strength of evidence associated with these sources.

Material and methods A Medline search was performed in PubMed and other databases, and on the instructions provided by working groups and scientific journals, to analyse and compile guidelines for writing case studies. 79 cases of pregnant women exposed to drugs were examined to identify the most relevant reports.

In the second phase, medical and pharmacological information was analysed related to each type of clinical situation, to be included in clinical reports suitable for future publications.

Results Several guidelines to publishing case reports were obtained. Although considerably heterogeneous, it was possible to develop a reporting model. As part of the model, we included the most relevant general clinical and pharmacological data for reporting cases of maternal drug exposure. The model was applied to 5 cases of pregnant women exposed to antidepressants, since they were the most prevalent, 25 out of 79, and was evaluated with a tool to measure quality.

Conclusion Clinical records analysis showed the absence of relevant, systematic and consistent information to build a case report. We have developed an evidence-based method tailored to report cases of maternal drug exposure, useful not only to strengthen their evidence and quality, but also to systematically collect clinical and pharmacological data.

REFERENCES AND/OR ACKNOWLEDGEMENTS

I thank the physicians from the Hospital for their cooperation.

No conflict of interest.

DI-063 REVIEW OF ALZHEIMER'S TREATMENT IN ELDERLY PATIENTS

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Background The prevalence of Alzheimer's disease (AD) reaches up to 20% in Spain's population over 80 years old. Even though several medicines are available today, there is limited evidence regarding their effectiveness, without forgetting their potential adverse events. Consequently, close therapeutic monitoring is necessary to identify cases in which there are no clear signs of therapeutic benefit.
Purpose To analyse the use of anti-dementia drugs in patients diagnosed with AD with the purpose of optimising it in the future.
Material and methods Retrospective observational study of poly-medicated patients living in nursing homes aged over 75 years, who took part in a medicines reconciliation project during 2013.

Data collection included age, sex, degree of dementia, number of chronic drugs and type of drug to treat AD.

Clinical guidelines were reviewed in order to check recommendations for AD treatment (Cholinesterase Inhibitors (CIs) are recommended in mild-moderate AD, whereas memantine is indicated in severe AD).
Results Eighty four (13.9%) out of 604 patients analysed were being treated with anti-dementia drugs (59.5% females, with an average age of 85.9 years and taking a median of 10.5 drugs daily). Memantine was the most common anti-dementia drug among our patients: 31 patients (36.9%) were taking it, 17 in monotherapy (20.24%), and 14 (16.7%) in association with CIs.

The most frequently used CIs were rivastigmine and donepezil, with 29 (34.52%) and 27 (32.4%) patients respectively. On the other hand, galantamine was prescribed in 12 patients (14.29%). With regard to the degree of dementia, 8 patients with severe dementia weren't being treated with memantine, whilst 4 with mild dementia were using this drug. Moreover, one case of association of donepezil and rivastigmine was identified.
Conclusion Twelve cases (14.29%) were identified whose treatment did not accord with the clinical guidelines consulted. These findings reflect the need to revise and update treatments, adapting them to the medical condition of patients.

REFERENCES AND/OR ACKNOWLEDGEMENTS

UpToDate

No conflict of interest.

DI-064 OFF-LABEL DRUGS USE IN PAEDIATRICS SERVICES

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Background The off-label drugs use in paediatrics is high and there are few studies undertaken on off-label drug use in Spain.
Purpose To analyse off-label drugs use in paediatrics services, to analyse which clinical units requested more often off-label drugs and which were the causes that led to the consideration of off-label treatment.
Material and methods Descriptive observational study from October 2009 to September 2014. We included all individual requests of off-label drugs received in the Pharmacy Department by the different paediatrics clinical units. Individualised assessment reports were developed with an analysis of efficacy, safety, convenience and cost, which were referred to hospital medical administration to make the decision to authorise or deny its use.
Results A total of 141 requests were analysed, of which 95.1% (134) were finally authorised and 4.9% (7) were denied. The most petitioned drugs were Levosimendan with 14.9% (14 requests in cardiac surgery using extracorporeal circulation and 7 in diastolic dysfunction), Adalimumab with 8.5% (6 requests for juvenile idiopathic arthritis, 3 in ulcerative colitis and 3 for Crohn's disease), Palivizumab with 6.4% (6 requests for prophylaxis of Human respiratory syncytial virus (RSV) in immunocompromised patients and 3 in treatment of RSV) and Pegfilgrastim with 4.9% (7 requests for neutropenia after chemotherapy in paediatric patients).

According to cause which led to the consideration of off-label, in 58.2% (82) was due to an unauthorised indication. Furthermore, the reason for off-label in 41.8% (59) due to unauthorised indication for patient age.

The most petitioned paediatrics clinical units were oncology with 46.1% (65), rheumatology with 12.1% (17), cardiology with 9.9% (14) and paediatric Intensive Care Unit with 8.5% (12).
Conclusion There is a variety of off-label drugs used in paediatric clinical units. Off-label drugs were requested mostly in the field of oncology and rheumatology. There were a high number of requests for drugs approved in adults but not in paediatric indications.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-065 FOLLOW UP STUDY OF HIV PATIENTS WITH BOOSTED PROTEASE INHIBITOR MONOTHERAPY IN ROUTINE CLINICAL PRACTICE

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Background Strategies to simplify HIV treatment are driven by concerns about the long-term toxicity of chronic combination antiretroviral therapy (ART), cost, and the risk of drug resistance over time due to non-adherence. Ritonavir-boosted protease inhibitors (PIs) can be an alternative.
Purpose To assess the effectiveness and safety of ritonavir-boosted PI monotherapy and whether the switching has been done in compliance with European AIDS Clinical Society guidelines.
Material and methods A large, retrospective observational, non-interventionist study was carried out including 91 patients on ritonavir-boosted PI monotherapy. Patients were followed since they started ART to December 2013 (the date at which all of

the patients had been switched for at least 6 months). Data were collected and summarised in a table with the following characteristics: Date of HIV diagnose, PI/r monotherapy toxicity, Adherence and Date of starting with PI/r monotherapy, viral load at the moment of the simplification, viral load in December 2013.

Results 21 out of 91 (23%) patients had detectable HIV-RNA at the moment of the simplification thus they did not meet the guideline recommendations for switching. 15 out of 91 (16%) patients had a detectable viral load on December 2013 thus the switching had failed in them. Patients had fewer episodes of lipodystrophy, only 14 out of 91 (15%), and cardiovascular complications, only 4 out of 91 (4.35%). 84 out of 91 (92%) patients had more than 85% adherence to the treatment.

Conclusion The overall effectiveness of ritonavir-boosted protease inhibitor monotherapy is inferior to ART. However 84% of patients have no viral rebound with HIV-RNA levels above 50 copies/ml, which is why there may be a subset of patients with a history of prolonged viral suppression who may benefit from switching to ritonavir-boosted protease inhibitor (PI) monotherapy to reduce adverse reactions and costs, and achieve more adherence.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Hospital de La Princesa Team

No conflict of interest.

DI-066 TOPICAL AMPHOTERICIN B USED IN CANDIDA KRUSEI VAGINITIS REFRACTORY TREATMENT

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Background Candida krusei is an unusual cause of fungal vaginitis. Conventional antimycotic treatments, including azoles, are less active *in vitro* against C. krusei than C. albicans. Amphotericin B has demonstrated favourable *in vitro* antifungal activity but is not available as topical preparations.

Purpose To describe a case of persistent vaginal candidiasis due to C. kusei unresponsive to conventional antifungal therapy, treated with topical Amphotericin B.

Material and methods A 61-year-old woman, presented with vulvo-vaginitis with vaginal culture isolation of C. lrusei. She was treated with ketoconazole ovules 400 mg per day for four days. Twenty days later, the patient came to the medical consultation with a labia majora lesion. Furthermore, the vaginal culture remained positive for C. krusei, with a higher yeast proportion than in normal flora. Consensually between Nephrology, infectious diseases and the pharmacy service, it was decided to develop a topical formulation of amphotericin 3% for vaginal application. Effectiveness was assessed by the presence of clinical symptoms and vaginal culture one month later. Information was compiled from digital medical records.

Results To prepare this formulation, amphotericin B deoxicolate was combined in Aquagel lubricating jelly. As amphotericin is lipid soluble propylene glycol was used for lubricant incorporation. 1.4 grams of this formulation was applied daily at night for 14 days. This preparation has an unknown shelf life and is obtainable from the pharmacy manufacturing unit. One month after, the patient's symptoms had resolved, but the vaginal cultures continued positive.

Conclusion Despite the vaginal cultures remaining positive, the symptoms had resolved, showing that amphotericin in lubricating jelly may be effective in vaginal C. krusei infection where conventional azole treatment has failed. This topical formulation has emerged as a potentially effective regimen but more studies are needed to set the optimal dosing regimen. Vaginitis caused by C. Krusei demands special efforts, and additional treatments must be developed.

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No conflict of interest.

DI-067 TREATMENT WITH ERYTHROPOIETIN STIMULATING AGENTS IN PATIENTS WITH CHRONIC KIDNEY DISEASE AND CANCERS

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Background Erythropoietin stimulating agents (ESAs) are used to treat anaemia associated with chronic kidney disease (CKD) and anaemia in patients receiving chemotherapy.[1,2]

Purpose To analyse ESA treatment in patients with CKD and cancers.

Material and methods Retrospective longitudinal study of patients treated with ESAs from March 2013 to July 2014 in a University Hospital. Descriptive and clinical data were obtained from the records of outpatients who had picked up their medicines from the Hospital Pharmacy Service.

Descriptive statistical analyses were made of qualitative and quantitative data.

Results 51 patients were included: 38 with CKD and 13 with oncology disease.

CKD: 42.1% were men, mean age: 83.4 years old (SD 10.0). The average glomerular filtration rate was 23 ml/min/1.73 m^2 (SD 13) and 56.8% of them had stage 4CKD. During this period 73% of patients presented mean haemoglobin values lower than 11 g/dl, 25% between 11 and 12 g/dl and only one patient had higher haemoglobin values than 12 g/dl. Average haemoglobin values of whole patients were 10.3 g/dl (SD 1.2) at the beginning and 10.5 g/dl (SD 1.3) at the end of the period studied.

Oncology diseases: 53.8% were men, mean age: 68.7 years old (SD 11.2). 69.2% were patients with chemotherapy-induced anaemia and 30.8% with myelodysplastic syndrome. Haemoglobin values at the beginning were 8.74 g/dl and at the end 9.47 g/dl. Blood transfusions were needed in 53.8% of the patients.

Conclusion In patients with CKD, haemoglobin levels remained stable during the period. Although the levels were lower than 11 g/dl in most patients, no significant clinical symptoms were observed.

The use of ESAs slightly improved the haemoglobin values in oncology patients, although blood transfusions were needed for half of the patients.

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No conflict of interest.

DI-068 BELIEFS, KNOWLEDGE AND EXPECTATIONS ABOUT MEDICINES AND PHARMACISTS IN ASTHMA AND PULMONARY ARTERIAL HYPERTENSION PATIENTS: PRELIMINARY RESULTS

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Background Chronic diseases have changed the management of patients and their status, to move toward a new "patient-health-care providers" partnership. Asthma and pulmonary arterial hypertension (PAH) are two chronic thoracic diseases with differences in terms of prevalence and drug delivery process. Little is known regarding patient's beliefs (B), knowledge (K) and expectations (E) of their illness, medicines and healthcare providers, despite these parameters influencing their adherence, behaviour and outcomes.
Purpose To gain detailed insight into B, K and E of medicines and pharmacists from asthma or PAH patients.
Material and methods For this observational prospective monocentric study, an interview guide was designed and validated to perform the semi-structured interviews (SSI). Each interview was recorded and fully transcribed. An inductive approach was conducted for the remaining text to inventory verbatim. All were classified according to the key ideas to describe B, K, E for each population.
Results SSI were conducted with 14 patients (5 asthma–9 PAH) (mean duration 37 ± 10 min) from December 2013 to April 2014. Medicines were perceived as a "necessity" (6 PAH–3 asthma), a "constraint" (3 PAH) or "poisons" (2 asthma). Three asthma patients didn't perceive the necessity of corticosteroids but all judged salbutamol and terbutaline as vital. Four PAH patients noticed few people and healthcare professionals who knew PAH and its management. Pharmacists could sometimes be perceived only as "retailers" (2 PAH–3 asthma), "advisors" (3 PAH) or associated with "medicines" (2 PAH–2 asthma). Tasks of pharmacists weren't well known and defined (5 PAH–4 asthma).
Conclusion Medicines and pharmacists were perceived differently depending on asthma or PAH patients. The ignorance about "what exactly pharmacists do" makes their role ambiguous for the patients leading to difficulties in describing their expectations of pharmaceutical care. More interviews are warranted to improve the B, K, E description of our populations.

REFERENCES AND/OR ACKNOWLEDGEMENTS

none

No conflict of interest.

DI-069 REVIEW OF OFF-LABEL APPLICATIONS IN ORDER TO IMPROVE THE USE

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Background Nowadays in hospitals drugs are more frequently used for purposes other than the ones indicated in the summary of product characteristics.
Purpose To analyse the applications for off-label use of drugs in a third level hospital with the aim of reviewing their approval procedures and setting measures to improve their use.
Material and methods An observational and retrospective study was carried out for the applications for off-label use of drugs received January 2010 to September 2014. A case report form was designed using the following variables: drug, therapeutic use, department, Oxford Centre for Evidence-based Medicine 2011 levels of evidence and type of approval (approval, conditional approval, and non-approval). Drugs requiring a protocol approved by the hospital Pharmacy and Therapeutics Committee were excluded.
Results 128 applications for 59 different therapeutic uses were analysed. A total of 117 (91.4%) were approved, of which 16 were conditionally approved due to the low level of study evidence. Approvals were denied for 11 applications, for 2 of which another treatment was suggested and the physician accepted. Most of the applications were made for rituximab (24 applications,18.7%), for 16 different therapeutic uses, omalizumab (10 applications, 7.8%), bevacizumab and tacrolimus, both of them with 7 application each.

The departments with more applications were Oncology and Haematology (24 applications, 18.7%), Neurology (19 applications, 14.8%), Internal Medicine, Ophthalmology, and the Allergology department, with 10 applications.

For most of the applications, physicians took into account studies with low (case-series studies, follow-up studies and no randomization) levels of evidence 3–4.
Conclusion Due to the high number of applications for different therapeutic uses and the poor level of evidence for them, it is necessary to review the criteria for their approval and to check that these criteria are being observed in order to guarantee the correct and efficient use of the drugs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-070 INDIRECT COMPARISON OF CETUXIMAB VS. PANITUMUMAB IN METASTATIC COLORECTAL CANCER

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Background In the absence of comparative studies of cetuximab vs. panitumumab in metastatic colorectal cancer (MCCR), we suggested performing an indirect comparison of the two drugs for this indication.
Purpose To perform an adjusted indirect comparison of the two pivotal clinical trials of cetuximab and panitumumab, designed versus the best supportive care as a common comparator in patients with chemotherapy-refractory metastatic colorectal cancer.
Material and methods On 5/04/2014 a literature search was performed in PubMed without finding indirect comparisons.

The adjusted indirect comparison was performed with the results shown in subsequent updates of the pivotal clinical trials, in which subgroups of patients with K-RAS wild-type were analysed. We tested that the homogeneity of the population studied

and the results of the treatment groups, were comparable with each other directly. Progression-free survival (PFS) was taken as the most clinically relevant variable available, as it allowed a proper comparison, although it was not the primary endpoint in either study. For our study we used the Bucher´s method, which combines the studies through analysis adjusted for the result of the control group. The Comparison Indirect Treatment (ITC) application, developed by the Canadian Agency for Drugs and Technologies in Heath (CADTH) was used. The margin of equivalence (the maximum difference considered clinically irrelevant) was defined.

Results In the adjusted indirect comparison by the Bucher method, using the Wells calculator, an insignificant Hazard Ratio (HR) was obtained for cetuximab vs. panitumumab, relative to PFS. Therefore, we have no objective evidence that one drug is superior to another. The HR: 0.933 is very close to 1, and CI95% 0.624–1.396. The margin of equivalence established (0.67–1.49) is exceeded only at the lower limit, affecting a probability of 94.65% that the result is above 0.67, a result obtained by the Shakespeare calculator.

Conclusion We consider that the two treatments might be considered as equivalent alternatives when referring to PFS in the third line.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-071 EVEROLIMUS (AFINITOR): A CASE OF STEATOSIS IN THE TREATMENT OF PANCREATIC NEUROENDOCRINE TUMOURS

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Background Everolimus (Afinitor) is an inhibitor of mTOR (mammalian target of rapamycin), which has demonstrated antineoplastic activity in breast, renal and neuroendocrine pancreatic cancer. At our centre, an uncommon adverse drug reaction (ADR) was detected in a patient treated with everolimus and lanreotide. The patient started lanreotide treatment on July 2013 and, after chemoembolization of hepatic nodules, everolimus 10 mg/day was added. After 5 months, Nuclear Magnetic Resonance (NMR) showed massive steatosis involving the entire left lobe of the liver and part of the right lobe, with no signs of recurrence of neoplastic disease. Treatment with everolimus was stopped.

Purpose To describe an uncommon adverse drug reaction to everolimus and lanreotide, review the literature and search for cases in National and European ADR databases.

Material and methods Searches of the Italian National Pharmacovigilance Network (I-NPN) and Eudravigilance databases and of PubMed and Embase databases were performed for reports of steatosis related to everolimus and lanreotide treatment. The Naranjo algorithm was applied to our case.

Results Searches of literature databases retrieved a single case report of steatosis related to everolimus treatment. No reports were detected in I-NPN. Eudravigilance Database contains 5 cases of steatosis possibly related to treatment with everolimus. According to the Naranjo algorithm, the causal link for our case appears to be "possible".

Conclusion Our case has a "possible" causal link according to the Naranjo algorithm and the patient is now on NMR follow up. Treatment for his pancreatic neuroendocrine tumour is now based on lanreotide. The detection and follow up of this uncommon ADR has been possible thanks to the close and constant collaboration between Oncology Endocrinologists and Pharmacists and is an important contribution to defining the safety profile of everolimus in patients with pancreatic neuroendocrine tumours.

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No conflict of interest.

DI-072 MOBILE PHONE TEXT MESSAGING TO IMPROVE ADHERENCE TO ANTIRETROVIRAL TREATMENT IN HIV-INFECTED PATIENTS

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Background Non-adherence to antiretroviral treatment (ART) regimens is closely related to treatment failure and in response, researchers have developed interventions to improve adherence.

Purpose To determine the effect of sending mobile phone text messages to remind patients to get more medicines on the adherence to ART in HIV-infected patients.

Material and methods This was an interventional study carried out in HIV-infected outpatients who got their medicines from a hospital pharmacy service during 2012. The intervention group included patients who received mobile phone text messages to remind them to get more medicines during 2012. The control group only received standard pharmaceutical care. Data were collected retrospectively. Adherence to ART was compared between the two groups. ART adherence was measured through pharmacy dispensing records. Patients were considered adherent if ART adherence according to dispensing records was ≥95%. Data collected included age, gender, treatment-naïve status and type of ART. That was classified as: a) 2 nucleoside reverse transcriptase inhibitors (NRTI) plus 1-non-nucleoside reverse transcriptase inhibitor (NNRTI); b) 2 NRTI plus 1 ritonavir-boosted protease inhibitor (PI/r) and others.

Statistical analysis:

To determine the effect of sending mobile text messages on the adherence to ART, we performed the chi-squared test. We used statistical package SPSS 20.0.

Results 120 patients were included. The median age was 47 years (IQR = 42.0–51.7). 68.3% of patients were men. No patients were new to treatment. The type of ART was similar in the two groups. The most frequent regimen consisted of the combination of NTRI plus NNRTI (47.5% and 38.6% in the intervention and control group, respectively). The percentage of adherent patients was significantly higher in the intervention group compared with the control group (83.9% vs. 63.8%; p = 0.013).

Conclusion Mobile phone text messaging can be an important tool to improve the adherence to ART in HIV-infected patients.

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No conflict of interest.

DI-073 OFF LABEL USE OF PSYCHOTROPIC DRUGS IN ELDERLY PATIENTS WITH DEMENTIA IN A PSYCHOGERIATRIC UNIT

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Background The use of antidementia drugs indicated for the treatment of certain cognitive, behavioural and psychological symptoms related to dementia (BPSD) in elderly patients is limited because of their low efficacy. Therefore, other psychotropic drugs are commonly prescribed off-label. Data on off-label prescriptions of psychotropic drugs for BPSD are scarce.
Purpose To assess both the frequency of psychotropic prescriptions for the treatment of BPSD and the conformity of prescriptions to official Swissmedic monographs[1] (OSM) and to Swiss recommendations 2014[2] (SR).
Material and methods Retrospective and descriptive study of patients discharged between June 1st 2013 and January 31st 2014 from the Organic Psychiatric Disorders Unit of the Geriatric Psychiatry Service of a primary and tertiary care university hospital. The number and the type of drugs prescribed were investigated and the percentage of conformity to references was analysed.
Results 835 different drugs were prescribed to the 94 patients included. The average number of drugs per patient was 9 ± 3, including 4 ± 2 psychotropic drugs. Dementia was diagnosed in 89 of them for whom 409 psychotropic prescriptions were identified.

Of these 409 prescriptions, 395 prescriptions targeted the treatment of BPSD. The conformity with OSM and SR were respectively 59.0% and 68.9% according to indication, 54.2% and 64.6% according to the route of administration, 38.0% and 38.8% according to the initial dose, 43.2% and 30.8% according to the maximum dose, 35.4% and 52.2% according to the duration of treatment.
Conclusion Patients treated in a primary and tertiary hospital due to BPSD are systematically prescribed psychotropic medication, often outside the official recommendations. This may emphasise the substantial and unmet needs of approved drugs to treat BPSD.

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No conflict of interest.

DI-074 ANALYSIS OF PERSISTENCE WITH ANTIRETROVIRAL THERAPY AMONG HIV+ PATIENTS IN THE SPANISH COHORT, PSITAR

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Background Since the introduction of HAART, HIV has become a chronic disease. Maintaining adherence and persistence to treatment are key elements in the pharmacotherapeutic follow-up. Persistence adds the dimension of time to the analysis and represents the time over which a patient continues to collect a prescription.
Purpose To determine the persistence with treatment-naive HIV + patients in the PSITAR cohort.
Material and methods Prospective multicentre study. Inclusion criteria: treatment-naïve patients who started antiretroviral therapy in 2011 and 2012 and monitoring in pharmaceutical care consultations of the centres involved. Demographic characteristics, virological parameters and pharmacotherapy variables: regimen prescribed, adherence to treatment, time to discontinuation and its cause.

Patients were classified according to the treatment received: 2NRTI + NNRTI, 2 NRTI + PI/r or 2NRTI + INSTI.

HAART persistence was measured as the time (in weeks) from the start of treatment until discontinuation due to treatment modification or abandonment for more than 90 days.

The evolution of persistence was tracked through survival curves using the Kaplan-Meier method, even considering no persistence.
Results 227 patients were included, 82.4% men. The mean age was 40 ± 11. The most frequent HAART consisted of 2NRTI + NNRTI (65.6%). A percentage of 43.2% was persisting with the same initial treatment at the end of the observation period. The median time to discontinuation was 76.4 weeks (CI95%: 56.8–96.0) and the main cause of discontinuation was adverse effects (70.6%).

Median persistence was 88.8 (CI95%: 73.2–104) weeks for the treatment with 2NRTI + NNRTI, 42.4 (CI95%: 35.2–50.0) with 2 NRTI + PI/r and 29.6 (CI95%: 4.8–54.4) with 2NRTI + INSTI.

Statistically significant differences were found in time to discontinuation between treatment groups with a third drug NNRTI versus PI/r (p = 0.001), the higher time to discontinuation being in the NNRTI group.
Conclusion Patients starting antiretroviral therapy with 2NRTI + NNRTI had better persistence with a median time to discontinuation of nearly two years.

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No conflict of interest.

DI-075 THERAPEUTIC STRATEGIES FOR MAINTAINING STABLE CLINICAL REMISSION OF RHEUMATOID ARTHRITIS PATIENTS IN TREATMENT WITH BIOLOGICAL DRUGS

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Background The advent of biological drugs in the past 15 years has radically changed therapeutic strategies for inflammatory rheumatic diseases. There are however some open questions regarding the duration of treatment, especially in patients in clinical remission, about both the side effects of long-term exposure and cost containment.

Purpose To evaluate the differences in clinical efficacy and financial sustainability of two therapeutic management models for patients with rheumatoid arthritis treated with biological drugs who are in stable clinical remission.
Material and methods Over a period of 6 years, 81 patients were considered of average age 55 years and who had already had the disease for 3 ± 2 years. They had been in stable clinical remission for at least 6 months at the time of admission treated with biological drugs. 34 patients continued to have the treatment, gradually deferring (extending the length of time between) administrations. The remaining 47 patients were treated discontinuously, so that at the achievement of remission the biological drug was suspended and it was administered again if the condition flared up.
Results The mean follow-up was 38.9 months for the group of patients in the deferral. They maintained remission for an average period of 33.8 months; two of them had a relapse that required a return to the normal pattern of administration.

Discontinued treatment patients were followed for a mean follow-up of 48.4 months and showed a duration of cumulative average remission of 27.6 months.

Flare-ups were significantly more frequent in patients with intermittent treatment compared to those with delayed treatment (42/47 or 89% vs. 2/34 or 6%, $p < 0.001$). Cost analysis showed that discontinuous treatment is not less expensive than delayed treatment as it is burdened with substantial costs for the management of relapse periods.
Conclusion Extending the time between biological treatments results in significantly longer periods of stable clinical remission without fluctuations during the course of the disease and with significantly fewer relapses than stopping and re-starting treatment.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-076 INTERRUPTION AND DISCONTINUATION OF HIGHLY ACTIVE ANTIRETROVIRAL THERAPY IN PSITAR HIV COHORT

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Background Treatment modifications within the first year are extremely important. The first HAART regimen should remain for years. The first regimen toxicity can have a negative impact on adherence and virological efficacy.
Purpose To establish the main reason for discontinuing antiretroviral treatment within the first year in an HIV cohort.
Material and methods Prospective multicentre study. Treatment-naive adult HIV patients who started treatment between 2011 and 2013 were selected. Basic demographic characteristics (sex and age) and pharmacotherapeutic variables as initial HAART, discontinuation of HAART within the first year and its reasons based on Swiss HIV Cohort[1] were collected. The main reasons for treatment modification were classified as treatment failure, intolerance and/or toxic effects, the patient's choice, the physician's decision, and other reasons.
Results 277 patients started HAART in this period, 82.4% men. The mean age was 40 ± 11. The most frequent HAART was emtricitabine/tenofovir/efavirenz (59.1%) followed by emtricitabine, tenofovir, atazanavir/ritonavir (13.6%), emtricitabine, tenofovir, darunavir/ritonavir (9.1%) and other combinations (18.2%). During the first year of HAART, 68 individuals modified their treatment. The reason for treatment discontinuation was: 64.7% intolerance or toxic effects, 16.2% the physician's decision 10.3% treatment failure, 4.4% the patient's decision and 4.4% other reasons. 44 patients modified their treatment because of drug intolerance and/or drug toxicity. CNS adverse events were the most frequent toxic effect (27.3%), followed by gastrointestinal tract intolerance and renal impairment (18.2%), rash (9.1%), biochemical alterations (6.8%) and others (18.2%).
Conclusion The number of patients stopping HAART in the first year is acceptable. It is necessary to properly assess starting HAART to reduce adverse reactions involving switching the treatment.

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No conflict of interest.

DI-077 USE OF ROMIPLOSTIM IN PATIENTS WITH IDIOPATHIC THROMBOCYTOPENIC PURPURA

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Background Romiplostim was approved in 2009 to treat adult splenectomised patients with chronic Idiopathic Thrombocytopenic Purpura (ITP) when refractory to other treatment. It is also considered second-line treatment in non-splenectomised patients in which surgery is not advised.
Purpose To determine the effectiveness and safety of romiplostim in patients with ITP who did not respond to 1st line or later treatments.
Material and methods Observational and retrospective study. All patients treated with the drug from January 2009 to February 2014 were included. Data collected included demographic, clinical and analytical information, as well as dates of administration of the drug and dose administered.
Results 7 patients diagnosed with ITP and not responding to previous treatment lines were included, three splenectomised and four non-splenectomised. Previous lines of therapy varied among patients and included: nonspecific immunoglobulins, corticosteroids, danazol, rituximab and eltrombopag. Platelet count (PC) at the start of treatment was less than 50×10^9/l in 6 patients and higher in 1 patient. Three patients received fewer than six doses, so it was not possible to assess platelet response. The remaining four patients started treatment at a dose of 1 mcg/kg, maximum doses received ranged from 5 to 10 mcg/kg. In the four patients who received more than six doses of the drug response was variable. The percentage of time with sustained PC in one patient was only 19% of the treatment time (99 weeks follow-up) while in the other three it was 73%, 85% and 97%. One patient had PC of 150×10^9/l for four weeks with no dose reduction.

Conclusion Romiplostim was prescribed according to approved use in all cases except for treatment discontinuation in the case of no response. No serious adverse effects were reported. Effectiveness was very variable. A protocol for use including conditions for discontinuation in case of no response could improve use of the drug in our institution.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-078 PRESCRIPTION BY ACTIVE INGREDIENT VERSUS BRAND NAME

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Background According to the recommendations of scientific societies and legislation, medicines prescription should be performed by the active ingredient (AI) to avoid drug-related problems. In clinical practice, for various reasons, physicians tend to use brand names (BN).
Purpose To evaluate the quality of prescriptions through the prescription by AI in inpatients compared with the prescription by BN and to compare with a previous study in our department.
Material and methods Observational and retrospective study in a tertiary teaching hospital conducted during October 2013. We included all inpatients admitted to non-critical units. Using the Unit Dose Drugs Dispensing System (UDDDS) pharmacists reviewed all the treatment lines of the medical orders. A database was designed and filled with data collected: number of lines of treatment prescribed as an AI or BN and medical service. Furthermore, we classified medicines by their treatment group according to the WHO classification: Anatomical, Therapeutic, Chemical classification system (ATC). As the last step, the results obtained were compared with those found in a similar study in October 2010.
Results During one month, UDDDS revised 1999 treatment lines in 2013 and 1973 treatment lines in the 2010 study. Physicians prescribed 1166 (58%) versus 1303 (66%) by the BN in 2013 and 2010 respectively. At clinical service distribution, lines of inpatient pharmacotherapy admitted to Pneumology (77%) and Psychiatry (72%) were the most prescribed by BN in the 2013 study; in the 2010 study, these were Psychiatry (86%) too, Gynaecology (83%) and Orthopaedic Surgery (83%). In the other clinical services, it appears that the requirements are approximately 50% AI. The reverse trend was observed in the Short Stay Unit, Paediatrics and Neurosurgery reaching around 60% of treatment lines with the AI in the 2013 study and also reaching 60% in the Haematology department in 2010. Sorted by ATC classification, the most prescriptions in 2013 by BN were in the N group with 31%, followed by A, B and J with 23%, 17% and 17% respectively.
Conclusion Most medical orders continue to be prescribed by the BN despite the prescribing quality recommendations. Maybe when computer-assisted prescription comes to our hospital, this situation will be reversed.

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No conflict of interest.

DI-079 EFFECTIVENESS OF TREATMENT WITH IMMUNOGLOBULIN IN PATIENTS WITH ITP

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Background Treatment of immune thrombocytopenic purpura (ITP) is a controversial subject. The management varies widely, ranging from observation only, to aggressive management with corticosteroids, intravenous anti-RhD, intravenous immunoglobulin (IVIG), rituximab, splenectomy, etc.
Purpose To assess the effectiveness of treatment by administration of immunoglobulins (Ig) in patients diagnosed with idiopathic thrombocytopenic purpura (ITP).
Material and methods Retrospective descriptive study of about 5 years (January 2009–March 2014). All administrations of Ig in patients diagnosed with ITP in our study period.

The variables analysed were: sex, age, dose Ig, number of administrations to each patient, pre-treatment with corticosteroids, effectiveness of treatment with Ig (being defined as platelet levels increasing to above $30–10^9$/l, as indicated by the clinical guidelines for the use of Ig).

Patients and clinical data were selected from the outpatient and inpatient records (Farmatools) and electronic patient clinical histories.
Results A total of 23 patients were treated with PIT Ig in the study period. 6 patients were excluded because their clinical data had not been collected. 17 patients (two of whom were paediatric patients) of whom 41% were males were included. The mean age was 48 years.

The mean dose administered per patient was 40.44 grams of Ig. Mean Ig administration per patient in the study period was two administrations per patient.

Pre-treatment with corticosteroids as first-line treatment was performed in 88.23% of patients.

Of the 34 administrations recorded, 61.76% were found to be effective according to the clinical guidelines for the use of Ig for the treatment of ITP.
Conclusion Ig treatment had a higher than 60% efficacy, so it is justified to use it in symptomatic treatment prior to corticosteroids in patients diagnosed with ITP.

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No conflict of interest.

DI-080 ANALYSIS OF TEICOPLANIN PRESCRIPTION PRACTICES AND OF THEIR CONFORMITY WITH THE RECOMMENDATIONS

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Background We analysed teicoplanin prescriptions due to the increase of pharmaceutical interventions.

Purpose To evaluate the real use of teicoplanin in our hospital, check the agreement of prescriptions with the recommendations and standardise prescribing.
Material and methods Over 2 months, we analysed every teicoplanin prescription. We identified:

- Patient information (age, sex, weight and renal clearance)
- Prescription information (indication, dose, antibiogram, teicoplanin serum concentration, dose adjustment).

The correct standard used for patients with normal renal function was the PILLY recommendations. For patients with renal failure, the correct standard used was "Guide de Prescription et Rein" recommendations.
Results 22 patients were included: 12 men and 10 women; 8 had renal failure. 63.6% of the indications were documented (100% of the antibiograms indicated sensitive organisms), 31.8% were probabilistic and 4.6% were prophylactic. 17 patients had teicoplanin serum concentrations tested but only 10 were done on to right date (i.e. just before the 5th injection). For patients with normal renal function, the initial dose was correct for 10 prescriptions and didn't follow the recommendation for 3 prescriptions (the effectiveness threshold wasn't reached for 1 serum concentration). The dose adjustment was correct for 6 prescriptions, non-compliant for 3 prescriptions and 4 prescriptions were stopped. For patients with renal failure, the initial dose was correct for 4 prescriptions and non-compliant for 4 prescriptions (efficacy threshold wasn't reached for 2 serum concentrations). The dose adjustment was non-compliant for 7 prescriptions and 1 prescription was stopped.
Conclusion Finally therapeutic drug monitoring was performed but not correctly. The doses were not always adjusted. It appeared necessary to follow patients with renal failure. As a result of this analysis, we set up a typical prescription summing up the main indications, initial dose, therapeutic drug monitoring recommendations, dose adjustment based on the serum concentration and on renal function.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-081 ORAL CHEMOTHERAPY: INCIDENCE AND DESCRIPTION OF POTENTIAL INTERACTIONS BETWEEN DRUGS AND FOOD

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Background Oral chemotherapy is increasingly used in Oncology. It has important advantages, such as patient comfort, but it also brings new challenges which did not exist with the intravenous treatment. Some of these drugs have interactions with food, leading to changes in their bioavailability. As they are drugs with a narrow therapeutic margin, this can lead to alterations in their efficacy and/or toxicity.
Purpose A. To assess the level of knowledge on the administration of oral cytostatics that present restrictions with meals (drugs that have to be taken with/without food) among the outpatients of a third level hospital. B. To minimise the incorrect administration and the risk of food-drug interactions, providing patients with information as to how and when drugs have to be administered.
Material and methods Once the oral cytostatics with food restrictions were identified, we asked the patients in treatment about the information they had received from the doctor and the way they were taking the medicine. We provided those who were taking the drug incorrectly with the right information. In the following visit, it was confirmed if the patients who had previously been taking the cytostatic incorrectly, were now taking them correctly (intervention accepted/not accepted).
Results 97 patients were interviewed (54% men, 46% women). 40% of them were used to taking the drug incorrectly. Of this percentage, 77% correspond to patients treated with capecitabine, 8% with lapatinib, another 8% with temozolomide, and finally 3% with abiraterone, erlotinib and pazopanib, respectively. We detected a great diversity depending on the drug dispensed. 95% of the 39 interventions made were accepted.
Conclusion The data obtained suggest the need to reinforce the information that the patient receives. It is important to make sure that the patient understands how and when the oral cytostatic should be administered.

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No conflict of interest.

DI-082 IMPROVEMENT IN THE LIPID PROFILE OF HIV-INFECTED PATIENTS AFTER SWITCHING TO RILPIVIRINE/EMTRICITABINE/TENOFOVIR

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Background Dyslipidaemia has been associated with antiretroviral therapy (ART). Rilpivirine, a new second-generation non-nucleoside reverse transcriptase inhibitor (NNRTI), has a more favourable lipid profile.
Purpose To study the changes in the lipid profile of HIV-infected patients after switching from any ART to rilpivirine/emtricitabine/tenofovir and to assess the efficacy of the switch.
Material and methods Observational study including all patients switching to rilpivirine/emtricitabine/tenofovir from April 2013–2014 in our cohort of 1550 HIV-infected patients. Data: demographics, previous ART, $CD4^+$count, HIV viral load and lipid parameters at baseline and six months after the switch. All patients were classified as normal baseline or altered lipid profile (NLP or ALP) according to National Cholesterol Education Program cut-offs. Differences between baseline and final values of the lipid parameters were compared between the two groups. Quantitative data were expressed as median (Q1/Q3).
Results 131 patients switched to rilpivirine/emtricitabine/tenofovir: 109 (83.2%) male; age: 43.7 (37.6/50.2) years. Previous ART included 2 nucleoside reverse transcriptase inhibitors (NRTIs) plus: protease inhibitor 46 (35.1%) patients, NNRTI 82 (62.6%) and integrase inhibitor 3 (2.3%). Baseline vs. final: $CD4^+$count 619 (437/811) vs. 653 (489/830) cell/mcL ($p = 0.067$) and%patients with HIV-RNA <50 copies/mL: 84.5% vs. 85.7% ($p = 0.788$).

Abstract DI-082 Table 1

	NLP		ALP		p#
	n	Difference	n	Difference	
Total cholesterol* (TC)	77	−15 (−31/−1)	−9.0 (−16.6/−0.6)	−32.5 30 (−46/−22)	−13.7 (−21.2/−9.2) <0.001
Low-density lipoprotein cholesterol* (HDL-c)	65	−5 (−19/5)	−5.5 (−16.9/6.9)	−24 23 (-32/-13)	−13.1 (−22.3/−9.9) <0.001
High-density lipoprotein cholesterol* (HDL-c)	70	−3.5 (−13/1)	−8.3 (−19.4/1.9)	−1 19 (−5/4)	−2.5 (−13.5/11.8) 0.01
Triglycerides*	75	−10 (−25/16)	−11.5 (−28.2/19.5)	−82 31 (−137/−58)	−49.2 (−63.0/−27.8) <0.001
TC/HLD-c	77	0.005 (−0.472/0.342)	0.2 (−14.0/11.9)	−0.545 11 (−1.06/0.128)	−10.1 (−16.6/1.7) 0.102

*mg/dL.
#Comparing absolute differences.

Conclusion

- Rilpivirine/emtricitabine/tenofovir improved the lipid profile of HIV-infected patients, while maintaining the immunological and virological efficacy of the ART
- The reduction in the lipid parameters was significantly higher in patients with altered lipid profile at baseline.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-083 AMPHOTERICIN B TOPICAL TREATMENT OF PLEURAL ASPERGILLOSIS: A CASE REPORT

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Background Pleural aspergillosis (PA) was first described in 1842 but remains a relatively rare entity when compared with other Aspergillus infections.
Purpose To describe the pharmacological management of a patient diagnosed with PA and the efficacy of intracavitary instillation of amphotericin B (ICAB) treatment.
Material and methods A 32-year-old woman with multiple drug allergy syndrome (NSAIDs, pyrazolones, quinolones, lincosamides, SSRIs, ondansetron) was admitted to our hospital because of postoperative Pseudomonas pneumonia complicated with empyema and bronchopleural fistula. The patient underwent thoracostomy. Pleural biopsy showed septate fungal hyphae and pleural fluid culture grew Aspergillus fumigatus while serum galactomannan antigen was negative. Systemic antifungal therapy, with oral voriconazole at first and then with posaconazole, was started. Concurrently, amphotericin B deoxycholate, diluted in 75 ml of 5% glucose solution, was infused directly into the pleural cavity, at 5 mg on the first day, rising to 10 mg and 25 mg on the second and third day, respectively, and then 50 mg, after washing of the pleural cavity with 5% glucose solution. Daily dressing with amphotericin B-impregnated gauze was introduced in the cavity. Local treatment was continued for about two weeks.
Results The treatment was well tolerated with no adverse drug reactions. The symptoms and the physical signs improved greatly during hospitalisation and the patient left the hospital 3 days after the end of treatment. Repeat pleural fluid culture was negative 2 weeks after the end of treatment.
Conclusion ICAB may improve the efficacy of systemic antifungal therapy and it should be considered as an additional treatment option. Moreover, the use of this method avoids repeated needling of the cavity and may allow extended treatment on a domiciliary basis.

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No conflict of interest.

DI-084 COST-UTILITY OF SOFOSBUVIR-BASED TREATMENT FOR UNTREATED GENOTYPE 1 AND 3 HEPATITIS C PATIENTS

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Background Hepatitis C virus infection constitutes a major public health problem worldwide due to its long-term impact, ranging from extensive fibrosis to hepatocellular carcinoma. Since the approval of direct-acting antivirals (DDAs), treatment-naïve and -experienced patients with compensated disease have been able to benefit from a broad choice of drug combinations.[1] Nowadays due to financial constraints the need for a financial evaluation of the innovative treatments is recognised.
Purpose To perform a cost-utility analysis of sofosbuvir-based treatment versus standard care in our Hospital for treatment-naïve genotype 1 and 3 patients (ribavirin/peg-interferon followed by boceprevir/ribavirin/peg-interferon in genotype 1 and ribavirin/peg-interferon in genotype 3).
Material and methods Review of recent literature data to evaluate the efficacy of the therapeutic options being analysed. A decision-analytic Markov model was used to estimate long-term health outcomes.[2,3] The cost was calculated based on the direct costs of the drugs (2014).
Results The incremental cost-efficacy ratio calculated for sofosbuvir-based treatment for untreated genotype 1 patients was €38,455.53. For untreated genotype 3 patients, the ribavirin/peg-interferon option was dominant versus sofosbuvir-based treatment.
Conclusion Sofosbuvir-based treatment can be considered a cost-effective option for genotype 1 patients, depending on willingness-to-pay for a quality-adjusted life year. Equally a cost-utility evaluation should be assessed for more than two dozen possible therapeutic schemes.

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No conflict of interest.

DI-085 EVOLUTION OF ANTIRETROVIRAL PRESCRIPTIONS IN TREATMENT-NAÏVE HIV-INFECTED PATIENTS

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Background The introduction of newly-approved antiretroviral drugs is leading to changes in first-line antiretroviral prescription.
Purpose To analyse the evolution of antiretroviral prescription patterns over a 4-year period in treatment-naïve HIV-infected patients and to assess rates and reasons for switching first-line HAART.
Material and methods Retrospective study including all antiretroviral-naïve patients who started HAART in a Spanish tertiary care hospital between 2010 and 2013. Prescription and pharmacy repeat prescription data were collected from the electronic prescription database and medical records.
Results 156 antiretroviral-naïve patients were included. Tenofovir/emtricitabine co-formulation was used as first-line nucleoside reverse transcriptase inhibitors combination in all but two patients with decreased renal function, who received abacavir/lamivudine instead. Efavirenz was the most commonly associated third drug: 65.1%, 62.5%, 43.2% and 57.1% each year, respectively. Protease inhibitor (PI)-based HAART increased over the years, with darunavir/ritonavir (DRV/r) and atazanavir/ritonavir (ATV/r) replacing lopinavir/ritonavir (LPV/r) as preferred PI: DRV/r was chosen in 23.3%, 31.2%, 21.6% and 21.4% of prescriptions, respectively; ATV/r, first introduced in 2012, was used in 29.7% of prescriptions that year and in 10.7% in 2013. LPV/r use decreased from 7.0% in 2010 to 4.1% and 2.7% in 2011 and 2012, respectively. There were only three prescriptions for raltegravir due to resistance or interaction issues, and one prescription for tenofovir/emtricitabine/rilpivirine, first introduced in late 2013. Treatment changes were necessary in 47 patients, and the main reasons for switching were: adverse events (55.3%), virological failure (14.8%), simplification (12.7%), interactions (10.6%), immunological failure (4.2%) and resistance mutations (2.1%).
Conclusion Antiretroviral prescription patterns in first-line HAART have widened in recent years due to the introduction of new agents, and adverse events remain the major reason for switching first-line treatment. With new drugs approved in 2014, practice protocols should be developed and implemented with pharmacist collaboration, in order to optimise clinical outcomes and financial impact of this changes.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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DI-086 INFLUENCE OF THE RECOMMENDATIONS OF THE EUROPEAN MEDICINES AGENCY REGARDING THE MODIFICATION OF THE PRESCRIPTION PATTERN OF METOCLOPRAMIDE

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Background In July 2013, the European Medicines Agency (EMA) recommended changes to the use of metoclopramide, including restricting dose (maximum 30 mg/day) and duration (up to 5 days), to minimise the known risks of potentially serious neurological side-effects.
Purpose To evaluate the influence of these recommendations on the prescription pattern of metoclopramide in a tertiary care hospital.
Material and methods The Pharmacy Department communicated the EMA's recommendations to physicians through an internal-messaging system. Pharmacists revised new prescriptions with metoclopramide in the electronic prescription database, making recommendations, if required, according to the EMA's advice.

Subsequently, an observational retrospective study was conducted of all prescriptions of metoclopramide during the same week before (March 2013) and after (March 2014) the EMA's press release. From the electronic prescription database, patient data (age, sex and reason for admission) and posology and duration of treatment with metoclopramide, were recorded and compared with the EMA's recommendations. Emergency Service and Paediatrics were not evaluated.
Results 213 (51% men) and 225 patients (44% men) with an average age of 59.6 [17–99] and 60.7 [22–93] years old received metoclopramide in the studied weeks of 2013 and 2014, respectively. Reason for admission in 73% and 74% of patients was surgery. 34% and 24% of patients, in 2013 and 2014 respectively, had a fixed-dosing schedule, so the "as needed" schedule was largely selected. Of the patients with a fixed-dose schedule, 44% vs. 46% met the EMA's prescription recommendations, with no statistically significant difference ($p = 0.782$, CI = 95%), in 2013 and 2014 respectively. Of these, 34% vs. 46% of prescriptions did not meet therapeutic indication; 27% vs. 22% had a duration in excess of 5 days and 2 patients in 2013 received doses higher than 30 mg/day.
Conclusion In our hospital, the pattern of metoclopramide prescribing has not changed significantly after the EMA's press release. More needs to be done in order to achieve major compliance.

REFERENCES AND/OR ACKNOWLEDGEMENTS

EMA recommends changes to the use of metoclopramide.

EMA/443003/2013.

No conflict of interest.

DI-087 SPONTANEOUS REPORTING OF ADVERSE DRUG REACTIONS IN A SECOND LEVEL HOSPITAL: IS PHARMACOVIGILANCE WELL TARGETED?

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Background It has been repeatedly reported that up to 7% of patients have serious adverse drug reactions (ADR) during hospital admissions. Hospital-based pharmacovigilance aims to detect previously unknown serious ADRs arising during differential diagnosis, with focus on special populations, but relies on spontaneous reporting by physicians. As a part of process auditing, we reviewed

spontaneous ADR reports received by the Hospital Pharmacy since the introduction of an intranet-based form for reporting,

Purpose To assess whether the system is targeted to detect previously unknown ADRs and serious ADRs in special populations.

Material and methods All reports received between January 2011 and December 2013 were reviewed. The suspected drugs and whether they had a regulatory requirement for additional monitoring (i.e. a black triangle on the label), the seriousness of the reaction and the novelty of the clinical association (i.e. absent from the summary of product characteristics) were described.

Results There were 53,332 admissions during the period, thus 3,733 serious ADRs were expected (7%). Only 114 notifications were received, which represents 3% of all potential reports, related to 108 patients (13% paediatric and 24% aged ≥75 years), and involving 143 suspected drugs of which 18% had regulatory requirements for additional monitoring. 72% of reports met the seriousness criteria.

Only 5% of the reports described previously unknown associations, of which half were confirmed as at least possible reactions: two cases of hepatitis associated with metamizole and rizatriptan respectively, and leukocytoclastic vasculitis associated with tocilizumab.

Conclusion Our audit pointed out serious under-reporting but highly focused reports: most were serious events, one third involved special populations, and one fifth drugs with a regulatory requirement for additional monitoring. Actions to improve notifications are required, but the fact that 3% of the reports were relevant suggests that the system is already focused.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Multidisciplinary team.

No conflict of interest.

DI-088 SINGLE-TABLET REGIMEN TENOFOVIR/EMTRICITABINE/RILPIVIRINE: ONE YEAR'S EXPERIENCE

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Background Tenofovir/emtricitabine/rilpivirine (TDF/FTC/RPV) is a recently-marketed fixed-dose combination of antiretrovirals with which there is little clinical experience as yet.

Purpose To describe our clinical experience with TDF/FTC/RPV, in terms of effectiveness, adherence and causes of discontinuation after its first year of use in our hospital.

Material and methods We retrospectively collected data from medical records and the Outpatient Pharmacy Database on all patients who started TDF/FTC/RPV in our centre since its introduction in May 2013, and who had at least one year of follow-up. Baseline and one year viral load (VL) and CD4 counts were recorded for those who completed 12 months treatment with TDF/FTC/RPV. For those who did not, the reason for withdrawal and mean time on treatment were obtained. Adherence was calculated from dispensed and retrieved units, considering the period between dispensing the drugs.

Results 83 patients were treated with TDF/FTC/RPV; 60 male, mean age 45.1 years (SD10.5), 79 had previously received antiretrovirals. Four patients were lost to follow-up. Of 65 patients who completed one year of treatment, 46 of 51 who had undetectable baseline VL remained undetectable, and 12 of 14 patients with detectable baseline VL reached <20 copies/ml. Mean CD4 counts were 646 (SD 254) and 656 (SD 297) cells/mm^3 at baseline and one year, respectively. The average adherence was 92% of the theoretical intake, 75% in the subgroup who had virological failure after 12 months.

Treatment with TDF/FTC/RPV was discontinued in 14 patients due to: virological failure (5), side effects (4), drug interactions (3), immunologic failure (1) and desire to become pregnant (1). The average length of treatment of these patients was 6.2 months (range 2.4–11.3 months).

Conclusion TDF/FTC/RPV was effective in terms of VL and CD4 counts in most patients after one year of treatment. Virological failure after 12 months was associated with low adherence.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Acknowledgments to Department of Pharmacy.

No conflict of interest.

DI-089 EFFECTIVENESS OF ABIRATERONE IN PROSTATE CANCER IN CLINICAL PRACTICE

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Background Abiraterone is an expensive drug used in hospitals for metastatic prostate cancer and it is necessary to evaluate health outcomes from its use to establish whether it is cost-effective treatment.

Purpose To analyse the effectiveness profile of abiraterone for metastatic prostate cancer in a tertiary hospital.

Material and methods Retrospective observational study of three years, since abiraterone was first marketed to the present (November 2011–July 2014). All prostate cancer patients treated with abiraterone were included. Variables recorded: age, performance status (ECOG) and progression-free survival (PFS). Data were collected from patients medical records.

The statistical analysis was ANOVA followed by t test. A confidence limit of $p < 0.05$ was set for the interpretation of results.

Results 33 patients were included in the study. The median age was 72.7 (SD 9.1) years old.

The PFS was 7.0 (5.2–8.8) vs. 2.9 (0.7–5.1) months for patients with ECOG 0–1 and ECOG2 respectively ($p = 0.01$).

5 patients were treated in first line, 3.8 months of PFS (9.1 months for ECOG0–1 patients and 1.0 months for ECOG2 patients).

28 patients in second line, 4.2 months of PFS (5.0 months for ECOG0–1 patients and 2.6 months for ECOG2 patients).

Conclusion Our results indicate that ECOG 2 patients derive little clinical benefit from abiraterone.

REFERENCES AND/OR ACKNOWLEDGEMENTS

To the oncology service.

No conflict of interest.

DI-090 A PROSPECTIVE, RANDOMISED, CONTROLLED STUDY TO ASSESS THE EFFECT OF PHARMACEUTICAL INTERVENTION ON COMPLIANCE AND KNOWLEDGE OF IMMUNOSUPPRESSION IN KIDNEY TRANSPLANT RECIPIENTS

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Background Pharmacists have important responsibilities inside a multi-professional renal transplant team.
Purpose This work aimed to evaluate the impact of pharmaceutical intervention in the education process and compliance to immunosuppressive therapy.
Material and methods This project was approved by the local ethics committee and conducted in a large transplant-specialised hospital. Adult kidney transplant recipients were identified and recruited by a trained pharmacist within two days after the transplant surgery and received standard immunosuppression therapy. After signing the informed consent patients were randomised to receive a planned intervention of the transplant pharmacist (group 1) or to follow the regular orientation offered by nurses only (group 2). The pharmaceutical-planned intervention consisted of detailed education about indications, doses, frequencies, and schedules for administration of immunosuppressive drugs and these actions were performed at day 3, 5, 7, 14, 21, 28, 60 and 90 days after transplant. A formal evaluation was applied using a standardised scale and a predefined questionnaire to assess compliance and knowledge at days 10, 28 and 90.
Results So far, 89 patients were randomised, 43 in group 1 and 46 in group 2. Preliminary results showed a mean age of 46, 62% male and 40% Caucasian. Regarding the education level, 52% and 30% of patients had not achieved the ninth grade in group 1 and 2, respectively. At day 28 and 90, 85% and 82% of patients showed compliance to immunosuppression in group 1 vs. 77% and 60% in group 2, respectively. Regarding the patients' knowledge about the use of immunosuppressive at days 10, 28 and 90, 85%, 88% and 95% of patients in group 1 showed well understanding about immunosuppressive medication vs. 73% ($p = 0.049$), while 82% and 80%, in group 2 respectively.
Conclusion These preliminary results showed that the intervention of the pharmacist trends to improve the compliance and knowledge of immunosuppression therapy.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Acknowledgements Hospital do Rim.

No conflict of interest.

DI-091 ASSESSMENT OF AN EDUCATION PROGRAM FOR PATIENTS TREATED WITH ORAL ANTICOAGULANTS IN A CARDIOLOGY DEPARTMENT: A PILOT STUDY

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Background In January 2013, an education program for patients treated with oral anticoagulants called "*ETAP*" was implemented in the cardiology department of our hospital. The day after the educational intervention, patient knowledge and coping are assessed but long-term knowledge, coping and medicines adherence have never been investigated up to now.
Purpose To assess long-term knowledge, coping and adherence of patients enrolled in *ETAP* since January 2013.
Material and methods 1) **January 2013–August 2014**: During hospitalisation, an initial "knowledge and coping score" (E1 score: 0 to 10 points) was awarded for patients enrolled in the education program with a specific questionnaire designed by the *ETAP* team.

2) **June–September 2014**: At least one month after discharge from the hospital, a pharmacy student called every patient at home who had given his verbal consent beforehand. A long-term "knowledge and coping score" (E2 score) was awarded with the same questionnaire. Medicines adherence was calculated with the 8-item Morisky Medication Adherence Scale (MMAS-8).
Results Of the 236 patients contacted, 100 patients completed the study. Mean "knowledge and coping scores" were both above 8 points (E1: 8.61 ± 2.36, E2: 8.23 ± 2.03). No significant difference ($p = 0.35$) was observed between means of E1 and E2 scores. MMAS-8 showed that most patients (70%) had a high level of adherence. No correlation was observed between E1 or E2 scores and adherence.
Conclusion The results of this pilot study suggest that most patients retain their long-term knowledge and coping skills. These data are in agreement with other studies.[1] The medicines adherence to oral anticoagulants estimated by MMAS-8 was higher than in routine practice. Assessment of the *ETAP* program should be improved by including biological and clinical outcomes such as INR or bleeding events collection.

REFERENCE

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No conflict of interest.

DI-092 POPULATION ATTRIBUTABLE RISK OF HIP FRACTURES IN ANTIDEPRESSANT USERS IN HUNGARY AND ESTIMATION OF THE RELEVANT COST CONSEQUENCES

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Background Pharmacoepidemiological studies have demonstrated an excess risk of hip fractures attributable to the use of antidepressants. In a recent systematic review the pooled relative risk (RR) of hip fracture was 1.70 for antidepressant users, compared to non-users. The potential impact of the use of antidepressants on the rate of hip fracture in Hungary has not been studied before.
Purpose To quantify the possible relationship between antidepressant consumption and the excess risk of hip fracture in Hungary, based on the results of published studies and national drug use data in 2012. The population-attributable risk (PAR) of hip fracture associated with the use of antidepressants was evaluated. We also estimated the yearly cost of the operations after hip fractures related to antidepressant use.
Material and methods For most countries, the prevalence (Pe) of antidepressant use can only be estimated if Intercontinental Medical Statistics and freely available public databases

(Denmark, the Netherlands, Norway) are used for data extraction. Pe in Hungary can be estimated using the following formula:

Estimated $Pe_{Hungary}$ = [(Antidepressants DDDs/1,000 persons/$day_{Hungary}$)/(Antidepressants DDDs/1,000 persons/$day_{Public\ databases}$)] × $Pe_{Public\ databases}$.

Pe and the pooled RR from the systematic review of published studies were combined with the following formula to calculate country-specific PAR%:

PAR% = [(Pe (RR − 1))/(1 + Pe (RR − 1))] × 100.

The cost of the operations after hip fractures was calculated using national data.

Results The Hungarian antidepressant consumption is 26.87 DDDs/1,000 persons/day. The estimated PAR of antidepressants on hip fracture rates in Hungary is 2.12% (95% CI, 1.44–2.95). The estimated PAR for the Hungarian population above 65 years is 3.86% (95% CI, 2.62–5.32).

The estimated yearly cost of the operations after hip fractures related to antidepressant use is 1.5–2.5 million Euros in Hungary.

Conclusion Our findings suggest that the potential contribution of antidepressant use to the population rate of hip fractures is 2.12% in Hungary, which may cause a significant social burden.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

DI-093 PREDICTORS OF NON-ADHERENCE TO HIGHLY ACTIVE ANTIRETROVIRAL THERAPY IN HIV-INFECTED PATIENTS

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Background Highly active antiretroviral therapy (HAART) has significantly reduced morbidity and mortality, transforming HIV into a chronic disease. The increase in life expectancy in these patients has led to a higher prevalence of comorbidities and use of concomitant medicines, which may limit adherence and therapeutic success.

Purpose To determine the prevalence of other chronic diseases in HIV-infected patients and to identify predictors of non-adherence to HAART.

Material and methods Single-centre retrospective study that included HIV-infected patients on HAART who attended pharmaceutical care at a pharmacy service from January to December 2013. The dependent variable was non-adherence to HAART (patients were considered non-adherent to HAART if the percentage of adherence through dispensing records was ≤90%). The independent variables were: sex, age, number of chronic diseases and concomitant medicines, and the presence of specific diseases (viral liver disease, dyslipidaemia, central nervous system disease, cardiovascular disease or hypertension).

Statistical analysis: to identify independent predictors of non-adherence, we performed a multivariate logistic regression analysis.

Results A total of 598 patients were analysed. 78.9% were men, mean age was 48 years (IQR: 42–52). The average number of comorbidities per patient was 1.6 ± 1.4. 31.3% of patients had viral liver disease, 17.9% dyslipidaemia, 15.6% central nervous system disease and 14.4% cardiovascular disease or hypertension. The average number of concurrent drugs per patient was 1.9 ± 2.7. 85.3% of patients were adherent to HAART. In the multivariate analysis, presence of viral liver disease was the only variable significantly associated with non-adherence to HAART (OR: 1.81); p = 0.02). The number of chronic diseases and concurrent drugs was not associated with non-adherence.

Conclusion The prevalence of other chronic diseases in HIV-infected patients was high. The presence of viral liver disease was identified as a predictor of non-adherence in HIV-patients in this study.

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No conflict of interest.

DI-094 TREATMENT OF PULMONARY EMPHYSEMA ASSOCIATED WITH ALPHA-1-ANTITRYPSIN DEFICIENCY

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Background Alpha-1-antitrypsin deficiency (AATD) is an inherited disorder that predisposes to the development of emphysema. Replacement therapy is an expensive chronic treatment.

Purpose To describe the characteristics of patients diagnosed with AATD and emphysema in our hospital. To follow up their progress using spirometric data and the number of hospitalizations before and after one year of treatment.

Material and methods A retrospective study of the individual progress of patients with AATD who have been treated with replacement therapy. Review of medical records and pharmacy dispensing data. Variables: sex, age at diagnosis, phenotype, FVC, FEV1, FEV1/FVC and number of exacerbations that required hospitalisation before and after treatment.

Results 8 patients received replacement therapy. The average age was 51 ± 10 years. 7 patients had the piZZ deficient phenotype and 1 MM phenotype and null/null genotype. The guideline in all cases was 180 mg/kg every 21 days as an intravenous infusion. AAT values at diagnosis ranged from 9 mg/dL to 82 mg/dL. In 2 patients, the number of hospitalizations was low once the treatment started. In 1 patient the number of hospitalizations increased. The average FEV1 before starting treatment was 1.30 ± 0.19 L and one year after was 1.33 ± 0.48 L, representing an increase of 0.029 L. The average FEV1/FVC prior to treatment was 42.9 ± 8.02 L and 46.15 ± 7.24 L a year after, increasing by 3.26 L after one year of treatment.

Conclusion The objective in AAT replacement therapy is to slow down the progression of emphysema and respiratory functional impairment, reducing severe exacerbations. We might with the results obtained that the treatment is effective because the respiratory parameters in our patients were stable after one year of treatment showing a slight increase, and the number of hospitalisation due to respiratory causes was practically unchanged. However, the limited number of cases and follow-up is insufficient to generalise findings. Larger cohorts are required.

REFERENCE
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No conflict of interest.

General management

GM-001 THE USE OF PERFORMANCE INDICATORS TO IMPROVE STANDARDS, AND TO IDENTIFY 'PERFORMANCE CONCERNS' IN INDIVIDUAL PHARMACISTS

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Background Each pharmacist has an 'area' of responsibility governed by specific guidelines. How performance indicators (PIs) can be used to audit work and to show continuous improvement is documented in the literature. However, the ability to identify 'Performance concerns' in pharmacists, is not well documented.
Purpose To show measurable improvement in the quality of service provision.

To identify any pharmacist (s) with 'performance concerns'.
Material and methods The 'audits' were performed by a pharmacist qualified in audit work. Three areas were audited – cytotoxic drugs, galenical preparation and narcotics. 52 PIs were used to score various procedures on a scale of 1–10 (1–2 unacceptable, 3–4 poor, 5–7 fair, 8–9 good, 10 excellent). 6 PIs were specific to prescription inaccuracies.

The April 2014 audit covered the previous 3 months' work. Audits were repeated in June and August 2014.

Performance concerns may be indicated by no improvement in repeated audits and/or persistent low scoring PIs.
Results The April audit showed 73% PIs to be good-excellent, 18% fair in 'Narcotics'. 71% PIs good-excellent, 21% fair in 'Galenicals'. 41% good-excellent, 23% fair in 'Cytotoxics'.

The June audit showed 100% PIs to be good-excellent, 0% fair in 'Narcotics'. 96% good-excellent, 0% fair in 'Galenicals'. 71% good–excellent, 23% fair in 'Cytotoxics'.

The August audit showed 100% PIs to be good-excellent, 0% fair in 'Narcotics'. 96% good-excellent, 0% fair in 'Galenicals'. 71% good-excellent, 23% fair in 'Cytotoxics'.

The percentage of inaccurate prescriptions in all 3 areas during the audit period was 7–12%.
Conclusion

1. Using PIs led to improved standards within an 8 month trial period.
2. The area which improved least was cytotoxics. The reason has not been determined but this may indicate a performance concern, which requires further investigation.
3. The rate of inaccurate prescriptions reflects an educational issue.
4. Incorporating PIs into hospital departments would contribute to improving standards and would bring to light performance concerns in health care professionals.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

GM-002 IMPROVING MEDICINES MANAGEMENT IN THE HOSPITAL DISCHARGE SETTING THROUGH PHARMACIST INTERVENTION IN THE SYNCHRONISATION OF COMPUTER APPLICATIONS

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Background Lack of synchronisation between hospital applications involved in the medicines use process (MUP) leads to inefficient use of resources.
Purpose To prove that pharmacist intervention (PI) in the integration of information recorded in computer applications improves medicines management in the discharge setting (DS).
Material and methods Longitudinal, prospective, study (10 days) in a tertiary hospital (1,350 beds). Adult patients being discharged from medical and surgical specialties were evaluated (410 beds). Discharges are recorded in a bed management computer application (BMCA). Every 20 min this information is transferred to CPOE so that electronic prescriptions (EPs) are automatically inactivated. At discharge, because of lack of synchronisation, EPs were incorrectly remaining active. This outdated information was transferred to the automated pharmacy medicines dispensing systems (APMDS) which meant that these medicines were being dispensed to the ward as if the discharged patients were being admitted. Subsequently, they were returned to the pharmacy.

Pharmacists confirmed discharges daily, consulting the BMCA. Once verified, they updated EPs in CPOE, avoiding unnecessary dispensing of medicines. Primary endpoint: number of EPs updated by PI in COPE. We also analysed the number of medicines whose unnecessary dispensing and subsequent return to pharmacy was avoided by PI and working time saved.
Results We evaluated 361 patients DS. PI updated EPs of 132 (36.6%) outdated because of lack of synchronisation between BMCA and CPOE. The remaining 229 didn't require PI, as the information recorded in CPOE when it was transferred to APMDS was correct. 1,012 EPs out of 3,327 (30.4%) were updated by PI. Without PI, these prescriptions would have generated unnecessary dispensing of 3,601 medicines. PI led to a total saving of 9.36 h of two pharmacy technicians' work re-entering medicines unnecessarily dispensed to the ward.
Conclusion PIs reduced dispensing failures arising from lack of real-time transmission between hospital applications. Greater synchronisation between BMCA and CPOE would have avoided most of them. PIs improved MUP in DS, saving time and avoidable pharmacy workload.

REFERENCE
1 Nursing staff

No conflict of interest.

GM-003 EVALUATION OF THE EFFECTIVENESS OF A BASIC TRAINING COURSE: THE PROCESS OF PHARMACEUTICAL LOGISTICS, PROSPECTS AND CHALLENGES FOR THE NATIONAL HEALTH SERVICE

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Background The growth of healthcare spending and the concurrent gradual reduction of resources require interventions oriented to the reorganisation of drugs supply chain and medical devices in the various steps from the manufacturer to the bed of the patient and/or his house. Logistics and innovation of hospitals and territorial structures thus possess a key role in increasing the efficiency and quality of health services.
Purpose The purpose of this study is to evaluate satisfaction and effectiveness of a basic training program about pharmaceutical logistic processes organised and held from the Logistic SIFO Area (LSA).
Material and methods During the period starting from February to April 2014 there were three training sessions (Catania, Torino, Pisa) lasting thirteen hours with a total of 70 participants. By administrating a course satisfaction questionnaire and an evaluation of the belonging structure it was possible to characterise both the course participants and the ability to transfer what they have learnt in their working contexts. The responses, assessed anonymously, were processed statistically.
Results 70 satisfaction and 60 self-assessment questionnaires were analysed. 52% of participants judged as "highly important" all topics treated and 50% rated as "very important" the educational quality of the course. The analysis of the questionnaire for the performance assessment showed that participation in the course increased by 70% in the learners' willingness to improve their organisational system and raised awareness in the need for performance investigation analysis tools, new technologies, constraints given by the Regional Administration and LHA. 60% of participants found organisational barriers in the modification of the current pharmaceutical logistics paths.
Conclusion Obtained data allowed us to verify the effectiveness of the methodology adopted by the LSA dealing with issues relevant to the profession, as well as highlighting both the utility to carry out further editions of the Basic Course and to develop an Advanced Course.

REFERENCES AND/OR ACKNOWLEDGEMENTS

None

No conflict of interest.

GM-004 IMPROVEMENT OF CUSTOMER FOCUS USING A QUALITY REQUIREMENT SELF-ASSESSMENT

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Background Quality standards invite organisations to determine and meet customer requirements in order to continually improve customer satisfaction. However, a certification organisation stressed that customer focus was insufficiently developed in our facility. This deficiency could lead to serious repercussions as this hospital pharmacy is independent from its customers and is currently evolving in a changing environment.
Purpose To develop a self-assessment tool to evaluate the pharmacy's functioning in relation to customer-focused quality requirements.
Material and methods Requirements of an optimal customer-focused quality management system were obtained from two quality standards (ISO 9001 and a hospital pharmacy quality reference system (RQPH)). A three-person workgroup scored these requirements according to the level of realisation, the extent of measurements performed, the suitability of the implemented answer; and its relevance to the organisation (0 pt = non-existent, 1–2 pts = intermediate, 3 pts = optimal). By adding these four scores, a total score of maturity was obtained for each requirement (≤4 pts = insufficient; 5–8 pts = intermediate; ≥9 pts = satisfactory). The requirements that scored 0 pt for any criterion, 1 pt for their degree of realisation or a total score <5 pts, were selected for improvement.
Results 54 requirements were identified (ISO 9001 = 14; RQPH = 14 general, 26 specific). Most of them scored more points on their level of realisation and measurement than on suitability and relevance, indicating that customer-focused activities had probably been implemented merely to answer quality requirements, without being useful, usable or put into use. A mean score of 7.25/12 pts indicated an intermediate global maturity of the customer-focused quality management system. One-third of requirements were selected for improvement (4/14 ISO 9001, 14/40 RQPH). Various practical suggestions for improving the pharmacy's functioning were finally made based on these results, and are currently being implemented.
Conclusion A quality requirement self-assessment tool was developed and tested successfully. It could be used by other organisations to assess their response to various quality requirements.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

GM-005 FINANCIAL EVALUATION OF CATARACT SURGERY IN A PUBLIC HEALTH HOSPITAL

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Background With more than 1,000 cataracts operations performed per year, our hospital is considered one of the national reference centres for this surgery.

In contrast to Extracapsular Cataract Extraction (ECCE), phacoemulsification is the most used technique at our hospital (84% of cataracts operated on) and requires costly consumables contributing to the overall cost of care.
Purpose To compare the proportion of Pharmaceutical Products (PPs) costs in the amounts billed according to cataract surgery types and to patients' Medical Tariff Categories (MTC).
Material and methods To evaluate the cost of the PPs used in uncomplicated cataract surgery with lens implantation by both standard techniques, and its impact on the amount billed to patients' MTC, we studied data from 1,073 patients operated on in 2013 (901 by phacoemulsification and 172 by ECCE). Information relating to the cost of PPs and billing packages was collected from our hospital's financial department.
Results Our study results (table 1) reveal that for phacoemulsification, the cost of PPs consumes 64% of the billing package in insured patients and 93% of the billing package in uninsured patients, in contrast to the ECCE for which the cost of PPs consumes only 20% of the billing packages in both patients' MTC.

Abstract GM-005 Table 1 Cost per patient of PPs compared to the overall billing package

MTC	ECCE PP Cost	ECCE Billing package	Phacoemulsification PP Cost	Phacoemulsification Billing package
Insured patients (15%)	€45	€227	€203	€318
Uninsured patients (85%)	€45	€218*	€203	€218*

*Excluding hospitalisation fees (€9 per day), radiology and medical biology fees.

Conclusion Phacoemulsification is the most used technique, preferred for its many advantages. However it requires costly PPs that consume the greatest share of billing packages, especially in uninsured patients. These findings require the billing of this surgical act to be re-evaluated and a revision downwards of the necessary PP acquisition prices.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

GM-006 CRITICAL ANALYSIS OF CONVENTIONAL CUSTOMER SATISFACTION INDICATORS IN HOSPITALS

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Background Customer satisfaction is characterised by its complexity and highly subjectivity in hospitals. Indeed, experience has shown that Conventional Customer Satisfaction Indicators (CCSIs) which have proved their relevance in many areas, may not be suitable in hospitals.

Purpose To determine the limits of CCSIs in hospitals.

Material and methods This is a descriptive study of customers and their needs in hospitals followed by a critical analysis of CCSI. As the model presented, we studied direct customers of our Hospital Pharmacy (HP).

Data on pharmacy customers, their needs and CCSIs for their evaluation were extracted from our pharmacy procedures booklet and quality manual, as well as from the complaints register and the satisfaction questionnaires completed by the customers concerned.

Results Direct customers of HP are: Care Units (CUs), administrative department, financial department and suppliers.

The table below illustrates pharmaceutical needs of the first category of customers (CUs), CCSIs used and their possible deficiencies:

Abstract GM-006 Table 1

Needs HP has to satisfy	CCSI designation	CCSI description	Limits
Availability of pharmaceuticals	Average duration of shortage	Σ time out of stock/Number of items in shortage	
Concordance between prescribed and dispensed items	Request Satisfaction Rate (RSR)	(Quantity of dispensed drugs/Quantity of requested drugs) × 100	Does not take into account ×appropriateness of the request
Rapidity of dispensing prescriptions	Prescriptions execution time	Time to dispense prescription lines/total number of prescription lines	
Pharmaceutical presence in CU	Rate of pharmaceutical presence in CU	(Number of CUs benefiting from pharmacist presence/total number of CU) × 100	Pharmaceutical presence is not required at the same level in all CUs

Conclusion Critical analysis of CCSIs in hospitals allowed us to identify many deficiencies. These findings will be used to develop new indicators that are more appropriate for the hospital context. For example we can imagine introducing an Index for Request Adequacy (IRA) to adjust the conventional RSR: Adjusted RSR = [Quantity of dispensed drugs/(Quantity of requested drugs × IRA*)] × 100.

*$0 < IRA \leq 1$ (The IRA must lie between 0 and 1).

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

GM-007 PLAN TO IMPROVE MEDICAL RECORDS AT THE OUTPATIENT PHARMACY SERVICE

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Background It is commendable to improve routine processes. However, they have to be checked once implemented, to verify if they are being done properly. One way to do this is by performing an audit. When audits are performed and abnormalities are detected, an improvement plan must be established to prevent errors.

Purpose To evaluate the impact of an improvement plan (IP) in the database in the outpatient setting.

Material and methods A methodology of continuous quality improvement was applied following the Deming cycle (Plan, do, check and act). The audit was carried out in June 2013. Patients were selected who attended the pharmaceutical care outpatient consultation; belonging to several Hospital Units: General Clinical Nephrology (GCN), Renal Transplantation (RT) and Dialysis (D). These services were selected because their records are complex. These patients frequently shift from unit to unit. The general ATHOS-APD data were reviewed and checked against each patient's medical record (paper/digital). An IP was developed based on the results of this audit.

The IP consisted of sending out the results of the review and holding a training session showing the professionals the correct way to keep patient records.

Six months later another audit was performed, to compare the results. Variables were collected: hospital unit, health area, type of patient (depending on the dispensed drug).

Results In both audits 26 patients were reviewed. In the first audit there were 9 patients (35%) in RT, 6 in GCN (26%) and 11 in D (42%). In the second, 5 in RT (19%), 8 in GCN (31%) and 13 in D (50%).

The records had 15% of errors in the first audit: 4 patients, 2 belonging to RT and 2 D who were registered in GCN. In the second, there was one error (4%): a patient belonging to D was recorded as in GCN.

The health area had a 19% errors in the first audit (5 patients). In the second no errors were detected.

The type of patient was wrongly recorded, in the first audit 4 patients (8%), and 2 (4%) in the second.

Conclusion The IP was successful. The first audit showed worse results than the second. Therefore using the Deming cycle enabled us to improve the quality of medical records.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

GM-008 IMPLEMENTATION OF AN OBJECTIVE STRUCTUTRED CLINICAL EXAMINATION AND EVALUATION CHECKLISTS AT AN INSTIUTE OF CLINICAL PHARMACY

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Background Objective structured clinical examination (OSCE) has proved to be a reliable and valid tool for assessing the communications skills of medical students. As a consequence of introducing the practice-oriented education of pharmacy students into the clinical pharmacy curriculum, the assessment of training success also has to be re-structured. Up till now, only very few voluntary OSCEs are being performed at the pharmacy faculties in the investigated country.

Purpose To implement a reliable and valid OSCE using self-developed evaluation checklists for pharmacy students at a clinical pharmacy Institute.

Material and methods 38 students in the 6th semester of their pharmacy studies took the OSCE during the summer term of 2014. The students' success was assessed by experts (pharmacists) using self-developed evaluation checklists. The reliability of the checklists was analysed by inter-rater agreement (kappa). Post-hoc all six experts separately evaluated the performance of six students in each of the six OSCE examination units (insulin administration, inhalation, compliance, interaction, over-the-counter medicines, drug information) which was video recorded during the OSCE.

Results According to the results of the evaluation checklists 36 students (95%) passed the exam. The overall medium inter-rater agreement regarding the six units was moderate (k = 0.49). The highest inter-rater agreement was recorded for insulin administration (k = 0.83) and the lowest inter-rater agreement regarding the interaction check (k = 0.22).

Conclusion The design of the OSCE proved to be satisfactory and the evaluation checklists developed turned out to be a reliable fair tool for assessing communication skills in clinical pharmacy.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

GM-009 MULTICENTER STUDY OF ENVIRONMENTAL 5-FU CONTAMINATION DURING NORMAL MIXING OF ANTINEOPLASTIC DRUGS

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Background Antineoplastic drugs have often been shown to be mutagenic, teratogenic and carcinogenic, and these drugs are recommended to be prepared in a biological safety cabinet (BSC). Among them, 5-fluorouracil (5-FU) is a common cytotoxic antineoplastic drug, and can potentially cause harm if not handled properly.

Purpose To investigate the relationship between the level of 5-FU contamination during normal mixing, the time spent in preparation, the operator's experience in mixing, the number of 5-FU vials prepared during this study, and the number of anticancer agents prepared at each hospital.

Material and methods During preparation, 5-FU contamination was determined on 2 stainless steel plates (10 × 10 cm) in the BSC in 8 national hospitals. These stainless steel plates were collected at the end of the study period. Samples were analysed by a validated liquid chromatography coupled to tandem mass spectrometry method.

Results The subjects were 16 pharmacists from 8 hospitals. The median preparation experience was 18 months (1–168 months), and the median number of 5-FU vials prepared by each pharmacist was 7 vials (2–38 vials). The level of 5-FU contamination was 2,079.5 ng (0–10,148.0 ng)/200 cm^2. Comparing the level of contamination to the amount of 5-FU prepared, the time spent in preparation, the years of preparation experience, and the number of anticancer agents prepared at each hospital, no correlations were observed (r^2 = 0.0062, 0.0002, 0.0562, 0.016).

Conclusion 5 pharmacists achieved 5-FU contamination at levels below the detection limit. Importantly, years of preparation experience varied among these pharmacists. These results suggested that even experienced pharmacists may underestimate the risk of environmental exposure during normal preparation. Routine training in mixing skills is needed to safely handle antineoplastic agents.

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No conflict of interest.

GM-010 REDUCING THE OVERALL PARTICULATE CONTAMINATION EXPOSURE IN PAEDIATRIC PATIENTS: THE ADVANTAGE OF USING MULTILUMEN INFUSION SETS

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Background Drug incompatibilities, such as precipitates, may contribute to the clinical deterioration of paediatric patients (sepsis), especially when infusing vancomycin and piperacillin (VAN/PIP). Drug concentration and infusion sets affect the overall particulate contamination of paediatric infusion protocols. Using multilumen infusion sets could prevent these incompatibilities.
Purpose To define and assess a new way to infuse VAN/PIP during leukaemia treatment in paediatric patients, without any visible precipitate.
Material and methods Two infusion sets were studied, which differed in design and drug dead-space volume (V): 1) a standard single lumen set with 2 four-port manifolds with extension lines (ref RPB4320, Cair LGL, France; V ~ 12 mL) and 2) a 5-lumen infusion set (ML-5) (Edelvaiss-Multiline, Doran International, France; V ~ 1 mL). Different vancomycin concentrations (VANc) were tested to infuse VAN/PIP simultaneously without any precipitate (optimised multidrug protocol). A dynamic particle count test was performed (N = 5) over 24 h to evaluate the overall particulate contamination of our standard (VANc = 42 mg/mL) and optimised (VANc = 4 mg/mL) protocols, using both standard and ML-5. We performed a t-test.
Results No visible particles were detected on reducing VANc (4 mg/mL) instead of the standard dose (42 mg/mL). For the optimised multidrug protocol, using the ML-5 reduced the overall particulate contamination by 68%, compared to the standard infusion set (716,349 ± 89,322 vs. 251,980 ± 49,429; p = 0.002). The number of large particle sizes was significantly reduced when using the ML-5 ~ 60% (p = 0.027) and 90% (p = 0.009) for particle sizes ≥10 and 25 μm, respectively.
Conclusion This study demonstrated the large number of particles administered during parenteral multidrug infusion. This can be minimised through the choice of the drug concentration and/or the type of infusion set. Although this kind of contamination is invisible, further studies are required to evaluate its adverse clinical impact.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

GM-011 CENTRALISED PREPARATION OF ARGATROBAN SYRINGES: MEDICO-ECONOMIC ASSESSMENT AFTER 18 MONTHS

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Background Argatroban is indicated in cases of suspected type II heparin-induced thrombocytopenia (HIT) at a starting dose of 0.5 to 2 µg/kg/min (70 kg patient: dose between 50 and 201 mg/day). But argatroban is presented in vials of 250 mg/2.5 mL. So there is between 20% and 80% of waste.

As argatroban is expensive and the presentation unsuitable, we decided in 2013 to centralise the reconstitution of the drug in the hospital pharmacy. One vial produces five 50 ml syringes ready to use, for multiple day use of argatroban 1 mg/ml, done under a biosafety cabinet with supervision, and in air controlled area.

The firm validated the physicochemical stability of the preparation for 14 days and we validated the microbiological stability for 5 days.
Purpose After 18 months, what is the medico-economic assessment of this preparation?
Material and methods Retrospective, cost minimisation analysis from January 2013 until June 2014 for the hospital.

We compared two Hypotheses (H):

H1: cost of the reconstitution of argatroban at the pharmacy. One vial = 5 prepared syringes: preparation cost is estimated at €355 (including costs of one vial, consumables and staff);

H2: if one vial was reconstituted daily on a ward (cost of one vial only included = €255.25 worst case: no staff, no consumables included).
Results 12 patients treated, average age 75 years ([66; 87]). Average duration of treatment: 16 days ([1; 40]). Average dosage: 0.53 mg/kg/min ([0.33; 1.07]) or 46 mg/day ([24; 61]).

Total of 245 prepared syringes, 49 vials used.

9% (23/245) of prepared syringes were not administered.

H1: cost €17,395.

H2: cost €56,666 calculated on 222 vials (245 prepared syringes – 23 syringes not administered).

Total savings = €39,270. Average savings per patient €3,272.
Conclusion To conclude, centralised preparation of argatroban syringes at the hospital pharmacy guarantees their safety, sterility and significantly reduces the cost of the treatment (reduction of 69%).

As our next step, we aim to extend the time of microbiological stability (expiry date).

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

GM-012 IMPACT OF DRUG SUPPLY DISRUPTIONS IN A TEACHING HOSPITAL: ONE YEAR ANALYSIS

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Background Drug supply shortages are not uncommon and their frequency and duration are increasing essentially because of production issues. The absence of advanced warning from drug manufacturers may affect the delivery of patient care. Drug supply shortages have several consequences on pharmacy departments and by the way on care services.
Purpose To quantify these shortages and their impact in our hospital.
Material and methods The drug supply shortages are regularly monitored in the pharmacy department using data collection with the following items: the drug, the manufacturer, information about the source of disruption, dates of beginning and end, the substitute treatment. The data collected between September 1st, 2013 and August 30th, 2014 was analysed.
Results One hundred and seventeen drug shortages were recorded: 48% were injectable drugs, 43% oral drugs and

9% external medicines. On average, five drugs per week (range, 1–13) were in short supply and the shortage lasted 65 days (range, 3–329). The pharmacy service was alerted by: the group purchasing organisations (42%), the French drug agency (20%) or the supplier (18%). Substitute treatments were proposed in 68% of shortages by the group purchasing organisations but only in 8% by the supplier. In 13% of the cases, there was no therapeutic alternative. The main impact of drug shortages on pharmacy services was the amount of time spent by staff repeatedly managing this problem: choice and creation of substitute treatment, order processing, purchases for account, information to the physicians. In addition, in the wards, changing treatment or the use of less familiar alternative drugs may raise patient safety issues.

Conclusion The drug supply shortages are a public health problem. It would be interesting to estimate the financial impact at the origin of the staff workload.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

Production and preparation

PP-001 VALIDATION OF CLEANING IN A MULTIPURPOSE FACILITY FOR NON-STERILE PRODUCTS

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Background Preparation in Hospital Pharmacies aims at meeting special patient needs. In general facilities and equipment are intended for preparation of a variety of products containing a diversity of Active Pharmaceutical Ingredients (API). Cleaning validation has to be performed according to EU GMP, which requires limits for Maximum Acceptable Carryover (MAC) to be established based on toxicological evaluations. Furthermore, effectiveness of the cleaning has to be documented using validated methods of analysis.

Purpose To develop models for establishing limits for MAC in general, and for validating the cleaning of equipment used for the preparation of suppositories in particular.

Material and methods A model for establishing limits for MAC was developed in close cooperation with acknowledged toxicologists with experience from food science. The MAC was calculated based on toxicological evaluations and calculations of the total surface area of equipment.

Riboflavin was found to be a suitable marker for API and a method was developed in order to detect any residues with a UV lamp. The method was tested for specificity, stability, reproducibility and accuracy. Limit of detection (LOD) was documented by testing a range of different concentrations of riboflavin for UV activity. For hot spots in the equipment it was furthermore documented, that any residues will be detected during the visual control with the UV lamp.

Cleaning validation included preparation of a test batch with riboflavin replacing the worst case API. After production the equipment was cleaned using standard procedures. Subsequently visual control was performed and rinse samples from the equipment were analysed for UV activity.

Results The analytical method was validated and LOD was documented to be 0.05 μg/ml – significantly lower than MAC. Cleaning of equipment used for production of suppositories was successfully validated using the riboflavin UV analytical method.

Conclusion Experience from food science can be used to establish limits for MAC. The riboflavin/UV analytical method is highly suitable for validating the cleaning of equipment used for suppositories.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PP-002 COMPATIBILITY AND STABILITY OF HYOSCINE N-BUTYL BROMIDE AND FUROSEMIDE ADMIXTURES FOR USE IN PALLIATIVE CARE

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Background In order to avoid separate injections, admixtures of drugs are frequently used in palliative care settings. There is a lack of evidence about the stability and compatibility of the combination of hyoscine N-butyl bromide and furosemide

Purpose To evaluate the compatibility and stability of three admixtures of hyoscine N-butyl bromide and furosemide at different concentrations and at two temperatures (25°C and 37°C) in NaCl 0.9% stored in elastomeric infusors protected from light.

Material and methods The samples were prepared and diluted in NaCl 0.9% in elastomeric infusors in triplicate to obtain six different conditions of concentration and/or temperature of storage (concentration: 2.0 mg/ml–2.0 mg/ml, 1.0 mg/ml–0.6 mg/ml and 0.6 mg/ml–0.6 mg/ml of hyoscine N-butyl bromide and furosemide respectively; temperature 25°C and 37°C).

The concentration of each constituent drug was periodically determined using a HPLC-UV method. The drugs were chromatographed on a C_{18} reverse phase column and determined at 220 nm by interpolation from the calibration curves prepared at (0, 1, 2, 3, 7, 11, 15, 20) days from the standards; the mobile phase was acetonitrile-water 80:20 (v/v); flow rate 1.5 ml/min.

Results The stability of the admixtures diluted in NaCl 0.9% were as follows: hyoscine N-butyl bromide-furosemide (2.0 mg/ml–2.0 mg/ml) was stable (retained >95% of their initial concentrations) two days at 25°C and 37°C; (1.0 mg/ml–0.6 mg/ml) was stable eight days at 25°C and two days at 37°C; (0.6 mg/ml–0.6 mg/ml) was stable twelve days at 25°C and three days at 37°C.

Conclusion The admixture of hyoscine N-butyl bromide and furosemide in NaCl 0.9% in elastomeric infusor can be safely used in palliative care for at least two days. Lower concentrations of the admixture can be prepared in advance and stored at room temperature, but the infusion cannot take longer than three days.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PP-003 PRODUCTION AND STABILITY OF A READY-TO-USE HYDROXOCOBALAMIN SOLUTION FOR PAEDIATRIC PARENTERAL USE

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Background A paediatric patient in our hospital suffers from a rare, hereditary transcobalamin II deficiency resulting in an intracellular vitamin B12 deficiency. Treatment consists of massive parenteral intake of vitamin B12. Parenteral vitamin B12 solution, suitable for children under 3 years of age, is not commercially available in our country.
Purpose The aim was to produce a preservative-free, sterile hydroxocobalamin (vitamin B12) solution at a concentration of 10 mg/2 ml for intramuscular use and to develop an analytical method of indicating the stability in order to determine the shelf life of the solution.
Material and methods The entire manufacturing process took place under aseptic conditions. Hydroxocobalamin hydrochloride was dissolved in NaCl 0.9% to give a concentration of 10 mg/2ml. The pH value was adjusted to 4.3–4.5 using hydrochloric acid. The solution was 0.2 μm filtered and finally, 2.4 ml of solution was aseptically filled into sterilised brown glass vials. The filter integrity was tested using the bubble point method. The vials were kept in the refrigerator. Alternatively, the solution was autoclaved at 121°C for 15 min and assessed by high performance liquid chromatography (HPLC) for degradation products.
Results The autoclaved solution contained degradation products and the hydroxocobalamin content had decreased by 20%. In contrast, the sterile filtered solution showed no degradation products and no loss in the hydroxocobalamin content was observed after storage for 24 months at 2–8°C. The solution was stable when stored for one month at room temperature and even exposure to 56°C for 2 days did not cause the product to degrade.
Conclusion We produced a hydroxocobalamin solution for intramuscular use with a shelf life of at least 24 months if refrigerated. The treatment of our patient with this solution, administered as an intramuscular injection once a week, has been extremely successful for more than 3 years.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PP-004 QUALITY CONTROL ASSESSMENT OF CYTOTOXIC BAGS BY UV-RAMAN SPECTROMETRY

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Background About 6,000 cytotoxic bags per year are produced in the compounding unit of a University Hospital Pharmacy. Each bag is checked by UV-Raman spectrometry. This analytical technique presents many advantages for better efficiency: identification and quantification of results, short time of analyses (2 min) and a minimal volume sample (1 mL).
Purpose To evaluate the quality of cytotoxic bags prepared and analysed over 11 months by this spectrometry tool.
Material and methods All the drugs and solvents were identified and a calibration curve was constructed. Each drug is subject to quality control every week. For eleven months, cytotoxic bags were routinely produced and then checked by UV-Raman spectrometry.

Criteria for acceptance was ±10% error. Tolerance occurred when error was between 10% and 15%. If ±15% error was found status was rejected.
Results 4838 cytotoxic bags were produced and checked in 11 months. 14 cytotoxic drugs were analysed by UV-Raman: carboplatin, cisplatin, cyclophosphamide, dacarbazine, docetaxel, doxorubicin, etoposide, ganciclovir, gemcitabine, ifosfamide, oxaliplatin, paclitaxel, pemetrexed, vinorelbine. 92.1% of cytotoxic bags were in the concentration range of ±10%; 5.2% in the range ±15% and 2.0% with a difference of more ±15%. The preparations presenting most non-compliance were doxorubicin (18.8%), cyclophosphamide (14.3%) and ifosfamide (11.1%). 0.6% of analyses were a misidentification of the molecule.
Conclusion This study makes an assessment of the quality of production of our cytotoxic bags and shows that UV-Raman is a suitable technique for the analysis of drugs. These results highlight defects of preparation of some cytotoxic bags. Awareness-raising activities were undertaken in order that the team be more watchful during the preparation and some protocols have been improved. This approach is subject to a process of continuous improvement of the quality of drug preparations, in our laboratory which was recently ISO900 certified.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PP-005 COMPLETE FORMULAE FOR PARENTERAL NUTRITION IN NEONATAL INTENSIVE CARE: A STABILITY TRIAL

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Background Parenteral Nutrition (PN) is a technique of Artificial Nutrition used to feed patients who cannot or should not get their nutrition through eating. Preparation is complicated because it involves mixing, with aseptic technique, nutritional substrates with different chemical-physical features (water, glucose, amino acids, electrolytes, trace elements and vitamins) to obtain a sterile nutritional emulsion that must be stable during preparation, storage and administration.
Purpose To check the stability of nutritional formulae for parenteral nutrition.
Material and methods Six nutritional formulae were prepared, three variations for each, using three kinds of lipid emulsion. Also added: long chain triglycerides (LCT) emulsion from soybean oil and middle chain triglycerides (MCT) emulsion from coconut oil; enriched lipid emulsion (LCT + MCT) from soybean, olive, coconut and fish oils; omega-3 emulsion from refined fish oil. Each formula was prepared with different calcium concentrations, which, together with viscosity, is the critical parameter that affects Zeta potential and consequently stability. Analysis was performed using a helium-neon laser granulometer on diluted samples at time 0 and after 24, 48, 72 and 96 h in order to reproduce normal storage conditions and clinical use.

Results The results of the analyses of lipid particles established different stabilities, depending on the different kind of lipids and concentration of calcium: nutritional formulae prepared with LCT + MCT have proved 96 h stability, independently of calcium concentration; nutritional formulae with enriched lipids and/or LCT/MCT and lipids from refined fish oil have been proved stable only if the calcium concentration is less than 9 mEq/litre.
Conclusion The results suggest a 96 h shelf life from preparation for nutritional formulae prepared with LCT + MCT. Stability is maintained only if the calcium concentration is less than 9 mEq/litre in nutritional formulae prepared with enriched lipids or with the addition of LCT + MCT and fish oil.

REFERENCE

1 SINPE Guidelines for Hospital Artificial Nutrition 2002; RINPE Year 20, **S5**: Update October 2003

No conflict of interest.

PP-006 MICROWAVE FREEZE-THAW TREATMENT OF INJECTABLE DRUGS: A REVIEW OF THE LITERATURE FROM 1980 TO 2014

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Background Microwave freeze-thaw treatment (MFTT) of injectable drugs can support the development of centralised intravenous admixtures services (CIVAS).
Purpose The aim of the review is to collect information and results about this method.
Material and methods A systematic review of the scientific literature about drug stability studies was made. The data are presented in a table and describe name of the drug, producer, final concentration, temperature and time of freezing storage, type of microwave oven, thawing power, method of dosage and results after treatment or final long-term storage at 2–8°C.
Results From 1980 to 2014, 63 drugs (anti-infectious, cytotoxics, antiemetic, pain treatment, …) were studied by MFTT and the results were presented in 52 publications. 41 papers were presented by 8 teams (2 to 21 by team). The storage freezing temperatures vary from −70°C to −10°C, the storage time from 4 h to 12 months, the thaw from low to full power. Assay of concentration was mainly done by High Performance Liquid Chromatography. Most of the 63 drugs are stable during and after treatment. However, ampicillin needs a very low storage temperature from −30°C to −70°C, cefuroxime a storage temperature lower than −20°C and mitomycin −30°C. Only 3 teams have tested the long term stability after MFTT, the first for ganciclovir after 7 days, the second for ceftizoxime after 30 days and the third for 28 drugs after 11 to 70 days.
Conclusion This review can help CIVAS to undertake the production of ready-to-use injectable drugs.

REFERENCE

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No conflict of interest.

PP-007 STABILITY OF DILUTED AND RECONSTITUTED ANTINEOPLASTIC DRUGS: UPDATED 2014

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Background The lack of studies published on stability of antineoplastic drugs and the contradictory character of the information available increased the need to carry out an internal review in our hospital.
Purpose To investigate the physical-chemical stability of vials of antineoplastic drugs included in the hospital's Therapeutic Prescription Guide after opening and/or reconstitution.
Material and methods We reviewed all information available in the Spanish Medicines Agency Technical Data Sheets, Micromedex, Stabilis, papers on PubMed and updated guides published by other hospitals in order to establish the physical-chemical stability of these types of drugs.
Results The following storage conditions and maximum storage times were found for 35 cytostatic drugs in use in the hospital: 24 months refrigerated (α 2-B interferon), 90 days at room temperature (RT) (cetuximab), 90 days refrigerated and protected from light (PL) (bevacizumab), 31 days refrigerated PL (pemetrexed), 30 days refrigerated and PL (methotrexate, rituximab, vinorelbine), 28 days at RT (eribulin, etoposide, paclitaxel), 28 days at RT and PL (cisplatin, docetaxel, fluorouracil), 28 days refrigerated (vinblastine), 28 days refrigerated and PL (doxorubicin, pegylated liposomal doxorubicin), 26 days at RT and PL (fludarabine), 22 days refrigerated (mitoxantrone), 21 days refrigerated and PL (carboplatin, ifosfamide), 14 days refrigerated and PL (cyclophosphamide, epirubicin, oxaliplatin, topotecan, mitomycin, vincristine), 8 days frozen with WFI (water for injection) (azacitidine), 7days at RT (carmustine, irinotecan), 7 days refrigerated (cytarabine), 7 days refrigerated and PL (dactinomycin, daunorubicin, gemcitabine, non-pegylated liposomal doxorubicin and idarubicin).
Conclusion The storage protocol was modified for cytostatic vials that had been opened/reconstituted under aseptic conditions using a vertical laminar flow cabin depending on their maximum stabilities. The resulting document was thereafter incorporated into regular working practice. The updated protocol resulted in the medicines being used safely and significant savings on these costly drugs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Oncology Department

No conflict of interest.

PP-008 PROMETHAZINE HYDROCHLORIDE INJECTION, FORMULATION AND PHARMACODYNAMIC EFFICACY

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Background Promethazine hydrochloride is phenothiazine derivate which possesses antihistaminic, sedative, anti-motion sickness, antiemetic, and anticholinergic effects. Promethazine is a competitive H1 receptor antagonist, but does not block the release of histamine. Structural differences from the neuroleptic

phenothiazines result in its relative lack of dopamine antagonist properties. Clinical effects are apparent within 5 min of an intravenous injection and within 20 min of an intramuscular injection. Duration of action is four to six hours, effects may persist up to 12 h. Promethazine hydrochloride is metabolised in the liver.

We cannot obtain commercially prepared promethazine injection in our country.

Purpose To formulate promethazine hydrochloride injection and to evaluate its quality and stability.

Material and methods Parenteral promethazine hydrochloride 5% injection (50 mg/ml) was prepared in the Department for Compounding Sterile Products in our hospital, following established procedures for parenteral preparations. The content of promethazine hydrochloride was examined according the requirements of the Ph. Eur.[1] The preparation was stored protected from light.

Results According to the Standard Operating Procedure, parenteral promethazine hydrochloride 5% injection was prepared aseptically in the laminar flow cabinet and sterilised by autoclaving. The final solution was then submitted to quality control, where a set of selected assays have been defined that ensure both raw material and final product are of assured quality.

Conclusion Promethazine hydrochloride 5% injection is a sterile solution of promethazine hydrochloride in water for injection. It contains 99–101% of 3-(10H-phenothiazin-10-yl)-N, N-dimethylpropan-1-amine hydrochloride calculated with reference to the dried substance. Packaging and storage are in well-closed, light-resistant containers as a single dose or multiple dose, preferably of Type I glass. It is determined with potentiometric titration using 0.1 M sodium hydroxide. The formulation manifested good quality in respect to physical properties, physico-chemical parameters and microbiological quality according to Ph. Eur. The dosage form was stable for a year in the conditions characteristic of the second (II) climate zone.

REFERENCE AND/OR ACKNOWLEDGEMENTS

1 Ph. Eur. monograph **1365**

No conflict of interest.

PP-009 THE IPILIMUMAB DRUG DAY: AN INSTRUMENT TO CONTAIN COSTS

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Background The great innovation of ipilimumab (available in our country since 2013) has been accompanied by a high cost that is a heavy burden for our NHS.

Purpose In order to contain the cost of ipilimumab, our hospital has established the Drug Day, with the objective of concentrating in a single day all patients who receive the same drug.

Material and methods With the collaboration of the Oncological-Immunotherapy department, we arrange two consecutive Drug Days (Thursday, Friday). The 21-day cycle of Ipilimumab administration helps us schedule these every 3 weeks, to avoid wasting the drug.

Results Advantages: The first day we prepared ipilimumab (3 May 2013), three patients were scheduled. The total dose was 693 mg, so we used 2 vials of 50 mg and 3 vials of 200 mg. If we had had patients on different days, we would have used 6 vials (750 mg) instead of the 700 mg that we actually used: we saved 1 vial of 50 mg which costs €2,953.

Remaining problems: The short stability of ipilimumab (24 h after reconstitution) restricts the potential of ipilimumab Drug Day. An example: on 5–6 December 2013 we had two patients per day who received the same dose (453 mg). If we could have used what was left over from the previous day we would have saved at least 1vial of ipilimumab 50 mg in two days.

Conclusion From the introduction of ipilimumab in our hospital, to the end of 2013, we treated 27 patients, with 90 administrations, concentrated in 40 Drug Days. This saved €70,884. The system could be further improved if patients in the area of our hospital could have their blood tests on Thursday, then receive the drug (preparation at around 9:00 am) on Friday; this would allow us to move within 24 h stability, thus permitting the reuse of vials used on Thursday (prepared at around 12:00 pm).

REFERENCE AND/OR ACKNOWLEDGEMENTS

No conflict of interest

PP-010 OPTIMISATION IN THE USE OF DRUGS FOR AGE-RELATED MACULAR DEGENERATION

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Background Antiangiogenic drugs are the treatment of choice for age-related macular degeneration (AMD). They are expensive due to the high cost of vials and absence of commercial syringes with the necessary dose.

Purpose To compare the efficiency of alternative treatments available for AMD, ranibizumab and aflibercept, when optimising vials to prepare syringes with exact doses in the pharmacotechnical unit of the Pharmacy Service.

Material and methods Retrospective study, from May 2013 to May 2014, of patients with AMD. The therapeutic option was ranibizumab, aflibercept was not yet allowed in the hospital. Data were obtained from medical prescriptions and computer records of the pharmacotechnical unit. To compare what treatment would have been more cost effective we considered the same patients and the same number of syringes of aflibercept as of ranibizumab in that period. We obtained three syringes of ranibizumab from each vial, and we would have obtained four syringes from each vial of aflibercept, when preparing the necessary dose. Variables studied: number of patients, number of syringes, cost of vials and cost of syringes.

Results During the study period, 1,179 syringes of ranibizumab were prepared, for 151 patients, corresponding to 7.8 syringes per patient. These syringes were obtained from 393 vials of ranibizumab. If we had used the corresponding number of vials, the cost would have been €815,219.55. However, the development cost of these syringes was €271,739.85. The costs with aflibercept would have been, using 1,179 vials, €759,912.66, and syringes, from 295 vials, €190,139.3. The difference between treatments was €55,306.89.

Conclusion The optimisation of the ranibizumab and aflibercept vials saves money for the health system, as well as providing greater accuracy and safety when preparing these sterile syringes in the Pharmacy Service. Assuming equivalence in effectiveness, we propose aflibercept as the more cost-effective treatment.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PP-011 ACCURACY IN THE PREPARATION OF ANTIBLASTIC TREATMENT

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Background Quality oncology preparation requires at least three important conditions: safety, quality and cost effectiveness.
Purpose To compare the quality of the oncology preparations made by two different methods: traditional manual preparation in a vertical laminar flow hood (Hv) and robotic compounding with APOTECAchemo (Ac).
Material and methods 21 different drugs were monitored from January 2013 to June 2014 in terms of dose accuracy (E%), for both procedures.

The dosage accuracy with Ac was extrapolated automatically from the system database.

Concerning the manual compounding, drugs vials were weighed before and after the liquid was withdrawn, by means of an analytical scale. Afterwards, E% was calculated using the density (*d*) of the solution.

Several technicians were involved in the manual compounding.
Results All the preparations showed dose errors within European Pharmacopoeia standard. E%. Big differences in accuracy among drugs were recorded in both procedures.

These values are related to the specific formulations of some drugs, such as: paclitaxel oleate solution (Ac%-0.28 vs Hv% 1.10), foaming trastuzumab (Ac%-1.15 vs Hv%-2.50), eribulin with small withdrawn volumes (Ac%-2.33 vs Hv%5.00), docetaxel for the combination with all the above-mentioned factors (Ac%-3.30 vs Hv%-5.50). In the case of lyophilised drugs the error can also occur during reconstitution: cyclophosphamide (Ac%-0.62 vs Hv%2.30), pemetrexed (Ac%-0.44 vs. Hv%3.14) and paclitaxel albumin (Ac%-0.55 vs. Hv%3.20).

In addition, high variability was observed in Hv among different technicians and within the same technician.
Conclusion Both procedures result in oncology preparations that comply with the European Pharmacopoeia. However, the automatic production shows better results, with higher accuracy than the traditional compounding. The data highlight the high repeatability of the automatic production compared with the less predictable manual behaviour.

REFERENCE

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No conflict of interest.

PP-012 ENVIRONMENTAL CONTAMINATION BY CYCLOPHOSPHAMIDE: COMPARISON OF MANUAL PRODUCTION IN BIOLOGICAL SAFETY CABINET AND ROBOT-ASSISTED PRODUCTION BY APOTECACHEMO

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Background The use of robotic systems is expected to significantly decrease the risk of operators being exposed to cytotoxic substances, as the most critical operations are performed in a closed area under negative pressure. Although robotic systems are already in use in several international centres, very few systematic studies on workplace contamination, comparing manual and robot-assisted drug preparation have been performed.
Purpose To compare environmental contamination with cyclophosphamide (CP) during one week of drug compounding by the manual procedure in a biological safety cabinet (BSC) and automated preparation with an APOTECAchemo robot.
Material and methods Over four consecutive days, similar numbers of infusion bags containing cyclophosphamide were prepared by both techniques in a cross-over design. Wipe samples (49 for BSC, 50 for APOTECAchemo robot) were taken at several locations (gloves, infusion bags, trays, BSC-benches, floor) in the pharmacy and analysed by GCMSMS (LOD 0.2 ng/sample).
Results We detected contamination in 70% of samples in BSC versus 15% in robotic samples. During manual preparation, contamination with CP was below 0.001 ng/cm^2 at most locations, but significant on gloves (0.0004–0.0967 ng/cm^2) and the majority (70%) of infusion bags (<0.0004–2.89 ng/cm^2). During robotic preparation, gloves (1 of 8: 0.0007 ng/cm^2) and infusion bags (3 of 20: 0.0005, 0.0019, 0.0094 ng/cm^2) were considerably less contaminated. Residual contamination was found on the surface under the dosing device in the compounding area (0.0293–0.1603 ng/cm^2) inside the robotic system.
Conclusion Compared to outcomes from other studies, our results underline the good manufacturing procedures in this pharmacy with low contamination for both techniques. However, comparison of the two procedures confirmed that the overall CP contamination was lower when the production was carried out by the robotic system inside a closed and controlled system. This was also underlined by minimally or even non-contaminated external surfaces of compounded bags and gloves when the APOTECAchemo robot was used.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PP-013 DESENSITISATION PROTOCOL FOR PEMETREXED HYSENSITIVITY: A CASE REPORT

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Background Desensitisation has been used for some decades now so that patients can be treated with the drug causing the hypersensitivity reaction when an alternative drug with similar efficacy/safety is not available.
Purpose To describe the pemetrexed desensitisation protocol and our experience in one patient with a previous anaphylactic reaction to pemetrexed.
Material and methods A 43-year-old man with stage IV lung adenocarcinoma was treated with cisplatin-pemetrexed, followed by pemetrexed monotherapy 880 mg. During the nineteenth cycle he developed face and hand erythema with urticaria and general discomfort, resolved with dexchlorpheniramine and hydrocortisone.

The patient underwent skin testing with pemetrexed 25 mg/ml and intradermal testing with different drug dilutions 1/10.000 to 1/10, obtaining a positive result.

A published standardised 12-step desensitisation protocol developed by Castells MC *et al*.[1] was adapted to pemetrexed desensitisation.

Results The drug was administered in the Medical Intensive Care Unit. Before admission the patient was premedicated with cetirizine 10 mg, ranitidine 150 mg, montelukast 10 mg and acetylsalicylic acid 300 mg (11–12 h before pemetrexed) and dexamethasone 20 mg (8 and 16 h before pemetrexed).

On admission he was premedicated with intravenous ranitidine 50 mg, dexchlorpheniramine 5 mg and dexamethasone 8 mg 1 h before 3 sequential pemetrexed solutions (rate of infusion): a) 1/100 dilution: 0.0352 mg/ml (2, 5, 10 and 20 ml/h each for 15 min, b) 1/10 dilution: 0.352 mg/ml (5, 10, 20 and 40 ml/h each for 15 min) and c) dilution 1/1: 3.520 mg/ml (10, 20, 40 ml/ h each for 15 min and 75 ml/h until reaching the total amount of 880 mg).

The patient was monitored continuously during desensitisation; no reactions occurred. The patient did not receive any more pemetrexed.

Conclusion The protocol was safe and well tolerated by our patient.

Desensitisation protocols stand out as an alternative to the standard continuous treatment in patients who are allergic to their chemotherapy agents.

REFERENCE

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No conflict of interest.

PP-014 PHYSICAL AND CHEMICAL STABILITY OF SEVOFLURANE IN POLYPROPYLENE SYRINGES

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Background The use of an alternative liquid anaesthetic sevoflurane has recently been reported in the literature on vascular ulcers. Topical application for management of analgesia appears to be successful.

Purpose To evaluate the stability of sevoflurane in pure polypropylene amber syringes.

Material and methods Commercial solutions of sevoflurane (Sevorane) were packed in polypropylene syringes. The syringes were stored at 23°C for 14 days in a digitally temperature-controlled chamber. The physical parameters monitored were clarity and colour. Chemical stability was determined by means of 19-Fluorine Nuclear Magnetic Resonance (^{19}F-NMR) and gas chromatography coupled with a Flame Ionisation Detector (GC-FID).

Results Over the 14 days, the clarity and lack of colour of the solutions were maintained. ^{19}F-NMR signals identical to those of the original product were observed in all samples, corresponding to the chemical structure of unchanged sevoflurane. Meanwhile, in the GC-FID analysis, no additional peaks occurred at the storage temperature. No degradation products were observed by either analytical technique.

Conclusion Pure sevoflurane preserved in amber polypropylene syringes was stable for 14 days at room temperature. This enables it to be stored in a more convenient way, and provides greater comfort in drug instillation onto the ulcer bed from the syringe.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

PP-015 USING A CLOSED-SYSTEM TRANSFER DEVICE LEADS TO BETTER CONTROL OF OCCUPATIONAL EXPOSURE IN ROUTINE PRACTICE

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Background Closed-system transfer devices (CSTD) are promoted in all recommendations to reduce the occupational exposure to antineoplastic drugs during the compounding process. Numerous *in vitro* studies have shown that using the PhaSeal system may limit chemical contamination.

Purpose To compare the chemical contamination inside isolators between a standard (S) and a PhaSeal (P) compounding process in routine practice.

Material and methods A 6-month prospective study started at the opening of a new compounding unit (checked as not contaminated). Two isolators with 2 workstations were used, one to compound with standard devices (needles and spikes) and the other one using the PhaSeal devices. Drugs were alternatively compounded in each isolator (90 preparations/day). Sampling was performed by wiping three surfaces (gloves, window (inner surface), worktop), before and after a cleaning process. Exposure to ten antineoplastic drugs (cyclophosphamide, ifosfamide, dacarbazine, 5-FU, methotrexate, gemcitabine, cytarabine, irinotecan, doxorubicin and ganciclovir) was evaluated on wipes by LCMSMS analysis. Contamination rates (% of samples revealing contamination) were compared using a Chi^2 test and the drug amounts by a Mann-Whitney test. Significance was defined as $p < 0.05$.

Results 655 samples were analysed (P: n = 327, S: n = 328). The amounts of drugs compounded in each isolator were not significantly different, excepted for methotrexate. The overall contamination rate before cleaning was significantly lower in the PhaSeal isolator (P: 12.6% vs. S: 25.4%; <0.0001). Both isolators were mainly contaminated before cleaning by gemcitabine (P: 295.9 vs. S: 224.7 ng; $p < 0.67$) and cyclophosphamide (P: 139.7 vs. S: 575.8 ng; $p < 0.03$). Only traces of methotrexate were retrieved one time in each isolator.

Conclusion/h3> This study demonstrates that using a CSTD significantly reduces the overall contamination without cancellation. This intermediate analysis will be implemented by an analysis of the drug amounts handled and the occurrence of incidents.

REFERENCE
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Conflict of interest

PP-016 VALIDATION OF A NEW METHOD OF STERILITY TESTING FOR THE VITAMIN AND LIPID MIXTURES DESTINED FOR THE NEONATALOGY DEPARTMENT

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10.1136/ejhpharm-2015-000639.310

Background Three vitamin and lipid mixtures are produced by the parenteral nutrition unit. Besides the checks performed on these preparations, a membrane filtration sterility test (STERITEST) is carried out as required by the European Pharmacopoeia (EP). Due to constraints associated with these tests (duration, visual interpretation) alternative methods are available such as those for septicaemia diagnosis: Bact/ALERT 3D. It consists of directly inoculating a culture medium followed by automated microbial detection. This method doesn't meet all the criteria required by the EP, but seems acceptable if validated.
Purpose To compare the two methods and to assess their respective efficiency.
Material and methods Growth promotion tests of aerobic, anaerobic micro-organisms (MO) and fungi were performed with 5 colony-forming units (CFUs) of S. aureus, B. subtilis, C. sporogenes, A. brasiliensis, C. albicans, and P. aeruginosa seeded in two different media. Afterwards the three kinds of mixture were produced in a microbiological safety cabinet. Both methods were tested at the same time on three samples of each MO and mixture (54 pairs of samples). Daily readings and identifications of MO were then performed in collaboration with the bacteriology department. The averages of the growth period of each method were compared using a t-test.
Results 100% of MO seeded on the 54 pairs of Bact/ALERT were detected versus 91% on STERITEST. The t-test showed a significant difference between the two methods: the average growth period with STERITEST (5.8 days) was longer than that with Bact/ALERT (2.5 days) ($p = 1.27$ E-18).
Conclusion Bact/ALERT is more efficient than STERITEST for the detection of MO: increased sensitivity and reproducibility, faster detection and identification of MO, less bias of reading. All these reasons drove us to choose the new BacT/ALERT sterility test instead of STERITEST.

REFERENCE
1 European Pharmacopoeia 7.*7 sterility 2*.**6**.1

No conflict of interest.

PP-017 EVALUATION OF LONG-TERM BIOLOGICAL ACTIVITY OF BEVACIZUMAB 25 mg/mL BY AN AD HOC ELISA METHOD

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Background Bevacizumab (BVZ), the active substance of Avastin (25 mg/mL BVZ), is a humanised anti-vascular endothelial growth factor (VEGF) monoclonal antibody indicated in the treatment of several cancers.
Purpose To evaluate the biological activity (BA) that remains in the medicine Avastin after opening single-use vials in a long-term study.
Material and methods An indirect non-competitive ELISA was developed for this and validated to test the stability of BA of BVZ. Cross-reaction with other monoclonal antibodies was tested. ELISA plates were sensitised with recombinant VEGF. Calibration function was between 0.01 and 25.0 μg/mL; detection and quantification limits were 0.10 and 0.35 μg/mL; precision – as intraday and interday reproducibility (%RSD) – was $<10\%$ and accuracy (% of recovery) $>95\%$. Stress study included mild basic, acidic, oxidative and ionic-strength conditions; temperature 50 and 70°C and light exposure. Surplus samples of Avastin from the daily use of the Hospital Pharmacy Unit were stored at 4°C and -20°C in the dark. The BA was tested up to 57 days.
Results The BA of Avastin was higher than 98% at day 1, and higher than 95% at day 2, but decreased by 15% of the initial BA at day 3. This value was maintained throughout the study (57 days) for the two storage conditions tested. Residual BA remained in all samples submitted to the stress except in samples heated at 70°C. There were no cross reactions with similar IgG1.
Conclusion Regarding BA, the stability of Avastin in the conditions used both refrigerated (4°C) and frozen (-20°C) was maintained for two days. Considering the limit of $\pm 10\%$ used in practical stability studies, it cannot be considered stable from day 3 since the loss of BA was 15%. These results will be further investigated by flow cytometry.

REFERENCES AND/OR ACKNOWLEDGEMENTS
1 Financial support: PI10/00201 (MICINN, Government of Spain).

No conflict of interest.

PP-018 PREPARATION OF EYE DROPS FOR VERNAL KERATOCONJUNCTIVITIS: THE PHARMACIST ADDED TO A TEAM ACTS AS A FULCRUM BETWEEN DOCTOR AND PATIENT

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Background Vernal Keratoconjunctivitis (VKC) is an allergic conjunctivitis, often not easily diagnosed and properly treated. The disease is very debilitating for patients, may be complicated by corneal lesions and can evolve to keratoconus.
Purpose The exponential increase in VKC patients led us to start a close collaboration between pharmacists and allergists, ophthalmologists, and chemists. The goal was to address and solve problems caused by the lack of adequate knowledge of VKC, in order to find a diagnostic-therapeutic course, improve patient

compliance and provide high-quality products as an alternative to conventional treatments.

Material and methods After discussions with allergists and ophthalmologists, pharmacists formulated 3 different kinds of eye drops as treatment: ciclosporin 1% and tacrolimus 0.1%, both in methylcellulose 0.15%, and ciclosporin 2% in sunflower oil. The stability of such formulations was demonstrated by using liquid chromatography coupled to a triple quadrupole mass spectrometer. The pharmacist now prepares a weekly supply of eye drops, after allergists pass on the number of children who will undergo eye examinations. Then, the pharmacist proceeds, after allergist confirmation, to arrange for eye drops to be sent directly to patients' homes in the whole country.

Results The LC/MS/MS and sterility analysis results allowed the pharmacist to declare that formulations in methylcellulose 0.15% and in sunflower oil were safe for up to 45 days. Such formulations were chosen considering also patient compliance. Indeed, one of the results of the team collaboration has been the development of the formulation in sunflower oil, which can be stored at room temperature; thus leading to huge advantages in terms of patient compliance.

Conclusion The preparation of a galenical formulation of such quality has contributed to the efficacy of the treatment. Moreover, the sharing of information between medical doctors, pharmacists and nurses has led to personalised assistance that is highly responsive to health needs.

REFERENCE

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No conflict of interest.

PP-019 COMPATIBILITY OF IRINOTECAN-LOADED DC BEADS WITH DIFFERENT VOLUMES AND TYPES OF NON-IONIC CONTRAST MEDIA

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Background Drug-loaded microspheres are used for chemoembolization of liver tumours and metastases. Prior to their administration, the drug-loaded microsphere suspension is mixed with non-ionic contrast media to guide the delivery via a transarterial catheter.

Purpose To evaluate the compatibility of irinotecan-loaded DC Beads (bead size M1) with different types and volumes of non-ionic contrast media over a maximum period of 24 h and storage at room temperature.

Material and methods 2 mL DC Beads were loaded with 100 mg irinotecan within 2 h. After removal of the excess solutions, and addition of 2 mL of water for injection to each syringe, the concentrations of irinotecan loaded were determined by using a reversed phase HPLC assay with ultraviolet detection.

To study the compatibility of irinotecan-eluting beads (IEBs) with different types and volumes of contrast media, IEBs were mixed with up to four different volumes of seven contrast media and the samples were withdrawn after 30, 60, 120, 240, 480, and 1,440 min. The concentrations of eluted irinotecan were measured in triplicate by HPLC. Admixtures of IEBs-contrast medium were stored light-protected at room temperature over a period of 24 h.

Results Irinotecan release was different in rate and quantity relying on the type and volume of contrast medium admixed. Mixing of irinotecan-loaded beads with non-ionic contrast media decreased the irinotecan loading efficiency by 2.5–18% over a maximum period of 24 h. Because of the initial rapid release (1–9%) it is not recommendable to prepare admixtures of IEBs with contrast medium in advance in centralised cytotoxic preparation units.

Conclusion IEBs are not compatible with typically used non-ionic contrast media. Admixtures should be performed by the interventional radiologists immediately prior to the delivery procedure.

REFERENCE

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No conflict of interest.

PP-020 IMPROVING EFFICIENCY BY EXTENDING THE STABILITY OF BORTEZOMIB

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Background Bortezomib is an expensive drug with a very short stability. For subcutaneous administration each vial should be reconstituted with 1.4 mL of NaCl 0.9% (2.5 mg/mL). According to the manufacturer, reconstituted it is stable at 25°C for only 8 h. Considering the recommended dose of 1.3 mg/m^2 and the amount of drug per vial (3.5 mg/1.4 mL), the loss of product during preparation may be significant. However, a study published by Walker et co-authors has shown that bortezomib is stable for up to 21 days, permitting an optimisation of costs.

Purpose To evaluate the impact of the extended stability limits of bortezomib on handling practices and the optimisation of costs.

Material and methods Two periods were evaluated: before (January–September 2013) and after (January–September 2014) modification of the stability limits. From the individual preparation files, different parameters were recorded: number of patients and prescription lines, mean dose, theoretical residues, % of residues re-used, value of the residues re-used.

Results Seventy patients were included, 34 in the first period and 36 in the second one. The number of prescription lines was 584 and 452 in the first and second period, respectively. The mean dose in both periods was 2.10 mg. In the first period the theoretical residues were 311.59 mL, the % of residue re-used 56.00 mL (17.9%) and the value of the re-used residues €24,137.57. For the second period, the theoretical residues were 248.39 mL, the % of residue re-used 232.4 mL (93.7%) and the value of the re-used residues €100,170.90. The cost per dose was €983 and €677 in the first and second period, respectively.

Conclusion An extended stability limit for bortezomib as compared to that recommended by the manufacturer should lead to an improvement of manufacturing processes and significant costs savings. The re-use of residues is a real strategy to contain costs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest

PP-021 READY-TO-USE MEDICINES SAFETY?! NATIONAL EVALUATION OF STANDARDISED DRUG SOLUTIONS IN THE INTENSIVE CARE MEDICINE

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Background Ready-to-use drug-solutions for syringe pumps produced by industry or hospital pharmacies have advantages over solutions prepared manually on the ward in terms of accuracy of drug concentration and microbiological aspects. A key prerequisite for large-scale productions is to standardise concentrations, as treatment varies at the local level.
Purpose To assess the different concentrations that are being used in intensive care units nationally and the variety of ready-to-use solutions that are being manufactured by hospital pharmacists.
Material and methods Two surveys were conducted among the hospital pharmacies and intensive care units (ICU) in the national university hospitals. The answers were evaluated descriptively.
Results Overall 100 different drugs were used in 262 different locally-standardised concentrations in the responding 17 hospitals. Of those, only 21 drugs were mentioned by at least two thirds of the ICUs: e.g. catecholamines, hypnotics, insulin, heparin, hydrocortisone and amiodarone.

Among the 24 different drugs prepared by the responding 19 hospital pharmacies, the main ones reported were expensive drugs and/or preparations that are extremely prone to error (argatroban, caspofungin). There was only a little overlap (n = 6) between the standardised drugs used in the ICU and the hospital pharmacy-based manufacturing of ready-to-use preparations. Out of these only potassium chloride and heparin were being manufactured by at least five pharmacies.
Conclusion The observed gap might be due to limited manufacturing capacities of the pharmacies and/or limited stability data of the ready-to-use preparations (concentration, diluent and primary container). Standardising the drug concentrations on a national, or even European level might enable hospital pharmacies to cooperate in overcoming the lack of stability data. The capacity deficit at the hospital pharmacies could be lessened by shifting high-turnover-drugs towards pharmaceutical companies. For nationwide recommendations of standardised concentrations of drugs used in intensive care an extensive survey among ICUs is being planned.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PP-022 EVALUATION OF LONG-TERM BIOLOGICAL ACTIVITY OF CETUXIMAB 5.0 mg/ml (ERBITUX) BY AN AD HOC ELISA METHOD

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Background Cetuximab (CTX) (Erbitux) is a chimeric mouse-human monoclonal antibody IgG1 targeting epidermal growth factor receptor (EGFR). It is approved for use as treatment for metastatic colorectal cancer and squamous cell carcinoma of the head and neck.
Purpose To evaluate the biological activity (BA) that remains in Erbitux after opening single-use vials in a long-term study. It was also to evaluate the remaining activity when the opened medicine was exposed to different stress conditions to test the risk associated with accidental exposure to light, heat, etc.
Material and methods An *indirect* non-competitive ELISA was developed for the purpose based in the use of human EGFR to test the BA of CTX. Calibration function was between 0.4–50.0 μg/mL, detection and quantification limits were 0.1 and 0.4 μg/mL; precision - as intraday and interday reproducibility (%RSD) - was <10% and accuracy (% of recovery) >90%. Cross-reaction with similar antibodies was tested. Surplus samples of Erbitux from the daily use of the Hospital Pharmacy Unit were stored at 4°C and −20°C protected from light. BA was tested up to 30 days. A drug degradation study (mild experimental conditions) was also conducted.
Results The BA of Erbitux decreased 5% when stored for 24 h at 4°C. The decrease was 14% after 3 days, 20% after 7 days and 85% on the last day checked. For CTX samples stored frozen at -20°C, the BA decreased from 16% (24 h) to 85% on the last day checked. Residual BA remained in all samples submitted to the stress except in samples heated at 70°C. There were no cross reactions.
Conclusion Regarding the BA of Erbitux, it is stable within the 24 first hours after opening of the vial when stored at 4°C. These results will be further investigated by flow cytometry.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

PP-023 EVALUATION OF THE PERFORMANCE OF AN AUTOMATED SYSTEM FOR THE PREPARATION OF CYTOTOXIC BAGS

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Background The increased use of chemotherapy drugs forces hospitals to rationalise their production. Automated systems are one of the possible solutions.
Purpose To evaluate the performance of the PharmaHelp (Fresenius) automated system for accuracy (trueness and repeatability) and productivity comparing different working conditions.
Material and methods Accuracy was studied by automated filling of 10 different volumes of IV bags from 0.5 to 250 mL. Working conditions studied were the filling position, size of syringes (20/60 mL), working day and manufacturing methods (dose banding/individualised doses). Gravimetric and chemical analyses (phenylephrine as tracer) were used for the measure of accuracy. Productivity was evaluated by the production time for batches of 10 IV bags of different filling volumes. Results were discussed according to accuracy limits of ±3%, ±5%, ±10% (IC95).

Results The filling was true for all studied volumes (97–103%). The minimum volumes allowing accurate preparation were 100, 3 and 1 mL in the limits of 3%, 5% and 10%, respectively. The repeatability was not influenced by the filling position (Student's t-test, p = 0.36, n = 180) or the working day (Student's t-test, p = 0.14 day 1/2, p = 0.46 day 1/3, p = 0.09 day 2/3, n = 540). Accuracy was the same for the 2 manufacturing methods (Student's t-test, p = 0.12, n = 360 (individualised doses), n = 180 (dose-banding)) and the 2 sizes of syringes (Student's t-test, p = 0.46, n = 270). The production time depended on the injected volume and the size of the syringe. The production of 10 bags took 45 ± 112 min on average, 30% for the manual steps (pre-processing: 24%, post-processing: 6%) and 70% for the automated step.
Conclusion The automated system produced IV bags from liquid active components. The filling was accurate from a volume of 3 mL for <±5% and 1 mL for <±10% limits. Results confirmed the potential of such automated systems to increase productivity and to guarantee the safety of patients and operators.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PP-024 NON-STERILE DRUG COMPOUNDING: PROFESSIONAL PRATICE EVALUATION

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Background An average of four drugs are compounded per week in our pharmacy, mostly paediatric dose capsules and children's suppositories. The pharmacy technicians' team is composed of 16 individuals, who are multi-skilled, serving in different positions of the hospital pharmacy.
Purpose To develop an evaluation of pharmacy technicians' professional competencies for non-sterile compounding.
Material and methods An assessment grid and a procedure for the evaluator were created for the different stages of production: prescription validation, work surface preparation, hygiene, drug compounding preparation and verification, labelling. Two evaluators observed the preparation and each stage was graded: Mastered (M) Acquired (A), Being Acquired (BA) or Not Acquired (NA). In March 2014, pharmacy technicians were evaluated.
Results A total of 13 pharmacy technicians were evaluated, on 7 pentobarbital suppositories preparations and 6 paediatric dose capsules preparations. Each stage, on average, was rated (A) or (M). For hygiene, 70% of the pharmacy technicians disinfected the work surface before and after preparing, but by using alcohol. Ninety two percent of the pharmacy technicians checked the calibration of the weighing scale but only one (17%) checked the level of the scale, 77% used paper sheets instead of a watch glass. Also, calculation of the confidence interval for the capsules was rarely mastered (16.7%).

The overall results were satisfactory. Some issues were identified: weighing procedures, compliance with procedures and the calculation of acceptance interval for capsules. Those issues called for a procedures update and clarification process: for example, using a surface disinfectant and a better explanation of the uniformity mass test.

Conclusion This evaluation was intended to make an assessment of professional practices for non-sterile drug compounding. Ongoing training will be implemented taking into account issues identified. The evaluation must be performed regularly to assess ongoing training implementation, and will be conducted for all new pharmacy technicians.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PP-025 STABILITY OF INTRAVITREAL BEVACIZUMAB SOLUTION IN POLYPROPYLENE SYRINGES IN NEOVASCULAR MACULAR DEGENERATION

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Background Bevacizumab is used by intravitreal administration as an off-label drug to treat age-related macular degeneration and other ophthalmologic diseases.
Purpose To analyse the physicochemical stability of bevacizumab repackaged in 1-mL polypropylene syringes for intravitreal injection.
Material and methods Bevacizumab syringes were repackaged under laminar flow. Each syringe contained 200 or 900 µL (25 mg/mL). For the stability assessment at 4°C, three storage groups of 2 repacked syringes and 2 original vials were constituted for each analysis time (0, 3, 7, 14 days). For bevacizumab characterisation a HPLC consisting of a Waters pump (600 E), an autosampler (717 plus), a dual UV detector (2487) to 214 nm, as stationary phase ShodexKW804 (8.0 mm × 300 mm) column and a mobile phase (25 mM $NaH_2PO_4 \cdot 2\ H_2O$ and 300 mM NaCl pH 7) at a flow of 1 ml/min. The size distribution of particles in the samples incubated in syringes was determined by a Zetasizer system.
Results The proposed HPLC method allowed us to separate two peaks for the bevacizumab control sample, corresponding to bevacizumab monomer (mean peak) and its oligomer, with retention times of 9.8 and 8.6 min respectively. We used the evolution of the monomer peak area value to indicate the stability. For the original vials the area values remained at 100% of their initial value for 7 days storage. For repacked bevacizumab this value was maintained for 3 days. The Zetasizer particles analyser detected submicron particles whose origin could be the repacking, for the vials mean particle size (17.8 ± 4.7) nm remained constant for 15 days. For repacked syringes this value remained constant for 3 days, at day 7 we found a small% of particles with size next to 5 μm indicating probable particle contamination of unknown origin.
Conclusion Our results support the physicochemical stability for 3 days at 4°C of repackaged bevacizumab for intravitreal administration.

REFERENCE

1 National Investigation Project of the Ministerio de Ciencia e Innovación in Spain (SAF2010–17083)

No conflict of interest.

PP-026 EVALUATION OF LONG-TERM BIOLOGICAL ACTIVITY OF TRASTUZUMAB 15.0 mg/ml (Herceptin) BY AN AD HOC ELISA METHOD

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Background Trastuzumab (TRZ) (Herceptin) is a humanised monoclonal antibody IgG1 that acts against human epidermal growth factor receptor 2 (HER2). It is indicated in the treatment of early and metastatic breast cancer and metastatic gastric cancer.
Purpose To evaluate the biological activity (BA) that remains in Herceptin after single-use vials have been opened in a long-term study. We also evaluated the remaining activity when TRZ was exposed to different stress conditions.
Material and methods An indirect non-competitive ELISA was developed for this purpose and validated to test the stability of BA of TRZ. ELISA plates were sensitised with recombinant human HER2. Calibration function was between 100.0 and 500.0 ng/mL; detection and quantification limits were 31.8 and 100.0 ng/mL; precision – as intraday and interday reproducibility (%RSD – was <10% and accuracy (% recovery) >95%. Stress study at 100 ng/mL included basic (NaOH 0.1M), acidic (HCl 0.1M), oxidative (H_2O_2 10%) and ionic-strength (NaCl 1M) conditions (33% v/v); temperature 50°C and 70°C and light exposure. Surplus samples of Herceptin were stored at 4°C, −20°C and −80°C in the dark. The BA was tested up to 15 days.
Results The BA of Herceptin decreased by 25%, 30% and 47% the initial activity 24 h after opening when vials were stored at 4°C, −20°C and −80°C respectively. The decrease was 50–60% after 2 days for the three storage conditions and it was maintained along the study (up to 15 days). Residual BA remained in all samples submitted to the stress except in samples heated at 70°C. There was no cross reaction with similar IgG1.
Conclusion Herceptin lost a significant percentage of the BA when tested by ELISA after 24 h of storage both refrigerated (4°C) and frozen (−20°C and −80°C). Nevertheless, these results will be further investigated by flow cytometry.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

PP-027 LONG-TERM STABILITY OF SOLUTIONS OF THE MONOCLONAL ANTIBODY CETUXIMAB

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Background Cetuximab (CTX) (Erbitux) is a chimeric mouse-human monoclonal antibody IgG1 targeting epidermal growth factor receptor (EGFR). It is approved for use as treatment for metastatic colorectal cancer and squamous cell carcinoma of the head and neck.
Purpose To access the stability of CTX during storage (in dark glass bottles at 4°C refrigerated and at −20°C (frozen) once the single-dose vial (5 mg/mL) had been opened and when diluted (2 mg/mL in saline solution) in the centralised preparation unit.
Material and methods Methods were developed for this purpose and ICH validated (to indicate stability: in addition to calibration, precision, accuracy, etc., stress studies were also conducted) for assessing the physicochemical and the biological stability: ELISA (to test biological activity), (RP)HPLC-DAD (to quantify), (CX)HPLC-DAD (to obtain isoforms profile), (SEC)HPLC-DAD (to detect aggregates) and ESI-qTOF-MS (to assay changes in the molecular weight).
Results The decrease of biological activity was only 5% 24 h after the vial had been opened (5 mg/mL), rising to 14% at day 3, 20% after a week, with a final decrease of 85% for the last day we checked (30 days). The overall quantity of CTX was unchanged for the month assessed. No formation of aggregates was detected in the two weeks tested. Changes in the chromatographic isoforms profile (2 mg/mL) were detected after a week, with significant variations in the isoforms from week 2 up to the end of the study (two months). Molecular weight indicated no major changes in the CTX structure (one month).
Conclusion Both the physicochemical and the biological properties assessed indicated good stability of CTX within 24 h after the vial had been opened. There was not even an important decrease in the biological activity a week after the opening of the medicine (20% decrease) with unchanged physicochemical properties for six days.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

PP-028 LONG-TERM STABILITY OF DILUTED SOLUTIONS OF THE MONOCLONAL ANTIBODY INFLIXIMAB

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Background The use of an alternative liquid anaesthetic sevoflurane has recently been reported in the literature on vascular ulcers. Topical application for management of analgesia appears to be successful.
Purpose To evaluate the stability of sevoflurane in pure polypropylene amber syringes.
Material and methods Commercial solutions of sevoflurane (Sevorane) were packed in polypropylene syringes. The syringes were stored at 23°C for 14 days in a digitally temperature-controlled chamber. The physical parameters monitored were clarity and colour. Chemical stability was determined by means of 19-Fluorine Nuclear Magnetic Resonance (^{19}F-NMR) and gas

chromatography coupled with a Flame Ionisation Detector (GC-FID).
Results Over the 14 days, the clarity and lack of colour of the solutions were maintained. ^{19}F-NMR signals identical to those of the original product were observed in all samples, corresponding to the chemical structure of unchanged sevoflurane. Meanwhile, in the GC-FID analysis, no additional peaks occurred at the storage temperature. No degradation products were observed by either analytical technique.
Conclusion Pure sevoflurane preserved in amber polypropylene syringes was stable for 14 days at room temperature. This enables it to be stored in a more convenient way, and provides greater comfort in drug instillation onto the ulcer bed from the syringe.

REFERENCES AND/OR ACKNOWLEDGEMENTS

University of Almería.

No conflict of interest.

PP-029 NON-COMEDOGENIC FORMULATION OF TOPICAL SIROLIMUS FOR TUBEROUS SCLEROSIS PATIENTS WITH FACIAL ANGIOFIBROMAS DEVELOPING ACNE COSMETICA

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Background Patients with tuberous sclerosis often develop facial angiofibromas that can be successfully treated with topical 1% sirolimus ointments. Nevertheless, this ointment's greasy nature can produce acne, causing patients to refuse the treatment.
Purpose To devise a non-oily formula for topical sirolimus for patients with tuberous sclerosis and facial angiofibromas who develop acne due this ointment.
Material and methods We reviewed the literature searching for standard procedures for making alternative topical formulations of sirolimus. In addition, the physicochemical properties of sirolimus were considered in order to find the most suitable formulation for this particular case.
Results No standard ways were found of producing oil-free formulations of sirolimus. We decided to compound a 0.2% sirolimus gel with the following procedure. First, prepare a 2% carmellose gel. For this, heat aqua conservans (Nipagin 0.25 g + Nipasol 0.11 g + distilled water 500 mL) to 50°C. In a mortar, mix 2 g of sodium carboxymethylcellulose and 10 g of glycerol. Then, add the content of the mortar to 88 g of heated aqua conservans and stir the mixture until room temperature is reached. Once the carmellose gel has been prepared, weigh 0.2 g of sirolimus and add a few drops of glycerol to it. Slowly, pour the carmellose gel onto the sirolimus, mixing them by stirring, until 100 g has been added. Let it stand for 12 h until the gel is homogeneous. We give it an expiry date of 2 months, stored in an opaque container and at room temperature (below 25°C). Mask and gloves must be used throughout the procedure.
Conclusion We found a way to formulate sirolimus in non-oily excipients in order to diminish the development of acne with its use. Further studies will be needed to determine the efficacy of this formula in the treatment of facial angiofibromas of patients with tuberous sclerosis and the improvement of the acne presented by these patients.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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PP-030 100.000 TREATMENTS PREPARED BY ROBOT: WHAT HAVE WE LEARNED?

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Background In 2007, the University Hospital of Ancona started the journey in automating IV compounding. At the end of 2009, the clinical validation process and workflow reorganisation ended, the second robot was introduced to set up a fully automated IV oncology pharmacy. The laboratory is composed of two APOTECAchemo systems and a laminar airflow cabinet which work from 8 am to 4 pm. There are 3 technicians from 8 am to 2 pm and 1 technician from 10 am to 4 pm. We work in a just-in-time production (80% for outpatients and 20% inpatients) and the rush hours go from 9 am to 1 pm. Two systems are used until 2 pm and one system works for the entire day.
Purpose To take stock of 7 years of experience in automated IV compounding.
Material and methods The production data were analysed in terms of doses and type of preparations delivered, by means of the statistical tools of APOTECAchemo.
Results Before 2010 10,400 treatments were produced automatically in a year and in 2010 this increased to 16,300 (80% of our annual production). In the following years, production increased with 19,300, 19,600 and 20,300 treatments in 2011, 2012 and 2013 respectively. In August 2014, we passed the threshold of 100,000 treatments compounded with APOTECAchemo, representing 95% of the treatments compounded. The annual production consists of 85% in bags, 10% in syringes and 5% in elastomeric pumps. 56 different active ingredients are used.
Conclusion

1. Automation ensures the highest quality standards because every step of the compounding process is controlled and traced
2. Automation can cover more than 90% of daily preparations even in a just-in-time system.
3. Automation allows a more intelligent and efficient management of human resources: for every 10,000 treatments automated, one FTE technician can be elevated to higher value-added tasks
4. To take advantage of automation, the workflow should be redesigned (i.e. introduce multi-dose vials and drug days).

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PP-031 THE USE OF GUIDELINES IN THE CYTOTOXIC DRUGS PREPARATION UNIT: WHAT IS THE REAL WORKLOAD FOR PHARMACY TECHNICIANS?

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Background In order to plan the managemenet a cytotoxic drugs preparation unit (CPDU), pharmacists used a scientific reference source[1] it recommended 5 pharmacy technicians for 26,000 preparations per year. 50% of technician effective working time should be spent to preparation and 50% on associated activities (AA).
Purpose What about in practice? The aim of this study was to assess the technicians' work load in real life.
Material and methods 5 technicians were hired in a CPDU in which 60% of the production was for use outside the hospital. Over one week, the times spent on the preparation and on 15 AAs was measured. The staff had to fill in a form giving the exact start and end times of the tasks. The different data collected were analysed and expressed in percentages.
Results 57% of technician effective working time was allocated to preparation. 9 AAs (36%) were fully done by technicians, the main ones being: preparation of sterilisation trays (17.4%), dressings, hygiene protocols (6%), managing orders (3.4%), schedule organisation (2%). The other AAs such as taking bacterial samples, inventory management, required the help of two additional logistics staff (47% of their working time). Without the help of logistics staff, all the AAs would need 58% of effective working time.
Conclusion Compared with our data, the reference source underestimates the time required for preparation and AAs, by 7.4% and 8% respectively. The additional time needed for preparation is explained by the fact that reference data are not accurate for specific preparations. Furthermore, AAs need more time because of the large amount of work outsourced to our department, which isn't mentioned in the reference source. This study showed that 6 technicians are necessary, instead of the 5 recommended by the guidelines. Moreover, with the new national law concerning hospital organisation, the CDPUs are going to change and the outsourced work they perform will increase; the guidelines need to be reviewed.

REFERENCE

1 Société Française de Pharmacie Oncologique

No conflict of interest.

PP-032 CLOTTING CONTROL IN A HAEMODIALYSED PATIENT WITH ALLERGIC TO LOW MOLECULAR WEIGHT HEPARIN (LMWH)

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Background A female with renal failure (renal clearance <20 ml/min), uncontrolled blood clotting, allergic to LMWH, suffered bruising, epistaxis and gastrointestinal bleeding with haemodynamic compromise, requiring repeated transfusions, when she was treated with acenocoumarol.
Purpose To design a therapeutic strategy to control the clotting in this patient.

To describe the most efficient method of preparing argatroban vials.
Material and methods Other alternatives were evaluated (lepirudin, fondaparinux and new oral anticoagulants, NOACs).

A literature review was made to determine drug stability in syringes and polypropylene bags, at different concentrations and storage conditions, to develop a solution with the optimal concentration that allowed us the most efficient use of the vial.
Results NOACs and fondaparinux are contraindicated in renal failure, and lepirudin has not been marketed since 2012.

The possible alternatives were danaparoid and argatroban, the latter being the more cost-effective.

Argatroban solutions are stable for 14 days under natural light and temperatures between 2°C and 8°C, in 0.9% NaCl or glucose solution, at 1 mg/ml, when packed in polypropylene syringes and bags. Moreover, they are stable under natural light and 25°C, in 0.9% NaCl at 0.2 mg/ml in the same type of packaging for 180 days. Doses of the initial bolus (13 mg) and the doses administered as a continuous infusion during dialysis (18 mg administered at 6 mg/hour), were in accordance with the Product Information.

Considering the stability conditions and the doses required by the patient, half the vial (1.25 ml) was prepared in a bag with a total volume of 125 ml, at a concentration of 1 mg/ml, from which was obtained the initial bolus and the continuous infusion for 4 dialysis sessions (taking place over 14 days).
Conclusion We succeeded in controlling clotting in this patient. The method of preparation allowed us to make the most efficient use of the argatroban vial.

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No conflict of interest.

PP-033 NYSTATIN-LIDOCAINE LOZENGES: INNOVATION IN THE TREATMENT OF ORAL MUCOSITIS

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Background Oral mucositis is often challenging to manage as the lesions can be very painful. It can compromise nutrition, oral hygiene and increase the risk of infection.

It is important to develop oral formulations that enhance treatment compliance, improve the administration and ensure the effectiveness of the drug.

Lozenges are described as an effective alternative to mouthwash, especially for their versatility, ease of administration and extended time in the oral cavity.
Purpose To describe the developmental process and stability studies performed of an innovative formulation of nystatin and lidocaine lozenges for the treatment of oral mucositis.
Material and methods An optimised lozenge formulation was developed. Different excipients such as gelatine, polyethylene glycol, sucrose, glycerine and gum arabic were tested. The aim was to obtain chemical and physical properties suitable for administration, storage and therapeutic compliance.

Full pharmaceutical quality testing was carried out, specifically for this dosage form including disintegration and dissolution testing performed with artificial saliva. Appropriate stability-indicating analytical methodology (HPLC) was developed to quantify nystatin and lidocaine. The microbiological and stability tests are still ongoing.

Results A stable formulation of soft lozenges was obtained, presenting suitable palatability for oral administration. It can easily be compounded with standard hospital pharmacy equipment.

The compounded product has suitable pharmaceutical characteristics, such as mass and content uniformity, disintegration time (15 min), dissolution rate and a pH value suitable for oral administration.

Conclusion Nystatin-lidocaine lozenges can be an effective alternative to mouthwashes for the treatment of oral mucositis due to their versatility, excellent palatability and easier administration. This formula's major advantage is the fact that patients can control for how long the drugs are retained in the oral cavity and consequently manage their pain treatment.

The process of clinical application will validate efficacy and optimum dosing frequency.

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No conflict of interest.

PP-034 ENVIRONMENTAL CONTAMINATION WITH CYTOTOXIC DRUGS IN A RECONSTITUTION UNIT

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Background In spite of protective measures and equipment (spike, closed system, vertical laminar airflow safety hood, isolator) the handling of cytotoxic drugs is referred to as an occupational health hazard because it can lead to the contamination of the environment. Absorption through the skin is the main route by which cytotoxics pass into the body.[1]

It is necessary to assess and quantify the contamination to protect operators, the environment, patients and their families.

Purpose To evaluate surface contamination with a cytotoxic drug 5 fluorouracil (5FU) in a unit that reconstitutes cytotoxic drugs.

Material and methods A total of 15 wipe samples were taken of surfaces (14 in a unit for reconstituting cytotoxic drugs and 1 in a container for transport of prepared cytotoxic drugs) and analysed for the presence of 5-FU.

The Limit of Quantitation (LoQ) was 0.02 μg.

Contamination is considered important if levels are above 5–10 times the LOQ.

Results Only three samples were above the LOQ: kitchen staff (3 × LOQ), container for transport of prepared cytotoxic drugs (5 × LOQ) and the dispensing area (705 × LOQ).

Contamination was considered major only for the dispensing area; it can be explained by the unprotected return of damaged preparations (septum leakage).

All other points of the UPA were below the limit of quantification reflecting appropriate methods of preparation, a good attitude of the operators and effective biocleaning.

Conclusion Of the 15 sampling points only 3 were positive, one of which was significant. This result demonstrates that working procedures and cleaning for some areas are appropriate and performed correctly; for further efforts must be made to control contamination (for example, a new procedure for the return of damaged preparations). New samples will be collected after implementation of the new procedures. The lack of a standard for surface contamination by cytotoxic drugs invites us to strengthen and continuously improve our working procedures and cleaning for the lowest possible contamination.

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No conflict of interest.

PP-035 ALBUMIN DESENSITISATION

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Background Report of a case of a patient allergic to albumin. In the absence of therapeutic alternatives we proposed an albumin desensitisation protocol.

Purpose To describe how the samples were prepared and the technique administered. To evaluate the effectiveness and safety of the desensitisation protocol for albumin in a patient who developed a hypersensitivity reaction to it.

Material and methods Review of the clinical history of a 72 year-old female diagnosed with liver cirrhosis HCV that had developed over 8 years, portal hypertension, ascites, oesophageal varices and splenomegaly. She was thought to have suffered an allergic reaction to intravenous albumin, based on symptoms after administration including neck rash, facial flushing and chest tightness, after we had eliminated allergy to any of the product excipients.

Alternatives such as administering albumin with premedication (corticosteroids and antihistamines), diuretics and plasma expanders were evaluated without getting the desired result.

After an unsuccessful literature review in which we could not find an albumin desensitisation protocol or a similar case, a protocol was suggested that involved the administration of increasing doses of albumin until a total cumulative dose achieved therapeutic levels.

Results Three albumin preparations were devised: 0.6 grams of albumin diluted in 250 ml of physiological saline to give a concentration of 0.0024 g/ml, a second one with 6 grams in 250 ml for a concentration of 0.024 g/ml and a third preparation with 60 grams of undiluted albumin, which were administered at infusion rates of 5, 10, 20 and 40 ml/h every 15 min.

After four sessions of paracentesis, with subsequent return of 60 grams of albumin infusion as per the desensitisation protocol, the patient did not have a further anaphylactic reaction. The regimen was well tolerated, achieving a final infusion rate of 50 ml/h.

Conclusion The protocol and formulation have proved to be effective and safe for desensitisation to albumin in the clinical case described.

Multidisciplinary collaboration of the professionals involved has enabled treatment with post-paracentesis albumin to be considered a valid therapeutic strategy for patients in the same clinical situation.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PP-036 PREPARATION OF AN EXPERIMENTAL CORD BLOOD SERUM EYE DROPS FOR TOPICAL USE IN SEVERE CORNEAL EPITHELIOPATHY

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Background The use of cord blood (CB) serum as a tear substitute has been recently proposed to heal severe corneal epithelial damage due to its high concentration of epithelial growth factors. No branded CB serum-based eye drops are available on the market.
Purpose To optimise the preparation of experimental galenical CB serum-based eye drops by ensuring product safety.
Material and methods In S. Orsola-Malpighi Hospital of Bologna, Italy, the drops were made under a vertical laminar flow hood. In the Transfusion Centre serum was collected from CB units, centrifuged for 10 min at 3,500 rpm, aliquoted into 15 ml sterile tubes and frozen at -80°C for six months as a quarantine period. Serological and molecular tests were performed on each serum sample, according to the Italian regulations. Thawed CB serum was sent to the pharmacy laboratory where it was diluted 1:5 with refrigerated sterile physiological saline, filtered (Millex HV 0.45 µm) and aliquoted into 1 ml single-dose PET vials. Filled vials were thermo-welded and packed in sealed labelled envelopes. Finally, they were stored at −20°C for 30 days before delivery to patients. Certification of molecular and serological tests was retained in the pharmacy. CB serum levels of epithelial growth factors were tested at different steps: freshly collected, thawed after quarantine, after filtration, after dilution and after one or two months storage at −20°C, respectively. Sterility was validated by a BacT/Alert test on each batch of eye drops.
Results Sterility tests confirmed that all batches of eye drops remained sterile after handling and storage. Immunological tests showed that CB serum levels were maintained over the whole process. Patients must keep the eye drops refrigerated and use them within 12 days.
Conclusion The collaboration among interdisciplinary professional figures overcame critical preparation problems, providing patients with a safe and effective product.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PP-037 ABSTRACT WITHDRAWN

Pharmacokinetics and pharmacodynamics

PKP-001 CURRENT VANCOMYCIN DOSING RECOMMENDATIONS FOR PAEDIATRIC PATIENTS: A PHARMACOKINETIC EVALUATION

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Background Current paediatric vancomycin (VANC) dose regimens recommend 40–60 mg/kg bodyweight/day in 3–4 doses, adjusted according trough values (optimum range 10–20 mg/L). Often, multiple dose escalations over several days after the start of treatment are needed to obtain appropriate levels.
Purpose To evaluate the current dosing scheme (4 × 15 mg/kg) against the optimal pharmacokinetic/pharmacodynamic parameters for VANC (AUC/MIC ≥ 400) and trough levels.
Material and methods Setting: a paediatric ward in a tertiary care university hospital. Patients >1 year and <18 years receiving intermittent VANC infusions between 2011 and 2013 were included. All necessary data were obtained from the electronic patient files. VANC clearance and Area Under the Curve (AUC) were obtained using JPKD software (Kaoshiung Medical University–Taiwan) using a 1-compartment, first-order kinetic Bayesian analysis. The Minimum Inhibitory Concentration (MIC) was set to 1 mg/L according EUCAST recommendations. For analysis, patients were stratified according age: <6; 6–12; and >12 years. Statistical analysis was done using SPSS 22.0.
Results Twenty-four patients (21 haematological; median age 6.3 years) were included with 183 available trough levels. VANC clearance was correlated with total administered fluid (ρ = 0.410, p < 0.0001) and excreted fluid (ρ = 0.368, p < 0.0001); and inversely correlated with age (ρ = -0.624; p < 0.0001); and weight (ρ = -0.616, p < 0.0001). Agreement between suitable trough levels and AUC/MIC was 86.0%. To obtain AUC/MIC ≥400, the required median dose was 29.36 mg/kg 4× daily for children <6 year; 21.52 mg/kg for 6–12 years; and 13.95 mg/kg >12 years (p < 0.0001). Similar median dosing values (24.89 mg/kg, 20.83 mg/kg and 13.95 mg/kg respectively) were needed when considering suitable trough values.
Conclusion Current paediatric vancomycin dose recommendations are insufficient and should take the patient's age more into account. In order to quickly obtain appropriate levels, we propose the following daily dosing scheme: <6 years: 4 × 25–30 mg/kg; 6–12 years: 4 × 20 mg/kg; >12 years: 4 × 15 mg/kg/day. A larger prospective study will be needed to confirm the recommended paediatric vancomycin dose regimen.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PKP-002 DECREASED LINEZOLID SERUM LEVELS IN CRITICALLY ILL PATIENTS: CLINICAL CASE STUDIES OF A DRUG-DRUG-INTERACTION BETWEEN LINEZOLID AND RIFAMPICIN

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Background Infections caused by multiresistant Gram-positive pathogens present a special challenge, resulting in increased clinical complications. Linezolid is used as reserve antibiotic in case of resistance or contraindication to vancomycin. Lack of effective linezolid levels due to co-administration of rifampicin has been described in healthy subjects. However, the clinical significance of this drug-drug-interaction (DDI) for critically ill patients is still unclear.
Purpose To report a DDI between linezolid and rifampicin resulting in linezolid levels below the minimal inhibitory concentration (MIC) in three patients.

Material and methods Three patients with linezolid and rifampicin were identified through routine therapeutic drug monitoring. Linezolid serum level was measured by a validated high performance liquid chromatography assay.
Results The therapeutic range of linezolid serum levels is expected to lie between 4 mg/l (2 × 600 mg IV) and 6 mg/l (2 × 600 mg p.o.). The MIC values of pathogens require trough levels between 2(4)–10 mg/l. However, the majority of observed linezolid levels in three patients were below 2 mg/l, even if rifampicin had already been stopped (Patient 1).
Conclusion We observed accelerated linezolid clearance in critically ill patients as previously described in healthy subjects. Monitoring of linezolid levels and corresponding dose adjustments could ensure safe and effective antibiotic treatment in patients with rifampicin co-administration as well as with previous rifampicin treatment. Further investigation is necessary to assess the clinical value of combination treatment.

Abstract PKP-002 Table 1

	Indication	Dosage linezolid	Day of treatment	Trough level [mg/l]
Patient 1	Ventriculitis	2 × 600 mg	3	<0.5
			5	<0.5
			7	2.1
			12	2.0
			13	<0.5
Patient 2	Implant-associated infection	2 × 600 mg	2	0.6
		3 × 600 mg	4	4.1
			8	0.9
			21	0.9
Patient 3	Implant-associated infection	2 × 600 mg	2	0.5
		3 × 600 mg	3	0.5
			7	1.9

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No conflict of interest.

PKP-003 PHARMACOGENETICS IN ANTIPLATELET TREATMENT WITH CLOPIDOGREL IN VASCULAR PATHOLOGY

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Background Clopidogrel is metabolised by CYP2C19 to the active metabolite responsible for the inhibition of platelet aggregation. The P-glycoprotein encoded by the ABCB1 gene is key in drug absorption. The effects differ according to genotype ABCB1 and CYP2C19. Intermediate and poor metabolizers and poor transporters (carriers of "loss of function" alleles: LOF) are responsible for the poor response to the antiplatelet drug.

This evidence has not yet been demonstrated in patients with peripheral vascular disease of the lower limbs undergoing percutaneous transluminal angioplasty.

Purpose To determine the occurrence of cardiovascular events (myocardial infarction, stroke, reoperation, PTA thrombosis, stent thrombosis, amputation and bypass) in patients undergoing PTA (+ - stent) for one year to monitor and study the association with the presence of genetic polymorphisms CYP2C19 and ABCB1. To determine the association between genetic polymorphisms and the Fontaine score (classification of ischemia).
Material and methods 45 lower limb disease patients with atherosclerosis of the arteries following PTA treated with clopidogrel were recruited. We evaluated the combined effect of ABCB1 3435 C > T genotype, CYP2C19*2 and CYP2C19*3 genotype and rates of the primary efficacy endpoint including ACS, stroke, reoperation for lower limb thrombosis post-PTA, stent thrombosis, bypass reconversion and amputation during 6 and/or 12 months after the prescription of clopidogrel, and other clinical parameters used to evaluate the clinical condition of the patients: intermittent claudication, toe-brachial pressure index (TBPI), arterial PVR test, Fontaine/Rutherford score measured at 6 and/or 12 months after the start of clopidogrel.
Results Subjects carrying at least one CYP2C19 reduced function allele and/or ABCB1 TT had a significantly higher risk of the primary endpoint (OR = 6.0, 95% CI 1.53–23.53, p = 0.010) than non-carriers patients. LOF patients were associated with a worse Fontaine/Rutherford score evolution than non-LOF patients (p < 0.0001, OR = 21.35 (3.85–118.35).
Conclusion CYP2C19 and ABCB1 polymorphisms could be used as genetic markers of cardiovascular events in vascular pathology.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PKP-004 CYP450 ISOENZYME-ASSOCIATED FOOD-DRUG INTERACTIONS ARE A NEGLECTED ISSUE IN MEDICINES INFORMATION

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Background Interactions are occurring in the course of the release, absorption, distribution, metabolism, and excretion of active ingredients, or at the target receptors. Two concomitantly used substances interact with a probability of 13%, 4 with 38%, and 7 with 82%. Therefore, the elevated number of components in food may result in an alarmingly high frequency of food-drug interactions and, consequently, in pharmacotherapy failure.
Purpose To assess whether adequate information on food-drug interactions is made available from medicines manufacturers.
Material and methods All online monographs according to the "Questionnaire for the information of hospital pharmacists about proprietary medicines" were retrieved from http://www.gsasa.ch and screened for information on interactions involving food.
Results From a total of 157 monographs, 90 (57%) declared that food-drug interactions were "not applicable", "unknown", or stated that "no data" were available. 23 (15%) explicitly mentioned that their medicine "...is not affected by food". 6 monographs (4%) reported an interaction during release and 1 (<1%) during excretion. 37 (23%) disclosed a bioavailability and metabolism interaction as a result of food intake: While 19 were restricted to concise information on delayed absorption from the GI tract which however would not decrease the amount of

medicine absorbed, only 18 hinted at CYP450 isoenzyme-associated interactions, but generally limited their comments to grapefruit juice or St. John's Wort.

Conclusion Food-drug interactions have consequences which go beyond absorption from the GI tract. Although many food ingredients such as caffeine, flavonoids, liquorice, spices, and vitamins are known to be inducers or inhibitors of some of the 57 known human CYP450 isoenzymes [cf. Flockhart Interaction Table, Drugbank, SuperCYP], they are not taken into account in the medicines' information made available by manufacturers. Thus, risks arising from isoenzyme-associated food-drug interactions are a neglected aspect of drug information.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PKP-005 PROGNOSTIC IMPACT OF NOVEL GENE POLYMORPHISMS IN NEWLY DIAGNOSED ACUTE MYELOID LEUKAEMIA ADULTS UNDERGOING INDUCTION CHEMOTHERAPY

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Background Single nucleotide polymorphisms (SNPs) could lead to inter-individual differences in treatment outcomes.

Purpose A recent study[1] reported several novel SNPs involved in cytarabine cytotoxicity using a whole-genome approach, which were associated with clinical outcomes in a paediatric AML population. However their association with effectiveness and toxicity remain undetermined in adults.

Material and methods The six SNPs with clinical significance in the Gamazon study[1] (Table 1) were evaluated in 109 adult patients at initial diagnosis with AML using a mass spectrometry–based multiplex genotyping assay (Sequenom). All patients were treated with idarubicin plus cytarabine.

Genotypes were grouped as dichotomous variables (dominant/recessive model). Efficacy was evaluated comparing complete remission (CR) vs. partial remission or resistance. Toxicities were grouped as binary variables (grade: 0–1 vs. grade: 2–4, Who scale). Haematological toxicity was measured with the time to neutropenia/thrombocytopenia recovery since first day of chemotherapy. Variables were assessed using χ^2 and Mann–Whitney U tests.

Results The median age of patients was 53 years (17–78 years). Among the baseline characteristics analysed (age, gender, haemoglobin, leukocyte, platelet and peripheral or BM blasts count) there was significant difference in genotype distributions regarding age (wild allele carriers of rs9883101 were older, p = 0.02) and gender (men had a higher proportion of variant alleles for rs6550826 and rs7729269, p = 0.003 and 0.006; and wild allele for rs2897047, p = 0.005). Toxicities were more frequent with variant alleles of several SNPs (table), but they were not associated with the CR rates.

Conclusion We obtained new associations of these novel polymorphisms with toxicity, not previously studied in adult AML patients, but not in effectiveness. These SNPs could be useful biomarkers in clinical practice.

Abstract PKP-005 Table 1

	Toxicity %: Wild-variant allele (P)					
SNP	**Cardiac**	**Hepatic**	**Skin**	**G3–4**	**Thrombocytopenia recovery (days)**	**Neutropenia recovery (days)**
rs12036333					GG/GA:32.7-AA:57.5 (0.004)	
				GG:51.9-GA/AA:73.3% (0.043)		GG/GA:34.0-AA:68.0 (0.029)
rs10758713						
rs9883101					AA:28.4-AC/CC:38.6 (0.036)	
rs6550826					CC:28.2-CG/GG:38.9 (0.027)	
IRX2: rs2897047		CC/CT:52.0-TT:88.9% (0.04)				CC/CT:32.9-TT:51.1 (0.015)
MCC: rs7729269	TT:8.2-TC/CC:22.9% (0.031)		TT:16.4-TC/CC:39.6% (0.003)			TT/TC:35.9-CC:16.3 (0.029)

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No conflict of interest.

PKP-006 COMPARISON BETWEEN THE USE OF TOTAL/IDEAL/ADJUSTED BODY WEIGHT FOR EMPIRICAL VANCOMYCIN DOSING IN OBESE PATIENTS

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Background Pharmacokinetic studies have suggested that total body weight (TBW) could be the optimal approach to calculate the dose of intravenous vancomycin (15–20 mg/kg TBW every 8–12 h) for target achievement (Css > 15 mg/L).[1] However, recent data concluded that the use of adjusted body weight (ABW) might be a better approach in obese patients.[2]

Purpose To determine which is the preferred method (TBW, ideal body weight (IBW) or ABW) to optimise vancomycin treatment in obese patients.

Material and methods Retrospective, non-interventional, observational study. Inclusion criteria: >18 years-old, body-mass-index (BMI) ≥30 kg/m^2, creatinine clearance ≥60 mL/min, and vancomycin TDM at steady-state. Non-obese patients were

included as a control group. Patients were identified by reviewing TDM reports.

Vancomycin theoretical total daily doses (15–20 mg/kg) were calculated using TBW, IBW and ABW for each patient. They were compared with the dose used in our patients after TDM (Bayesian forecasting; PKSAbbot Software; target: Css > 15 mg/L) (TDM dose).

Dose differences greater than 10–12.5% of the TDM dose were considered unsuitable, since they could be related to clinical failure. Wilcoxon's test analysis was performed using SPSS; ($p < 0.05$).

Results Forty obese patients: 35% men; 60.4 ± 12.6 years-old; BMI: 33.3 ± 2.7 kg/m^2.

Compared to the TDM dose and considering 15–20 mg/kg:

(i) Overdosage was observed in 72.5 (95%), 25 (47.5%) and 32.5 (72.5%) patients for TBW, IBW and ABW, respectively. Statistically significant differences were seen, with mean dose differences higher than 500 mg in the 20 mg/kg group.

(ii) Underdosage was seen in: 22.5 (5.0%), 75 (45%) and 67.5 (27.5%) respectively.

Statistically significant differences were seen with mean dose differences lower than 400 mg in the 15 mg/kg group.

No relevant differences were observed in the control group.

Conclusion Compared to the TDM dose, a high incidence of overdosage would be observed by using TBW. In our obese patient cohort, ABW might be the best approach to set the dose of intravenous vancomycin (15–20 mg/kg), as already seen in previous literature.[2]

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No conflict of interest.

PKP-007 APPROPRIATENESS OF SAMPLING TIMES FOR DRUG MONITORING IN THE EMERGENCY DEPARTMENT

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Background Pharmacokinetic monitoring optimises drug treatment. However, blood samples should be carefully collected at the right time after drug administration. Otherwise, drug levels could be interpreted in the wrong way and the physician could make an incorrect clinical decision.

Purpose To evaluate the percentage of blood samples collected at the wrong times in the Emergency Department (ED) with respect to time after drug administration.

Material and methods A prospective observational study was conducted in the ED. All patients who took medicines that should be monitored were included. The study period was 20 days (June 2014). The following variables were recorded: demographics (age and gender) and pharmacokinetics (drug name, time of drug administration, time of sample collection and number of drug levels requested per patient). The collection times recommended in our institution are: a) digoxin: at least 8 h after oral administration and 3 h after intravenous administration; b) paracetamol poisoning: at least 4 h after the last administration; c) valproate, phenobarbital, carbamazepine and lithium: prior to next dose (trough level).

Results A total of 40 patients fulfilled the inclusion criteria. 17 patients had plasma drug concentration measurements (65% were female and the median age was 65). The total number of drug measurements was 40 (1–5 measurements per patient). Regarding wrong sampling times, 20% blood samples (8/40) were collected at the wrong times: a) digoxin: 5/17 measurements (29%); b) paracetamol: 2/11 (18%), c) valproate: 1/6 (17%), d) phenobarbital: 0/3 (0%); e) carbamazepine: 0/1 (0%); f) lithium: 0/2 (0%).

Conclusion A high percentage of drug levels were collected at the wrong times in the ED. This fact could lead to unnecessary sampling and data misinterpretation. For this reason, pharmacokinetics training provided by clinical pharmacists prior to blood sampling should be mandatory.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PKP-008 IMPROVING THE QUALITY OF CLINICAL DECISION MAKING BASED ON TOTAL PHENYTOIN SERUM LEVELS

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Background Therapeutic drug monitoring of phenytoin is commonly done by measuring the total phenytoin level (TPHEL) in serum or plasma. This result can be misleading in patients with serum albumin <44 g/L needing correction before use in clinical decision-making. However, serum albumin isn't always requested with phenytoin measurement.

Purpose To design and implement an algorithm, in agreement with the Clinical Laboratory, that includes the albumin serum measurement whenever TPHEL is requested in routine testing in hospitalised patients, in order to facilitate the correct interpretation of TPHEL.

Material and methods Retrospective observational study of hospitalised patients whose TPHEL was determined between January 2013 and August 2014. The algorithm triggers serum albumin analysis in routine testing if it isn't requested on the same day as phenytoin measurement. Variables collected were age, sex, TPHEL, albumin, creatinine and urea. Albumin-adjusted total phenytoin level (AATPHEL) by the Sheiner-Tozer equation and GFR by CKD-EPI were calculated. Phenytoin therapeutic interval considered was 10–20 mg/L. TPHEL and AATPHEL results was classified into infra, supra or therapeutic groups and discrepancies among groups were analysed.

Results 561 TPHEL results were studied (206 patients; average age: 60.5 years; 119 female). 74 (13%) TPHEL did not have albumin results because were stat requests. 98.8% of TPHEL (481 out of 487) had serum albumin <44 g/L and required correction and 93% of them (449 out of 481) had GFR >25 mL/min/1.73 m^2. Based on the TPHEL alone, 44% required an increased dose while only 27% required it when using AATPHEL. In contrast, 16% of TPHEL results taken alone required dose reduction, which jumped to 38% when the AATPHEL was used.

Conclusion The majority of hospitalised patients had albumin inferior to 44 g/L, requiring the calculation of AATPHEL to

optimise clinical decisions. The collaboration between the Clinical Laboratory and the Pharmacy Service has facilitated the availability of serum albumin values for nearly 90% of TPHEL thus improving quality in TPHEL interpretation.

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No conflict of interest.

PKP-009 GENETIC POLYMORPHISMS OF EFECTIVENESS TO INTERFERON-B TREATMENT IN MULTIPLE SCLEROSIS

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Background Multiple Sclerosis (MS) is the most common demyelinating disorder. Still today its pathogenesis is not well known, but there are several drugs to slow down disease progression. Interferon-B (IFN-B) drugs are useful to initiate treatment quickly after diagnosis. But treatment response to IFN-B is highly variable between individuals. There are recent investigations demonstrating genetic polymorphisms associated with the response to INF-B.
Purpose To determine the main genetic polymorphisms evaluated for possible clinical utility in MS.
Material and methods A literature review focused on genetic polymorphisms associated with IFN-B treatment responses in MS published in 2004 or later.
Results Twenty-seven articles were reviewed. Different genes have been studied as a possible cause of inter-individual response. HLA genes have been associated with development of neutralising antibodies (NAbs) to interferon: rs4961252-GG, rs9272105-GG, HLA-DRB1*04:01, DRB1*04:08 and DRB1*16:01 polymorphisms were associated with higher risk of appearance of NAbs. In the CD46 gene the polymorphism rs2724385-AT was significantly lower and the TT genotype was higher in responders to interferon compared to non-responding patients. Other genes for pro and anti-inflammatory cytokines (IFNG, TNF, IFNB1, TGFB1) and receptors (IFNAR1, CCR5 and IL7RA) have been studied due to the inflammatory component of MS; Only the single alleles TGFB1*C and CCR5*d were associated with optimal IFN-B response. Another study associated one polymorphism (rs2542109-AA) from the ubiquitin-specific peptidase-18 gene with a better response to IFN-B. Another important gene studied was myxovirus resistance A (MXA) because previous studies demonstrated different gene expression in IFN-B patients treated. But in one study of two promoter region single nucleotide polymorphisms (rs2071430; rs17000900) no association was found with the clinical course.
Conclusion Although individual genetic polymorphisms are relatively poor predictors, combinations of these will possibly be useful to guide therapeutic decision-making given the variety of different treatments now available with varying mechanisms of action and risks.

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No conflict of interest.

PKP-010 HIGHER THAN RECOMMENDED DOSES OF COLISTIMETHATE SODIUM IN PATIENTS WITH MULTI-DRUG RESISTANT GRAM-NEGATIVE BACTERIAL INFECTIONS: A BENEFIT OR AN INCREASED RISK OF TOXICITY?

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Background Recent pharmacokinetic studies suggest the administration of higher colistimethate sodium (CMS) doses for treating multidrug resistant Gram-negative (MDR-GNB) infections.
Purpose The aim was to compare the efficacy, pharmacokinetics and toxicity of the manufacturer's recommended CMS doses (RD) versus higher doses (HD).
Material and methods Pharmacokinetic study performed at a university hospital in patients with MDR-GNB infections treated with CMS. Data: demographics, severity (APACHE-II), CMS dose, type of infection, colistin plasma concentration ($Cmin_{ss}$ before next CMS dose and at steady state), nephrotoxicity at day 7 (RIFLE criteria), clinical cure and crude mortality. CMS doses were selected by the clinicians' criteria. All patients treated with higher doses than those recommended by the national manufacturer were considered HD group. $Cmin_{ss}$ was measured by HPLC.
Results 102 included patients. Clinical and pharmacokinetic characteristics.

Abstract PKP-010 Table 1

	RD patients (n = 70)	HD patients (n = 32)	p
Age (years)*	64.8 (16.4)	64.6 (15.1)	0.940
Male	55 (78.6)	24 (75.0)	0.436
APACHE*	12.3 (5.9)	12.6 (5.3)	0.707
Severe sepsis	34 (48.6)	14 (43.8)	0.153
MDR-GNB infection:			
Bronchial	16 (22.9)	7 (21.9)	
Pneumonia	12 (17.1)	8 (25.0)	
Urinary tract	11 (15.7)	3 (9.4)	
Bacteriemia	7 (10.0)	5 (12.5)	
Bone/Skin and soft tissue	13 (18.6)	4 (12.5)	
Others	11 (15.7)	6 (18.8)	0.838
Baseline GFR (ml/min/1.73 m^2)*	164.3 (117.9)	147.8 (100.3)	0.569
CMS dose (mg/kg/day)*	5.1 (2.0)	8.5 (3.0)	<0.001
$Cmin_{ss}$ (mg/L)*	1.3 (1.1)	2.1 (1.8)	0.024
Nephrotoxicity	11 (15.7)	15 (46.9)	0.001
Clinical cure	57 (81.4)	22 (68.8)	0.181
Mortality	20 (28.6)	13 (40.6)	0.227

*Mean + SD.

Conclusion More than 30% of patients received a higher than recommended CMS dose but they didn't achieve better clinical outcomes in terms of clinical cure and mortality and they developed nephrotoxicity more frequently, a fact probably related to the higher colistin plasma levels.

These findings suggest the need to select which patient's profile can benefit from higher CMS doses.

REFERENCES AND/OR ACKNOWLEDGEMENTS

None.

No conflict of interest.

PKP-011 PHARMACOTHERAPEUTICS MONITORING ANALYSIS OF VANCOMYCIN IN THE PHARMACEUTICAL SERVICE

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Background Vancomycin is a widely used antibiotic in nosocomial infections due to methicillin-resistant staphylococcal aureus, a major cause of death, justifying the strict controls on its use as well as serum drug level monitoring (SDLM).
Purpose To evaluate pharmaceutical interventions regarding their impact on the initial regimen and adjustment of serum vancomycin levels.
Material and methods A retrospective observational study of patients for whom pharmacokinetic monitoring of vancomycin was requested in the year 2013. The parameters evaluated were obtained from the computer applications Kinetidex, Clinidata Net and the pharmacotherapeutic profile: creatinine, dose, first dosed serum drug level and suggested dose.
Results 433 serum drug levels of vancomycin were determined. Of the total 159 patients, 63.5% were subjected to pharmacokinetic monitoring, averaging 4.29 serum drug levels per patient.

61.4% patients received vancomycin, in an intermittent regimen (IR), 38.6% received it by continuous infusion (CI), of these only 46.2% had a loading dose.

The average trough serum drug level was 14.07 μg/ml and the intermediate serum drug level in the CI regimen was 23.14 μg/ml.

It was found that 40% of the trough serum drug levels in the IR were within the reference values?? (RV) (10–15 μg/ml), 30% of serum drug levels were above and 30% were below.

In CI, 13.9% of intermediate serum drug levels were within the RV (20–25 μg/ml), 33.3% were above and 52.7% were below.

Most pharmaceutical interventions were aimed at maintaining the dosing interval, reflecting the interventions in increasing doses (31.68%) or decreasing doses (20.79%).
Conclusion It was concluded that many patients required an adjustment to the initial treatment regimen, maintaining the dosing interval, but with dose modifications.

A serum drug level lower than the RV is not effective in controlling the infection with the potential emergence of resistant strains. High serum drug levels above the RV may cause toxic effects.

This differentiated pharmaceutical intervention contributed to improved health outcomes and strengthened the regulatory framework in multidisciplinary health teams.

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No conflict of interest.

PKP-012 MONITORING OF VANCOMYCIN IN 62 PATIENTS WITH CENTRAL NERVOUS SYSTEM INFECTIONS

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Background Since the release of linezolid vancomycin has been downgraded as an alternative in the treatment of central nervous system (CNS) infections caused by Gram-positive bacteria on account of its bad penetration and high incidence of nephrotoxicity. There are no studies with enough patients to support this trend.
Purpose To evaluate the efficacy and safety of vancomycin in CNS infections, and the impact of monitoring its pharmacokinetics.
Material and methods Descriptive retrospective study which included all patients with CNS infections treated with vancomycin and monitored. Patients aged under 18 and those who received less than 5 days' treatment with vancomycin were excluded.
Results A total of 62 patients were included, 39 with previous surgical intervention (SI) in the CNS.

The most common diagnoses in the group with prior SI were bacterial meningitis (51%), fistula of cerebrospinal fluid (CSF) (21%) and shunt infection (21%). All had baseline neurological disease – neoplasms (46.2%) and subarachnoid haemorrhage (25.6%).

Most patients without prior SI (n = 23) were diagnosed with bacterial meningitis (n = 21) and just 2 with a brain abscess. The infective pathogen was isolated in 39 samples of CSF. All isolated microorganisms were sensitive to vancomycin. 63.7% of the isolated microorganisms were coagulase-negative Staphylococcus, with a MIC = 2 in 23.7%.

The initial and adjusted mean doses of vancomycin were 35.6 ± 9.3 mg/kg/day and 39.9 ± 15.2 mg/kg/day respectively. The median initial and adjusted Cmin were 10.04 (6.16) mcg/ml and 14.67 (3.66) mcg/ml respectively.

Laboratory-confirmed CSF clearance was obtained in 26 of the 39 isolates, 73.1% during the first 10 days of treatment.

The overall mortality was 5.8%, but only one death was related to the CNS infection.

Although Cmin above 20 mcg/ml was recorded in 15 patients, none developed nephrotoxicity.
Conclusion Vancomycin is still an agent of choice for CNS infections. Vancomycin trough concentrations of 15–20 mcg/ml are recommended to achieve clinical effectiveness for CNS infections without causing nephrotoxicity.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PKP-013 MANAGEMENT OF INCREASED SERUM CREATININE LEVELS IN TELAPREVIR TREATMENT IN COADMINISTRATION WITH AMLODIPINE: A CASE REPORT

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Background Telaprevir is a protease inhibitor used for the treatment of chronic hepatitis C genotype 1. Amlodipine is a drug commonly used by hepatitis C patients and is a substrate of CYP3A. Many studies show that telaprevir is a strong inhibitor of CYP3A and that co-administration with CYP3A substrates should be clinically monitored.
Purpose To describe the management of increased serum creatinine levels in a patient who received telaprevir in co-administration with amlodipine.

Material and methods A 65-year-old man, treated with amlodipine 10 mg/day, was admitted with chronic hepatitis C genotype 1. His body weight was 64 kg (BMI 24.9) and laboratory evaluation showed the following values: haemoglobin 12.6 g/dl, serum creatinine 0.8 mg/dl, viral load (HCV RNA level) 1,518,241 IU/ml. The patient's medical history was reviewed and risk factors were carefully evaluated. A literature search was conducted in PubMed.

Results In May 2014 the patient began triple therapy with telaprevir, peginterferon a-2a (180 mcg/week) and ribavirin (800 mg/day). Two weeks later, the viral load became undetectable. After four weeks of antiviral treatment, the patient was hospitalised because of high serum creatinine levels (1.7 mg/dl). A drug-drug interaction was suspected and it was decided to suspend amlodipine and reduce ribavirin to 200 mg/day. The patient was rehydrated and continued triple therapy. 24 h later, the serum creatinine levels started to decline and returned to the normal range (1.2 mg/dl) within four days.

Conclusion The co-administration of telaprevir with amlodipine may result in significant ADRs. Clinical monitoring and modification of the treatment allowed the continuation of triple therapy for a patient with a high probability of success.

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No conflict of interest.

PKP-014 VARIABILITY OF EXPOSURE PARAMETERS OF ADULTS TREATED WITH HIGH DOSES METHOTREXATE

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Background In the current treatment of Non-Hodgkin's lymphomas (NHLs) with high-dose methotrexate, the dose is calculated according to different protocols, regardless of patients' pharmacokinetic variability.

Purpose To evaluate the variability of exposure to methotrexate in adult patients with NHL who received high-dose methotrexate (>1,000 mg/m²) in order to justify the need to individualise the dose and optimise the treatment.

Material and methods Retrospective observational study, between October 2007 and June 2014. We included 43 adult patients (27–77 years old) with NHLs who received 96 cycles of methotrexate. Patients were classified into two groups, patients who received 1,000 mg/m² over 24 h in accordance with the HYPER-CYVAD protocol (group I) and those who received 1,500 mg/m² infused over 24 h, following the BURKIMAB-08 protocol (group II). Methotrexate was measured by a fluorescence polarisation immunoassay (TDx/FLx System) in plasma samples obtained at 2, 12, 23, 36, 42 and 60 h after the start of infusion. Methotrexate pharmacokinetics parameters were estimated by Nonlinear Least Squares Regression (software Abbott PKs). The target range of exposure was defined as ±20% of the average AUC value, considering the extreme values positioned outside ±40%.

Results In group I, the AUC was 471.05 ± 188.59 μM h (235.29–1,231.34), 52.18% of the patients showed values within the pre-specified target (376.84–565.26), and 21.74% showed extreme values (>659.47 and <282.63). In group II, the AUC was 560.77 ± 194.63 μM h (308.53–1,414.62); 58% of patients showed values within the pre-specified target (448.62–672.93), and 16% showed extreme values (>785.08 and <336.46). The variability of the clearance in these patients (90.04 ± 30.59 ml/min/m²) would explain these results.

Conclusion The variability of exposure to methotrexate (37.99%) justifies the need to individualise dosage to optimise treatment. This could prevent an extreme risk of inefficacy or toxicity in the 18.75% of patients who are outside the pre-specified target range.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PKP-015 PHARMACOGENETIC STUDY OF THE EFFECT OF POLYMORPHISMS IN THE TRAILR1/TRAIL SYSTEM ON THE RESPONSE TO TREATMENT WITH RITUXIMAB IN FOLLICULAR LYMPHOMA PATIENTS

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10.1136/ejhpharm-2015-000639.345

Background The interindividual variability in drug response and toxicity is well known and may be related to genetic factors. TRAIL and TRAILR1 are proteins involved in the induction of apoptosis by the extrinsic pathway and may be implicated in the mechanism of action of the anti-CD20 agent, rituximab.

Purpose To assess the influence of the functional gene polymorphisms rs20576 TRAILR1 and rs12488654 TRAIL on response to treatment with rituximab in follicular lymphoma (FL) patients.

Material and methods FL patients treated with rituximab in combination with first line chemotherapy in a level 3 Hospital. The clinical response was assessed after the fourth cycle and treatment completed, response criteria used were proposed by the International Working Group [Complete Response (CR), Partial Response (PR), Stable Disease (SD), Relapsed Disease (RD), considered SD and RD for non-responders (NR)]. Genes polymorphisms were determined by allelic discrimination using fluorescence probes and a 7500F real time termocycler. Statistical analysis of the data was performed using the program Epidat 3.1 ($p < 0.05$ as statistically significant).

Results 40 patients were included (60% men). Average age: 58 ± 16 years. Pharmacogenetic study was performed to 31 patients at the fourth cycle and to 39 at the end of the treatment. Distribution for response/genotypes:

- After fourth cycle: NR [AA = 1(100%)], PR [AA = 8(50%), CA = 8(50%)], CR [AA = 10(71.4%), CA = 4(28.6%)] (polymorphism rs20576); NR [GA = 1(100%)], PR [AA = 1 (6.3%), GA = 5(31.3%), GG = 10(62.5%)], CR [AA = 1 (7.1%), GA = 2(14.3%), GG = 11(78.6%)] (polymorphism rs12488654).
- Treatment completed: NR [AA = 1(100%)], PR [AA = 4 (57.1%), CA = 3(42.9%)], CR [AA = 17(54.8%), CA = 13 (41.9%), CC = 1(3.2%)] (polymorphism rs20576); NR [GA = 1(100%)], PR [GA = 2(28.6%), GG = 5(71.4%)], CR [AA = 2(6.7%), GA = 7(23.3%), GG = 21(70%)] (polymorphism rs12488654).

There were no statistically significant differences between genotypes of polymorphisms (rs20576; rs12488654) and clinical

response to rituximab after fourth cycle (p = 0.3503; p = 0.3930) and treatment completed (p = 0.9050; p = 0.4908).
Conclusion According to the results of our study, genes polymorphisms rs20576 TRAILR1 and rs12488654 TRAIL do not appear to influence the response to treatment with rituximab in FL.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Haematology Department.

No conflict of interest.

PKP-016 A COMPARISON OF INDIKO AND DIMENSION ENZYMATIC ETHANOL ANALYZERS

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Background In certain clinical settings such as the emergency room, it is necessary to analyse the urinary concentration of ethanol to determine the degree of intoxication. However, in the Addictive Behaviours Unit it is important to detect if the patient is remaining abstinent. In this case, the selection of the analytical technique will be dictated by the sensitivity limit.
Purpose To compare the results of ethanol determinations on the Thermo Scientific Indiko (Indiko) and Siemens Dimension Xpand (Dimension) analysers considering the sensitivity limit of the analytical technique.
Material and methods Urine samples were collected from patients of an Addictive Behaviours Unit and were refrigerated to be determined later. Urine samples were analysed by the Indiko and Dimension using a method based on enzymatic reaction. The sensitivity limit of the ethanol test was 13 mg/dl and 10 mg/dl for the Dimension and Indiko, respectively. An ethanol concentration above the sensitivity limit were considered as positive. Accuracy was calculated for concentrations of 15 mg/dl and 20 mg/dl, near the sensitivity limit. Statistical analysis was performed with SPSS v.17.
Results A total of 60 urine samples were analysed. 58 samples were deemed negative and 2 samples positive by both analysers. Mean concentration for the 15 and 20 mg/dl checks were 12.49 ± 0.46 mg/dl (CV: 3.65%) and 14.34 ± 1.18 mg/dl (CV: 8.22%), and 18.38 ± 0.55 mg/dl (CV: 3.01%) and 18.08 ± 0.37 mg/dl (CV: 2.05%) for the Indiko and Dimension, respectively.
Conclusion In our study with urine samples of patients from an Addictive Behaviours Unit, there were no discrepancies between the ethanol concentration results for the two techniques.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Pharmacy department.

No conflict of interest.

Patient safety and risk management

PS-001 AUDIT ON THE USE OF DIGOXIN IN AN ACUTE GERIATRIC UNIT: REPORT OF A RETROSPECTIVE STUDY

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Background Digoxin is the only product in its class of drugs and the only positive inotropic agent available, used to slow the heart rate in atrial fibrillation.
Purpose To perform an audit on the use of digoxin in the elderly, with the aim of being able to optimise the use of digoxin in geriatric units.
Material and methods Retrospective study in an acute geriatric unit, from January to June 2014, including patients over 65 years, who received digoxin 0.25 mg/0.125 mg. The normal digoxin range is between 0.5 and 1.2 mmol/L; the patient doses were individualised taking account of comorbidities, biological parameters (renal/liver function, calcaemia/kalmia, serum albumin, presence of an inflammatory syndrome) and drug interactions.
Results 20 patients were enrolled, including 11 women (55%). The median age was 88 years (78–94). 12 (60%) patients had renal failure, seven (35%) had disturbed liver function tests, 11 (55%) had an inflammatory syndrome, 9 (45%) had malnutrition, no patients had hypercalcaemia, and only one had hypokalaemia. 7 (35%) patients had high digoxin levels, including 3 with electrical signs related to overdose. Of these 7 patients, 5 had renal failure, 4 were malnourished, and one patient had an inflammatory syndrome. Only 2 patients had liver abnormalities. Considering possible drug interactions, all 3 patients who had electrical signs associated with overdose were taking a cardioselective beta blocker. 5 out of the 7 patients had a proton pump inhibitor; only 2 patients were taking amiodarone (but had no electrical signs). Because of the small patient cohort (20), comparing the qualitative and quantitative variables such as digoxin could not achieve significance in our study.
Conclusion Digoxin should be prescribed cautiously in the elderly if they have kidney failure, inflammatory syndrome or are taking beta blockers.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-002 IMPORTANCE OF PHARMACOVIGILANCE FOR MAINTAINING HOSPITAL PROTOCOLS INCLUDING HIGHLY COMPLEX DRUGS: OUR OWN EGFR-TKI AFFAIR

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Background Two reversible tyrosine-kinase inhibitors of the epidermal growth factor receptor (EGFR-TKI) (A and B) were approved for the treatment of EGFR-mutant advanced non-small cell lung cancer (aNSCLC), with similar activity and results. Pharmacovigilance detected efficacy differences between A and B in our centre.
Purpose To define and possibly correct the cause of this finding.
Material and methods Drug A was considered our standard treatment for EGFR-mutant aNSCLC from April 2011 to March 2013, and was replaced with B from April 2013 to the present. EGFR-mutant patients were sequentially diagnosed in two different external platforms (PA and PB) during the same periods of time. We retrospectively reviewed the medical charts of TKI-treated EGFR-mutant aNSCLC patients from April 2011 to March 2014. Progression free survival (PFS) was analysed in any, first, and second line of treatment by Kaplan-Meier curves

and Cox regression. The finding of significant differences in PFS between A and B led to the retrospective review of all EGFR-analysed aNSCLC patients.
Results Fifteen EGFR-mutant aNSCLC patients were treated with A (7 s line), and 16 with B (10 s line). Mean age of the series was 65 years (44–82), and 74.2% were women. PFS benefited A in any (11.43 vs. 4.96 months; p = 0.000), first (13.3 vs. 3.98 months; p = 0.014), and second line of treatment (9.5 vs. 5.53 months; p = 0.023). PA analysed 108 aNSCLC, patients detecting 12.1% EGFR-mutant and 15% non-analysable tissue samples. PB analysed 85 aNSCLC, patients finding 20% EGFR-mutant and 3.5% non-analysable tissue samples.
Conclusion The lower PFS of B-treated aNSCLC patients was attributed to an excessive sensitivity of PB in detecting EGFR-mutation. Re-calibration of the technique modified the current percentage of EGFR-mutant and non-analysable samples to 15.5% and 10% of 129, respectively. Periodic monitoring of selected drugs helps to correct protocol defects, to improve quality of treatments, and to reduce costs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Conflict of interest

PS-003 PHARMACEUTICAL INTERVENTIONS IN THE FIELD OF ONCOHAEMATOLOGY

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Background Pharmaceutical validation is considered an essential process in detecting medicines errors in chemotherapy.
Purpose To describe and analyse pharmaceutical interventions (PIs) carried out in oncohaematology patients during 2012–13.
Material and methods Retrospective observational study. Data were collected from the PI reporting platform, which comprised both hospitalised and outpatients. Information collected included: demographic data, inpatient or outpatient setting, drug, dosage, reason for PI, type of PI and acceptance. PIs were categorised in 12 groups (dosage adjustment; dosing schedule; drug; administration route; dosage form; frequency; dispensed; initiation and duration of treatment; treatment monitoring; suspension and others) and were associated with 52 different reasons for the intervention.

Drugs involved were classified into chemotherapy (chemo), related or unrelated.

PIs were analysed using Excel. Acceptance data was categorised as accepted or no information available.
Results 3,294 PIs (1,109 patients) were recorded (4.5 PI/day). In-patients accounted for nearly all PIs (95%) and 88% of drugs involved were unrelated to chemo.

The main type of PI reported was others (38.5%). The most common reasons were: incorrect use of electronic prescribing program (21.2%), adapting dosage forms (17.9%), pharmaceutical care/patient information (14%).

Change of dose (24.4%) and schedule adjustment (22.2%) were the most frequent types of PI within chemo-related drugs. Drugs related to higher notification rates were: trastuzumab (4.2%), gemcitabine/carboplatin (2.9%) and paclitaxel/erlotinib (2.0%) among chemo drugs, and antiemetic treatment (38.3%), calcium folinate (6.0%), filgrastim (6.0%) and zoledronic acid (4.9%) within the chemo-related drugs.

PI global acceptance was 51%, but increased to 93% considering only chemo drugs.
Conclusion PIs were mainly recorded in the in-patient setting and focused on non-chemo drugs.

The different acceptance rate between chemo and non-chemo drugs, explained by the lack of recorded acceptances, highlights the need for an improvement in the reporting tool.

The results suggest the need for standardisation of the PI reporting and evaluation process.

REFERENCE

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No conflict of interest.

PS-004 EXTRAVASATION OF TAXANES: DEVELOPMENT OF AN ACTION ALGORITHM FOR QUICK AND EFFECTIVE TREATMENT

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Introduction A potential complication of chemotherapy is vesicant cytotoxic extravasation; for example taxanes may harm patients. Therefore, fast acting and active treatment are essential.
Purpose To develop an algorithm for the management of taxane extravasation. It should include management measures, antidote and treatment.
Methods A literature review was performed of guidelines and articles obtained from PubMed from January/2000 to December/2013, intersecting the terms "cytotoxic extravasation", "chemotherapy extravasation" and "extravasation treatment". The summary of product characteristics of all of intravenous taxanes available in Portugal was also reviewed.
Results The first course of action is to stop the infusion immediately, not remove the cannula, disconnect the infusion, and with a new syringe aspirate as much of the infusate as possible. The medical staff on service is then notified, the extravasation kit is collected and the extravasated drug is identified. Thereafter, the extravasation area is marked and photographed and the cannula is removed. Warm compresses should be applied to the affected area for 20 min, 4 times/daily for 1–3 days, with minimal pressure, and the antidote hyaluronidase 150 IU/mL must be administrated (several subcutaneous injections of 1–6 mL of hyaluronidase into the extravasation area in a clockwise manner). Analgesia should be provided if required. Each incident of extravasation must be thoroughly documented and the follow-up and long term management is central. An algorithm was developed for the management of taxane extravasation that promotes quick and effective treatment.
Conclusions The algorithm developed is a valuable tool for all hospital services that prepare and administer taxanes, contributing to a quick and effective response to episodes of extravasation.

REFERENCES AND/OR ACKNOWLEDGEMENTS

We thank all Portuguese hospital pharmacists who have contributed to this project with valuable opinions and suggestions.

No conflict of interest.

PS-005 IMPROVING MEDICINES SAFETY – IMPLEMENTING A BARCODE SCANNING DISPENSING CHECK IN A LARGE TEACHING HOSPITAL

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Introduction From a literature search, it was found that there was very little data on how scanning the barcode on a medicine affects medicines safety and error rates in a hospital pharmacy setting.

Purpose To reduce medicines dispensing errors by 50% in a large teaching Hospital Pharmacy Department by December 2013 by implementing a final barcode scan step into the dispensing process.

Methods Data was collected from 2009 to 2013 by analysing medicines errors occurring in a hospital setting. It was found that since 2009, 37% of errors had been caused by picking the wrong strength of the correct product and 27% of errors were due to picking the wrong drug from the shelf. The primary solution implemented was the addition of a barcode to the pharmacy dispensing label. The implementation strategy included data collection, implementation and then an evaluation phase to ensure the change was successful through series of "Plan Do Study Act" cycles. A new dispensing process was implemented with existing software which included a new reporting system.

Results After implementing the modified dispensing practice of using the barcode scanner as a tool for final checks, the technicians were able to detect 100% of their own errors. With ongoing monitoring, it was found that 80% of medicines errors in the pharmacy department were detected through the use of barcode scanning as a checking tool. The remaining 20% of errors were due to typing errors on the labels or misreading the directions on the prescription.

Conclusions With ongoing monitoring, we are able to look at which errors are not improving with barcode scanning, which will help identify further projects to ensure patient medicines safety. Future areas being considered are to attach barcodes to medicines manufactured in-house and to use barcode scanning as a tool to reduce picking errors for routine ward stock.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-006 PURE RED CELL APLASIA ASSOCIATED WITH ADALIMUMAB THERAPY

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Background Pure red cell aplasia is a severe, non-regenerative form of anaemia, with selective erythroid aplasia of the bone marrow. Although there are congenital forms, most cases are adquired by toxic, radiation or drugs and 50% are idiopathic.

Purpose Our objective is to describe the probable relationship between the occurrence of pure red cell aplasia and the treatment with adalimumab in a patient diagnosed with Crohn´s disease.

Material and methods 22 years old woman who was admitted to hospital because of probably central origin anaemia secondary to adalimumab administration, over base severe iron deficiency. The variables analysed were: haemoglobin (g/dl), hematocrit (%), erythrocytes ($\times 10^9$/l), leukocytes ($\times 10^9$/l), platelets ($\times 10^9$/l), serum iron (µg/dl), transferrin (mg/dl) and transferrin saturation index (%).

Results The patient started treatment with adalimumab in November 2013 with an induction dose of 160 mg at week 0 and 80 mg at week 2, followed by 40 mg every other week. Baseline haemoglobin, erythrocytes and hematocrit were 11, 1 (norm. 12–15), 4, 18 (4–5) and 33, 8 (37–47), respectively. Concerning to iron study, baseline values of serum iron, transferrin and transferring saturation index were 22,4 (50–70), 217 (200–360) and 8, 13 (16–50), respectively. Platelets and leukocytes were in the normal range. After 5 months of treatment with adalimumab, the patient was admitted to hospital because of severe anaemia (haemoglobin = 4, 1, hematocrit = 14, 1 and erythtocytes = 2, 33), requiring stopping treatment and the administration of intravenous iron, 3 packed red blood cells and subcutaneous erythropoietin 40.000 once a week. After 5 weeks, the patient had haemoglobin values of 10.2 g/dl, showing a partial marrow recovery.

Conclusion There have been rare cases of aplastic anaemia associated with the use of tumour necrosis factor antagonists, so that, although their relationship is unclear, patients with confirmed significant hematologic abnormalities should be considered to discontinue the treatment.

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No conflict of interest.

PS-007 SURVEY ON THE USE OF VIALS AND PENS AS INSULIN DELIVERY DEVICES IN HOSPITALISATION UNITS

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Background Insulin is a high-risk drug not always used properly in hospitals according to the current recommendations.

Purpose To find out what is the usual practice in use and storage of different types of insulin delivery devices (vials-pens) in hospital.

Material and methods Pharmacists surveyed nurses in non-critical wards concerning safety, handling and storage conditions of insulin in a general hospital (420 adult beds).

Results A total of 77 questionnaires were returned. Concerning safety, vials were used for several patients (100%). Pens were generally used in the right way, however some nurses (32.5%) admitted using them occasionally for different patients, taking out doses with a syringe. Dispensing sealed pens from the pharmacy was considered an effective safety measure (92%).

In terms of handling the vials, 83% of nurses used them with safety insulin syringes. Pens were used with conventional, non-safety needles (100%), without purging in 52% of cases and 80% removed the needle from the pen after administration. About how the needle was removed: 39% unscrewed it directly to discard it, 35% covered it first with the outside protector and 14% with the inside one. At discharge 50% delivered an opened pen to the patient; otherwise, the pens were left in the unit's medicines storage area or discarded.

Opened pens and vials were stored in the unit's medicines storage area, mostly in the refrigerator (67% and 57%,

respectively). Lack of specific training was detected when the patient was isolated (no response in 35%). Insulin vials were only identified with the opening date (71.5%). 70% of nurses identified opened pens with the patient identification label and also 12% with the opening date.

Conclusion Nursing staff are generally familiar with the safe handling and storage of insulin delivery devices, although we found a high variability in some of their responses. Publishing recommendations by the Pharmacy Department in this regard would be helpful to reach a greater uniformity in the practice.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Nursing

No conflict of interest.

PS-008 THE EFFECT OF DISEASE-MODIFYING ANTIRHEUMATIC DRUGS ON THE SUSPENSION OF BIOLOGIC AL TREATMENT DUE TO ADVERSE EFFECTS

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Background Anti-TNF drugs (AD)s have been a major advance in the control of chronic rheumatic diseases, however they sometime have important adverse drug effects (ADEs).

Purpose To assess the frequency of AD and disease-modifying antirheumatic drug (DMARD) combinations leading to withdrawal of biological treatment (BT) due to ADEs.

Material and methods Observational study in a tertiary hospital (1,350 beds). Outpatients on BT followed in a rheumatic disease unit were included. We evaluated patients who had been prescribed infliximab, etanercept or adalimumab concomitantly with DMARDs (between November 1999 and March 2013). The primary end point was BT withdrawal due to ADEs.

Results 444 patients out of 531 took DMARDs at the same time as ADs. 52 (11.7%) discontinued treatment due to ADEs as did 10 patients receiving anti-TNF monotherapy (11.5%) (OR = 0.27; $p > 0.05$). 160 patients took leflunomide, 28 of them (17.5%) discontinued AD due to ADEs. This risk of discontinuation was significantly higher than in patients receiving other concomitant DMARDs (OR = 1.984; $p < 0.05$). However, methotrexate seemed to have a protective effect regarding the risk of stopping ADs (OR = 0.567; CI95%: 0.319–1.010; $p > 0.05$). The frequency of AD withdrawal was similar when comparing patients on monotherapy versus polytherapy (anti-TNF and DMARDs) regardless of drug or diagnoses. Only leflunomide showed significantly higher ADEs which led to BT interruption (OR = 1.984; $p < 0.05$). We did not detect a significant increase in ADEs when other DMARDs were used concomitantly with BT. We found less probability of withdrawal for patients treated with anti-TNF in combination with methotrexate (OR = 0.567; IC95% (0.319–1.010); $p > 0.05$). There was an increase in discontinuations with each additional number of concomitant DMARDs up to a maximum of three.

Conclusion Association of anti-TNF with different DMARDs did not modify the risk of BT withdrawal as a consequence of ADEs. As a DMARD was added to any AD, the number of its discontinuations increased. The addition of BT treatment concomitantly with leflunomide significantly increased the risk of anti-TNF discontinuation due to ADEs, while patients taking methotrexate with BT were less likely to develop ADEs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

PS-009 MEDICATION ERROR: FEEDBACK CONCERNING THE DEATH OF A NURSING HOME RESIDENT

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Background During the morning medicines round, an 82-year-old resident received another resident's treatment by mistake. The nurse's aide realised her mistake and warned the charge nurse upon her arrival. The doctor was informed and the appropriate surveillance was implemented. That same evening, following a significant decrease in alertness and low blood pressure, the resident was admitted to intensive care. The following morning, the resident was declared dead. A root cause analysis was performed with the support of the "Regional Platform of Support for the Management of Adverse Events".

Purpose To demonstrate the benefits of a root cause analysis in the management of serious adverse events.

Material and methods The root cause analysis was performed using the Orion method.

This method includes the following steps: i) data collection, ii) chronology of events, iii) identification of gaps, iv) identification of contributing and influencing factors, v) development of action plan, vi) drafting analytical report.

Results The root cause analysis was performed by medical and paramedical professionals as well as management representatives.

Corrective actions were proposed: i) ensure "double-check" patient's identity by writing a drug distribution procedure and training all staff members, ii) raise team awareness by sharing this feedback (posters, scenario analysis), iii) identify drug distribution boxes with a photo ID, iv) expand the workspace, v) improve the working conditions of the agents (new organisation, risk study).

Conclusion As a result of the root cause analysis, corrective actions involving all concerned agents have been implemented.

These actions not only helped to make drug administration safer but also to educate the teams, set up more secured work environments and to develop identity monitoring.

Systematising the practice of root cause analysis is required in nursing homes as part of the continuous improvement of quality and the safety of patient care.

The pharmacist plays an important role in this new risk management.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-010 SCREENING OF ELECTRONICALLY PRESCRIBED CYTOSTATIC DRUG PROTOCOLS FOR MEDICATION ERRORS

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Background The Institute of Oncology in Ljubljana is the leading institution for cancer care in the country and has a busy pharmacy department. The prescription and preparation of cytostatic drugs must be closely monitored, since they are highly toxic and pose a serious health hazard if errors occur in prescriptions for medicines. Pharmacists with knowledge of chemotherapy protocols are thus a key factor in improving the standard of patient care, as they can spot specific errors on chemotherapy prescriptions.
Purpose To analyse the number of pharmacists' interventions over a one year period and evaluate their impact on safety and effectiveness of patient care.
Material and methods A review of all pharmacists' interventions from August 2013 to July 2014 has been carried out. All errors detected were then evaluated by the team of pharmacists and sorted according to their potential to cause harm. Measures to eliminate such mistakes in the future have also been proposed. The interventions were communicated by phone to ensure that the right treatment had been selected and the correct medicines validated in the computer program Cypro.
Results The total number of prescriptions was 22,120 and the pharmacy dispensed 48,442 cytostatic preparations. The errors causing most concern were: wrong treatment protocol selected, different patient selected (two patients with the same or similar name), omitted validation for 1 or more drugs from the treatment protocol and erroneous dose orders due to a variety of input mistakes (wrong weight or height, body surface area and random bias).
Conclusion Medicines errors should not occur when using approved protocols from the computer program (Cypro). Nevertheless, pharmacist supervision is still needed, since medicines prescription errors happen despite the existence of inputted schemes, as was shown in our study. Only experienced pharmacists with expertise in chemotherapy drugs and pharmacology of cytostatic drugs can identify errors, communicate with physicians and validate the correct treatment orders.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-011 IMPROVING THE SYSTEM FOR MONITORING ADVERSE DRUG REACTIONS

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Background This study examined adverse drug reaction (ADR) reports submitted at this hospital for 32 months from December 2011 to July 2014. The proportion of ADR cases reported by doctors and nurses was 8.7%, while that of pharmacists was 91.3%. Nevertheless, the proportions of ADR of injectables and other drugs reported by doctors and nurses were 4.0% and 6.1%, respectively. Thus, their ADR reporting should largely be improved.
Purpose To investigate the perception of ADR reporting by clinical staff, to examine what is done in response, and to seek to improve the monitoring system and invigorate ADR reporting.
Material and methods A survey was distributed to each department and ward. The completed questionnaires were collected from these participants three days later.
Results Of the participants, 36.5% knew about the ADR reporting procedure in the electronic medical record system. However, only 5.3% had actually reported ADRs. Of participating doctors, 66.7% did not report an adverse reaction since they felt it was too complex and were busy. Of participating nurses, 50.0% did not report ADRs since they were not sure of the cause-effect relationship. However, 28.6% of nurses did not report adverse reactions since they were too minor. To prevent ADR recurrence, 75.4% of clinical staff inputted ADR data into the medical record, while only 12.1% of them inserted such data into the ADR system.
Conclusion For periodic and vigorous promotion of ADR reporting, these authors began an all-out promotion which included distributing an official letter and making an ADR presentation at medical conferences. We are improving the system to simplify the reporting process and to effectively manage the reported cases. Additionally, the ADR feedback system is newly reinforced. We hope that such a feedback system may invigorate quality ADR reporting.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-012 MEDICINES RECONCILIATION IN THE INTENSIVE CARE UNIT

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Background Medicines reconciliation is known to minimise medicines errors and reduce morbidity in hospitalised patients. Its role in the Intensive Care Unit (ICU) has not been widely studied.
Purpose To analyse the number, type, and importance of pharmacist contributions in the ICU of a tertiary level hospital.
Material and methods Prospective study conducted in July 2014 to assess the accuracy of in-patient prescription charts. Drug history and medicines reconciliation were undertaken within the first 24 h by a specialist pharmacist. The patient's own medicines, information from relatives or carers and community pharmacy records, were used as sources of information. Discrepancies between the patient's regular medicines and prescribed medicines were conveyed to the medical team. Discrepancies were considered medicines errors when they required further intervention by the responsible doctor.
Results 48 patients were included, percentage of females 39.6%, mean age 62 ± 14.04. Average number of regular medicines per patient: 5.41 ± 3.5. Discrepancies were found in 62.5% of patients, of which 79.9% required pharmacy intervention (the rest of them were obviated due to the patient's clinical condition – mostly inability to swallow). These involved 98 out of 260 drugs prescribed. Of them, the contribution was accepted in 51.3% of cases (40 prescriptions), whereas in the remainder 48.7% of cases, the changes were intentional. According to their pharmacological class, the highest number of contributions was found in anti-hypertensives (9 contributions), followed by statins (6) and diuretics (6). In relation with the type of medicine involved, a total of 33 medicines errors were accountable as omissions, whilst wrong directions were found in 4 cases, and wrong dose occurred in 3 cases.

Conclusion Medicines errors in the ICU have a similar incidence to those in other non-acute clinical settings. This study is in line with previous publications, suggesting that the ICU might benefit from the regular input from a pharmacist, which in turn would result in a reduction of medicines errors.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-013 ERRARE HUMANUM EST, NOT ONLY... A REVIEW OF ERRORS DUE TO COMPUTERISED PHYSICIAN ORDER ENTRY (CPOE)

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Background Prescription computerization is an undeniable step forward in terms of safety. It can significantly reduce the errors associated with handwritten prescriptions. However these new practices are the source of new risks associated with interactions between humans and computers.
Purpose To identify and quantify these risks in our institution.
Material and methods We analysed the pharmaceutical interventions performed in DxCare software over a period of 15 months with the query tool Business Objects. We then ranked the interventions according to error types.
Results Over the study period, 48,551 prescription lines were analysed. 3,139 pharmaceutical interventions were performed (6.5% of prescription lines). Among these interventions, 971 (31%) were identified as related to computerization. The main errors identified were: prescription unit errors (n = 561), wrong administration procedures (n = 147), duplicate prescriptions (n = 143), wrong drug prescribed (n = 37), incomplete doses (n = 31), inappropriate use of software features (n = 29) and lastly, prescribed dose was inappropriate (n = 23). The root causes of these errors can be related to defects in software design, a lack of user training or a reluctance to use computers.
Conclusion Our analysis has highlighted that computer-related errors cannot and should not be overlooked. Optimising software and layout could reduce some of these errors. Other methods would require more in-depth training and a better understanding from the users. Finally, as patient safety is paramount, it is vital to see computerization as a tool for improvement and not as a quick fix.

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No conflict of interest.

PS-014 DRUG-DRUG INTERACTION PATTERNS IN A PORTUGUESE HOSPITAL MEDICINES SERVICE

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Background Concomitant administration of several therapeutic agents has the potential to cause drug–drug interactions. The ability of health professionals to detect drug–drug interactions is still limited; they often go unnoticed by the physician when prescribing and by the pharmacist when validating.
Purpose To retrospectively evaluate potential drug–drug interactions that occurred between January 1st and June 30th of 2013 in a hospital medicines service.
Material and methods In the initial phase, the history of each patient's drug treatment was obtained, using the computer system of Cova da Beira Hospital Centre. All medicines administered were then analysed and potential drug-drug interactions were identified using the Micromedex Drug Information 2.0.
Results This study showed that of 300 patient pharmacotherapeutic profiles analysed, 207 (69.0%) were identified as having at least one potential drug–drug interaction in the prescribed treatment. In total, 784 interactions were identified, of which 8 (1.0%) were classified as contraindicated interactions, 350 (44.6%) as major interactions and 426 (54.3%) as moderate interactions. The 10 most common drug-drug interactions identified by Micromedex represented 30.9% (242/784) of interactions. Enoxaparin was the drug most frequently involved in clinically significant interactions (72 cases), followed by amiodarone (55 cases) and warfarin (49 cases).
Conclusion The occurrence of drug interactions was relatively high and clinically significant interactions occurred in a considerable proportion of hospitalised patients. This study may contribute to the rapid and efficient detection of clinically significant interactions through the implementation of computerised alerts targeting the interactions identified in the present study and visible during the medical prescription and pharmaceutical validation.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

PS-015 PHARMACEUTICAL INTERVENTIONS (PIs) IN ELECTRONIC PRESCRIPTIONS

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Background PIs add quality and safety to the drug treatment process, through records and their subsequent assessment.
Purpose To analyse the PIs made during the process of validating e-prescriptions at a regional hospital.
Material and methods A prospective, observational study of PIs made between August 2011 and August 2014 during the process of validating e-prescriptions by a software application (Silicon), in line with the adaption to Spain of the medication errors classification system of the National Coordinating Council for Medication Error Reporting and Prevention. The sections analysed were: wrong medicine, dose omission, incorrect dose, length of treatment, inadequate monitoring and other errors that included therapeutic duplication and exchange, the frequency, speed, route and technique of administration, preparation/handling and/or conditioning, and pharmaceutical method.

Results 413 PIs were recorded: 16.5% medicines errors (22% inappropriate/wrong drug for treatment intended), 8.8% dose omission (80% without a prescription stating the medicine required), 26.3% incorrect dose (59.6% dose higher than stipulated), 3.9% length of treatment (69% longer than necessary), 21% inadequate monitoring (94.1% no clinical review) and 24% other errors (30% frequency of administrative error). 52.8% of the PIs were for women. Average age: 65.8. Service areas: 38% internal medicine, 14.5% orthopaedic, 12% general surgery, 10.7% infectious diseases, 7.4% respiratory, 5.5% digestion, other areas with fewer occurrences. Medicines: n = 107 home treatment, n = 19 acenocoumarol, n = 11 serum therapy, n = 13 omeprazole, n = 8 amoxicillin/clavulanic and digoxin, n = 7 furosemide, n = 6 amlodipine and n = 5 metamizole and amphotericin B liposomal.
Conclusion The results show that home treatment accounted for most PIs, which has led to the development of a medicines reconciliation project. Acenocoumarol (high risk drug according to the Institute for Safe Medication Practices) was the drug that generated most PIs, and incorrect dose was the most frequent error. The PI analysis quantified and provided information on the medicines that required intervention, in order to minimise drug-related administration errors.

REFERENCE

1 http://www.nccmerp.org/medErrorTaxonomy.html

No conflict of interest.

PS-016 DEVELOPING TOOLS FOR ELECTRONIC PRESCRIBING PROGRAM IMPROVEMENT

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Background Medication systems related to clinical decision support, when implemented in an electronic prescribing program, have the potential to reduce adverse drug reactions.
Purpose To increase safety in the prescription and administration of drugs through the introduction of new warning systems, such as of interactions, maximum doses and a guide to the parenteral administration of drugs, in an electronic prescribing programme (SILICON).
Material and methods 1. The most relevant interactions between the active pharmaceutical ingredients included in the pharmacotherapy guidelines (TFG) were chosen. 2. A search for the maximum dose of the active ingredients present in the parenteral administration TFG was performed. 3. The necessary information was collected in order to create a link between the proper administration and maintenance of the active pharmaceutical ingredients administered parenterally.
Results A total of 70 interaction pairs, corresponding to 16 different active pharmaceutical ingredients, were selected and introduced in SILICON. 100% of the selected interactions were accompanied by a pharmacotherapeutic recommendation.

From a total of 295 active ingredients, 140 maximum doses were considered useful for prescription and validation, and were included in SILICON. In order not to create confusion when prescribing, 28 (9%) files of active ingredients were duplicated in the program to differentiate oral and parenteral maximum doses.

Finally, for the parenteral administration guide, 224 (76%) of active ingredients were selected. Moreover a direct link from the prescription screen to the administration guide was created. All active substances excluded from the guide, have an administration protocol to follow.

All information entered in the prescription program was included on the pharmacy service website.
Conclusion The insertion of maximum dose alerts and interactions, and a link to the updated parenteral drugs administration guide, into an electronic administration program, provides a safety tool. In this way, we contribute towards reducing medication errors.

REFERENCE

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No conflict of interest.

PS-017 USING TREATMENT PROTOCOLS IN THE VERIFICATION OF ORAL ANTICANCER DRUG PRESCRIPTIONS

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Background A lack of information at the time of dispensing has been identified as a barrier to the safe provision of Oral Anticancer Medicines (OAMs) by pharmacists. Access to cancer treatment protocols at the time of pharmacist dispensing is advocated by numerous professional bodies to ensure the safe supply of OAMs.[1,2]
Purpose To compare the number of OAM prescriptions that could be verified and safely dispensed with and without access to the treatment protocol, and to assess the use of these protocols by pharmacists.
Material and methods One hundred OAM prescriptions were retrospectively reviewed to assess OAM verification with and without the treatment protocol. An electronic questionnaire was also distributed to 493 pharmacists. This questionnaire asked respondents to verify an OAM prescription with and without access to the treatment protocol and to comment on their experience and opinions.
Results When using standard reference sources, the pharmacists had sufficient information to verify 7% (n = 7) of OAM prescriptions reviewed. Having access to the treatment protocol increased the number of prescriptions that could be verified to 16% (n = 16) (p = <0.01). Lack of access to body surface area and failure to communicate deliberate deviations from standard doses prevented the verification of most OAM prescriptions (n = 84). The response rate to the questionnaire was 6.4% (n = 32). Pharmacists reported that the protocols were a valuable source of information and reported they would like access to them in the future.
Conclusion Facilitating access to the treatment protocol at the time of dispensing of OAM increases the number of prescriptions that can be verified and safely dispensed. However, implementing this measure alone is insufficient to address the safety concerns associated with the dispensing of OAM prescriptions by non-specialist pharmacists.

REFERENCES

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2 British Oncology Pharmacists Association (BOPA). Standards for the verification of prescriptions for cancer medicines. 2013

No conflict of interest.

PS-018 UNDER-DOSING OF ONCOLOGY PATIENTS DUE TO THE OVERFILLING WITH DILUENT OF CYTOSTATIC DRUG SOLUTIONS

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Background The solution for infusion bags prepared by the pharmacy contains an unknown and variable volume of solution in order to keep a minimum volume.
Purpose To determine the potential under-dosing of oncology patients related to the loss of cytostatic drugs in the remaining volume of the solution for infusion bags.
Material and methods Prospective observational study. We randomly assessed 50 cytostatics mixtures prepared by the Pharmacy Service.

Studied variables: total dose of cytostatic drug prescribed, total volume of the mixture and the volume remaining after the intravenous administration. The remaining volume was indicated by the infusion pump. The total volume was obtained from the cytostatics compounding program (Farmatools).

As we found from the literature, it is acceptable that up to 5% of the total dose prescribed by the oncologist may be lost in the process of IV administration.
Results Overfilling was detected in all 50 solutions (100%). In 10 cases (20%), the volume of the solution remaining after administration contained a cytostatic dose less than 5% of the total dose. In 40 cases (80%) the remaining dose was higher than 5%. In 16 of these 40 cases (40%), the non-infused dose was higher than 10% of the total dose (32% of the total of mixtures) and in 6 cases (15% of these 40 cases) was higher than 20% of the dose prescribed (10% of all the preparations).
Conclusion The solutions for infusion bags contain more fluid than that specified on the commercial label. If this is not corrected for, the total volume of the mixture will be greater than that shown on the label issued by the Pharmacy Service. The measure adopted is to program an additional volume in the infusion pump, while maintaining the speed shown on the label, so that the entire mixture is administered to the patient.

REFERENCES AND/OR ACKNOWLEDGEMENTS

L. Santos

No conflict of interest.

PS-019 RESULTS OF PHARMACEUTICAL INTERVENTIONS IN ELECTRONIC PRESCRIBING

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Background The pharmaceutical validation procedure itself reduces a large number of medicines errors. The Electronic Prescribing System (EPS) is a computerised physician order entry and clinical decision support system. Its advantages are the opportunity to standardise clinical practice and avoid the transcription of prescriptions.
Purpose We identified pharmaceutical interventions (PIs with the objective of improving the safety of medical care and for their influence in clinical practice.
Material and methods We identified PIs for 6 months after the implementation of the EPS. PIs were classified into 2 groups: firstly wrong use of the tool and secondly to conduct pharmacotherapeutic monitoring (FTM). The pharmacist, via an internal messaging system, wrote recommendations to the prescriber before the dispensing and administration of medicines. Subsequently we quantified the PIs for the next 6 months in order to assess whether these interventions contributed to an improvement in prescribing.
Results The hospital ward has an average of 32 patients with 275 prescriptions per day. During the first part of the study there were 588 PIs of which 279 (47%) were due to wrong use of the EPS. In the second part there were 431 PIs (26.7% fewer than in the previous period), 39% (39.42% fewer than previously) were due to the use of the program. The main errors in the use of the program were prescribing "if it is needed", the shortening of the duration of treatment, choice of frequencies, prescription of insulin, etc. FTM errors (52.5% during the first part and 60.98% in the second) were related to inadequate following of the Hospital Formulary, recommendations for alternative medicines, avoiding duplication, choice of pharmaceutical form, dose in the elderly, wrong frequency, route or dose, etc.
Conclusion Pharmaceutical validation can substantially increase the safety of the drug treatment process. PIs contribute to improving physicians' performance in the use of EPS and to reducing medicines errors.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-020 THE COST-EFFECTIVENESS OF SCREENING FOR DIHYDROPYRIMIDINE DEHYDROGENASE POLYMORPHISMS IN CANCER PATIENTS TREATED WITH FLUOROPYRIMIDINES

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Background Fluoropyrimidines are widely used in the treatment of several tumours such as colorectal and breast cancers. The toxicity caused by these drugs has been clearly associated with genomic variants in the dihydropyrimidine dehydrogenase (DPYD) gene.
Purpose To compare the cost of the screening for DPYD*2A and 2846 A >T mutations with the cost of treating fluoropyrimidine-induced severe neutropenia.
Material and methods The average cost of treating severe neutropenia (grade ≥ 3) in 10 cancer patients treated with 5-FU or capecitabine was calculated. Medical records were reviewed to calculate the health care resources used as the result of the adverse event (blood tests, secondary treatment and hospitalisation). A literature review was conducted to estimate the

frequency of DPYD*2A or 2846A >T genetic variants and the proportion of patients with these variants developing adverse reactions grade 3–4.

Results The frequency of DPYD*2A in Caucasians was 0.9%, while DPYD 2846A >T occurs in 1.5%. A literature review showed that 682% of DPYD*2A and 74.3% of DPYD 2846A >T carriers would develop an adverse event grade ≥ 3 during treatment with fluoropyrimidines (approximately 17 out of 1,000 patients). The average cost of genotyping 1,000 patients for these two polymorphisms in our centre would be €10,000 and the cost of treating an episode of severe fluoropyrimidine-induced neutropenia in 17 patients was €32,300. As a result, €22,300 would be saved for 1,000 patients treated.

Conclusion Avoiding the costs of treating severe adverse reactions due to fluoropyrimidines may justify the costs of DPYD testing. Treatment with fluoropyrimidines guided by DPYD genetic testing could offer a more efficient health outcome versus empirical treatment. Further studies should be carried out to verify our findings.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-021 POTENTIALLY INAPPROPRIATE MEDICINES FOR THE ELDERLY IN THIRD LEVEL HOSPITAL DISCHARGES

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Background Medicines for which the risk of adverse drug events (ADE) exceeds their expected clinical benefit when they are given to elderly persons, and which can be replaced by better-tolerated alternatives, are called potentially inappropriate medicines (PIMs).

The prevalence of PIMs might be considered as a quality indicator of prescribing practice in the elderly.

Purpose To study the prevalence of three PIMs for elderly patients in third level hospital discharges.

Material and methods Data were obtained from the pharmacy claims database between 1st January 2013 and 31st December 2013.

Patients over 64 years old who had had at least one of the following PIMs dispensed in the community pharmacy during 2013 were included:

- fluoxetine (selective serotonin reuptake inhibitor (SSRI)) because of the risk of hyponatremia and central nervous side effects (nausea, insomnia, dizziness, confusion),
- glibenclamide (sulfonylurea) because of its high risk of hypoglycaemia,
- metoclopramide (prokinetic) because of its extrapyramidal side effects.

The proportion of users of these PIMs was calculated and broken down by gender and age.

Results The percentage of elderly patients who were dispensed one of the selected PIMs for the three drug classes is shown in Table 1.

Conclusion The percentage of PIMs in elderly patients is still considerable at discharge, at least for the three drugs considered. Stronger efforts should be made in medicines reviews at hospital discharge in order to minimise PIMs.

Abstract PS-021 Table 1

Potentially inappropriate drug	Drug Class	Percentage of patients	Gender	Mean age
Fluoxetine	Selective serotonin reuptake inhibitor	7/4% (26/350)	69,2% female 30,8% male	77.6 years
Glibenclamide	Sulfonylurea	26.5% (26/98)	46.2% female 53.8% male	78.5 years
Metoclopramide	Prokinetic	78.4% (182/232)	59.3% female 40.7% male	77.3 years

REFERENCE

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No conflict of interest.

PS-022 POLYPHARMACY AND DRUG-DRUG INTERACTIONS IN ADULTS WITH HUMAN IMMUNODEFICIENCY VIRUS INFECTION

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Background Studies demonstrate that human immunodeficiency virus (HIV) patients may be at greater risk of age-related comorbidities, polypharmacy and medicines-related problems, such as drug-drug interactions (DDIs).

Purpose To describe the characteristics of polypharmacy and DDIs in HIV patients.

Material and methods We performed an observational-retrospective study of the pharmacotherapeutic profile (all drugs) and clinical record (demographic and clinical data) of adult HIV patients on stable antiretroviral treatment (ART, at least 6 months) in a general teaching hospital. We defined polypharmacy as the use ≥5 drugs. To define the impact of DDIs we used the Lexi-Interact drug-interaction database; interactions categorised as D (consider treatment modification) or X (avoid combination) were analysed and further stratified into one of the following groups: Type 1 = ART + non-ART; Type 2 = two non-ARTs; Type 3 = two ARTs. One-way ANOVA was performed to compare interactions by group.

Results We evaluated 100 patients (female, 28; median age, 48 years; HCV co-infected, 43; HBV co-infected, 2; HCV&HBV co-infected, 7; adherence <95%, 9). There were 54 patients with polypharmacy (mean 7.5 ± 2.6 drugs/patient). ART profile was based on triple therapy with non-nucleosides (NN) in 65 patients, protease inhibitors (PIs) in 18, integrase inhibitor (II) 8 and other combinations in 9. Non-ART drugs most prescribed were statins (38 patients), benzodiazepines (at least one in 26 patients) and proton pump inhibitors (24 patients). We identified 123 DDIs in 43 patients, 83 (67.5%) classified as Category D or X (59 different drug pairs, Type 1: 2.17 DDIs/patient; Type 2: 0.62 DDIs/patient; Type 3: 0.07 DDIs/patient; $p < 0.001$). The ART drugs involved in DDIs were mainly PIs (34 pairs 57.6%) and non-ART drugs, mainly statins (9 pairs 15.2%).

Conclusion There is a medium-high level of polypharmacy and DDIs in our patients. Type 1 DDIs are significantly higher than the others, therefore greater attention to non-ART prescriptions is needed to ensure the safest drugs use in HIV patients.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-023 TYPES, CAUSES AND POTENTIAL SERIOUSNESS OF MEDICINES ERRORS INTERCEPTED BY MEDICINES RECONCILIATION IN A GENERAL HOSPITAL

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Background As part of the WHO's High 5s project, the Standard Operating Protocol "Medicines Reconciliation" has been used in our hospital centre since 2010. Medicines reconciliation at the time of admission detects medicines errors (ME), called unintended discrepancies (UDs). These MEs are particularly worthy of attention because they are not detected by the computerised physician order entry system (CPOES).
Purpose To analyse the type and the potential seriousness of MEs, to identify the cause of the loss of information and to determine the ATC groups of the drugs most involved.
Material and methods Prospective observational and interventional study.

From July to September 2014

In patients older than 65 years of age hospitalised in short stay units after admission through the Emergency Department:

- Within 48 h of admission, patients' regularly used medicines are compared with computerised prescriptions at admission.
- Every UD identified is corrected at reconciliation, and recorded in an Excel file.

Results 191 lines of UDs were identified among 532 reconciled patients (30% from eligible patients):

- Type of ME: omission (70%), incorrect dose (20%)
- Potential seriousness: minor (32%), significant (48%), major+ (20%)
- Identified cause: inattention (60%), regular prescriptions non-available (26%), resumption of an old prescription (7%)
- Most involved ATC groups: C (35%) particularly subgroups C09 (30%) and C10 (30%).

Conclusion Most MEs are omissions, and information is most frequently lost due to inattention; this is easily corrected by reconciliation. Almost half of MEs might have significant consequences for patients if not rectified. Concerning errors in the C09 subgroup, we must improve the equivalence database of our CPOES.

Working within a multidisciplinary team in hospitalisation units, the pharmacist contributes to increasing patient safety. Medicines reconciliation is a time-consuming activity; to keep it steady in our hospital after the end of the WHO project and to be exhaustive, we have to identify which patients are the most important to reconcile.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-024 PREFILLED PRESCRIPTIONS: IS MORE SUPERVISION NEEDED FOR SAFETY REASONS? THE CASE OF RITUXIMAB

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Background The indicatons for rituximab in haematology are classified into 3 categories: group 1: indications for which the medicine was initially marketed (MA), group 2: additional recommendations for temporary use (RTU), and group 3: indications that are not authorised or are lacking sufficient documentation for authorisation by the French Medicines Agency (ANSM), but for which the medicine can be used based on the literature and recommendations. We have a prescription form in which all of the drug's indications authorised by the ANSM (group 1 and 2) are already written and classified, to encourage safe use of medicines.
Purpose To check if rituximab prescriptions for these indications reflect the actual use of the drug.
Material and methods For each prescription of rituximab from January to April 2014, we compared the indication on the prescription to the one in the patient's files (multidisciplinary meetings reports and discharge letters). Every indication was classified by group and we analysed the divergence.
Results In our cohort of 52 patients, 80.8% were in prescription group 1, 3.8% in prescription group 2, and 15.4% in prescription group 3. We calculated a 25% divergence between the prescribed indication and the actual one. 16.66% of prescription group 1 and 100% of prescription group 2 indications were in reality group 3 indications. 52.94% of real group 3 prescriptions were not declared as such.
Conclusion This study might question the safety of prefilled prescriptions because doctors might supply incomplete information and pharmacists might therefore approve dispensing of this medicine for incorrect indications. In order to improve safety, we suggest a new kind of prescription form in which all of the medicine's indications are written without being classified and with more blank spaces to allow the doctor to give additional information about the chemotherapy, the state of the cancer and the number of relapses.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

PS-025 QUALITY METRICS FOR HYGIENE MONITORING

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Background Aseptic production is performed by approximately 100 operators. According to the Quality Management System, sampling is performed daily on all operators, both hands. The acceptance criteria established is, that on the total of two gloves; one viable microorganism is accepted.

Over some years, numerous out of specification results were observed. As the amount of data is very large (two samples from each of approx. 100 operators, every day), and as the data is structured inefficiently, it is very difficult to evaluate whether there are trends in the data and also difficult to keep the individual operator informed about her own results.
Purpose To develop an easily accessible quality indicator that can generate an overview of the hygiene data and help the operator to recognise his/her own performance so as to improve working procedures and thereby reduce the number of out of specification results.

Material and methods For three selected departments, the 2014 data were evaluated and suitable quality metrics developed. Applying these quality metrics, data were presented graphically, in order for the individual operator to be informed and aware of the results from her own glove fingerprints. Employees from Quality Assurance and Microbiology inspected the aseptic working routines, made observations and gave feedback. Once a month data are updated and the operators informed of their own results.
Results Before, results could not be measured and individual persons were unaware of their own results, After the quality metric was developed, each employee is currently informed in a manageable form, and the number of out of specifications on bacterial contaminations of gloves fingerprints has reduced.
Conclusion Using a quality metric that allows graphical presentation of data on a personal level, it was possible to make the individual employee aware of personal hygiene data and thereby to reduce the number of out of specifications to the benefit of the aseptic procedure and thereby to the safety of the patient.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-026 PERIPHERAL INFUSIONS IN NEONATAL AND PAEDIATRIC INTENSIVE CARE: EXTRAVASATION RATE AND RISK FACTORS

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Background Intravenous infusions of highly concentrated drugs and hyperosmolar parenteral nutrition are frequent in our neonatology (NEONAT) and paediatric intensive care (ICU) units, by central or peripheral venous catheters (PVCs). Extravasation may have severe consequences (necrosis, skin graft).
Purpose To determine the extravasation rate of peripheral infusions in two care units (NEONAT/ICU) and associated risk factors.
Material and methods Retrospective study (Jan–Dec 2013, electronic patient data) of all patients hospitalised in NEONAT or ICU and with at least one PVC.

Global PVC (location, duration *in situ* (days), patient's age (days) at PVC removal) and patient analyses (sex, age at admission (year), gestational age (GA, week)). 'Extravasation group' if PVC was removed or insertion site documented as 'diffusion' and if the patient had at least one extravasated PVC.

Comparison of 'extravasation' and 'no extravasation' groups (median value [IQR25–75]) and multivariate subgroup (NEONAT/ICU) analysis of associated factors.
Results A total of 1,300 PVCs in 695 patients were analysed. An extravasation rate of 11.7% (152/1,300) of PVCs and 17.6% (122/695) of patients was determined. In NEONAT and ICU, a rate of 28.3% (51/180) PVCs and 30.1% (44/146) patients, and 9.1% (101/1,115) PVCs and 14.3% (78/547) patients respectively was observed. In the extravasation group, the PVC remained *in situ* for longer (1.8d [1.0; 3.1] vs. 1.5d [0.8; 2.7], p = 0.01) and age at PVC removal (131.8d [1.2; 966.3] vs. 984.4d [154.2; 5,146.0], p < 0.0001), age at admission (0.3y [0.0; 2.5] vs. 1.7y [0.1; 9.2], p < 0.0001) and GA (33.4 w [32.0; 37.0] vs. 36.3 w [33.6; 39.4], p = 0.002)) were lower. No differences were observed in terms of sex or location. In subgroup analysis, low GA (NEONAT < 32 week), low age at PVC removal (NEONAT/ICU) and *in situ* duration >3 days (ICU) were independent risk factors.
Conclusion We observed a global extravasation rate of 11.7% (PVC) and 17.6% (patients). Prematurity (NEONAT), low age and PVC remaining *in situ* >3 days were associated risk factors. Implementation of PVC management guidelines and of an assessment scale are planned in the next future.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-027 POTENTIALLY INAPPROPIATE PRESCRIPTIONS ACCORDING TO BEERS AND STOPP CRITERIA IN THE UNIVERSITY HOSPITAL OF FERRARA

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Background Inappropriate drug prescriptions or prescriptions outside the therapeutic indications can frequently be the cause of adverse reactions to drugs, which can potentially be avoided. Despite there being a consensus on the definition of inappropriate medicines prescription, it is often difficult to identify and measure inappropriate prescriptions.
Purpose To evaluate the frequency and occurrence of inappropriate drug prescriptions in elderly patients hospitalised in our healthcare setting by using two criteria: Beers and STOPP.
Material and methods The discharge prescriptions coming from the internal and geriatric medicine wards of the Ferrara hospital. We selected the prescriptions for all patients over the age of 70 from July 1st 2013 to June 30th 2014 considering: age, sex, length of hospitalisation, prescribing ward, prescribed drugs and the patient's pathologies. The main outcome measures were: prevalence of inappropriate prescriptions following the Beers and STOPP criteria, and the drugs that are frequently inappropriately prescribed.
Results Our study involved 950 patients (average age 75). Following the Beers criteria, 37% (28–42%) of patients had received at least one inappropriate prescription. This percentage rose to 45% (38–49%) by following the STOPP criteria.

According to the Beers criteria our analyses observed that 20% of inappropriately prescribed drugs were beta blockers, 25% were NSAIDs, 18% were benzodiazepines. On the other hand, by following the STOPP criteria we observed that aspirin accounted for 45% of inappropriately prescribed drugs, NSAIDs for 22%. The highest frequency of inappropriate prescriptions was detected from the geriatric ward.
Conclusion From the analyses performed we have observed that in our hospital in the medical wards there is a high frequency of inappropriate prescriptions. It could be possible to reduce inappropriate drugs by about 80% by acting on the four main categories of drugs that are more often inappropriately prescribed.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-028 SUCCESSFUL PREGNANCY OUTCOME WITH INTERFERON-ALPHA IN HAEMATOLOGICAL PATIENTS

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Background Pegylated Interferon-alpha-2b (pegIFN$_{\alpha 2b}$) is an effective agent for the treatment of haematological malignancies. As it does not inhibit DNA synthesis, this agent may be safe for use during pregnancy.
Purpose To describe 2 cases of successful pregnancies in patients with haematological disorders treated with pegIFN$_{\alpha 2b}$.
Material and methods Medical record review and literature search.
Results Patient 1: 30-year-old woman diagnosed with polycythaemia vera at age 13, well-controlled with hydroxyurea. Chemotherapy was interrupted due to the patient's desire for a second pregnancy and treatment with pegIFN$_{\alpha 2b}$ 50mcg/week subcutaneously was initiated. (During the first pregnancy she received non-pegylated-IFN$_{\alpha 2b}$ with good progression but low tolerance due to influenza-like symptoms). 5 months later, she became pregnant, but was hospitalised due to headaches which caused a dose reduction to 30 mcg/week of pegIFN$_{\alpha 2b}$. Finally, the patient delivered a healthy male infant. 15 days later, pegIFN$_{\alpha 2b}$ treatment was interrupted to recommence the usual treatment with hydroxyurea.

Patient 2: 27-year-old woman with Philadelphia chromosome-positive chronic myeloid leukaemia diagnosed at age 22, well-controlled with imatinib. The patient interrupted antineoplastic treatment due to her desire to conceive a child and subcutaneous treatment with pegIFN$_{\alpha 2b}$ at 50 mcg/week was initiated. She became pregnant after 4 months and pegIFN$_{\alpha 2b}$ dose was increased to 80 mcg/week and developed hypothyroidism which was treated with levothyroxine. Finally, the patient delivered a healthy male infant and 1 month later, she discontinued pegIFN$_{\alpha 2b}$ and levothyroxine treatment to recommence her usual treatment with imatinib.

Both were normal full-term deliveries. Infant growth and development have been normal to date (follow-up time of 2 and 3 years). Blood tests were normal during pregnancies. Only mild anaemia and slight neutrophilia were detected in the first patient, but did not require treatment interruption.
Conclusion PegIFN$_{\alpha 2b}$ was well tolerated, safe and effective, and caused no complications during the pregnancies. Since chemotherapy agents involve teratogenic effects, pegIFN$_{\alpha 2b}$ might be a safe treatment option during pregnancy, although further teratogenic studies are necessary.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-029 IMPACT OF HAEMATOLOGICAL ADVERSE EVENTS OF TRIPLE THERAPY IN PATIENTS WITH HEPATITIS C

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Background Protease inhibitor treatment (PIT) represents an important advance for patients with hepatitis C. However, PIT may produce haematological adverse events (HAE).
Purpose To analyse the impact of HAE in hepatitis C patients who have been treated with PIT.
Material and methods Retrospective observational study (December 2012–August 2014) of patients with PIT who suffered HAE requiring supportive treatment in a general hospital.

Data collected:

- Medical record review: weight, treatment (drug, dose, length of treatment) and HAE.
- Outpatients database: cost of real (including supportive treatment) and theoretical (without HAE) treatment per patient.

Results 12 patients (7 with telaprevir, 5 with boceprevir) began PIT. 6 (3 male and 3 female) median age 53.3 ± 3.2 years suffered from HAE, requiring supportive treatment (4 patients with weight ≥75 kg).

Telaprevir patients:

- 2 patients presented neutropenia between 8th and 12th week. The pegylated-interferon-?2a dose was reduced and they were treated with filgrastim 48 MIU until 36th and 43th week, respectively, when they stopped their treatment due to other adverse events (AE).
- 2 patients (1 co-infected with HIV) suffered anaemia from 6th and 8th week. Their ribavirin dose was reduced. One patient was given epoetin-alfa 40,000 IU until 7th week when he stopped treatment due to other AEs. The HIV-co-infected patient began darbepoetin-alfa 50–100 mcg (treatment finished after 48 weeks). Both needed blood transfusions (this cost was not evaluated).

Boceprevir patients:

- 1 patient stopped PIT at 7th week for severe neutropenia, having reduced pegylated-interferon-a2b dose previously. Afterwards, one dose of filgrastim 30 MIU was necessary.
- 1 patient reduced pegylated-interferon-?2a dose for severe thrombocytopenia in the 8th week. Later, he was given eltrombopag 25 mg until the end of PIT (48 weeks).

The real cost was €179,439.9 and theoretical cost €169,674.9.
Conclusion 50% of patients with treatment with IP needed supportive treatment to manage HAE. The real cost was higher than the theoretical cost (6.8%), but they could continue their PIT, although 4 patients had to finish it later because of other side effects.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-030 RISK OF ANTICHOLINERGIC EFFECTS ESTIMATED IN POLYPATHOLOGICAL PATIENTS. THE IMPACT PROJECT

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Background Drugs with anticholinergic and sedative effects carry significant risks in older people. An increased incidence of falls, impaired physical function and cognitive decline has been attributed to the use of these drugs.
Purpose To estimate the Risk of Anticholinergic Effects (RAE) in patients with several conditions based on their pharmacotherapy.

Material and methods Cross-sectional study of RAE in a cohort of patients included in the IMPACT project (October 2010–April 2012).

Anticholinergic exposure was calculated using the Anticholinergic Risk Scale (ARS) and Anticholinergic Cognitive Burden (ACB). These are reliable lists of drugs with a measure for the anticholinergic load. Higher scores are associated with increased RAE.

The age, sex and pharmacotherapy were collected for each patient. The RAE measured was defined as patients treated with at least one anticholinergic drug according to the ARS and ACB scales.

Results Eighty patients were analysed. The mean age was 78.2 ± 8.2 years, 55.0% were men and the mean number of medicines was 12.9 ± 3.5.

The ACB identified 68 patients (85% of individuals) as exposed to a medicine with anticholinergic potency: 47 patients (58.7%) with ACB level of 1, 13 (16.2%) with level 2 and 8 (10.0%) with level ≥3.

The ARS identified 15 patients (18.7%): 11/15 patients with ARS level of 1 and 4/15 with level 2.

The most common medicines was furosemide (77.5%) with ACB level of 1, digoxin (6.25%) with ACB level of 1, metoclopramide (5%) with ARS level of 1, risperidone (5%) with a level of 1 on both scales, atenolol (3.75%) with ACB level of 1 and paroxetine (3.75%) with ACB level of 3 ACB and ARS level of 1.

Conclusion A high proportion of polymedicated patients are at risk of anticholinergic adverse events due to treatment. Detection of patients with RAE can be an important strategy for optimising drug treatment in these patients.

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No conflict of interest.

PS-031 EFFECTIVENESS AND SAFETY OF ANTIHYPERTENSIVE DRUGS IN ELDERLY PATIENTS

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Background Older hypertensive patients should attempt lifestyle modification to lower the blood pressure. If the blood pressure goal is not attained with lifestyle modification, antihypertensive treatment should be initiated.

Purpose To evaluate the effectiveness and safety of antihypertensive drugs in institutionalised older hypertensive patients.

Material and methods Retrospective descriptive study including all older patients treated with antihypertensive treatment who lived in a public elderly residence. Follow-up was three months (February–May 2014).

Parameters analysed were: systolic (SBP) and diastolic (DBP) blood pressure, kind of hypertension, cardiovascular risk factors (CVRF), vascular and/or organ injury and safety.

The collected data were obtained from Savac (prescription and validation program) and clinical records.

Results A total of 141 residents included 74 hypertensive patients (52.48%). The mean value of SBP was 122.6 mmHg (160–80) and DBP was 65.37 mmHg (89–49). Most patients had primary hypertension.

32.4% of patients had two CVRF, 44.6% had three, 20.3% had four and 2.7% had five. The most important CVRF (excluding age and inactivity) was dyslipidaemia. Cardiovascular risk was stratified in medium (13.5%), high (14.8%) and very high (71.7%). Clinical lesions were diagnosed in 73% of patients.

44.6% of patients were treated with only one antihypertensive but 21.6% and 6.7% were treated with four and five antihypertensive drugs. According to ESH/ESC Guidelines,[1] the prescriptions were adjusted in left ventricular hypertrophy, renal failure and diabetes mellitus (88.89%, 76.92% and 63.64% respectively). The effectiveness was 84.85% with one antihypertensive, 70% with two, 68.8% with three and 40% with four.

The adverse effects were: 31 orthostatic hypotension, 8 dizziness and 8 hyperkalaemia.

The pharmaceutical interventions were conducted by two pharmacists and all accepted.

Conclusion The antihypertensive treatment in the elderly was effective and clinical trials have consistently demonstrated benefit.[1,2] However, the orthostatic hypotension was higher than in other studies (41.8% vs. 20%).[1,3]

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No conflict of interest.

PS-032 PHARMACEUTICAL VALIDATION AS SAFETY ASSURANCE FOR THE MANAGEMENT OF CYTOSTATICS

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Background The addition of a pharmacist during the validation, preparation and administration of cytostatics ensures the detection and resolution of drug-related problems.

Purpose To quantify and analyse the pharmacist's contribution during the validation process, to ensure safety during all the stages of use of cytostatic drugs.

Material and methods A prospective observational study of 4 months. All pharmacist interventions (PIs) related to medication errors (MEs) were recorded, from the prescription to the administration of chemotherapy. All prescriptions associated with chemotherapy, biological treatments and supportive care drugs were considered. The MEs and their severity were classified according to the Updated Classification of Medication Errors, by the Ruiz-Jarabo group 2000. The variables recorded were: potential gravity, if it reached the patient, drugs involved and medical policy.

Results During the study period 38 PIs were recorded (24 drugs involved). PIs were made more often during the prescription process (86.8%), followed by administration (7.9%) and preparation (5.3%). Of these, in 81.6% of cases a cytostatic and/or biological agent was involved, and 18.4% involved a supportive care drug. The severity of PIs was: 18.4% minor, 31.6% moderate, 42.1% severe and 7.9% very severe. They reached the

patient in 10.5% of cases. The drugs involved more often were carboplatin (33.3%), aprepitant (20.8%), paclitaxel (16.67%), azacitidine (12.5%), irinotecan, oxaliplatin and vincristine (5.3% each). The main MEs were: omission of medicine needed (26.3%), dose higher than needed (15.8%), omission in transcription (13.2%), dose lower than needed (10.5%), administration error (7.9%) and preparation error (5.3%).
Conclusion The pharmacist's contribution prevented 89.5% of MEs from reaching the patient. These results reveal the importance of incorporating the pharmacist as an essential part of a multidisciplinary team to contribute to the safety of patients. The pharmacist should have a more active role in the areas of medicines preparation and administration; an appropriate ratio of pharmacists vs. number of validated patients is needed.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Ruiz-Jarabo 2000.

No conflict of interest.

PS-033 PREVENTING MEDICINES ERRORS BY MEDICINES RECONCILIATION AT ADMISSION AND DISCHARGE

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Background Institutions related to healthcare quality, such as the Joint Commission, recognise that reconciliation errors (REs) compromise the safe use of medicines.
Purpose To prevent medicines errors by reconciling the patient's current medicines (CM) at admission and discharge, quantify and analyse the discrepancies found between the CM and those prescribed and to identify the possible causes of RE.
Material and methods A prospective observational study was conducted from May to July 2014, in which patients over 75 years with 6 or more usual drugs were included. The process of medicines reconciliation was conducted by interviewing the patient, reading the primary care electronic medical record, background checks, last admission and outpatient visits. Updated CM was recorded in the hospital electronic medical record system and was compared with the drugs prescribed on admission and at discharge.
Results 295 patients were reconciled: 3,205 medicines (average of 10.8 drugs per patient). 238 patients (80.3%) at admission (28 patients were excluded) where 1,020 discrepancies were detected, of which 353 (34.6%) were REs: 29% drug omission, 3% dosage or regimen error, 1% wrong drug and 1% drug prescribing previously concluded. 51% of patients had at least 1 RE, and 32.9% more than 1 RE. 57 patients (19.7%) were reconciled at discharge, all reconciled at admission. 69 discrepancies were detected of which 9 (13%) were reconciliation errors: 2% drug omission, 4% dosage or regimen error, 1% wrong drug and 6% drug prescribing previously concluded. 8.7% of patients had at least 1 RE and 5.2% more than 1 RE.
Conclusion Medicines reconciliation at admission and discharge prevents medicines errors, thus increasing patient safety. Key points to avoiding errors were detected: update the record in the electronic medical record of the patient's CM at admission, and correctly reconcile CM at admission to prevent errors at discharge.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-034 HYPOPHOSPHATEMIA IN HIV PATIENTS TREATED WITH ANTIRETROVIRAL TREATMENT

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Background The summary of product characteristics of tenofovir-disoproxil fumarate (TDF) recommends monitoring renal function periodically, as it has been related to hypophosphatemia and tubulopathy. Evidence links hypophosphatemia in HIV patients with hypovitaminosis D and other antiretrovirals.

However, hypophosphatemia as early marker of renal failure is questionable since bone phosphate reserves could compensate for renal loss.
Purpose To analyse hypophosphatemia as an early marker of renal toxicity in HIV patients treated with antiretroviral therapy (ART) and to study TDF involvement as a cause.
Material and methods Retrospective, observational study including HIV patients receiving ART who had their renal function monitored from 1 January 2013 to 15April 2014.
Results Hypophosphatemia occurred in 18 (17%) of 107 HIV patients monitored for renal function; 16 (89%) males and 2 (11%) females. Mean age was 50 ± 8 years. Hypophosphatemia was classified as isolated if it was not accompanied in any case by possible alterations of tubulopathy. Regarding TDF involvement, 13 (72%) of patients were exposed to the drug when hypophosphatemia was detected.

Follow-up was feasible in 14 patients (78%). ART was modified in 7 (50%), all of them TDF-exposed, with resolution or improvement of the hypophosphatemia in 5 (36%), no change in 1 (7%) and assessment pending in 1 (7%). In the other 7 (50%) cases, 4 TDF-exposed and 3 non-exposed, the treatment was not changed: 3 (21%) due to multidrug resistance, 3 (21%) to hypovitaminosis D and 1 (7%) who was awaiting assessment.
Conclusion The results suggested that hypophosphatemia in HIV patients taking ART might be multifactorial and its use as an early marker of renal toxicity is inconclusive.

To identify the cause of hypophosphatemia in each patient and establish an individualised therapeutic approach, it would be advisable to make a complete baseline study before starting ART.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-035 ARE WE AWARE OF THE RISK OF EYE IRRITATION CAUSED BY SOME EYE DROPS, PARADOXICALLY, IN THE TREATMENT OF ALLERGIC CONJUNCTIVITIS?

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Background The formulation of eye drops needs to prevent any microbial contamination of the eye. For this purpose, pharmaceutical manufacturer can use: the addition of a preservative, the

use of a specific packaging including a sterilising filter or a single dose packaging.

Purpose The purpose of the study is to check if the contents of eye drops indicated for the treatment of allergic conjunctivitis can be irritating for the eye.

Material and methods For this purpose, based on Vidal® 2013, we searched for eye drops used in allergic conjunctivitis and we analysed their excipient formulas searching for those known irritating to the eye.

Results The 21 analysed formulas revealed that the benzalkonium chloride is the only preservative used in this context. Although it is classified as an excipient known to be irritating to the eye, it is still used in 11 cases and cited as an excipient with known effect in only 1 case, while for the rest it is cited as an antimicrobial preservative. The single-dose packaging is used in 7 cases while the packaging including a sterilising filter is used in only 3 cases.

Conclusion Treating allergic conjunctivitis by a potentially irritating drug can be problematic when induced irritation takes over the symptoms of the allergy. This can lead to extend the treatment beyond the expected duration and also create doubts about the efficiency of the drug. It seems wise to choose a drug that does not contain benzalkonium chloride when it comes to treat an allergic conjunctivitis. However, if this is not possible, the ophthalmologist must be aware of this risk when it comes to the clinical evaluation of the patient.

REFERENCE

1 Vidal® expert database 2013

No conflict of interest.

PS-036 THE PLACE OF MATERIOVIGILANCE AS TOOL OF TRACEABILITY IN THE QUALITY MANAGEMENT SYSTEM (QMS) IN HOSPITAL PHARMACY

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Background Materiovigilance aims to monitor the risk of incidents resulting from the use of Medical Devices. What is its role in the establishment of a QMS in the hospital pharmacy?

Purpose To identify materiovigilance notifications within our hospital, to analyse them, to identify measures taken in each case and to establish a QMS that incldes the traceability of medical devices.

Material and methods Materiovigilance statements that were collected between June 2012 and May 2014 were analysed. Decisions that had been taken were collected in order to make a synthesis of QMS implemented in our pharmacy. Incidents were classified into three categories according to the severity of the event (3 is the worst) and measures taken were classified into three categories (corrective, preventive and palliative).

Results 75 notifications were collected, 27 (36%) first degree, 24 (32%) second degree and 24 (32%) the third degree of dangerousness. 24 notifications were from surgery units (gloves, sutures, infusion tubing), 19 from the haemodialysis service (vials of bicarbonate), 12 from ophthalmology (ocular implants) and 7 from the Intensive Care Unit (catheters, tracheal intubation tube, pressure sensors). Similar results have been found and published in EJHP by other national teams. The measures that have been taken were corrective in 16 (21%) of cases (definitive change of medical device), preventive in 6 (8%) of cases (compliance test before use) and palliative in 53 (71%) of cases (exchange of defective device).

Conclusion All notifications were selected and sent to suppliers to request information and to exchange defective devices. Some incidents were very serious (coils and stents breaking). Materiovigilance is necessary for the traceability of adverse events related to the use of medical devices. It is essential for the adoption of the QMS that we introduced in our pharmacy. This is particularly important in the absence of a national medical devices industry and specific regulation for these products.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

PS-037 DRUG RELATED PROBLEMS IN ONCOHAEMATOLOGIC OUTPATIENTS INCLUDED IN CLINICAL TRIALS

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Background Lack of knowledge about their treatment is one of the main elements leading to an inappropriate use of medicines by patients. When starting a clinical trial, outpatients receive a large amount of information, which is sometimes difficult to understand.

Purpose To quantify and to analyse drug related problems (DRPs) in Oncohaematology outpatients included in clinical trials and to measure their knowledge about the treatment.

Material and methods A descriptive, cross-sectional study was conducted from March to April 2014 in a general hospital.

Oncohaematology outpatients starting treatment with oral investigational products (IPs) or who had been taking the treatment less than three months from the time of inclusion in the study were selected.

The variables collected were: age, sex, diagnosis, department, previous participation in clinical trials, prescribed medicines, DRPs, knowledge about their treatment and pharmaceutical interventions.

Results 26 outpatients were included, 19 (73.1%) were females, and mean age 59.8. 84.6% belonged to the Oncology department. The main diagnosis was breast cancer: 11 (42.3%) patients.

At the time of recruitment, 15 (57.7%) patients started treatment with IPs and 5 (19.2%) had previously participated in another clinical trial.

109 drugs were evaluated, 32 (29.3%) were IPs. 10 DRP were detected in 7 (26.9%) patients. 6 (60%) of the DRPs detected were due to the IP.

The most frequent DRPs were due to interactions [4 (40%)] and adverse events [4 (40%)]. Others were related to erroneous prescribing and incorrect self-administration. Mean DRPs per patient was 0.38. Prevalence of DRPs in outpatients starting treatment was 26.7%.

We performed 23 pharmaceutical interventions, 18 (78.3%) were on information about treatment.

Regarding the whole sample, the average score on the test of knowledge was 6.5/10, whereas in outpatients starting treatment it was 6.0/10.

Conclusion The high incidence of DRPs detected emphasises the necessity for Pharmaceutical Care programs to adequately inform patients included in clinical trials, and to prevent and detect DRPs, especially when starting new treatments.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-038 APPROPRIATENESS OF NEW ORAL ANTICOAGULANT PRESCRIPTIONS: ANALYSIS OF PHARMACIST INTERVENTIONS

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Background New oral anticoagulants are an alternative to acenocoumarol in the prevention of stroke and systemic embolism in adult patients with non-valvular atrial fibrillation.

Purpose To assess the suitability of prescriptions for new oral anticoagulants for those diagnoses, in accordance with criteria established by the health organisation and to analyse pharmaceutical interventions.

Material and methods A prospective, observational and cross-sectional study of all patients admitted to our hospital who were prescribed dabigatran, rivaroxaban or apixaban from 01/02/2014 to 31/08/2014. Electronic medical records and electronic medical prescriptions were used as data sources. Demographics (age, gender), reason for admission, indication for anticoagulation, risk factors for complications such as renal and hepatic failure, concomitant drugs that increase the risk of bleeding (NSAIDs, platelet inhibitors, low molecular weight heparins) and adverse events were collected. In addition, adverse drug-related events avoided were also recorded.

Results 64 patients (36 men) with mean age of 76 years (range 35–95) were included. 24 patients were treated with dabigatran, 38 with rivaroxaban and 2 with apixaban. 4 of these treatments were used as off-label treatments.

8 patients had renal failure and 23 had a risk of major bleeding due to concomitant treatments, mainly NSAIDs. Pharmaceutical interventions were performed in the 8 cases of renal failure because the doses needed adjustment. 14 patients with concomitant drugs that could increase the risk of bleeding were also monitored. 100% of recommendations were accepted by physicians.

2 severe adverse events were recorded: 2 bleeding episodes.

Conclusion 94% of new oral anticoagulant prescriptions met the criteria established by the healthcare organisation. Pharmacists were involved in the optimisation of a third of the treatments, with total acceptance. It would be desirable to extend this activity, individualization of anticoagulant treatment, into primary medical care.

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No conflict of interest.

PS-039 DRUG SHORTAGES AND MEDICINES ERRORS

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Background Drug shortages are caused by many factors, therefore medicines errors are reported. It is necessary to know how much health quality is a concern of clinical practice and how patient safety is involved.

Purpose To check out the drug supply problems; analyse the characteristics of drug shortages and assess their impact on a medium-sized hospital.

Material and methods A retrospective study of drug supply issues was conducted from September 2012 to September 2014. Variables analysed: type of drug, expected duration of the shortage and strategies. All data were exported from the National Drug Agency website. Drug purchases were gathered from a drug management application.

Results 172 drugs were affected by shortages. 19.77% of the drugs belonged to the digestive and metabolic group (mainly mineral supplements); 18.02% to the nervous system (mostly psycholeptics); 16.86% to the anti-infective group (primarily antibacterials); 11.05% to the cardiovascular system (predominantly beta blockers); 11.05% to the hormones group (mostly systemic corticosteroids). The expected length of the shortage was 235 days, although in 29% of cases, planned end date was not prompted. In 63.37% of the cases, the same drug was marketed by another firm so it could be obtained. 21.51% could be requested through other brands under special conditions, and in 15.12% the option was to look for a therapeutic alternative.

Conclusion The increasing frequency of drug shortages raises many difficulties and has a profound impact on patient safety and clinicians. Although it is impossible to predict for every drug shortage, establishing clear procedures and guidelines for managing drug shortages can improve patient safety, help prevent medicines errors and improve quality of care.

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No conflict of interest.

PS-040 IMPACT OF DISPLACEMENT VALUES OF POWDERS FOR SOLUTION FOR INJECTION OR INFUSION ON DRUG DOSES ADMINISTERED TO CHILDREN

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Background Paediatric patients receive drug dosages based on their body weights. Consequently only part of a vial with medicine for intravenous (i.v.) administration is often required for a child, contrary to an adult, for whom one vial normally equals one dosage. This does not present a problem when preparing an i.v. drug dosage from an i.v. concentrate or solution. However the problem arises when the drug is formulated as a powder requiring reconstitution. The displacement values of the drug powders can be of negligible or significant sizes. Neglecting to take into account significant displacement values can result in under-dosing. A literature search revealed guidelines highlighting the importance of accounting for displacement values. No recent studies regarding the size of underdosing resulting from ignored displacement values were found.
Purpose To investigate whether displacement values of powders for reconstitution are taken into account in the preparation and administration guide for i.v. drugs at the paediatric ward. If not, then categorising these drugs and calculating the percentage of the resulting underdosing.
Material and methods The preparation and administration guide for i.v. drugs at the paediatric ward was studied to see whether displacement values were actually stated and to establish how the specified drug concentrations of reconstituted powders had been calculated.

For the drugs where displacement values were not stated a description of the drug type was carried out and the size of the deviation between the estimated concentration (where the displacement value was addressed) and the specified concentration was calculated.

Displacement values were obtained through a literature search and by contacting the marketing authorisation holders.
Results Displacement values were taken into account in only 1 in 7 drug powders in the guide, all of them antibiotics, resulting in potential under-dosing ranging from 4–12%.
Conclusion Ignoring displacement values of i.v. antibiotic drug powders for reconstitution can result in under-dosing of children.

REFERENCES AND/OR ACKNOWLEDGEMENTS

None.

No conflict of interest.

PS-041 POLYPHARMACY AND COMPLIANCE WITH START CRITERIA IN PATIENTS ADMITTED TO A REFERENCE HOSPITAL

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Background The START criteria aim to ensure the prescription of drugs that have shown to be beneficial in certain diseases, in people over 65 years of age.
Purpose To analyse if these criteria were met in patients in a reference hospital.
Material and methods A cross-sectional study was carried out that included a sample of 138 patients over 65 years of age who were hospitalised in an Internal Medicine ward at a reference hospital. The variables elicited by the physician in charge of each patient were age, gender, number and type of drugs prescribed (excluding serum therapy and topical treatments), and diagnoses by which to check that the drug was being prescribed in response to the patient's disease, following the START criteria.
Results The mean age was 76.8 ± 6.3 years, (52.6 were male). Each patient received 11.7 ± 3.6 drugs. 25.9% of the patients received the drugs indicated according to the START criteria; in 37% of the patients 1 START criterion was unmet; in 25.9%, 2 criteria were unmet; in 7.4%, 3 were unmet and in 3.8% of the patients, 4 or 5 criteria were unmet. The START criteria that were met were: statins in diabetes mellitus associated with one or more vascular risk factors (29.6%), platelet antiaggregants in diabetes associated with one or more vascular risk factors (13.6%), clopidogrel or ASA with a history of arteriosclerotic disease in patients with sinus rhythm (12.3%), metformin in type 2 diabetes mellitus in the absence of kidney failure (11.1%), calcium and vitamin D supplements in patients with known osteoporosis (8.6%).
Conclusion Drugs that were prescribed the least, in spite of their indication, were statins and antiaggregants (primary and secondary prevention), possibly due to the perception of the futility of the said treatments in elderly patients. We highlight the low prescribing of calcium and vitamin D in patients with osteoporosis, probably for the aforementioned reason.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-042 PARENTERAL NUTRITION (PN) IN PREMATURE INFANTS: RISK ANALYSIS AFTER REDESIGNING A PRODUCTION PROCESS

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Background Prescribing and preparing paediatric PN is an extremely complex processes because of manipulation of small volumes, stability problems, risk of contamination and patient fragility. Therefore, we need to manage the risk of such a delicate process.
Purpose To quantify the risk reduction derived from redesigning the preparation process for parenteral nutrition (PN) for preterm infants, identifying residual risks in the current process and planning measures to solve them.
Material and methods The major changes carried out were e-prescribing and improvements in quality control, by double checking on gravimetric preparations and biochemical control.

We used FMEA (Failure Mode and Effect Analysis) to analyse the risk of the process, and a group of four pharmacists and two pharmacy technicians was formed to agree and discuss the critical points in the different phases of the process: prescription, validation, processing, quality control and labelling. Then, we qualified these errors in terms of their probability of occurrence (O), severity (S) and detection capacity (D) in the process, assigning values from 1 to 10, and considering that the severity only depends on the critical point.

By multiplying these factors, the criticality index (CI = O × S × D) was obtained. The difference between the previous and current CI processes allowed us to compare the risk management in both processes and prioritise those points which required immediate action.
Results We identified 31 critical points and realised that following the old procedure the CI obtained was 4,964, whereas it was

1,715 in the current procedure. Therefore, we achieved an overall risk reduction of 65.5%; of which 25.7% was due to e-prescribing, while 28% and 10.5% would have derived from the incorporation of double supervision in the preparation and biochemical control, respectively. However, there are new risks, mainly due to the management of a computer system (4.4%), for which a procedure manual and a training program have been developed. Furthermore, current process have a remaining risk (nearly 30%), which could be reduced by automating the production process.

Conclusion Improvements mentioned above allowed us to minimise the risk associated with paediatric PN production process.

REFERENCE

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No conflict of interest.

PS-043 MEDICINES ERRORS IN CRITICALLY ILL PATIENTS

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Background Medication errors in critical care are frequent, serious and predictable. Critically ill patients are prescribed twice as many medications as patients outside the intensive care unit and nearly all will suffer a potential error at some point during their stay.

Purpose To quantify and characterise medication errors in a surgical intensive care unit (SICU).

Material and methods We conducted a one-month prospective observational study to detect, quantify and score medication errors in a SICU.

Results A total of 634 observations made over weekdays and weekends were performed including morning, noon and night shifts. 36.27% observations (230) included some type of error, a total of 245 medication errors were detected. According to the type of error found: 52 were prescription errors (21.22%), 2 omissions (0.82%), 44 related to administration technique (wrong speed) (17.96%), 10 omissions of the administration record (4.08%), 97 erroneous preparations (39.59%), 1 wrongly prescribed dose by default (0.41%) and 3 by excess (1.22%), 5 errors related to erroneous administration route (2.04%), 2 erroneous drug monitorization (0.82%) and 29 transcription errors (11.84%). According to severity within categories established by the National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP), 26.12% errors were Category A, 10.20% were Category B, 61.63% were Category C, 1.63% Category D and 0.41% Category F.

Conclusion Determining the incidence of medication errors in our system and adopting measures to prevent them is a priority in order to improve the drug treatment process in critically ill patients. The integration of a pharmacist in the intensive care unit is one of the measures that our institution has adopted to reduce medication-related errors and improve quality of care.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-044 ELECTRONIC PRESCRIBING SYSTEMS IN OUTPATIENT CARE. SOURCE OF INFORMATION OR SOURCE OF ERRORS?

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Background Electronic prescribing systems have been implemented widely in outpatient care in our country. The pharmacotherapeutic information they contain is used in both primary and hospital health care. In daily clinical practice systematic errors are observed in this information, even in narrow therapeutic index drugs, which could reach the patient especially in transitions.

Purpose To quantify the frequency of errors that occur in narrow therapeutic index drugs monitored in the pharmacokinetics service.

To assess whether these errors affect plasma drug concentrations (Cp).

To determine whether follow-up queries within the hospital or outpatient care reduce errors.

Material and methods Prospective observational study.

Period: five months (January–May 2014).

Population: All patients monitored for carbamazepine (CBZ), phenytoin (PHE) and valproic acid (VPA) treatment were selected.

Information sources: electronic pharmacotherapeutic information/prescription (IANUS), pharmacokinetic history (Openlab).

Cp determination: Architect 1200SR.

Variables collected: age, drug monitored, Cp, error (mismatch between prescribed dose and actual patient dose), physician follow-up (outpatient or hospital).

Statistical evaluation: Stata 12. Descriptive statistics. Mean comparison using Student t. Proportions with Chi-square.

Results Population variables: 103 patients (34 CBZ, 27PHE, 41VPA). (mean ± SD). Age (years) (45.8 ± 24.5).

Error (%) (30.1 ± 46.1).

Effect of error on Cp (mg/ml) by drug: without error vs. with error CBZ (11.5 ± 17.85 vs. 7.17 ± 2.75; p = 0.95) PHE (8.83 ± 3.48 vs. 6.70 ± 4.73; p = 0.15) VPA (67.17 ± 22.92 vs. 61.8 ± 21.55; p = 0.502).

Hospital follow up (%) (70.59 ± 46.79). Effect of follow up on errors: Hospital vs. outpatient errors (hospital without/with error vs. outpatient without/with error) (47/25 vs. 24/6 p = 0.141).

Conclusion We show that this information is unreliable as it has a very high proportion of errors (30.1%). The hospital follow-up was not related to fewer errors than outpatient care. These errors were not associated with a different Cp. This may be related to the narrow therapeutic index of these drugs and the small sample size of the study. Future studies should assess the frequency of adverse effects with higher numbers of patients. Pharmacists should review this information to communicate and correct errors and to prevent them from reaching patients.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-045 STUDY OF APPROPRIATENESS OF THE INDICATION FOR PARENTERAL NUTRITION FOR ADULT HOSPITALISED PATIENTS

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Background Parenteral nutrition (PN) is an essential supportive treatment for patients who are unable to meet their nutrition requirements through oral or enteral nutrition. Many studies have noted that PN is often inappropriately prescribed, thereby increasing the risk of associated complications and costs.
Purpose To determine the quality of prescription of PN in our hospital, based on the ESPEN 2009 guidelines and the pharmacy cost.
Material and methods A prospective, observational study of PN episodes in adults was over a 3-month period. The use of PN was classified as 'appropriate' or "inappropriate". Variables collected included: demographic data, underlying diagnoses, indication for PN, number of days on PN and complications related to PN in inappropriate use such as phlebitis, metabolic complications and bacteraemia associated with central venous catheter (BAC). We calculated the cost of the number of inappropriate PN treatments provided.
Results We reviewed the indications for 90 PN treatments. The patients were 53% male with median age of 63.9 years (range, 27 to 96 years), with a principal diagnosis of digestive tract neoplasia (37.8%). In 37.8% of the cases PN was "inappropriate"; the most common indications were prolonged fasting (22.9%), palliative care (20%) and patient refusal to eat (8%). The median duration of "inappropriate" PN prescription was 4.9 days (range, 1 to 17 days). Six patients (17.6%) had complications; 3 cases of BAC, four metabolic complications, and two cases of phlebitis. The number of inappropriate PN treatments was 163 units which cost the pharmacy €6,130.57 for the PN.
Conclusion PN is associated with complications; because of this the indication for PN should comply with the main clinical practice guidelines and requires monitoring by experienced professionals in multidisciplinary Nutritional Units.

In addition, cost savings could be achieved if PN was provided only to the patients who meet these guidelines.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Thanks to my co-workers.

No conflict of interest.

PS-046 EVALUATION OF A SYSTEMATIC TOOL TO REDUCE INAPPROPRIATE PRESCRIBING (STRIP) IN ADULTS WITH INTELLECTUAL DISABILITY: A PILOT STUDY

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10.1136/ejhpharm-2015-000639.392

Background Polypharmacy, a risk factor for inappropriate prescribing, is common in adults with intellectual disability (ID). For older patients with polypharmacy in the general population a Systematic Tool to Reduce Inappropriate Prescribing (STRIP)* has been developed recently. This patient review requires the active involvement of the patient, which can be complicated in adults with ID.
Purpose This pilot study was performed to evaluate whether STRIP can be used in adults with ID living in a centralised setting.
Material and methods This observational pilot study was performed in three care organisations. In each organisation nine clients with polypharmacy, defined as concomitant use of five or more drugs, were selected by their pharmacists and ID resident physician for a review using STRIP. Clients, their legal representatives and mentors were invited to participate. The primary outcome was the proportion of clients, legal representatives and mentors who participated. Secondary outcomes were the number of potentially appropriate indicated drugs (according to the START criteria) and the number of potentially inappropriate or unnecessary drugs identified (according to STOPP criteria).
Results 27 reviews were performed in this pilot study. During these 27 reviews, 24 clients (89%), 14 legal representatives (53%) and all 27 mentors (100%) participated.

Thirteen potentially appropriate indicated drugs and 44 potentially inappropriate or unnecessary drugs were identified, resulting in suggestions for changes in pharmacotherapy for 21 (78%) clients. Besides, 9 (33%) reviews revealed in total 21 drugs, mainly as required prescriptions, that were never used by the client.
Conclusion A Systematic Tool to Reduce Inappropriate Prescribing (STRIP) with the active involvement of adults with ID, their legal representatives and mentors can be used to identify drug-related problems in this population. The benefits in terms of reduction of patient harm as well as cost-effectiveness of this method should be assessed in this population in future studies.

REFERENCE

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No conflict of interest.

PS-047 MEDICINES SAFETY: THE INCIDENCE AND SEVERITY OF PRESCRIBING ERRORS IN PARENTERAL NUTRITION IN PAEDIATRIC INPATIENTS

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Background Parenteral nutrition (PN) is important for providing sufficient food for neonates, especially premature infants. Individually prescribed PN addresses specific patient requirements.[1] Due to the diversity and complexity of PN prescribing, medicines errors may occur.[2]
Purpose To identify the incidence, type and severity of prescribing errors in PN in a paediatric intensive care unit (PICU). In this context the role of a clinical pharmacist should be checked as a member of an interdisciplinary team.
Material and methods The occurrence of prescribing errors in PN in a PICU in a university hospital was analysed retrospectively between March 2012 and July 2013. First the errors were categorised in seven pre-defined categories. Afterwards the potential severity of each individual error was assessed independently by three medical experts from three different Level III

neonatal units, not involved in any treatment regimen and blinded for patient outcome, based on the National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) Index for Categorising Medicines Errors.[3]

Results 118 prescribing errors were identified from 2,889 PN orders. Each error had been discussed and eliminated before preparing the PN, so no errors reached the patient. The majority of errors constituted the category 'concentration range'; 65%. Nearly 11% of the errors occurred in the categories 'dose' and 'indication'. Error rates of 5% and lower were due to 'choice of drug', 'compatibility', 'patient data' and 'osmolarity'. (By using the NCC MERP Index, the three experts classified the errors into several categories.)

Conclusion These results underline that clinical pharmacists can prevent minor as well as major adverse drug events. Physicians as well as clinical pharmacists have to be aware of these risks and have to implement strategies to enhance medicines safety in PN treatment.

REFERENCE

1,2,3 Literature available from the author

No conflict of interest.

PS-048 USE OF ALTERNATIVE TREATMENT IN OUTPATIENTS

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Background Alternative treatments (AT) such as homeopathy (H) and/or medicinal herbs (MH) are used concomitantly with medical treatment by some patients to relieve and/or improve the symptoms of a disease. Pharmaceutical care consultations (PCC) are held in order to respond to pharmacotherapeutic needs in outpatients.

Purpose To analyse the concomitant use of H and MH with medical treatment in outpatients who come to PCCs in the Pharmacy service.

Material and methods Observational study of outpatients who came for the first time to collect medicines from the PCC during the first week of September 2014. The information was obtained during the pharmaceutical interview with the patient, using a survey that included type of AT used and the source that had recommended it.

Results 42 new patients (21 men, 21 women) were attended in the PCC, 11 of whom admitted taking some type of AT (7 were male and 4 females, mean age 43.3 years). According to the medical treatment: we had: 2 patients with antiretroviral treatment, 2 with anti-TNF alpha, 2 with oral cytostatics, 1 with somatotropin, 1 with drugs for hepatitis virus C, 1 with coagulation factor, 1 with epoetin beta and 1 with glatiramer. About the type of AT used: 8 patients were taking homeopathy and 4 medicinal herbs. The recommendation to use any of these was by a family member/friend in 5 patients, 3 patients took AT on their own initiative and in 3 patients a community pharmacist had recommended the AT.

Conclusion A quarter of the patients who come to the PCC, are concomitantly using an AT with the medical treatment and mostly without medical or pharmaceutical recommendation. Therefore the safety and efficacy of medical treatments collected in the consultations should be closely monitored.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-049 ANALYSIS OF POTENTIAL DRUG-DRUG INTERACTIONS WITH IMMUNOSUPPRESSIVE DRUGS IN PATIENTS ON THE WAITING LIST FOR RENAL TRANSPLANTATION

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Background Prerequisites for successful renal transplantation are stable and effective serum concentrations of immunosuppressive drugs such as ciclosporin, mycophenolate mofetil, tacrolimus (CMT). Drug-Drug-Interactions (DDIs) could change blood levels of CMT, potentially leading to toxicity or ineffective transplant function. Patient-specific information on potential DDIs is not accessible to surgical staff at the time of transplantation, when CMT is routinely started.

Purpose To identify and analyse the potential of DDIs of routine treatment with CMT in patients on the waiting list for renal transplantation through a systematic, standardised DDI check by a pharmacist, to increase patient safety.

Material and methods The current drug treatment of 136 patients was recorded. Potential DDIs of each drug with CMT were analysed using three DDI databases (Lexi-Interact, Drugdex, Stockley's Drug Interactions) and the German SPC. For drugs not listed in these the Swiss-based MediQ-database was used. DDI severity was recorded according to the Lexi-Interact standard (A, D, X). An individual pharmacist-approved DDI risk profile of current drug treatment with CMT was prepared for each patient and made accessible at all times for the transplanting surgeon by adding it to the transplant record.

Results The patients (n = 136) reviewed (65% male, 35% female) had a mean age of 51 (±13 years), took a total of 225 different drugs. Patients took 2 to 22 different drugs (mean 10 ± 4).

Abstract PS-049 Table 1

Number of patients with clinically relevant DDIs (Lexi-Interact score ≥C)			
	C (monitor treatment)	D (modify regimen)	X (avoid combination)
Ciclosporin	133	68	37
Mycophenolate	70	60	0
Tacrolimus	87	34	5
Number of drugs with clinically relevant DDIs (Lexi-Interact score ≥C)			
Ciclosporin	61	23	3
Mycophenolate	17	14	0
Tacrolimus	24	10	4

Conclusion Starting CMT puts patients at risk of DDIs with concurrent drug treatments they are having for their comorbidities. Readily-accessible individual DDI risk evaluations prepared by drug information pharmacists may improve patient safety for renal transplant patients who are starting on CMT.

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No conflict of interest.

PS-050 SUBVISIBLE PARTICULATE MATTER IN INTRAVENOUS PREPARATIONS - A COMPARISON OF INNOVATOR AND GENERIC DICLOFENAC SODIUM

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Background Hazardous effects are brought about by sub-visible particulate contaminants of intravenous preparations being administered into the bloodstream.

Pathological consequences ultimately leading to severe harm may result.

Purpose To compare often-used drugs in their innovator and generic form and to optimise the workflow in busy work environments to improve patient safety.

Mixtures of 0.9% sodium chloride solution and two diclofenac sodium preparations (Voltaren and Diclobene) and the effect of a buffer were investigated regarding their particulate count and size.

Material and methods 250 millilitres (mL) of sodium chloride 0.9% solution was mixed with either Diclobene 75 milligram (mg) or Voltaren 75 mg/3 mL injectable solution and the required buffer containing sodium bicarbonate solution.

The number of particles greater than or equal 10 micrometres (μm) and 25 μm were counted shortly after mixing the components and after 30, 60, 90, 120 and 150 min.

Results The prepared Diclobenesolution had a consistently low particulate count which was way below the threshold value for sub-visible particulate matter contamination regulated by the European Pharmacopoeia whereas Voltaren bicarbonate solutions had a high and fluctuating number of particles exceeding the threshold value.

Surprisingly the mixture of Voltaren without the required buffer had an average particulate count below the compulsory threshold.

Conclusion The measurements conducted resulted in substantial changes of neither particulate count nor size in the Diclobeneand the Voltaren preparations.

Mixtures of Diclobene with sodium chloride 0.9% solution resulted in a considerably lower particulate count than the Voltaren mixture.

Taken into account that adding the buffer to the preparation of Voltaren is an additional step, Diclobene might be a better choice in a busy ward environment thus enhancing patient safety.

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No conflict of interest.

PS-051 THE IMPACT OF AN ANTIMICROBIAL STEWARDSHIP PROGRAM ON PRESCRIPTIONS OF ERTAPANEM IN A TERTIARY HOSPITAL

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Background The implementation of an Antimicrobial Stewardship Program (ASP) in our hospital has attempted to streamline the use of antibiotics. Within this program, pharmacist interventions have been introduced on the de-escalation of antimicrobial treatment and on the adjustment of duration of treatment.

Purpose To analyse ertapenem prescriptions since establishing pharmacist interventions in a tertiary university hospital.

Material and methods This was a retrospective study where we compared ertapenem prescriptions dispensed between March and May 2012 with the prescriptions dispensed in the same period in 2014. We analysed the following variables: number of prescriptions, request for microbiological cultures, duration of treatment, indication and de-escalation performed. The Oncology-Haematology, Orthopaedics and Trauma, Neurosurgery and Neurology, Paediatrics and Gynaecology departments were excluded. To measure and compare the drug consumption, we used the Daily Defined Doses (DDD) per 100 stays.

Results In 2012, there were 167 prescriptions for ertapenem, while in 2014, this figure was110. Microbiological cultures were requested in 64% of cases in 2012 and in 68% in 2014. The mean duration of treatment was 5 days in 2012 and 4 days in 2014. In 2012, ertapenem treatment was interrupted because of discharge from hospital (39.5%), escalation or replacement with other antibiotic with similar spectrum of coverage 37.1% and de-escalation (18.6%); in 2014, these percentages were 37.5%, 27.9% and 29.1% respectively. In 2012, ertapenem was most commonly prescribed for intra-abdominal infections (45.0%), skin and soft tissues infections (21.6%) and respiratory infections (19.0%); whereas in 2014, it was prescribed for intra-abdominal (46%), urinary (20%) and respiratory (18.5%) infections. The DDD per 100 stays in 2012 was 2.9 and in 2014 was 1.5

Conclusion Since the launch of ASP, we have observed that the consumption of ertapenem has decreased significantly. The duration of treatment is also shorter thanks to the system for de-escalation. Still, more microbiological tests need to be requested

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-052 EVALUATION OF PHARMACEUTICAL INTERVENTIONS IN INTENSIVE CARE UNIT PRESCRIPTIONS

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Background Pharmacist review of drug prescriptions in the intensive care unit (ICU) has been shown to prevent errors and improve patient outcomes. However, it is necessary to evaluate the efficacy of interventions performed by pharmacists.

Purpose To classify and measure the type of interventions performed by pharmacists on ICU prescriptions and to measure the physician's acceptance of the recommendations.

Material and methods Retrospective observational study of pharmaceutical intervention on ICU prescribing, from 1st September 2013 to 31st August 2014.

All the information about interventions was obtained from the computerised physician order entry system.

Drug related problems (DRPs) detected were classified as follows:

Indication:

DRP1: the patient was not using the medicines that he needed.

DRP2: the patient was using medicines that he did not need.

Effectiveness:

DRP3: the patient was using an erroneous medicine.

DRP4: the patient was using a lower dose and/or a different dose schedule than required and/or did not continue treatment for the full course indicated.

Safety:

DRP5: the patient was using a higher dose or a different dose schedule than required and/or exceeding the full course of treatment indicated.

DRP6: the patient was using a medicine that causes an adverse drug reaction.

Overall percentage of interventions accepted and the percentage of interventions accepted in each subgroup were calculated.

Results During the study, 105 interventions were recorded, of which 62 (59.1%) were accepted.

Types of DRP were: DRP1 8 (7.6%); DRP2 17 (16.2%); DRP3 3 (2.9%); DRP4 19 (18.1%); DRP5 32 (30.5%); DRP6 26 (24.8%).

Acceptance rates in each subgroup were: DRP1 5 (62.5%); DRP2 13 (76.5%); DRP3 1 (33.3%); DRP4 10 (52.6%); DRP5 20 (62.5%); DRP6 13 (50.0%).

Conclusion

1. The most common types of pharmacist interventions over ICU prescriptions were in connexion with DRP5 and DRP6.
2. However, the best rates of acceptance by physicians were achieved by interventions regarding with DRP1, DRP2 and DRP5.

REFERENCE

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No conflict of interest.

PS-053 ANALYSIS OF THE USE OF FIDAXOMICIN IN A TERTIARY UNIVERSITY HOSPITAL

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Background Nowadays, Clostridium difficile infection (CDI) is the leading cause of nosocomial diarrhoea in industrialised countries and the incidence is increasing.

Purpose To examine whether fidaxomicin prescribing was following the Pharmacy Committee criteria.

Material and methods This was a retrospective observational study carried out over one year. Fidaxomicin prescribing was considered appropriate in the following cases: when the first recurrence had previously been treated with vancomycin and there was a high risk of recurrence (considered in the presence of at least two of these factors: age >65 years, serious underlying disease, concomitant use of antimicrobials) and if the recurrence was severe (10 or more loose stools or fever >38.5°C or leukocyte count >15,000/mm^3 or a rise in serum creatinine >1.5 times above the baseline) and if it had a clinical impact (the persistence of the disarrhoea endangered the health of the patient worsening the underlying disease and/or increasing the length of hospital stay); in second or subsequent recurrences after considering the risk or severity of recurrences and their clinical impact.

Results A total of eight prescriptions were written for six patients. 25% did not comply with the approved criteria. The median age was 53 years (range: 41–83). When prescriptions were appropriate (75%), all cases presented severe underlying disease and a recurrence with clinical impact; 66.7% were prescribed as treatment for first recurrence and 75% of the patients were already receiving antimicrobial treatment. Regarding the severity of the recurrence, leucocytosis was found in 50% of cases, ten or more loose stools in 25% of cases and a rise of serum creatinine in 25%. 12.5% of patients had recurrences after being treated with fidaxomicin. 87.5% of these prescriptions were supervised by the Infectious Disease Unit (IDU).

Conclusion Since fidaxomicin has been introduced into the hospital, there have been few prescriptions for this drug. Most prescriptions were appropriately and accurately prescribed under IDU supervision.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-054 STORAGE AND USE OF CONCENTRATED INTRAVENOUS POTASSIUM SOLUTIONS IN A HOSPITAL COMPLEX

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Background Intravenous concentrated potassium solution (ICPS) has been identified as a high-alert drug by organisations in Australia, Canada, United States of America and the United Kingdom. Despite that, there are reports of accidental death from the incorrect administration of ICPS.

Purpose To evaluate the storage and use of ICPS in a hospital complex.

To identify the factors that can influence the use of ICPS versus pre-diluted solutions.

Material and methods Descriptive study. An audit was conducted of all hospital complex medical kits (place in clinical management units (CMUs) where drugs are stored); location and identification of vials, CMU accreditation by Health Quality Andalusian Agency and knowledge of ICPS use by personnel. Also, consumption of intravenous concentrated potassium salts was calculated and was compared with the consumption of pre-diluted solutions by the CMUs.

A medical kit was considered appropriate when ICPS lockers were separated, identified and had a safety alert.

Results 78 kits from 30 CMUs were tested. 64 (82%) kits were in correctly identified ICPS lockers and 39 (51.3%) were in ICPS lockers adequately separated from the rest. 20 (25.6%) kits were labelled with safety alerts warning about the use of ICPS: 11 of them were posters and 9 red boxes. 35 (44.9%) kits belonged to an accredited CMU and 23 (29.5%) had received safety clinical sessions.

Only 12 (15.4%) were appropriate medical kits: 9 (75%) belonged to an accredited CMU.

The total ratio mEq potassium concentrated/potassium pre-diluted was 9.68.

The total ratio mEq potassium concentrated/potassium pre-diluted in a CMU with certified quality management was 9.26.

The total ratio mEq potassium concentrated/potassium pre-diluted in a CMU trained in prevention of treatment errors was 6.74.

Conclusion The percentage of suitable kits was very low and consumption of pre-diluted solutions was much lower than ICPS. CMUs with an accredited quality management and/or whose staff had been trained in prevention of treatment errors had better concentrated potassium storage conditions and had a slightly higher use of pre-diluted potassium solutions than non-accredited CMUs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Institute for Safe Medication Practice

No conflict of interest.

PS-055 THE INCIDENCE OF DRUG ALLERGIES IN HOSPITALISED PATIENTS

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Background The literature reveals that approximately 20% of healthcare professionals fail to document drug allergies (DA) in the electronic records. Breakdowns in the documentation of allergies can lead to medicines errors (MEs).

Purpose The aims of this study were to examine patient DA profiles documented in the electronic records and to determine MEs associated with DAs.

Material and methods Retrospective observational study including all adult patients admitted to our hospital on February 24, 2014. Discharge prescriptions and patient DA profiles entered into the different (non-integrated) electronic records were reviewed.

Results 258 patients were included in the study. In all patients, a history of an allergic reaction to drugs or not was reported in at least one electronic record: 55% in the patient's admission prescriptions, 60% in the nursing consumption form and 46.4% in the electronic prescription system. Nevertheless, only in 3% of the cases was it reported in all of the records. In 13.2% of the cases, there were discrepancies between different electronic records. DAs were recorded in 60 patients. The drugs most frequently involved were penicillin (50%) and metamizole (25%). 11 MEs were identified in which a drug was prescribed for a patient with a documented DA. In 6 cases the medicine didn't reach the patient and was prevented by a pharmacist in four cases. In the other 5, the medicine reached the patients. Fortunately, there was no evidence of any reactions following the administration of the drugs.

Conclusion The existence of different non-integrated electronic records favours inadequately recorded DAs, discrepancies and MEs related to DA. Pharmacists can play an active role in getting adequate DA recording systems into hospitals and improving inpatient safety.

REFERENCES AND/OR ACKNOWLEDGEMENTS

I thank Dra. Ana Pérez for helpful comments.

No conflict of interest.

PS-056 IMPROVING THE CULTURE OF SAFETY THROUGH AN ONLINE INCIDENT REPORTING SYSTEM: A NATIONAL PROJECT

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Background The project involved the Hospital Pharmacists Association network in collecting incident reports/near misses related to drugs and medical devices. There is evidence that by reporting errors and analysing error patterns there could be a reduction in medication errors (MEs).

Purpose To improve the safety culture through the development of an online national incident reporting system (IRS) in order to reduce potential MEs and increase patient safety.

Material and methods We performed a literature review of IRSs. We created our national IRS, which is available online on our Hospital Pharmacists Association national website. It is composed of three sections (context; details; causes and consequences). Submission of MEs is anonymous to guarantee confidentiality. Periodically a ME report is published on the website to educate readers in potential MEs. MEs reported between October 2011 and September 2014 were collected and analysed. We evaluated the severity of the errors reported using the American National Coordinating Council for Medication Error Reporting and Prevention Index (NCCMERPI), which classifies errors in 9 categories according to the severity of harm caused (with increasing severity from A to I).

Results From quantitative data analysis it emerged that all reports (69 valid out of 84) referred to drugs and the majority of MEs were prevented by pharmacists (50.7%). The riskiest phases turn out to be administration (52.2%), followed by prescription (29%) and distribution (8.7%). From NCCMERPI analysis it emerged that the majority of MEs reported were classified in the C category (39.1%).

Conclusion Incident reports collected suggest increasing checks (double check) throughout the medication process and developing specific checklists. We mostly need to sensitise healthcare professionals to improve incident reporting. We need to take specific initiatives on potential errors with medical devices because of the lack of reporting in this important category.

REFERENCES AND/OR ACKNOWLEDGEMENTS

American National Coordinating Council for Medication Error Reporting and Prevention Index

No conflict of interest.

PS-057 CISPLATIN -INDUCED HYPOMAGNESAEMIA

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Background Hypomagnesaemia is a well-known side effect of cisplatin, induced by the drug's renal toxicity. Although hypomagnesaemia refers to any magnesium level below 1.7 mg/dL, it does not lead to clinical symptoms until levels <1.2 mg/dL. Life-threatening consequences have been reported only when levels <0.7 mg/dL.

Purpose To evaluate the incidence and severity of cisplatin-induced hypomagnesaemia.

Material and methods A retrospective and observational study (April 2001–March 2014) was conducted in a General Hospital (600 beds). All patients who had received at least one dose of cisplatin were included. Start date of cisplatin chemotherapy, gender, age, tumour type and blood magnesium levels were collected for each patient. According to the hospital protocol, patients receive magnesium supplementation before and after cisplatin and aggressive hydration in order to prevent nephrotoxicity.

All patients with hypomagnesaemia were classified according to the CTCAE grade.

Results 528 patients (3,682 cisplatin administrations) were included (79.3% male, mean age = 56.68 ± 12.29 years).

Magnesium level was assessed in 6,021 blood tests and it was below the lower limit in 1,421 of them. Hypomagnesaemia was observed in at least one blood test, in 320 patients (60.6%), during or after treatment.

Abstract PS-057 Table 1

Magnesium (mg/dL)	1.7–1.2	<1.2–0.9	<0.9–0.7	<0.7
Patients (%)	314 (59.5%)	56 (10.6%)	13 (2.5%)	3 (0.6%)

The incidence of hypomagnesaemia was similar for men and women (60.3% vs. 61.7%).

93.9% of patients with haematological malignancies and 57.2% of patients with solid tumours showed hypomagnesaemia in at least one blood test, (OR: 11.47; IC95%: 3.52–37.40; $p < 0.05$).

Mean time until onset of hypomagnesaemia was 211 days and in the vast majority of patients (89.4%) this happened within the first year of treatment.

Conclusion

- Hypomagnesaemia is a common and long-term side effect of cisplatin but only in very few cases was it considered to be severe. The incidence of life-threatening hypomagnesaemia is extremely low.
- The prevalence of hypomagnesaemia was much higher in haematological patients than in patients with solid tumours.

REFERENCE

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No conflict of interest.

PS-058 A SYSTEMATIC REVIEW OF TRENDS, RATES AND BURDEN OF HARM ASSOCIATED WITH INTRAVENOUS DRUG PREPARATION ERRORS IN HEALTHCARE SETTINGS

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Background Intravenous (IV) admixture preparation errors (IAPEs) are a safety concern but their frequency, risk factors and associated burden of harm are not well understood.

Purpose To systematically review published evidence on the occurrence and associated burden of harm from IAPEs in healthcare settings.

Material and methods Searches were conducted in 4 large electronic databases (January 2005–December 2013). Publications reporting rates of IAPE and error types (wrong drug, wrong dose, wrong concentration, wrong diluent, wrong container, wrong route, contamination, and mislabelling) were reviewed.

Results Of 1,267 studies, 21 met the inclusion criteria, with 8 (38%) of these from Europe. Four studies were in critical care settings; 17 in general wards. Of studies reporting on an IV preparation site, 6 reported use of centralised locations with a biological safety cabinet, 11 reported preparation on the nursing ward, and 1 had an even split between the 2. Error types and reported rates varied substantially, including: wrong diluent used in 0.3% to 49% of doses; wrong dilution volumes used in 1% to 21.3% of doses; labelling errors in 9.3% to 99% of IV preparations; and inappropriate sterile technique in 25% to 100% of observed preparations. Higher IAPE rates were reported for ward-based versus centralised IV preparation. The only reports of zero IAPEs involved either computerised dose calculations or the use of automated equipment. The lack of consistent reporting on the types of error and the scarcity of studies reporting error rates made it difficult to identify trends. Error severity and associated burden of harm were not adequately documented to evaluate the impact on patient care or consequences for healthcare facilities.

Conclusion This systematic review identified few studies reporting data on the frequency or burden of harm of IAPEs. The available evidence reported fewer errors when drugs were prepared in the pharmacy than on nursing wards, and when processes were standardised and automated.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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Conflict of interest

PS-059 REVISION OF BENZODIAZEPINES RECONCILIATION AT ADMISSION AND DISCHARGE

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Background Benzodiazepines (BZD) have to be reconciled within 24 h of admission to avoid withdrawal symptoms. On the other hand, it's important to check the discharge report to avoid treatment discrepancies.

Purpose To find out the accuracy of BZD reconciliation at admission and discharge in our hospital.

Material and methods Observational prospective study carried out in a tertiary care hospital over two months. Patients over 65 years and without a relevant psychiatric condition were selected. The BZD prescribed at admission was compared with patient's home treatment. Clinical data was obtained from the electronic clinical history and electronic prescription. The discharge report was also checked for BZD indications. Reconciliation was classified as "reconciled" (same BZD and same half-life), "partially reconciled" (change to another BZD with different half-life) or "not reconciled". At discharge, physicians' indications were revised.

Results 110 patients were included. The median age was 81 (65–95). They were 71 women (64%) and 39 men (36%). At admission the results were: 1) "Reconciled": 63 patients (57.3%); 2) "Partially reconciled": 9 patients (8.2%) and 3) "Not reconciled": 38 patients (34.5%). At discharge, physicians

indicated the following: 1) "Same treatment": 69 patients (62.7%); 2) "No mention of BZD": 25 patients (22.7%); 3) "BZD combination": 5 patients (4.5%); 4) "Changed to other BZD": 5 patients (4.5%) and 5) "Withdrawal": 2 patients (1.8%). 4 patients (3.6%) died during the hospitalisation.

Conclusion Almost a third part of patients don't have their treatment suitably reconciled. It might occur that treatment was changed because it was not warranted, regardless of reconciliation. At discharge, physicians use phrases like "same treatment" or don't mention anything about BZD. This can lead to treatment discrepancies with Primary Care.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-060 AGREEMENT BETWEEN POTENTIAL DRUG INTERACTIONS IDENTIFIED BY AN ELECTRONIC TOOL AND CLINICAL JUDGMENT: INTERcheck VERSUS PHYSICIANS

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Background The software INTERcheck provides physicians with the potential drug-drug interactions (pDDIs) associated with a patient's treatment, classifying them based on clinical relevance from the literature, as A (minor), B (moderate), C (major), D (contraindicated).

Purpose To assess the concordance between the clinical relevance of pDDIs as classified by INTERcheck and the physician's personal judgement.

Material and methods This retrospective study, conducted in 4 wards between April–October 2014, identified pDDIs from medical records of elderly inpatients aged ≥65 years, on ≥5 drugs, using INTERcheck. Clinical relevance as classified by INTERcheck was then compared with physician's judgement through a structured interview consisting of four questions, as follows: is the pDDI known? is it clinically relevant?, if yes, why?, would knowledge of the pDDI at the time of prescription have changed your prescribing approach?

Concordance between INTERcheck and the physician's judgement was defined as: classification of "clinically relevant = yes" by physician and class C or D by INTERcheck; classification of "clinically relevant = no" by physician and class A and B by INTERcheck.

Results Medical records of 60 inpatients were analysed: 1,658 drugs were prescribed, 481 unduplicated pDDIs were detected by INTERcheck and subsequently evaluated by physicians. Of those, 229 (47.6%) were unknown and 235 (49%) were classified by them as clinically relevant: 158 (67%) for potential adverse effects, 58 (25%) for patient complexity/co-morbidity, 19 (8%) for other reasons.

According to INTERcheck, pDDIs were classified as: 12 (2.5%) A; 300 (62.4%) B; 113 (23.5%) C and 56 (11.6%) D.

Concordance between the physician's judgment and INTERcheck was : 83% (10/12) for A, 63% (189/300) for B, 73% (83/113) for C, 70%(39/56) for D. The knowledge of the pDDI at the time of prescription would have resulted in a change of treatment in 28.5% (137/481) of cases.

Conclusion A high concordance between INTERcheck and the physician's judgement was found throughout all INTERcheck classes. The lowest concordance was retrieved in class B. This finding will be taken into account to improve this database according to physician needs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-061 THE RECOGNITION/RECONCILIATION PROCESS IN ELDERLY PATIENTS: A RETROSPECTIVE STUDY IN GERIATRIC AND INTERNAL MEDICINE WARDS

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Background Polypharmacy, common in the elderly, is an important risk factor for drug-related problems. In this context, the hospital pharmacist can contribute to supporting clinicians in promoting the safe use of medicines.

Purpose To identify the need for an appropriate medicines reconciliation system in a sample of hospitalised elderly patients.

Material and methods Medical records of patients ≥65 years taking ≥5 drugs admitted during a one-month period to 5 general medicine and geriatric wards were retrospectively reviewed. The following data were collected by a hospital pharmacist: number of drugs prescribed, dose omission, frequency, administration route, pharmaceutical form and potential drug-drug interactions.

Results We analysed the medical records of 75 patients (36 men, 39 women, mean age 81 years). Overall, patients were admitted with 634 drugs used at home; in the first 24 h after admission and at discharge, 723 and 645 drugs were prescribed, respectively. At the recognition stage, the dosage form was omitted in 17% of prescriptions, the dose in 12%, route of administration in 20%, frequency in 26%.

At discharge rates of omission decreased to 2% for dosage form, 2% for route of administration, 7% frequency.

Overall, 816 potential drug-drug interactions were identified. In 13 medical records medicines were not prescribed in accordance with the hospital formulary; allergies/intolerances were not taken into account in 2 discharge letters and in 2 inpatient prescriptions, while 9 suspected adverse drug reactions were not notified.

Conclusion The review of the actual process of accuracy of drug recording in the patient's medical record highlights the need for a more structured procedure. An active role for hospital pharmacists is foreseen, in order to ensure the safe use of medicines.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-062 A PILOT STUDY ON HOW NURSES MANAGE DRUG SUBSTITUTION DUE TO DRUG CHANGES AND DISCREPANCIES BETWEEN PRESCRIPTIONS AND DRUG AVAILABILITY

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Background Drug tenders and shortages result in drug changes and may result in discrepancies between prescriptions and available drugs. A high requirement for drug substitution (generic and therapeutic) may pose a potential patient safety risk. Little is known about how nurses manage such challenges.
Purpose To investigate how drug substitution due to drug changes and discrepancies between prescriptions and available drugs are managed by nurses. A secondary aim was to document time spent by nurses to address these challenges.
Material and methods The study was designed as a cross-sectional survey. Data were collected from a paediatric (45-bed) and a medical (33-bed) ward at a Danish public hospital. A structured self-reporting form was used for data collection. All nurses on the two wards were invited to record any problem requiring drug substitution together with a time estimate. Data were collected during May and June 2014.
Results A total of 38 responses was obtained from which 2 were excluded. Eighteen responses were related to drug tender, two to drug shortages and 16 to other reasons including physicians failing to prescribe within the ward drug list. Nurses used different strategies to manage drug substitution. In 20 of the cases, a different drug from the one prescribed was dispensed. Other strategies included contact with a colleague, contact with the pharmacy, request for a new prescription and obtaining the drug from another department. On average, the nurses spent 7 min on each response. Two cases concerned non-registered drugs and both nurses reported requiring 35 min to solve the problem.
Conclusion Nurses use a variety of strategies to manage drug substitution. Direct generic or therapeutic substitutions were the most common strategies. In all cases nurses spend extra time managing the substitutions. Improved implementation of drug changes and focus on correct prescribing may indeed improve the safety of the medication process and reduce the time spent on drug dispensing.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-063 INTERVENTION OF HOSPITAL PHARMACISTS TO OPTIMISE HOME TREATMENT

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Background Drug-related problems (DRPs) are common among elderly patients using several drugs for the treatment of chronic diseases. The aim of the study was to evaluate the role of the hospital pharmacist in detecting and acting on problems related to home treatment.
Purpose To describe and analyse a program that enables a pharmacist to review home treatment at admission to a Short Stay Unit (SSU).
Material and methods The study was conducted from January 2014 to May 2014 in a general hospital. Polymedicated patients over 65 years old and awaiting SSU admission were included. The pharmacist developed the home medicines list using electronic primary care records, interview with the patient/caregiver and review of the medication bag. When DRPs were identified, they were reported to the physician through a document that contained treatment information and appropriate pharmacotherapy recommendations (PR). The physician had the information before the first prescription. The incidence and types of DRPs and acceptance of the PR conducted was measured.
Results 46 patients were selected, registering 529 chronic medicines in total, with an average of 11.5 ± 4.2 per patient. The mean age was 76 ± 9.6. The most frequent reasons for admission were heart failure (19.6%), acute exacerbation of COPD (15.2%), respiratory infection (10.9%) and acute bronchitis (10.9%). The average stay was 3.5 ± 2.7 days. In total 86 PRs were performed on 71.7% of patients (mean 1.9 ± 1.8). 50% of PRs were accepted. The PR distribution was: dose adjustment or posology 35 (62.9% accepted), drug interaction 24 (45.8% accepted), therapeutic equivalent 16 (37.5% accepted), contraindication or dose adjustment for IRC 7 (100% accepted), 1 duplication (1 accepted), 3 others (1 accepted). Therapeutic groups most frequently involved in the recommendations were antihypertensives 17.4%, inhaled β-agonists 16.3%, oral antidiabetics 9.3% and diuretics 8.1%.
Conclusion The high incidence of DRPs in patients considered at risk in our study highlights the importance of this type of intervention, admission to SSU resulting in an opportunity to optimise home treatment. The high degree of medical acceptance of pharmaceutical interventions shows its usefulness.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-064 CHEMOTHERAPY ADMINISTRATION SAFETY IN THE OUTPATIENT ONCOLOGY SETTING

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Background Administration of antineoplastic agents is a complex process due to the potential risks for patients. The "five rights" should be accepted as a goal of the medication process: the right patient, the right drug, the right dose, the right route, and the right time.
Purpose To describe the process used to reduce safety-related errors by using portable data assistants (PDAs) and barcode scanners that ensure the five rights are completed. In addition, we aimed to know the degree of safety perceived by nurses and patients during administration procedures.
Material and methods The medication process begins with the review of clinical information and prescription, then it continues with the pharmaceutical review, drug preparation and drug dispensing. Once the information is introduced into an Oncofarm system, a unique barcode is assigned to identify each treatment with each patient and a bracelet is printed for the patients. Nurses read each barcode using their PDA where the

information is displayed helping to prevent errors related with the five rights. Opinion survey questionnaires were handed out to 50 patients and 10 nurses to find out how they feel about drug safety.
Results Since the start of the use of a barcode system in November 2009 to July 2014 a total of 58,948 treatment regimens (91,159 drugs) have been administered to 4,560 patients. Regarding questionnaires, 95% of patients answered they felt totally safe when asked about the use of the barcode system. Among nurses, almost every aspect of the service provided was rated good or very good and 80% considered it a valuable tool to prevent medication errors. The increased perception of safety is considered the major advantage of the system.
Conclusion The development of the bar code system proved to be a valuable tool to improve patients' and nurses' perception of drug administration safety.

REFERENCES AND/OR ACKNOWLEDGEMENTS

American Society of Clinical Oncology/Oncology Nursing Society Chemotherapy Administration Safety Standards.

No conflict of interest.

PS-065 ANALYSIS OF MEDICINES ERRORS MADE IN A GENERAL HOSPITAL

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Background Hospital pharmacists must be focused on patient safety. Consequently, it is important to evaluate the impact of the occurrence of medicines errors (MEs).
Purpose To analyse MEs taking place in a General Hospital over a period of 5 years (2009–2013).
Material and methods Descriptive observational study of MEs reported in a General Hospital over a period of 5 years (2009–2013). Variables analysed: place, stage, drug, type, causes, consequences.
Results 422 MEs were notified in 5 years: 47, 51, 75, 111, 138. Annual growth: 8.51%, 47.06%, 48%, 24.32% respectively; overall growth: 193.62%.

- Place of detection: 33.65%, Hospital Pharmacy Service; 27.73%, Hospitalisation Units; 17.30%, Day Case Unit; 17.06%, Outpatient Clinics.
- Stage: prescription (63.74%); transcription (28.44%); dispensing, processing, supply manufacturer, validation, administration or labelling (7.82%)
- Drug (Anatomical Therapeutic Chemical classification): 41%, group L (Antineoplastic and immunomodulating agents); 14.22%, group J (Anti-infectives for systemic use); 11.14%, group N (Nervous system); 8.06%, group B (Blood and blood forming organs); 7.35%, group A (Alimentary tract and metabolism); 7.11%, group C (Cardiovascular system).
- Type: errors in dosage (36.02%), inappropriate medicine (24.64%) or patient (22.27%).
- Causes: lack of staff training (29.86%), lack of compliance of work procedures (27.25%), incorrect patient identified (14.93%), insufficient staff, without experience or under stress conditions (13.51%), problems in interpreting the prescription (11.85%).
- Consequences: the error did not reach the patient (70.14%); the error came to the patient but did not cause any damage (16.35%); circumstances or events which may cause error (10.19%).

Conclusion Reporting of MEs is increasing significantly, although the corresponding data are undervalued. Therefore, it is important to continue working on this aspect. It is crucial to report and analyse in detail the MEs taking place in hospitals. This way, the real conditions in which they occur can be known, and improvement strategies can be adopted to improve the safety.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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PS-066 A HIGH-RISK DRUG: INTRAVENOUS CONCENTRATED POTASSIUM CHLORIDE, HOW TO IMPROVE SAFETY AND QUALITY OF CARE?

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Background In the High Risk Medicines (HRM) field, intravenous potassium chloride (IV KCl) has an important role.
Purpose To assess nursing and medical practices in the management of hypokalaemia, to evaluate the accreditation norms of the hospital and define potential actions to make the use of IV KCl safe and standardised.
Material and methods A first audit of IV KCl prescriptions and administration practices was conducted, based on 33 electronic patient records regarding appropriateness of use (kalaemia during hospitalisation, administration rate, etc.). A second audit based on the "Adverse Drug Event Trigger Tool" was conducted to determine the number of iatrogenic hyperkalaemia events per 100 patients who received sodium or calcium polystyrene sulfonate, Kayexalate,during their hospitalisation. Finally, a list of the applicable measures was written with relevant actions depending on different actors.
Results The first audit indicated that 49% of the IV KCl administrations were inappropriate, 19% were appropriate because of patients' kalaemia and the other 32% also if the patient was unable to tolerate oral route. It is noticed from the second audit that 19% of Kayexalateprescriptions stemmed from iatrogenic hyperkalaemia caused by intravenous or oral KCl. Therefore, we decided to prioritise redaction and publication of internal guidelines about KCl use. Rationalisation of the KCl availability should be the second step to implement.
Conclusion Regarding the results, a key issue relates to the health professionals' training as well as the standardisation of hospital practices. Hypokalaemia and KCl administration management procedures have been validated by the Pharmaceutical and Therapeutic Committee. The availability of the different types of KCl in the Institution will be reviewed. Several improvements can be made in the near future.

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No conflict of interest.

PS-067 PERIPHERAL NEUROPATHY INDUCED BY OXALIPLATIN: RISK FACTORS

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Background Oxaliplatin is widely used in the treatment of solid cancers. The main limit of use is the occurrence of peripheral neuropathy (PN). The principal predisposing risk factors (RF) are: diabetes, chronic alcoholism, cumulative dose, malnutrition, history of gastrointestinal surgery (malabsorption of neuroprotectors such as the vitamin B12), anaemia, kidney failure and concomitant neurotoxic drugs.
Purpose To analyse these RFs and to determine a relationship between the number of RFs and the average cumulative dose (ACD) of oxaliplatin.
Material and methods Retrospective 2-year study (2011–2012), n = 96 patients. The RFs mentioned above were identified from patients' records. From the chemotherapy software Asclepios we identified the total cumulative dose and the threshold dose for occurrence of PN for each patient. The tests used were the Pearson correlation coefficient and Student's significance test.
Results The incidence of PN in our sample was 46%. 3 groups were identified: 0–1 RF (59%), 2 RF (27%), 3 RF or more (11%). The proportion for each RF was: anaemia (48%), malnutrition and antecedents of gastrointestinal surgery (40%), diabetes (16%), administration of neurotoxic drugs before or during chemotherapy (16%) and chronic alcoholism (13%). The ACD at the onset of clinical signs was 331 mg/m². According to the Summary of Product Characteristics the cumulative dose is 850 mg/m². In our sample it was 2.6 times smaller ($p < 0$). For each group it was 360 mg/m² in the 0–1 RF group, 250 mg/m²0 in the 2 RFs group and 215 mg/m² in the 3 RFs or more. It was inversely proportional to the number of RFs ($r = -0.930$) ($p = 0.069$).
Conclusion It has been shown that the greater the number of RFs, the lower the ACD at which PN occurs. According to the literature these RFs do not contraindicate the use of oxaliplatin and in practice the reducing or stopping of oxaliplatin is dictated by the clinical appearance of NP.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-068 UTILITY OF ROOT CAUSE ANALYSIS TO IMPROVE SAFETY IN THE USE OF IODINATED CONTRAST AGENTS

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Background Following the introduction of a new iodine-containing contrast medium (IC) (iomeprol) to our hospital formulary, an unexpected increase in adverse drug reactions (ADRs) to the IC was observed. Consequently, a root cause analysis (RCA) was made to identify the causes of adverse events, and to suggest improvements to prevent recurrences.
Purpose To determine the corrective measures resulting from an RCA to investigate the unexpected increase in ADRs associated with the introduction of a new IC (iomeprol) in the hospital, and to evaluate the effectiveness of measures implemented.
Material and methods The study was made in a 460-bed specialty hospital. The RCA multidisciplinary team was composed of medical and nursing directors and supervisors of radiology and pharmacy units. Steps followed in RCA involve: 1-problem description and data collection, 2-organisational system analysis, 3-human factor analysis, 4-team and material management analysis, 5-patient-related factors analysis, 6-RCA team proposal. The monthly number of ADRs notified before and after RCA was used to assess the effectiveness of corrective measures. Notifications of IC ADRs were extracted from the records of yellow card reports, as well as patient data, drug data and ADR data.
Results Proposals generated by RCA were: 1-to retrain radiology technicians and doctors on the use of IC pumps for administration, 2-to inspect pump calibration, 3-to verify the premedication needed. In the period 2009–2012 average notification of IC ADRs was 0.87/month. Since iomeprol was introduced in 2013/03 until RCA was performed (2013/05/08) 9 notifications were recorded (6/month); type and severity were similar to the previous period. Retraining and pump calibration inspection were finalised in June. The average IC ADR notification rate in the period July–December 2013 was 1.67/month. In the period January–October 2014, the notification rate was 0.89/month, similar to that before introduction of the new IC.
Conclusion 1. Technical training, machine calibration and patient evaluation were identified by RCA as aspects to improve. 2. After corrective measures had been taken, IC RCA notification has returned to the usual value.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-069 POTENTIALLY INAPPROPRIATE MEDICATIONS IN PRIMARY CARE OLDER PATIENTS IN TOLEDO (SPAIN): THE STOPP-START CRITERIA COMPARED WITH THE BEERS CRITERIA

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Background Prescribing potentially inappropriate medications (PIMs) and omitting essential drugs are a common problem in elderly. Application of Beers criteria and screening tool of older persons' potentially inappropriate prescriptions (STOPP) in primary care setting has not been studied broadly.
Purpose To identify PIMs using Beers and STOPP criteria. The START (Screening Tool to Alert doctors to the Right Treatment) criteria were applied to detect potential prescribing omission in elderly patients in Primary Care.
Material and methods A descriptive, observational study was carried out for patients over 65 years, with more than 6 medications who attended in 5 Medical Centres Primary Care between October 2013 and June 2014. The patients were randomly selected to participate in the study.

The patient demographic data including medical histories, current diagnoses and current medications were recorded by a pharmacist. PIMs have been defined as patient who met any of the Beers 2012, STOPP or START criteria.

Results Number of patients: 270. Average age: 80 years. Total prescribed medications: 2.758, average 10, 2 per patient. The highest prevalence was related to drugs for the cardiovascular system, inhibitors of proton pump, statins and omeprazole.

There were 49%, 59%, 20% PIMs found using Beers, STOPP and START criteria, respectively. The most common PIMs using Beers and STOPP criteria were short-acting benzodiazepine prescribed to elderly patient with a history of falls (31% vs. 24%). The STOPP criteria were duplicate drugs prescriptions among (24%), higher doses than 150 mg/day of aspirin (7%). Common PPOs identified included antiplatelet for diabetes with high cardiovascular risk index (18%), vitamin D and calcium supplements for known osteoporosis patients (17%).

Conclusion STOPP/START criteria showed higher MPIs detection capability than Beers criteria. This study confirms the high prevalence of PIMs among older adults comparing prior studies (16.3–62.5%). This can be explained by the diversity in the severity of disease in the study subjects.

REFERENCE

1 Beers, STOPP/START Criteria

No conflict of interest.

PS-070 INTERVENTIONS TO ADDRESS RISK OF DRUG-INDUCED HYPOKALEMIA IN HOSPITALISED PATIENTS

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Background Certain drug combinations preferred for the patients being treated in the chest diseases ward may lead to hypokalaemia (e.g. concurrent use of corticosteroids, diuretics and xanthenes with beta agonists) and thus may result in dangerous cardiac arrhythmias.

Purpose To reduce the risk of arrhythmia for patients thought to be in need of pharmacist interventions due to particular drug combinations in their received treatments.

Material and methods The hospital computer system was used by pharmacists to check patients' e-charts daily. Drug combinations expected to result in hypokalaemia were detected from recent literature data. Patient files located in the wards were accessed to monitor the potassium levels.

Results 220 patient charts were examined during a 2-month period. Drug interactions associated with hypokalaemia were observed in 92 charts. Combinations of methylprednisolone sodium succinate, furosemide and theophylline with salbutamol were those most frequently observed to be of concern. Inclusive of additional laboratory tests requested for 12 patients, the number of patients observed with a decreasing level of potassium was 32 in total. Consequent to discussion with physicians, treatment was modified for 8 patients and pharmacists continued to monitor potassium levels for 24 patients.

Conclusion Hospitalised patients are frequently prescribed drug combinations that may result in hypokalaemia. Pharmacists' collaboration with physicians and involvement in the care of these patients can lead to better outcomes.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-071 SUBMANDIBULAR SIALADENITIS CAUSED BY ONDANSETRON IN A PATIENT WITH RISK FACTORS

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Background Ondansetron is a powerful and highly selective serotonin receptor antagonist used to prevent nauseas and vomiting after surgery or chemotherapy. Sialadenitis consists in the formation of stones along the salivary duct.

Purpose To describe a case of ondansetron-induced sialadenitis and the prevention of its reappearance.

Material and methods Data obtained from the medical records and direct interview with the patient, were: age, sex, pathology, concomitant drugs and resolution. Side effects and interactions of each drug were obtained from the product information and Micromedex.

Results A 28-year-old woman in treatment with temozolomide for a low-grade astrocytoma, sought help in her third cycle of chemotherapy for obstruction of the salivary duct.

The patient was taking escitalopram and levetiracetam. Temozolomide, ondansetron and dexamethasone had been recently introduced, so they were the most likely agents to have caused the event.

In the list of possible adverse effects of every agent, sialadenitis is not referenced but xerostomia is described in the information about ondansetron (5%) and escitalopram (4–9%) and it could have worsened with the vomiting and dehydration.

Studying the interactions between the drugs did not warn us. The mechanism of action of ondansetron over the 5-HT4 receptor can explain it. Some antidepressants block cholinergic receptors contributing to this situation but escitalopram has a very low effect over them, the reaction was unexpected.

The Naranjo algorithm assigned 5 points (likely) to both as the causative agents but there are no previous notifications of this adverse event.

The stone dissolved spontaneously after oral hydration and the salivary duct became milky. The pharmacist instructed the patient in correct oral hydration and the event did not occur again during the next 12 months of treatment.

Conclusion High dose of ondansetron added to escitalopram may cause salivary duct stones in patients with other risk factors such as vomiting and dehydration. The pharmacist can prevent new stones from appearing by teaching patients good oral hydration practices during treatment.

REFERENCE

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No conflict of interest.

PS-072 INCIDENCE, MANAGEMENT AND COST OF TELAPREVIR/BOCEPREVIR-INDUCED THROMBOCYTOPENIA DURING THE FIRST 12 WEEKS OF TREATMENT IN PATIENTS WITH HEPATITIS C

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Background Protease inhibitor-based triple therapy increases the expected incidence and severity of haematological adverse events, with repercussions on the total cost.
Purpose To assess the incidence, management and incremental cost of thrombocytopenia in chronic hepatitis C virus (HCV) patients treated during the first 12 weeks with telaprevir/boceprevir-based triple therapy.
Material and methods Retrospective observational study conducted (June 2012–February 2013) at the outpatients department of a general hospital. HCV genotype-1 patients were included treated with telaprevir (750 mg/8 h) or boceprevir (400 mg/8 h), ribavirin (1,000–1,200 mg/day) and Peg-IFN-α2a (180 μg/week) or Peg-IFN-α2b (1.5 μg/kg/week). Patients were monitored during the first 12 week of treatment. Their medical records were reviewed for platelet count at baseline, week 4 and 12 from the start of triple therapy. Thrombocytopenia was categorised according to degree of toxicity and magnitude of change. Additional procedures due to thrombocytopenia (clinical appointments, laboratory tests, drugs and platelet concentrates) were recorded and costed.
Results 53 patients were included: 32 men, 51 ± 10years-old, 73 ± 7kg. 36 patients were treated with telaprevir and 17 with boceprevir. Platelet counts were 107.7 ± 59.1 × 10^9/L at week 4 and 104.2 ± 64.4 × 10^9/L at week 12. No significant differences were found in the magnitude of change at week 4 (-44 × 10^9/L (95% CI: -99 × 10^9/L to 10 × 10^9/L)) and 12 (-48 × 10^9/L (95% CI: -106 × 10^9/L to 10 × 10^9/L)). Table 1 shows the degree of thrombocytopenia. 42 patients experienced thrombocytopenia. In these, 130 medical visits were involved, 13 emergency room visits, 2 days of hospitalisation, 165 blood tests and 2 treatments with eltrombopag. The incremental cost was 12,709 euros (240 euros/patient). Increased costs of 156 euros/patient were estimated with thrombocytopenia grades I-II and 566 euros/patient with grades III-IV.

Abstract PS-072 Table 1

	Week 0	Week 4	Week 12
Degree 0	50	24.3	20.7
Degree I	40.4	40.5	51.7
Degree II	7.7	18.9	6.9
Degree III	1.9	13.5	17.2
Degree IV	0	2.7	3.4

Conclusion Patients with telaprevir/boceprevir-based triple therapy experience a high incidence of thrombocytopenia during the first 12 weeks, with significant impacts on overall cost, especially for grades III–IV. The cost of adverse events should be taken into account when considering the financial burden of the disease.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-073 REGIONAL PROJECT: RISK MANAGEMENT IN HOSPITAL WARDS AND NURSING HOMES FOR ELDERLY RESIDENTS

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Background Risk management is essential for the delivery of safe high-quality social care services. Medicines errors compromise patient confidence in the healthcare system and increase healthcare costs.
Purpose The aim of this exploratory analysis was to detect the status of implementation of the national Recommendations for the safe and secure handling of drugs in hospital wards and nursing homes for the elderly of our Region.
Material and methods The project was conducted in some hospital wards (n = 210) and nursing homes for elderly residents (n = 67). The survey involved all public hospitals (21 AULSS, 2 University Hospitals, 2 IRCCS) and 16 private hospitals of the region. Nursing homes were recruited by AULSS. The project was carried out by pharmacists through visits to the hospital wards and nursing homes, interviews with medical/nursing staff, direct observation and checks. Data were collected between July–October-2013 in a database and analysed by a multidisciplinary working group (pharmacists, pharmacologists, clinicians, nurses).
Results The project has showed, both in hospital wards and nursing homes, some critical issues: low adoption of procedures on medicines reconciliation (34% and 30%); patients' allergy information not consistently documented in the clinical record (74% and 69%); low reporting rates of ADRs (11% and 4%). Moreover, 35% of hospital wards and 46% of nursing homes did not store look-alike-sound-alike drugs (LASA) in different locations or use alert stickers on shelves where LASA drugs were present.
Conclusion There is the need to develop a risk management culture, both in hospital wards and in nursing homes. A regional multidisciplinary working group will develop a medicines reconciliation process, in order to improve the transitions of care throughout the hospitals/nursing homes and within the practice setting. Moreover, we need to take initiatives to encourage healthcare professionals to report ADRs and to encourage them to manage risks systematically.

REFERENCE

1 ASHP_Guidelines_on_Preventing_Medication_Errors_in_Hospitals

No conflict of interest.

PS-074 OMISSION OR OVERPRESCRIPTION OF DRUGS DURING HOSPITAL RECONCILIATION CAUSED BY ERRORS IN THE INFORMATION SOURCES

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Background Hospital/home treatment reconciliation often finds a lack of concordance between how patients take their medicines and how they should take them.
Purpose To reveal which drugs patients take and are not included in our clinical information sources (medical income report and electronic primary care history) and which drugs patients do not take but are recorded in these sources. All of them were detected by a pharmacist-patient interview.
Material and methods For two months a hospital pharmacist carried out treatment reconciliation at admission. Home treatment information from the two clinical information sources was recorded, and then a medicines interview was conducted. A

report was written reflecting the real use of medicines in every case. All omitted or overprescribed drugs were recorded for statistical analysis.

Results 23 patients were interviewed, 73.6 ± 11.6 years, with a median of 9 drugs in their home treatment (range 5 to 20), 63.6% women. We found that 25.9% of patients had medicine (s) omitted from their medical admission reports, and 17.8% from their electronic primary care history. A total of 83 drugs were omitted in the physician admission reports. These included some high-risk drugs: 3 patients taking digoxin, 3 antiplatelet drugs and 2 anticoagulants. 36 drugs were omitted in the primary care electronic clinical history, including 2 omissions of anticoagulants and 2 antiplatelet agents. Regarding medicines that the patient did not take but were stated in the information sources: the physician admission report overprescribed 30 drugs, including 1 antiplatelet drug, 1 antipsychotic and 1 antidepressant (high-risk drugs). With respect to the electronic clinical history, 24 drugs were overprescribed, including the high-risk drugs 1 antiplatelet drug, 2 antipsychotics and 2 antidepressants.

Conclusion The quality of the data provided by the information sources is not sufficient, creating a risk of drugs omission or over-prescription. Hospital pharmacists could contribute positively to medicines reconciliation at admission.

REFERENCE

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No conflict of interest.

PS-075 EVALUATION OF TOXICITY OF STANDARDISED TRIPLE INTRATHECAL CHEMOTHERAPY

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Background Intrathecal administration of methotrexate, cytarabine and hydrocortisone (i.e. triple intrathecal therapy) is commonly used to treat and prevent central nervous system (CNS) involvement in leukaemias and lymphomas. The dose, volume and method of preparation and administration of intrathecal chemotherapy are highly variable in clinical practice. Thus, the standardisation of the preparation of the triple intrathecal therapy (TIT) is recommended.

Purpose To describe the incidence and severity of adverse events (AEs) due to standardised TIT in adult patients.

Material and methods Prospective observational study performed from January 2013 to June 2014 of adult patients treated with standard TIT (methotrexate 12 mg, cytarabine 30 mg and hydrocortisone 20 mg, in a final volume of 8 ml and pH and osmolarity values 7–7.5 and 280–310 mOsm/kg, respectively). The severity of AEs was classified according to Common Terminology Criteria for Adverse Events (CTCAE) grade.

Results Twenty patients, 5 female and 15 male, median age 50 years, were included. Median monitoring time: 8.5 [1.5–19] months. The most common diagnoses were non-Hodgkin's lymphoma (59%), acute lymphoblastic leukaemia (30%) and acute myeloid leukaemia (15%). TIT was administered via lumbar puncture in all patients, and the indication was prophylaxis of CNS involvement in 19 patients. During the study period, 56 TIT treatments were administered (2.8 TIT/patient). Seven patients (36%) showed any adverse events (AEs). AEs occurred in 30% of administrations: headache (23.2%), vomiting (17.9%), dizziness (5.4%), back pain (3.6%), paresthesias (1.8%) and orthostatic hypotension (1.8%). All AEs were acute; the median time of onset was 26 [1–72] h and the median duration of event 48 [1–720] h. The severity was: 22.6% grade 1, 74.2% grade 2 and 3.2% grade 3. All toxicities resolved.

Conclusion The incidence of mild and moderate AEs associated with TIT is relatively frequent, headache being the most common AE such as described in the literature. No long-term toxicities were observed. Therefore, the TIT shows an acceptable toxicity profile.

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No conflict of interest.

PS-076 PREVALENCE OF QT PROLONGATION UPON HOSPITALISATION AND THE ANALYSIS OF POTENTIALLY RELATED PRIMARY CARE TREATMENTS IN CARDIOLOGY PATIENTS

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Background QTc (corrected QT interval) prolongation can lead to acute ventricular arrhythmias. A risk factor for this condition is the use of drugs that potentially prolong the QTc interval.

Purpose To analyse the effect of QTc-prolonging drugs (QTPDs) on the QTc interval of patients admitted to cardiology units. Drug-drug interactions that could increase this effect were also evaluated.

Material and methods Observational, prospective study was completed in a tertiary hospital (1,350 beds) from July–September 2014. QTc intervals upon admission were measured by two arrhythmologists for prolonged QTcs (>450 ms for men, >460 ms for women per American Heart Association/European Heart Association consensus). Patients with pacemakers or wide QRS (>120 ms) were excluded. Home and inpatient drug treatment regimens were evaluated by pharmacists for QTPDs and drug-drug interactions.

Results Over the study period, 111 patients were evaluated (median age = 71.8 years, 38.2% female). Upon admission, 34 patients (30.6%, 95% CI: 22.2–40.1) had a prolonged QTc interval (mean QTc = 488.53 ± 21.8 ms). Of these, 9 patients (26.5%) had a home regimen that included at least one QTPD. A difference was not found between the mean QTcs of patients treated with QTPDs (486.0 ± 17.8 ms), QTPDs with interacting drugs (487.8 ± 20.8 ms), or no QTPDs (480.5 ± 22.1 ms). Half of the QTPDs prescribed were antidepressants. Furthermore, 18 patients (52.9%) were taking interacting medicines prior to admission that potentially contributed to this QTc prolongation (beta-blockers = 94.0%; diuretics = 61.1%).

Conclusion Almost one-third of patients hospitalised in cardiology units had a prolonged QTc interval at admission, increasing their risk of developing potentially fatal arrhythmias. Before hospitalisation, the majority of patients were receiving QTPDs or interacting medicines; however, this study did not observe a

related increased risk of QTc prolongation (limited by a small sample size). It is unknown how further treatment in the hospital affects these patients' risk. Therefore, it is recommended to evaluate QTc intervals of cardiology patients upon admission and closely monitor for additional risk factors of QTc prolongation and arrhythmias during hospitalisation.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Nursing staff

No conflict of interest.

PS-077 STUDY OF DRUG INTERACTIONS IN A MEDICINE DEPARTMENT

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Background The potential drug-drug interactions (PDDI) in a multidrug treatment (MDT) regimen must be taken into account when prescribing, as adverse effects (AEs) may occur that might make it necessary to choose an alternative treatment.

MDT regimens are usually being prescribed by different doctors. This practice increases the risk of DDI and it is fundamental to acknowledge them and identify at-risk patients early.

The AEs resulting from DDI can be reduced or avoided with dose adjustments or changes in the regimen, or even stopping some drugs.

DDIs can be classified according to severity as major, moderate and minor. The focus of our study was in the group of potential major drug–drug interactions (PMDDI), which can threaten the patient's life or result in permanent injury.

Purpose To analyse the PDDI profile of medical prescriptions according to severity and identify the most frequent PMDDI and the drugs involved.

Material and methods Retrospective study of PDDIs (checked on Drug Interactions Checker of *drugs.com)* on all prescriptions of medical ward patients, who were discharged from February to March 2014, by consulting the patient's clinical record. Descriptive statistical analysis was performed.

The following data were collected: number of prescriptions/patient analysed, patients' average age, average number of prescribed drugs/prescription, maximum number of major interactions/prescription,% of prescriptions with interactions detected; % of prescriptions with potential major interactions (MI), main drugs involved (MD) and more frequent interactions (MFIs).

Results

Abstract PS-077 Table 1

Prescriptions/patient analysed	234
Average age	75.3 ± 15.2 years (132?, 102?)
Prescribed drugs/prescription	11.5 ± 4.5
Major interactions/prescription	11
% of prescriptions with interactions detected	97.50%
% of prescriptions with potential major interactions	71.4%
Main drugs involved	Enoxaparin (10.9%)/Potassium Chloride (9%)
More frequent interactions	Acetylsalicylic Acid-Enoxaparin (11.1%)

Conclusion The data analysis revealed a huge number of PDDI. This leads us to the conclusion that the pharmacist intervention in this area will increase safety in medicines administration.

In future the development of an intervention plan regarding the most frequent PMDDIs will improve the health care provision.

It's our goal to introduce an automatic notification system for the prescriber at the time of prescription in order to manage these interactions.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-078 REVIEW OF CLOSTRIDIUM DIFFICILE ISOLATES IN A GENERAL HOSPITAL

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Background Several studies indicate that 96% of patients with symptomatic C. difficile infection had received antibiotics within 14 days prior to the onset of diarrhoea. Complications include dehydration, electrolyte disturbances, toxic megacolon, hypotension, renal failure, systemic inflammatory response syndrome, sepsis and death.

Purpose To analyse patients admitted to our hospital testing positive for toxins A + B of C. difficile over 4½ years and to determine the associated mortality.

Material and methods Descriptive retrospective study conducted between 1 January 2010 and 30 June 2014 that included all hospitalised patients testing positive for C. difficile toxins A + B. Dara recorded were antimicrobial treatments before detection of toxins, condition for which they were prescribed, treatment to eradicate C. difficile and its duration. The percentage of patients who died during that admission or within 10 days of discharge was also determined.

Results Results were positive in 60 samples from 54 patients, 51.7% women and 48.3% men, with a mean age of 76.2 years. The most common pathologies for which antibiotics were prescribed were respiratory infection (36.4%), urinary tract infection (27.3%), intra-abdominal infection (16.4%), unspecified febrile syndrome (7.3%) and others (12.6%). 35 patients (64.8%) received more than one antimicrobial prior to detection of C. difficile, mainly ß-lactams (63.0%) and fluoroquinolones (27.8%).

Treatments prescribed for eradication of C. difficile were:

- Metronidazole (63.3%): <7 days in 4 isolates, 7–10 days in 18 of them, >10 days for 15 and five patients died during treatment.
- Oral vancomycin (20%): <7 days in 1 patient, 7–10 days in 3 isolates and >10 days for 8 of them.
- No treatment: 10 patients (16.7%).

Of the patients evaluated, 18 died (32.7%).

Conclusion The number of patients in whom toxins A + B of C. difficile were positively identified was low, probably due to the low degree of clinical suspicion and not too satisfactory sensitivity of the technique. Prescribing for treatments for eradication was not appropriate in 27.8% of patients (10 received no treatment and 5 for insufficient time). The mortality rates found in our study agree with data from the literature (22–40%).

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-079 IMPLEMENTATION OF PROACTIVE MEDICINES RECONCILIATION TO REDUCE DRUG ERRORS AT ADMISSION

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Background Medicines reconciliation (MR) is a critical step for reducing medicines errors (ME) at admission to hospital care. However, because of resource constraints it can be difficult to implement in hospital pharmacists' everyday practice. The Lean method is used to streamline and optimise processes considering all stakeholders and resources.
Purpose To redesign the medicines management process at admission to reduce MEs.
Material and methods A Lean approach review was conducted of the current medicines management process at admission (retroactive MR process) in order to define the new process (proactive MR), with all the stakeholders (clinicians, nurses, pharmacists, pharmacy technicians, head nurses). 5 activities were performed:

- mapping of the current process (retroactive MR process)
- measure of unintended medicines discrepancies (UMDs) at admission
- analysis of the collected data and root cause implementation
- design of a new improved process (proactive MR)
- implementation and measurement of the new process

Only patients more than 65 years old and/or taking at least 3 medicines before admission were included.
Results 52 patients were initially included (75 years, 7.4 medicines/patient). 46% had at least 1 UMD (0.75 UMDs/patient) and 28.2% of UMDs had the potential to cause moderate to severe discomfort or clinical deterioration. After implementation of the new MR process, 50 patients were included (70 years, 6.9 medicines/patient). The percentage of patients with at least 1 UMD decreased to 12% ($p < 0.01$) (0.16 UMDs/patient) and 28.6% of UMDs had the potential to cause moderate to severe discomfort or clinical deterioration.
Conclusion Results demonstrate that proactive MR is effective in reducing ME on admissions orders and suggest that Lean is fully adapted to improve the medicines management process. Other studies are warranted to evaluate the impact of Lean on ME reduction.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-080 SAFETY SYSTEM IN THE ADMINISTRATION OF INTRAVENOUS CHEMOTHERAPY

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Background Patient identification bracelets and their verification by infrared scanner help to minimise errors during administration of intravenous anticancer drugs.
Purpose To quantify the number of correct administrations, type of mistakes avoided and the level of implementation of the new safety system for administration of intravenous drugs.
Material and methods A retrospective descriptive study was designed with all patients who received intravenous anticancer drugs in Oncology Day Hospital (June 2014–September 2014). The identification bracelet was printed and put on the patient by the nurse. The scanner read the barcode of each intravenous preparation: chemotherapy and supportive treatment, and the Data matrix code of the bracelet with patient data. The system verified that dosages and the administration steps in the order specified in the chemotherapy management software (Farmis-Oncofarm V.2011.0.4.6) were correct. All the information was recorded in a database through a WiFi system. The end points examined were: number of correct administrations and number and type of mistakes that were avoided. The level of implementation of this system was assessed as the number of drugs preparations identified by infrared scanner compared to the total number of completed administrations.
Results During the study period, 476 patients were included with 13,805 administrations (21% cytostatic drugs and 79% supportive treatments). The level of implementation obtained was 67%.

Abstract PS-080 Table 1

	N	%
Correct administrations	8,559	92.32
Mistakes avoided during medication administration	541	5.84
Order of drug administration	513	5.53
Wrong-patient medication error	26	0.29
Expired drug	1	0.01
Incorrect date of scheduling	1	0.01
Drug not found in the database	171	1.84
Total	9,271	100

Conclusion

1. The safety system was used in more than a half of administered cycles.
2. Errors related to order of administration were the most common identified.
3. The level of implementation of the identification system would require an improvement in order to benefit the maximum number of patients.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-081 ACCIDENTAL CYTOTOXIC EXPOSURE OF PAEDIATRIC PATIENTS, RELATIVES AND HEALTHCARE STAFF: IMPROVING THE SAFETY OF CYTOTOXIC SYRINGES

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Background In paediatric patients with cancers, cytotoxic drugs are often prepared in syringes to reduce injection volumes. In view of the risk of nurses being exposed to cytotoxic substances, the syringes were secured with special devices from Codan

laboratories. Several problems of cytotoxic leakage, involving syringes, were reported to the pharmacist. As the safety of healthcare staff and patients was evidently being compromised it was decided to systematically analyse and report every undesirable event.
Purpose To evaluate the safety problems related to the administration of cytotoxic syringes and to test a different system in order to replace the current device if needed.
Material and methods Over 6 months, we systematically interrogated the nurses who were reporting a problem and the devices involved were inspected. Each incident was reported to the manufacturer and the devices were sent back to them. Nurses also tested a new administration system from BD PhaSeal. A scoring table was used to assess the staff satisfaction on technical and safety criteria.
Results The Codan device was involved in seven incidents. Breaks were systematically observed at the junction between the tubing containing the cytotoxic and the non-return valve. The safety of nurses, patients and their relatives was then compromised. However, according to the manufacturer, the device was not faulty and our complaint was not followed up.

Consequently, we decided to test the new device from BD (the PhaSeal system). 18 nurses participated, they assigned a score of 2.5/3 for safety criteria and 2.2/3 for handling criteria. This device seemed to improve the safety of patients and staff regarding cytotoxic exposure and microbiological contamination.
Conclusion Risk management is an important concern for pharmacists working in paediatric oncology units. Close collaboration with physicians and nurses allowed us to improve the safety of children and staff.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-082 PHARMACISTS AND HOME ARTIFICIAL NUTRITION: WHAT EMERGED FROM A NATIONAL AND REGIONAL SURVEY

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Background Artificial home nutrition (AHN) is a constantly expanding area. This study focuses on the management of AHN on a national level and on the pharmacist's role in this field.
Purpose To screen the management of Artificial Nutrition at a national level by means of a survey.
Material and methods About 150 hospital and regional pharmacists answered a questionnaire of 50 questions, focusing on AHN.
Results Only 45% of the hospitals offer AHN services and only 35.5% of pharmacists are involved in it. The data given by "Società Italiana Nutrizione Artificiale e Metabolismo" show 83.9% of Hospitals offer Enteral Nutrition at home and 16.1% Parenteral Nutrition at home. Only 10% of hospitals are governed by a regional law, while 65% obey general regulations and more than 25% lack any legislative instrument that guarantees the immediate start of AHN treatment. The survey looked for the existence of AHN working groups at regional level: 44.7% of the people interviewed replied saying there was a working group, while 31.6% answered there wasn't. Furthermore 22.4% of the people interviewed were not aware of the benefits offered by a working group. Another significant result concerned the role in charge of training the patient: in 40.8% of the cases it was the doctor, in 51.3% it was the nurse, while in only 3.9% was it the pharmacist. The result is that, when an AHN unit is set up, it manages all the phases of the treatment and standardises the initial phases of the treatment (in more than 80% of the cases).
Conclusion The situation of AHN in Italy appears highly fragmented, with various structural differences in each region and the role of the pharmacist is still limited.

REFERENCES AND/OR ACKNOWLEDGEMENTS

The authors wish to thank all the pharmacists for their contribution.

No conflict of interest.

PS-083 ANALYSING MEDICATION ERRORS REPORTED: A BASIS FOR CONTINUOUS IMPROVEMENT

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Background In France, the reporting, evaluation and prevention of medication errors (ME) are regulatory requirements for hospitals. This represents a key point in the risk management policy and the improvement of the quality of patient care. In our hospital, MEs are reported using electronic software (BLUEMEDI) to facilitate their declaration.
Purpose To analyse medication errors reported in order to identify ways of improvement.
Material and methods Quantitative and qualitative retrospective analysis of MEs reported from January 2010 to August 2014. The data were extracted from BLUEMEDI software and classified according to ME characteristics, contributing factors and their belonging to the national list of events that should never happen ("never events").[1] Multidisciplinary team work (MTW) has identified ways of improving.
Results 90 MEs were analysed. Most MEs were administration errors (AEs) (75.6%, n = 68) and only 22 (24.4%) were prescribing errors. Regarding the characteristics of AEs, there were 16 drugs errors, 15 administration technique errors, 10 dose errors, 7 drug omissions, 7 drug storage errors, 6 drug administration traceability errors, 5 patient errors, 2 drug preparation errors. Furthermore, 16 (23.5%) of these AEs were part of "never events": 6 concerned anticoagulants, 5 insulin, 3 potassium chloride, 1 a paediatric solution. All of these "never events" were preventable and the human factor was involved in 14 (87.5%) of situations. To raise awareness among nursing staff about AEs, the MTW suggested implementing a play-based training scenario, error checking in a standardised patient room. Topics have been chosen from the "never events" that have occurred.
Conclusion Learning from our mistakes is one of the first steps towards a safer care system. This retrospective analysis allowed us to develop targeted training. Furthermore, establishing a training program based on error detection will not only raise nurses' awareness of administration errors but also improve knowledge of them.

REFERENCE

1 http://www.sante.gouv.fr/securite-du-medicament-a-l-hopital.html

No conflict of interest.

PS-084 NEW ERRORS ASSOCIATED WITH COMPUTERISED PHYSICIAN ORDER ENTRY SYSTEM: INCORRECT MEDICATION SCHEDULE

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Background The introduction of a computerised physician order entry (CPOE) system in 2010 changed the way of working in our hospital. Previously, the administration of medicines was scheduled by nurses, whereas now it is set in advance by physicians. Medicines administration can be delayed or omitted if nurses are unaware of CPOE timetables fixed in advance.
Purpose To quantify and analyse medication errors associated with incorrectly scheduled prescriptions.
Material and methods Retrospective observational study of a 10-day period. To facilitate the study only one daily medicine regimen was selected (levofloxacin). Started or modified treatments (sequential treatment, treatment or timetable change), and their administration records were reviewed the day after. Omission was considered if the medicine was not administered in a 24 h period, and incorrect prescription if the pre-arranged timetable was 8 h later than that stated in the prescription or if a dose was repeated in the day.
Results 20 levofloxacin start treatments and 48 modifications were collected (47 oral and 21 intravenous). Classified by Service: 18 Respiratory (RES), 16 Internal Medicine (IMD), 16 Emergencies (E), 13 Cardiology (CAR), 5 others.

9 omissions (13%) and 6 duplicated doses (9%) were detected. 5 errors occurred on starting and 10 during sequential treatment. Classified by Service: E, 3 omissions and 2 duplications (31%); IMD, 3 omissions and 2 duplications (31%); CAR, 2 omissions and 1 duplication (23%); Others, 1 omission (20%); RES, 1 duplication (5%). Incorrect prescription (35%) was the cause in all errors that occurred.
Conclusion CPOE systems reduce potential errors associated with medication. However, these systems can be a source of new errors if they are used incorrectly. To prevent these errors a system of continuing CPOE training is necessary for physicians. Due to the results, the Pharmacy Service informed all physicians about correctly scheduling medication, giving examples.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-085 IMPACT OF DRUG INCIDENT REPORTING ON THE WORK OF PHARMACEUTICAL SERVICES

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Background The growing introduction of new therapeutic options has contributed to increased awareness of patient safety in Health Care. Different studies have quantified the medication errors that take place at every step of the medicines use process.
Purpose To evaluate the impact of drug incident reporting on the way the Pharmaceutical Services (PS) work.
Material and methods Retrospective study, 2011–2014, of the drugs-related incident reports recorded on the Incidents Reporting Platform (IRP). All notifications were assessed regarding the stage of the medication process, root-cause analysis and categorising of medicines.

These incidents were assessed in the PS and corrective or preventive actions taken according to ISO 9001:2008 by the Quality Department.
Results 425 incident reports were recorded on the IRP, 45 (10.6%) regarding drugs. Of these, 73.3% were related to the dispensing process, 4.4% to preparation, 17.8% to drug administration and 4.4% to patient identification.

Most incidents are potential errors that are detected early and do not reach the patient, considered near misses (JCI).[1] The drugs involved were look-alike sound-alike (LASAs), β-lactams and amiodarone. The most frequent causes related to drug dispensing (73.3%) were omission of a medicine (36.4%) and wrong medicine (21%).
Conclusion Reporting systems (RS) are a key element for building a culture of safety. RS are useful if data is assessed and information is provided back to the health professionals involved. Following the assessment of these reports improvements have been implemented in the drug circuit: change in the location, confirmation before dispensing (random or total), and random weekly audits of medicines repackaged at the Pharmacy warehouse facilities. Study limitations include the absence of reports related to prescriptions, which should be encouraged in order to improve safety.

REFERENCE

1 *Joint Commission International Accreditation Standards for Hospitals*, 5th ed. JCI, April 2014

No conflict of interest.

PS-086 ERRORS ASSOCIATED WITH A COMPUTERISED PHYSICIAN ORDER ENTRY SYSTEM: INCORRECT NON-DAILY MEDICINES REQUESTS

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Background Computerised physician order entry (CPOE) systems prevent medicines being requested without a prescription. However, potential errors still occur due to incorrect treatment requests.
Purpose To quantify and analyse potential medicines errors associated with incorrect nurse requests for medicines scheduled less often than every day.
Material and methods Prospective observational study carried out over three months in units using CPOE and unit-dose medicines dispensing systems. Data about non-daily medicines schedules (every 48 or 72h, weekly,..) requested by nurses were collected.
Results 45 medicines requests were checked during this period. Classified by schedule: 14 weekly, 7 every 48 h, 7 biweekly, 5 single dose, 4 Monday-Wednesday-Friday, 8 others. Classified by medicine: 15 epoetin alfa, 4 weekly alendronate, 4 intramuscular risperidone, 4 intramuscular paliperidone, 18 others. Classified by cause: 27 not dispensed in unit doses due to stability or other special issue, 9 starts of treatment, 6 with errors in the requests, 2 dispensing errors, 1 missed medicine.

A total of 6 incorrect requests were detected (13%): weekly epoetin alfa, weekly alendronate, prednisone every 48 h,

mercaptopurine every 48 h, furosemide every 48 h, buprenorphine every 72 h. Only one of these errors occurred in medicines not dispensed in a unit dose (1 of 27 requests), and the others in unit-dose dispensed medicines (5 of 18 requests).

All the incorrect requests had been prescribed correctly.

Conclusion CPOE reduces potential errors associated with medicines, such as requests for medicines that have not been prescribed. However, errors associated with medicines requests are still happening. These incorrect requests occur despite a correct prescription, therefore an exhaustive revision of the system for requesting non-daily medicines is necessary to prevent this source of errors.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-087 MEDICINES RECONCILIATION AT HOSPITAL DISCHARGE

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Background Discharge from hospital is a high-risk period for medicines errors. Unintentional medicines discrepancies may contribute to drug-related problems at home.

Purpose To identify and assess the clinical impact of unintentional medicines discrepancies at hospital discharge in order to reduce them.

Material and methods Patients admitted to the internal medicine department in August 2014 were included in this prospective study. Any differences between the patient's current home medicines (based on pre-admission prescriptions and medical history in the patient's file) and the discharge prescription were listed. Discrepancies were categorised with physicians as intentional or unintentional.

The clinical impact of unintentional discrepancies was assessed by two physicians and one pharmacist as may having no, minor, significant or major consequences.

Results 62 patients were included (52.3% men – average age: 73.1 ± 15.5 years). The average number of medicines per patient was 6.1 ± 3.9.

295 discrepancies were identified at discharge: 80.3% intentional and 19.7% unintentional.

The unintentional discrepancies were classified as 43.1% (25) missing chronic medicine, 8.6% (5) addition of a new drug, 8.6% (5) different dose, 15.5% (9) different frequency, 20.7% (12) change to therapeutic equivalent and 3.5% (2) other.

21.8% (12) of discrepancies may have had significant consequences for the patient, 50.9% (28) minor consequences and 27.2% (15.7) no impact.

Only 42.3% (124) of intentional discrepancies were documented in discharge letters.

Conclusion Discharge is a particularly vulnerable transitional interface regarding the number of discrepancies and their potential clinical impact.

Omission of chronic medicines and change to therapeutic equivalents – which may be confusing for elderly patients – were the most common discrepancies.

Intentional discrepancies not communicated to family physician can lead to the patient's care not being changed.

Obtaining a complete picture of medicines at admission is another difficulty due to multiple prescribers.

This study highlights the need for medicines reconciliation to prevent adverse drug events and to improve continuity of care and patient safety.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-088 ASSESSMENT OF ANTICHOLINERGIC EFFECTS OF DRUGS PRESCRIBED FOR THE ELDERLY

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Background Elderly patients have a higher risk of adverse reactions associated with drugs with anticholinergic properties. Anticholinergic drugs may produce cognitive impairment, delirium and falls and can increase functional dependence.

Purpose To determine the extent of anticholinergic exposure in older people at admission to an internal medical ward. To assess the association between this exposure and anticholinergic adverse effects using two different scales.

Material and methods Observational and retrospective study of elderly patients (≥75 years old) admitted to an internal medical ward in March and April 2014. Total anticholinergic risk was assessed by the Anticholinergic Risk Scale (ARS) and the Anticholinergic Cognitive Burden Scale (ACB). The two scales consider in a different way the drug-associated risk of developing an anticholinergic symptom. Data were obtained from emergency reports while admitting to the internal medical ward and from the pharmaceutical management program Farmatools.

Results 148 patients, 49.3% men. Mean age: 84.8 ± 5.4 (75–97). Mean drugs prescribed at admission: 8.4 ± 3.8 (1–20). 86.5% lived at home and 13.5% in a nursing home. 10.3% died during admission. According to the ARS and ACB scales, 28.4% and 62.2% of patients were taking an anticholinergic drug at admission. 37.2% of patients had an anticholinergic symptom.

Results from the ARS scale showed a statistically significant association between taking an anticholinergic drug and developing an anticholinergic symptom ($p = 0.008$) OR = 6.76. No association was found with the ACB scale ($p = 0.485$).

42 patients were taking at least one anticholinergic drug at admission, according to the ARS scale. This predicts a grade 1 risk: levodopa-carbidopa, quetiapine, trazodone 19% each; paroxetine 11.9% and risperidone 9.5%. Grade 2 risk: tolterodine 4.7% and amantadine, olanzapine and baclofen 2.4% each. Grade 3 risk: tizanidine and amitriptyline 4.8% each. Average extent of anticholinergic exposure was 1.5 ± 0.74. At discharge, at least one anticholinergic drug was removed from 14.3% of these patients.

Conclusion A high percentage of elderly patients admitted to an internal medical ward were taking an anticholinergic drug. In our study, we found a correlation between anticholinergic exposure as defined by the ARS scale and adverse anticholinergic symptoms.

The ARS scale predicts an association between the taking of an anticholinergic drug and the development of an anticholinergic symptom (6.76 times higher risk).

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-089 IMPLANTATION OF A SAFETY STRATEGY FOR DRUG STORAGE IN A PHARMACY SERVICE

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Background Patient safety is a key factor in the quality of care and it is the object of public attention.

Improvement strategies have stimulated the development of models that allow a better understanding of the adverse effects related to health care. The most common adverse effects are related to drug use and often are preventable. Therefore, they have to develop strategies to reduce and detect them.

Purpose To describe the development of a strategy designed to improve drug's storage and dispensing in a pharmacy service to ensure patient safety.

Material and methods Literature review about drugs that are confused: drugs that must be stored and dispensed in special conditions because of their photosensitivity, drugs whose active generic or trade name are written or pronounced in the same way (look-alike, sound-alike: LASA) or drugs that bear a heightened risk when used in error (high alert medication).

Design a colour labelled to avoid the possible confusions. Photosensitive drugs were labelled with yellow point, "LASA" with green and high alert medication with red point. Then, it has been set some posters with the colour code to teach the pharmacist and technicians. After that, we evaluated the results and checked with a survey among the technicians, that this strategy was useful.

Results Of 2,490 drugs that are stored, 89 (3.57%) were categorised as photosensitive drugs, 6 (0.24%) as "LASA" and 66 (2.65%) as high alert medication.

Four error related with dispensation were registered along three months before intervention, however any error has occurred the quarter after that. In addition, after an audit, all the photosensitivity drug's are stored in optimal conditions.

From 15 technicians surveyed, 90% say to know the strategy implemented and consider it like useful.

Conclusion This strategy has helped the pharmacy service to improve the storage and dispensing quality, avoiding medication error and providing the drugs in optimal conditions to the patients, increasing their safety.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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PS-090 RESULTS OF A MEDICINES RECONCILIATION PROGRAM IN COMPLEX CHRONIC PATIENTS AT HOSPITAL DISCHARGE

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Background Risk of medicines discrepancies is high during care transitions where treatment changes are frequent.

According to the Institute for Healthcare Improvement, medicines reconciliation is the formal process of obtaining a complete list of the patient's prior medicines and comparing it with what has been prescribed on admission, care transitions or hospital discharge. Changes should be documented and communicated properly to the follow-up physician and patient or caregiver.

Purpose To determine the drug discrepancies at hospital discharge of complex chronic patients.

Material and methods Cross-sectional study over 6 weeks in a secondary hospital to investigate the prevalence of reconciliation discrepancies of complex chronic patients. The criteria for consideration as a complex chronic patient included: 2 hospitalizations with minimum 9 days length of stay and a chronic disease. We excluded patients whose destination was a nursing home, healthcare centre or home care plus a support program. A pharmacist reviewed a report of all the complex patients' chronic medicines at discharge and compared them with treatment prescribed in the electronic prescription and medicines prior to regular admission,

Results We reviewed all complex chronic patients who were discharged from July 15th 2014 to August 31st 2014 (n = 103) and we included 92 patients. Mean age was 78.5 years and 58.3% were men. 63% of patients had a discrepancy between the information in the discharge report and electronic prescriptions given to the patient. Overall we found 1.3 discrepancy rate per patient. The highest percentage of discrepancies occurred by omission (49.2%), followed by incorrect frequency (29%), dosing errors (19%) and others (3%)

Conclusion Unjustified medicines discrepancies between discharge report and electronic prescription are frequent. This can lead to medication errors or doubts about the correct overall treatment. A multidisciplinary team: doctor, pharmacist and nurse could prevent a high percentage of these discrepancies with a final review of the medicines prescribed at discharge. Furthermore, it is important to explain the medication plan to the patient or caregiver.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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PS-091 BENEFITS OF MEDICINES RECONCILIATION IN AN EMERGENCY UNIT

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Background To improve drug treatment in an emergency unit, we tested Medicines Reconciliation (MR) based on the WHO High5 Medication Reconciliation program method.

Purpose To assess the contribution of MR and to measure the pharmaceutical time required for this activity.

Material and methods This study lasted from June to October 2014. Patients had to meet the following eligibility criteria: admission to Emergency unit followed by admission to hospital, aged between 65 and 90, poly-medicated, with their medicines presenting a risk. Discussions with the patient (or his family if he could not be questioned), his pharmacist, his GP are all information sources (IS) enabled the pharmacist to write an

Optimised Medicines Appraisal (OMA). The MR compared the OMA to the first hospital prescription. The prescriber categorised differences found as intentional (ID) or non-intentional (NID) differences, which equate to medicines errors (ME). NID were categorised according to potential danger (minor, significant, major, critical) and type (oversight, duplication, dose error, dosage error, computer error). Time spent at each stage was measured in minutes.

Results Amongst eligible patients, 1 to 2 (n = 44; 8.76%) were randomly selected daily. Average population age was 79 years (M/F = 1.38) with 9.6 ± 2.8 (median = 9) medicines prior to admission. At least one difference (ID + NID) was found in all patients (44/44). Amongst them, 29 (66%) presented at least one NID: 19/29 with 1 NID, 8/29 with 2 NID and 2/29 with 3 NID. Total NID detected was 39: major 23/39 (59%), significant 8/29 (20.5%) and minor 8/39 (20%). Moreover, 74.4% (29/39) of errors consisted of a medicines oversight, 20.5% (8/39) dosage errors, 5.1% (2/39) dose errors. MR took 36.6 min ± 12 min (median = 36) per patient. Time necessary to avoid 1 major ME was 65 min.

Conclusion Finding more than half of patients with major NID demonstrated the benefits of MR. We have to find the resources to establish MRs in the Emergency unit.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-092 EVALUATION OF PATIENT SAFETY CULTURE AMONG HEALTHCARE PROFESSIONALS IN A PHARMACY DEPARTMENT

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Background Patient safety is an important component of healthcare quality. The Hospital Survey on Patient Safety Culture (HSOPSC) designed by the Agency for Healthcare Research and Quality is a validated tool used to assess the patient safety culture in hospitals. However, few studies have been performed exclusively in Pharmacy Departments.

Purpose The aims of the study were to evaluate the patient safety culture of healthcare professionals in a Pharmacy Department, to analyse the strengths and opportunities for improvement and to compare with a multicentre study (n = 2,503) carried out in national hospitals by the Ministry of Health, Social Services and Equality in 2008.

Material and methods Descriptive and cross-sectional study. The national adaptation HSOPSC was delivered to all staff of the Pharmacy Department. It included 12 dimensions related to patient safety culture, the number of events reported during last year and professional profile of the responders.

Results The response rate was 70.7% (n = 28), half of whom were pharmacists (14/15) and the other 50'0% included technicians, pharmacy assistants, nurses and administrative staff members (14/26). The global score of patient safety culture in our service was 7.5 (on a 10-point scale) and there were no significant differences among professional profiles. 47.8% of responders reported >2 events last year and there were significant differences between pharmacists (57.1%) and non-pharmacists (33.3%). The most highly-scoring dimension was 'Organisational learning and continuous improvement' (84.2%). The worst qualified was 'Staffing' (38.7%). In the comparative study, the global score of patient safety culture was 7 and the highest and the worst dimensions were the same (82% and 27.6%, respectively).

Conclusion Patient safety culture in our department is notable and slightly higher than comparison national hospitals. The HSOPSC allowed us to detect the main strengths and opportunities for improvement in order to design patient safety strategies.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-093 PHARMACEUTICAL INTERVENTION TO PREVENT METFORMIN-ASSOCIATED LACTIC ACIDOSIS IN DIABETICS ADMITTED WITH KIDNEY FAILURE

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Background Metformin is widely used against diabetes type II mellitus. Its most severe adverse effect is lactic acidosis. Although rare, the risk of its development can be increased by kidney failure (KF).

Purpose To report on pharmaceutical interventions (PIs) for preventing metformin-associated lactic acidosis (MALA) in diabetics admitted to hospital with KF and to evaluate their degree of acceptance.

Material and methods This prospective study (October 2013–March 2014) included all metformin-treated patients admitted. Creatinine clearance (CrCl) was estimated with the Cockcroft-Gault equation. PIs were: PI-1, stop-order for metformin when CrCl < 30 mL/min or CrCl = 30–45 mL/min associated with other MALA risk factors (MALA-RFs); PI-2, 50% reduction in maximum dose (2.550 mg/day) when CrCl = 30–45 mL/min with no other MALA-RF; PI-3, request for new renal function analysis when CrCl is unknown. MALA-RFs considered: kidney, liver, heart and respiratory failure, infection, alcoholism, surgery, iodine contrast. Variables recorded: sex, age, hospital department, daily dose, serum creatinine, CrCl, MALA-RFs, PI performed.

Results During the study period, 234 metformin-treated patients were admitted (61.5% males), most frequently to the Cardiology Department (33.3%); mean (standard deviation) age was 71.3 (12.4) yrs; mean dose was 1,552.8 (560.7) mg/day. CrCl < 30 mL/min was recorded in 5.6% of patients, CrCl = 30–45 mL/min in 14.1%, and CrCl was unknown in 1.7%. PIs were performed in 44 patients (52.3% females, 61.4% ≥80 yrs). MALA-RFs: heart failure (34.1%), infection (34.1%), liver failure (22.7%), respiratory failure (18.2%) and surgery (4.5%). PIs performed: 38 PI-1 (34.2% when CrCl <30 mL/min), 2 PI-2 and 4 PI-3. Acceptance was 64.8% overall, 66.7% for PI-1 (91.7% when CrCl < 30 mL/min) and 66.7% for PI-3. No PI-2s were accepted.

Conclusion A small proportion of these patients had KF. A large majority of these required PI, most frequently PI-1. The degree of satisfaction was high and was especially elevated for PI-1 when CrCl was <30 mL/min.

REFERENCES AND/OR ACKNOWLEDGEMENTS

AEMPS

No conflict of interest.

PS-094 BISPHOSPHONATE TREATMENT AND ATYPICAL FRACTURES

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Background Bisphosphonates are a safe and effective treatment for osteoporotic disease, due to decreasing bone resorption mediated by osteoclasts. However, if the treatment lasts for 2–4 years, it may increase the formation and propagation of microcracks into the bone. As a result, patients may be susceptible to suffer atypical fractures, mainly in the subtrochanteric region and femoral shaft.
Purpose To analyse and assess the prevalence of atypical femur fractures in surgical patients treated with bisphosphonates.
Material and methods Descriptive observational study in a tertiary teaching hospital with 413 beds. We reviewed every inpatient of orthopaedic surgery from February 2013 until September 2014. Data collected included age, gender, domiciliary pharmacotherapy and medical history of the episode.
Results 585 surgery inpatients were studied, of which 34 (5.8%) had long-term bisphosphonate use for osteoporosis. 27 (79.5%) were female and 7 were male patients. The median age was 77 ± 9.5 years and the median duration of treatment was 17 ± 8.5 months.

Among patients reviewed, different bones were involved: 16 (47%) of them had femur fractures and 18 (53%) had other fractures: there were 11 patients with knee fracture (32.2%), 3 (8.8%) with shoulder fracture, 2 (5.9%) with wrist fracture, and the remaining patients had vertebral fractures. The average duration of treatment in patients with atypical femur fracture was 13 ± 3.2 months.

At the time of hospital discharge, 8 (23.5%) patients who had suffered some kind of fracture continued with bisphosphonate treatment, whereas 26 (76.5%) discontinued treatment at home.
Conclusion In our study, half of the patients who have been treated with long-term bisphosphonates suffered atypical femur fracture. Bisphosphonate treatment should be evaluated periodically by the primary care physician to prevent the occurrence of atypical fractures in patients with more than 12 months' treatment.

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No conflict of interest.

PS-095 DRUG INTERACTIONS BETWEEN IMATINIB AND THE USUAL HOME TREATMENT

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Background Imatinib has a high likelihood of drug interactions due to hepatic oxidative metabolism.
Purpose To evaluate the incidence and severity of interactions between imatinib and home treatment of oncohaematology patients.
Material and methods Retrospective observational study of oncohaematology patients treated with imatinib between January and March 2014. The following data were collected: age, sex, diagnosis, date of start and end of treatment with Imatinib and concomitant prescribed medicines. Imatinib interactions with other drugs were assessed by the software tool Micromedex 2.0. These were classified as: contraindicated, severe, moderate and mild.
Results 24 patients were included. 58% were men (n = 14) with a mean age of 61 years. The main indication for imatinib was chronic myeloid leukaemia (54%). 164 prescriptions were analysed. The most prescribed therapeutic groups were: analgesics (19%), antidepressants and anxiolytics (16%), antihypertensives (11%) and gastric protectors (10%). 16 interactions between imatinib and concomitant treatment were detected, affecting 50% of patients. 69% were severe interactions and 31% moderate interactions. 6 patients had one severe interaction, 2 had two severe interactions, 1 patient suffered a severe and a moderate interaction and 2 patients each had two moderate interactions. Severe interactions were due to paracetamol (n = 8), acenocoumarol (n = 2) and amiodarone (n = 1). Moderate interactions were for itraconazole (n = 2), tamsulosin (n = 1), ketoconazole (n = 1) and levothyroxine (n = 1). The effect of severe interactions was reviewed and no clinical relevance was detected to date. These patients were selected for special monitoring by the pharmacist.
Conclusion Like other studies on the subject, our study shows that there are numerous interactions between imatinib and other drugs. The interactions detected are severe or moderate. It is important to keep track of patients treated with imatinib who take paracetamol due to the very frequent use of this drug.

REFERENCE

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No conflict of interest.

PS-096 DENOSUMAB-INDUCED HYPOCALCEMIA IN PATIENTS WITH METASTATIC BONE DISEASE

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Background Denosumab is a human monoclonal antibody used to prevent skeletal-related events (SREs) in patients with bone metastases from solid tumours. Although antiresorptive treatment reduces the risk of SREs, it also reduces the release of calcium (Ca) from bone into the bloodstream. In September 2014, the Spanish Agency for Medicines and Health Products issued an alert for the risk of severe hypocalcaemia in patients receiving denosumab, recommending that Ca levels be monitored and adequate Ca and vitamin D supplementation be given.
Purpose To determine the prevalence of hypocalcaemia induced by denosumab.
Material and methods A retrospective review of patients undergoing treatment with denosumab from April 2013 to October

2014 in a general hospital. Demographic and clinical data were obtained from Pharmacy Department records, patient medical histories and laboratory software.
Results A total of 28 patients treated with denosumab were included in the study (53.6% male, mean age 62.6 ± 14.2). Hypocalcaemia was observed in 10 patients (35.7%): 3 grade I, 5 grade II, 1 grade III and 1 grade IV (Common Terminology Criteria for Adverse Events, v4.0). 3 patients who developed hypocalcaemia had impaired renal function at baseline (GFR < 35 ml/min). 16 of all patients (57.1%) received Ca and vitamin D supplementation. Hypocalcaemia was more common in patients who did not receive Ca and vitamin D vs. those who did (6 vs. 4 patients). Only 2 patients developed grade III or IV hypocalcaemia, they both did not take Ca and vit D supplements.
Conclusion Hypocalcaemia is a common side effect of denosumab despite adequate calcium and vitamin D supplementation. Despite the small sample size, we recorded less hypocalcaemia in patients taking Ca and vitamin D. Ca levels should be closely monitored during denosumab treatment.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-097 ADMISSIONS CAUSED BY IATROGENIC DISEASE IN A REFERENCE HOSPITAL

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Background Iatrogenic disease is an important cause of admission to hospitals in the Internal Medicine Unit. It is very important to evaluate the doses of the drugs indicated, renal and hepatic functions and possible interactions in order to avoid it.
Purpose To evaluate the prevalence of admissions for iatrogenic illness in the Internal Medicine Unit and to determine which drugs were most frequently associated with adverse events.
Material and methods Retrospective observational analysis in which we investigated patients diagnosed with iatrogenic conditions admitted to the Department of Internal Medicine during 2013. Data were collected related to the drug responsible for the adverse reaction, the severity and type, and also demographic data such as age and gender.
Results 273 patients were admitted to the Internal Medicine Unit. 29 (10.62%) of these admissions were caused by a drug. The mean age was 80.1 ± 6.3 years (55% were male). Drugs implicated and adverse reactions were: **1**. Digitalis drugs (27.6%): bradycardia and heart failure. **2**. Oral anticoagulants (24.1%): 4 gastrointestinal bleeds and 3 soft tissue hematomas. **3**. Diuretics (13.8%): 3 hyponatremia and 1 renal failure. **4**. Corticosteroids (10.3%): severe hyperglycaemia. **5**. Neuroleptics (10.3%): 2 confusional syndrome and 1 hepatitis. **6**. Nonsteroidal anti-inflammatories in 1 person (3.5%): renal failure. **7**. Insulin (3.5%): hypoglycaemia. **8**. Angiotensin converting enzyme inhibitors (3.5%): renal failure. **9**. Spironolactone in 1 person (3.5%): hyperkalaemia. Two patients died (6.8% of iatrogenic patients) one by digitalis poisoning and another because of gastrointestinal bleeding.
Conclusion Drug-induced illness is an important cause of admission to our hospital. Drugs with a narrow therapeutic index such as oral anticoagulants or digoxin are the main ones responsible.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

PS-098 ROLE OF THE PHARMACIST IN THE IMPLEMENTATION OF A COMPREHENSIVE SAFETY PROGRAM

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Background Clinical safety is a priority healthcare quality issue. Health services have implemented patient safety projects to prevent adverse events.
Purpose To assess whether the inclusion of a clinical pharmacist in the safety program improves the effectiveness and safe use of medicines.

To analyse the type of interventions carried out.
Material and methods We conducted a one year descriptive study of the role of the clinical pharmacist as a part of a multidisciplinary safety team.

The study took place in an integrated healthcare organisation that includes primary care (7 centres), a hospital (110 beds) and an intermediate care facility (210 beds). We recorded and analysed pharmaceutical tasks and interventions.
Results The pharmacist's portfolio includes: identification of medicines-related risk in the computerised prescription program, the arrangement of stocks of medicines on hospital wards, identifying and locating separately high-risk drugs, the recording of safety-related interventions through the validation of medical electronic prescriptions, drug reconciliation and review of safety notifications from the core hospital safety team.

1,031 interventions were recorded derived from validation of prescriptions: 143 drugs suspended due to an interaction, duplication or contraindication; 180 modifications of dose, route or frequency of administration; 204 drug reconciliations at admission; 68 therapeutic drug monitoring or blood tests to check adverse drug events; 87 interventions to improve antibiotic prescribing and control infections; 25 incomplete prescriptions and 42 drugs omitted that were needed for the patient; 282 adjustments of drugs to hospital guidelines.
Conclusion Pharmacist interventions promote the effectiveness and safety of treatments in terms of: drug reconciliation, dose adjustment and reduction of drug-related problems, such as contraindications, duplications or interactions.

The most common interventions concerned compliance with hospital guidelines.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-099 DRUG-DRUG INTERACTIONS IN FLUOROPYRIMIDINES-BASED REGIMENS USED IN COLORECTAL CANCER TREATMENT

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Background Drug interactions in oncology are of particular importance due to the narrow therapeutic range and inherent toxicity. The incidence of interactions increases when patients are polymedicated, which is very common in cancer patients as they often have other co-morbidities.
Purpose To identify potential drug–drug interactions in patients with colorectal cancer treated with fluoropyrimidines-based regimens and concomitant treatment.
Material and methods Retrospective study to evaluate drug interactions in patients with colorectal cancer who started chemotherapy between January and March 2014, in a central hospital, and who were also prescribed other drugs. Interactions were screened using the Lexi-Interact database between chemotherapy regimens including FOLFOX4, mFOLFOX6, FOLFIRI, capecitabine and fluorouracil continuous infusion, supportive treatment for prevention of emesis (dexamethasone, ondansetron) and other prescribed treatment.
Results Of the patients who started fluoropyrimidines-based chemotherapy, 29 were also prescribed other drugs, the majority cardiovascular and Central Nervous System drugs. Of the 108 drugs prescribed, 20 interacted with the chemotherapeutic regimen, and accounted for 34 interactions, with an average of 1.2 interactions per prescription. According to the Lexi-Interact database 10 had risk rating C and required monitoring of side effects; 23 had risk rating D and were recommended for treatment modification or aggressive monitoring; 1 had risk rating X which required avoidance of the combination. The drugs included in the chemotherapy regimens with the highest number of interactions were dexamethasone (n = 20) and fluorouracil (n = 8).
Conclusion The screening of drugs for the treatment of co-morbidities was based on electronic medical records hence OTC drugs and dietary supplements were not included in this study. The identification of these drug interactions enables their inclusion in the prescription program, allowing alerts to be issued at the time of prescription.

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No conflict of interest.

PS-100 VENOUS THROMBOEMBOLISM (VTE) PROPHYLAXIS FOR HOSPITALISED MEDICAL PATIENTS (HMP) WITH LOW MOLECULAR WEIGHT HEPARIN (LMWH)

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Background VTE is a public health problem; the prevention of VTE is a strategy to improve patient safety. In Portugal 53 percent of HMPs are at risk of VTE and preventive measures are in place for only 59 percent of them.
Purpose To assess the risk of VTE in HMPs based on risk factors (RF), to analyse the prescription of LMWH, to determine the number of patients (a) with prescriptions without RF/contraindicated (CI), (b) without prescriptions with RF, (c) with an unadjusted dose, (d) with prescriptions and RF (e) without prescriptions or RF/CI. To evaluate the need to develop a VTE Risk Assessment Model (RAM).
Material and methods HMPs in three services were studied over 2 months. Patients with anticoagulants at therapeutic doses were excluded. Medical records were consulted to find RF. Patients were classified according to the Cohen RAM and according to the prescription of LMWH. Physicians were consulted. Pharmaceutical intervention and medical justification were recorded.
Results Of all patients (141), 67.4% were classed as having RF for VTE; 56.7% had received prophylaxis with LMWH. Patients were classified in (a) 9.2%, (b) 19.9%, (c) 2.1%, (d) 45.4% and (e) 23.4%. Pharmaceutical interventions were made in 31.2% of prescriptions, prescriptions were changed in only 3.6%. Age factor >75 years (44.7%), active cancer requiring treatment (23.4%) and acute infection (18.4%) were the three most common RF.
Conclusion Of patients who are not treated prophylactically (30%), a large number is due to the lack of consensus in relation to VTE prophylaxis in cancer patients, sick patients with dementia and patients in palliative care.

As clinicians do not follow a RAM for VTE, the need to develop a consensual model has been identified.

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No conflict of interest.

PS-101 RISK MANAGEMENT OF HBV REACTIVATION IN HAEMATOLOGICAL PATIENTS TREATED WITH RITUXIMAB

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Background Treatment with rituximab may cause reactivation of hepatitis B virus (HBV).
Purpose To find out if HBV serology for patients with haematological diseases treated with rituximab is routinely performed in accordance with the HBV reactivation prophylaxis protocol. According to the results, to develop a strategy to ensure compliance with the protocol.
Material and methods Observational, retrospective study of haematological patients who started treatment with rituximab between December 2012 and April 2014. The HBV reactivation prophylaxis protocol requires patients to be screened before starting treatment with rituximab and, depending on the serological results, the recommendations of the European Association for Study of the Liver and Asociación Española para Estudio del Hígado are to be followed. The following data were collected: date of initiation of treatment with rituximab, date and results of serology (HBsAg, anti-HBc, viral DNA).
Results 96 patients were included. The protocol was not followed in 24 patients (25%). Non-compliance was due to no screening for HBV in 21 patients (22%). The remaining 3 patients (3%) were anti-HBc positive and in one of them the viral load was not determined. Furthermore, none of the 3 received the recommended prophylactic treatment required because they were anti-HBc positive. We therefore propose making the proper HBV screening and monitoring of all patients treated with rituximab an essential requisite prior to the

pharmaceutical validation. This is to ensure that the serological profile of HBV is available and that preventive actions and treatments have been carried according to the serology results.
Conclusion The risk of reactivation of HBV is due to: absence of HBV serology and absence of viral DNA levels and/or recommended prophylactic treatment according to the protocol. The proposed strategy to prevent HBV reactivation is to include serological profiling as a requirement for pharmaceutical validation of those patients treated with rituximab.

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No conflict of interest.

PS-102 CAN THE PATIENT BRING MEDICINE TO THE HOSPITAL? – THE USE AND RISK OF BROUGHT IN MEDICINES

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Background Due to the limited selection of drugs (adjusted to the specialties of the hospital in question), hospitals are not always able to satisfy the patients' demands for medicines, therefore the patients often bring their own medicines to the hospital. This seems to be financially beneficial for hospitals, but it is not entirely lawful and the inaccurate administration of drugs (caused by uncontrolled and sometimes hidden drug taking) leads to medicines errors.

This is a significant problem of daily practice and it is unfortunately present in all hospitals in the country.
Purpose To describe the motivation and the attitudes of the stakeholders (physicians, nurses, pharmacists, patients) and their daily practice.
Material and methods Pharmacists were asked to fill in an anonymous online survey. They were reached through the Chief Pharmacists. (The response rate was 70% (26 hospitals).) 14 wards of our hospital were approached. The head nurses filled in an anonymous printed survey. The response rate was 93%. The attitudes of the inpatients of two wards was also compared, which differed in the average length of in-patient stay (one short-term and one long-term) by interviewing 74 patients.
Results Controversial legislation leads to uncertainty. All the three surveys showed that there is no standardised practice, it follows that individual solutions are used everywhere. However – in spite of the current laws – it is still important to know about and to document the products that are taken by the treated patients.
Conclusion Under current regulations the complexity of what medicines patients are really taking is not clear during the hospital treatment. The survey revealed that there is a strong need among patients and health care staff for new legislation which would clearly regulate the kinds of drugs that can be brought to the hospital, and the conditions under which they can be used.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-103 PRESCRIPTION OF QUETIAPINE FROM THE PERSPECTIVE OF PATIENT SAFETY

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Background Atypical antipsychotics need a prescription check (visa), that is, a prior official authorisation of prescriptions, so as monitor patient safety.
Purpose To describe the prescription of quetiapine in a health area and compare the indications for prescribing with the indications approved on the visa summaries from the perspective of patient safety.
Material and methods We conducted a descriptive observational study of the prescription of quetiapine between 15th September and 15th October 2014 in a visa unit of a health area, formed by a hospital and a primary care district.

We recorded the following variables: gender, age, medical service, indication and acceptance or rejection. Quetiapine indications allowed by the visa are: (1) schizophrenia, (2) depressive episodes associated with bipolar disorder, (3) moderate to severe manic episodes in bipolar disorder, (4) prevention of recurrence of manic or depressive episodes in patients with bipolar disorder who previously responded to quetiapine treatment, (5) add-on ongoing treatment in patients with major depressive disorder who have had sub-optimal response to treatment with other antidepressants, (6) persistent aggressiveness among elderly people with moderate to severe dementia, who have contraindication or have not responded to other treatment (benzodiazepines, haloperidol, risperidone).
Results We assessed 31 prescriptions for quetiapine (58.1% male, mean age 65 ± 19.4 years). The medical services were primary care (41.9%), mental health (32.3%) and neurology (6.5%). The main indication for quetiapine was "persistent aggressiveness with moderate to severe dementia" (32.3%), "followed by depressive episodes associated with bipolar disorder" (22.6%), "schizophrenia" (19.4%) and "moderate to severe manic episodes in bipolar disorder" (19.4%). Four prescriptions (12.9%) were not correct according to the visa, so they were rejected.
Conclusion Discrepancies between the drug's visa recommendations and real use of quetiapine commonly occur, which means added risk for the patients. The visa unit is essential to promote the safer use of atypical antipsychotics.

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No conflict of interest.

PS-104 INITIATIVE FOR IMPROVING MEDICINES SAFETY IN SURGICAL INPATIENTS

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Background Audits of the drug prescribing process in hospitals can help to identify problematic fields in relation to drug treatment. This can increase patient safety by preventing potential medicines errors.
Purpose To quantify the frequency of drug-related problems (DRPs) and assess consequent interventions in hospitalised patients.
Material and methods The study took place in the vascular and general surgery ward over a 6-week period in 2014. Medicines recorded on patient charts were reviewed by a pharmacy resident in order to identify DRPs. DRPs of chronic medicines and those newly prescribed during the stay in hospital were assessed. Interventions were also recorded. The number of chronic medicines (i.e. including polypharmacy status: taking ≥6 medicines) in relation to DRPs were analysed (SPSS, T-test).
Results Medicines of 171 patients (vascular surgery: 105, general surgery: 66) were assessed. Overall 123 DRPs were identified from 89 patients. Majority (68%, 84 cases) of DRPs were related to newly prescribed medicines while the rest (32%, 39 cases) were related to chronic medicines. In case of chronic medicines the most frequent type of error (71%) was inaccuracy of product strength or recording of dosing regimen. In newly prescribed drugs the lack of daily update on patient charts was the most frequent DRP (60%). The most frequent types of intervention were clarification of dosage/dosing regimen (60 cases) and clarification of the necessity for daily dosing (50 cases). Association was found between the number of medicines and DRPs: firstly, patients with polypharmacy had significantly higher chances of DRPs (OR: 2.45, 95% CI: 1.14–5.26; p = 0.020), secondly, in the vascular surgical ward, the average number of chronic medicines per patient was significantly higher when DRPs were found (7.1 ± 4.5 vs. 8.9 ± 3.5, p = 0.03).
Conclusion We identified drug-related problems (DRPs) in every second patient. Pharmacists are able to detect and solve DRPs and prevent potential medicines errors.

REFERENCE

1 PCNE Classification of DRP V **6**.2

No conflict of interest.

PS-105 IMPLEMENTATION OF A UNIQUE AUTOMATION AND MANAGEMENT PLATFORM TO EXTEND PROCESS CONTROL TO ALL MEDICINAL PRODUCTS PREPARED FOR CANCER PATIENTS

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Background Many publications have demonstrated that robotic automation represents a unique solution to assure absolute quality and safety of the oncologic treatment admixture process. Nevertheless, there are a small number of preparations (i.e. investigational drugs) that are currently not candidates for robotic preparation. In order to extend the total quality concept to the entire production process, we have designed and implemented an automation platform composed of: (1) a robotic system for automated admixtures (APOTECAchemo); (2) a guided preparation system to support manual admixtures (APOTECAps); (3) workflow management software that manages all pharmacy production activities for both systems (APOTECAmanager).
Purpose Here we focus the attention on APOTECAps to analyse the measurable improvements in production quality it has introduced. It is important to understand the overall impact on a pharmacy activity in relation to both error reduction and workload.
Material and methods A 4-month period of using APOTECAps was monitored in the University Hospital of Ancona (the first hospital with the entire platform). Regarding APOTECAps, the production time and errors intercepted were extrapolated from the system log file that records every single operation. Concerning the manual procedure, a third operator clocked the compounding time.
Results The number of medicines analysed was192 with 25 active ingredients. 11 mistakes were intercepted (5.7%): 3 were associated with wrong component supplied, 4 with tolerance exceeding 10%, 3 with adjustment of amount of drug or solvent.

In terms of preparation time, the mean time was 220 s and 125 s respectively for the guided and the manual preparations. The guided procedure came out 1.8 times slower than the traditional manual procedure.
Conclusion The implementation of a guided preparation system increases medicines quality and patient safety. 11 potential medicines errors were intercepted at an early stage, giving us the chance to rectify them. However, a high level of control comes with an important impact on the working time required to produce the products.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-106 ADMINISTRATION MISTAKES IN CYTOSTATIC UNIT

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Background The cytostatic unit is a critical area in a hospital, therefore drug-related mistakes should be analysed in order to increase safety and effectiveness in patients treated with chemotherapy.
Purpose To evaluate drug-related mistakes during transcription, preparation or administration of cytostatics.
Material and methods Prospective study, two months duration, in which every member of staff involved in the validation (pharmacists), preparation for compounding, compounding and administration of cytostatics (nurses) reported any mistake found, including category of mistake, date and who detected it.
Results 73 drug-related mistakes were recorded at the cytostatic unit: prescription mistakes (28.3%), transcription mistakes (39.3%), compounding mistakes (16.6%), pre-compounding mistakes (15.8%).

Of them, 60.3% were category A, 25.1% category B, 5.1% category C and 9.5% category D. Category A was defined as circumstances or incidents able to end in a mistake, B, there was a mistake but it did not reach the patient, C, the mistake reached the patient but it did not cause any damage, and D, although it caused no damage, monitoring and/or intervention was needed.

A total of 20.6% mistakes were reported by the pharmacist, 30% by nurses in charge of compounding, 32.1% by nurses in

charge of preparation, 5.8% by staff nurses, and 11.5% by nurses in charge of administration.
Conclusion It is vital to ensure a system of safe validation and be sure to avoid any mistakes that could reach the patient in the case of chemotherapy. Cytostatics have a narrow therapeutic range, so therefore minimal mistakes could end in fatal consequences.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Cytostatic unit of a tertiary hospital.

No conflict of interest.

PS-107 REVIEW OF ABSENCE OR PRESENCE OF LACTOSE IN ORAL CYTOSTATIC DRUGS

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Background In humans, lactase activity continues after weaning and in adulthood in about 30% of the population (lactase persistence), but in the others the lactase enzyme is absent (alactasia) or deficient (hypolactasia). It is important to be aware that lactose is often present in a wide range of medicines in higher amounts than previously suspected. It is well known that most patients with lactose intolerance can ingest up to 10–12 g without experiencing symptoms. Others consider the safety limit to be as low as 5 g. However in clinical practice, it is very common to find individuals who have symptoms of lactose intolerance after consuming only very small quantities of the sugar.
Purpose To discover the presence or absence of lactose in the oral cytostatic drugs most commonly used in a third level university hospital.
Material and methods A descriptive study. We reviewed the product information of the commonly used cytostatic drugs.
Results A total of 94 drugs (31 active ingredients) with different doses and manufacturers was reviewed. 48.6% of the active medicines contained lactose as excipient. The median was 84 mg lactose. The oral cytostatic with most of this excipient was Revlimid 10mg whose lactose content was 294 mg and the least was capecitabine 150 mg Accord EFG with 7 mg of lactose.
Conclusion The sensitivity to lactose is variable between individuals so it is important to know the degree of individual lactose intolerance and the absence or presence of it in the medicines and in what quantity

REFERENCES AND/OR ACKNOWLEDGEMENTS

none

No conflict of interest.

PS-108 STUDY OF POTENTIAL DRUG INTERACTIONS WITH ORAL ANTINEOPLASTIC AGENTS IN AN ONCOLOGY OUTPATIENT CLINIC

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Background Cancer patients are usually polymedicated, therefore one of the objectives of pharmaceutical care in cancer patients is to identify drug interactions.
Purpose To identify potential drug interactions with oral antineoplastic agents and risk factors in order to design a medicines reconciliation programme in an oncology outpatient clinic.
Material and methods The study was undertaken at an oncology outpatient clinic during July 2014 in patients taking oral antineoplastic agents. The information regarding patient demographics and drug treatments was collected retrospectively from Hospital and Outpatients records. Potential drug interactions were identified selecting clinically relevant interactions. Drug interactions were assessed by using Micromedex, the summaries of product characteristics of the oral antineoplastic agents and a published interactions guide.[1]
Results 174 patients were included: median 65 years old (range: 27–84), 52% female.

41 patients (23.6%) showed 50 potential drug interactions, averaging 1.2 interactions per patient. Of this group of patients, 22 (53.6%) were male. Their age range was 34–83 years (median 64) and they received 1 to 24 concomitant drugs (median 9).

20 oral antineoplastic agents were identified in the patient records, of which 14 had potential interactions, most commonly seen in erlotinib 14 (28%), dabrafenib 6 (12%) and gefitinib 5 (10%).

According to the severity the interactions found were: contraindicated 1 (2%); severe 29 (58%).

Recommendations in the literature were: avoid the drug combination, 3; adjust posology/administration, 25 and monitor, 22.
Conclusion A large number of patients treated with oral antineoplastic agents had potential drug interactions, especially with the new drugs. However, many of those interactions are predictable and therefore preventable.

It would be helpful to implement a medicines reconciliation programme in polymedicated oncology outpatients.

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No conflict of interest.

PS-109 BARRIERS AND FACILITATORS TO IMPLEMENTING DRUG CHANGES CAUSED BY DRUG TENDERS AND SHORTAGES

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Background Drug tenders and shortages result in drug changes. International studies found that drug changes can adversely affect patient safety and the working procedures of healthcare professionals.[1,2] The challenges of drug changes in Danish public hospitals have not previously been studied.
Purpose To identify barriers and facilitators for implementing drug changes due to drug tenders and shortages in Danish public hospitals.
Material and methods Six focus group interviews were conducted at three hospitals in different regions of the country. At each hospital two focus group interviews were conducted, one including physicians and nurses and one including pharmacists

and pharmacy technicians, respectively. The focus groups consisted of three to four participants. A semi-structured interview guide was applied and the interviews were audio-recorded, transcribed verbatim and categorised thematically through content analysis.

Results Barriers Identified included: frequent changes of labelling, packages and drug names. Furthermore, implementing drug changes requires extra resources and finance. Technologies such as computerised physician order entry and barcode scanning systems were perceived as potential facilitators, but also as barriers in cases where the quality and implementation of the systems were not adequate. Facilitators included: hospital pharmacy services and lower drug prices. Furthermore recommendations on generic prescription, optimisation of the tendering process and support for drug identification during drug shortages were proposed.

Conclusion This study identified different barriers and facilitators for implementing drug changes. The barriers and facilitators included specific features related to drugs, health care technology as well as to financial and organisational aspects. Future studies should focus on removal of barriers and development and implementation of appropriate facilitators which may indeed improve patient safety and the working procedures of healthcare professionals during drug changes.

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No conflict of interest.

PS-110 EXTENT AND DIVERSITY OF DAY-TO-DAY CLINICAL PHARMACISTS' INTERVENTIONS IN HOSPITALS

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Background Clinical pharmacy services (CPS) are known to improve medication safety and patients' clinical outcome. However, in the majority of the European countries their implementation is low and there are no nationwide reports about the nature of clinical pharmacists' interventions (CPIs) in European hospitals outside the UK.

Purpose To evaluate both the extent and diversity of data about national hospital CPIs nationwide.

Material and methods Datasets from ADKA-DokuPIK, an anonymous and voluntary German database for the documentation of hospital CPIs with >500 registered users, which were entered between 01/2009 and 12/2012, were analysed descriptively.

Results In total, 27,610 CPIs were recorded, with an upward trend over the years. The vast majority of CPIs were performed by ward-based pharmacists (82.5%), mainly on surgical wards (37.8%), followed by anaesthesiology/ICU/IMC (16.8%) and internal medicine (10.8%). More than half of the patients were >65 years. The main reasons for CPIs were inappropriate use of drugs (including over- and underuse, inappropriate choice of drug and/or formulation, generic or therapeutic substitution) (23.2%) and wrong dose or administration interval (22.2%) resulting in the most frequently taken actions of change of dose, change of drug and drug stopped/paused. The therapeutic subgroup with most interventions was antibacterials for systemic use (13.9%) followed by antithrombotic agents (6.9%), analgesics (6.7%), drugs for acid-related disorders (5.9%) and agents acting on the renin-angiotensin system (5.4%). Altogether, the acceptance rate of the CPIs was 85.5%. Underlying medication errors were predominantly classified as "error, no harm", while 4.1% were classified as "error, harm or death" according to NCC-MERP.

Conclusion For the first time we demonstrated clinical pharmacists' involvement nationwide in daily clinical practice in a non-UK European country. Although the overall rate of CPIs cannot be calculated due to the anonymous and voluntary data collection, the results might help to further strengthen the demand for CPS in Germany.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Thanks to all ADKA-DokuPIK users.

No conflict of interest.

PS-111 EVALUATION OF THE MEDICINES RECONCILIATION AND VTE RISK ASSESSMENT ROLES OF THE PRESCRIBING PHARMACISTS ON THE ELECTIVE THEATRE ADMISSIONS UNIT

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Background Previous audits at the hospital have shown poor prescribing of regular medicines prior to elective surgical procedures, which raised patient safety concerns.

Since May 2013 there has been a cohort of prescribing pharmacists and pharmacy technicians working on the theatre admissions unit (TAU) with defined roles including medicines reconciliation and assessing patients for risk of venous thromboembolism (VTE).

Purpose This audit was to determine if regular medicines were being prescribed correctly, appropriately and within 24 h of admission to the hospital by the prescribing pharmacists on TAU. It was also to determine if VTE risk assessments were completed within 24 h of admission and if suitable thromboprophylaxis was prescribed.

Material and methods A retrospective audit was carried out using the electronic prescribing system and theatre lists for all elective patients on TAU over a 5-day period in August 2014. Drug histories completed by the pharmacy technician were compared with regular medicines prescribed by the TAU pharmacist.

The electronic prescribing system was used to check VTE risk assessments and what thromboprophylaxis was prescribed post-surgery.

Results Medicines reconciliation was completed within 24 h for all 62 patients admitted to TAU during the audit period.

All appropriate regular drugs were prescribed by the TAU pharmacist on the day of admission. In 28/62 patients where regular medicines were not prescribed, there was an appropriate reason documented on the electronic prescribing system for

omission. VTE risk assessments were completed in all patients within 24 h.

Conclusion Prescribing pharmacists and pharmacy technicians have a pivotal role in completing medicines reconciliation within 24 h and prescribing regular medicines to ensure patients do not miss doses, reducing the risk of post-surgery complications. Early completion of VTE risk assessments and the prescription of appropriate thromboprophylaxis should also reduce post-op complications.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Cohort of prescribing pharmacists and pharmacy technicians who all cover TAU.

All other healthcare members of TAU.

No conflict of interest.

PS-112 PHARMACEUTICAL ANALYSIS OF ASSISTANCE ON RECONCILIATION OF PAEDIATRIC MEDICINES

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Background Medicines reconciliation is one of the strategies used to minimise drug-related adverse effects.

Purpose To detect and analyse potential medicines errors in a paediatric population at the time of admission.

Material and methods From May to July 2013 the daily admissions of paediatric patients were reviewed. Only patients who had already been prescribed medicines were selected. We reviewed patients who had previously received treatment appropriate to their current condition as well as drugs prescribed because of an acute illness. Some prescriptions were verified by clinical interviews. Differences were categorised into no discrepancies or discrepancies and these last into justified or unjustified. The unjustified were defined as drug omissions or drug interactions detected and were communicated to paediatricians.

Data collection was classified by age, sex, and medicine (dose and route of administration).

The time was noted when discrepancies were detected and the gravity measured in a scale from 1 to 3, representing the impact to the patient.

An exclusion criterion was hospitalisation for less than 24 h.

Results 30 patients were analysed, 18 boys and 12 girls, mean age 8.6 years. A total of 47 medical prescriptions were reviewed. Clinical interviews were held with 11 patients. Of 47 prescriptions, 11 (23.4%) were categorised as no discrepancies, 17 (36.1%) as justified discrepancies and 19 (40.4%) as unjustified discrepancies. Of these 19 unjustified discrepancies, 18 resulted from drug omissions and 1 drug interaction was detected. 11 (57%) of unjustified discrepancies were communicated to the paediatricians and a change in the medical prescription was requested.

Antimicrobials and inhaled treatments were the most common drugs omitted. Almost all of them were detected on the first day. The mean gravity was 2.4.

Conclusion From a total of 47 medical prescriptions, 11 (24.3%) potential medicines errors were avoided. We believe pharmaceutical care focused on medicines reconciliation is an important tool to optimise paediatric medical prescriptions.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Multidisciplinary team

No conflict of interest.

PS-113 BIOLOGICAL TREATMENT ALERTS PROJECT IN RHEUMATOLOGY PATIENTS' ELECTRONIC RECORDS

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Background Biological treatments are responsible for numerous side effects, some of which can trigger a medical consultation by the patient in primary care. When these drugs are prescribed and dispensed, the process is not reflected in the patient's records so the primary care physician does not know which patients are treated with these drugs.

Purpose To describe the impact of a care model that puts alerts in electronic records to enable primary care physicians to identify rheumatology patients on biological treatment and their associated adverse reactions.

Material and methods A retrospective observational study of patients from the Rheumatology Unit on biological treatment and analysis of the most frequent adverse reactions produced by these drugs that could cause a consultation in primary care. The study period was one year (October 2013–September 2014). A search of adverse events classified as very common (≥1/10 patients) of each drug and the number of patients identified in the APD-ATHOS program was conducted.

Results A total of 7 drugs was identified and 461 patients were treated. The most-used drugs were etanercept (N = 209, 45.3%) and adalimumab (N = 172, 37.3%). Adverse reactions that would have had a higher frequency of occurrence and could generate a consultation in primary care were: respiratory tract infections (N = 48, 10.4%), hypercholesterolemia (N = 22.5, 4.9%), headache (N = 20, 4.3%), leukopenia (N = 17.2, 3.7%), nausea (N = 17.2, 3.7%), rash (N = 17.2, 3.7%), musculoskeletal pain (N = 17.2, 3.7%), increased liver enzymes (N = 3.9, 0.8%). A total of 163 patients might present one of these adverse reactions.

Conclusion A high number of patients could benefit from alerts, as they provide primary care professionals with relevant information about common adverse events.

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No conflict of interest.

PS-114 ASSESSMENT OF POTENTIAL DRUG INTERACTIONS BETWEEN ANTINEOPLASTIC AGENTS AND DRUGS PRESCRIBED IN PRIMARY CARE IN CANCER PATIENTS

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Background Cancer patients receiving chemotherapy may be at risk of drug interactions between antineoplastic agents and drugs prescribed in primary care, which can lead to an increase in the number and severity of adverse drug events or a reduction in treatment effectiveness.
Purpose To assess the incidence of potential interactions between chemotherapy drugs prescribed by oncologists in hospital care and any other drugs prescribed by general practitioners in primary care.
Material and methods Retrospective and observational study. Patients diagnosed with any type of cancer between 1st May and 30th September 2014 who received oral and intravenous chemotherapy were included. Data were obtained from two computerised order entry systems: Oncowin (hospital setting) and electronic medical history (Primary Care setting). Potential interactions were checked with Micromedex 2.0: minor (limited clinical effects), moderate (interaction may exacerbate the patient's condition and/or require an alteration of treatment) and major (can lead to hospitalisation/death).
Results 340 patients. Median age 66 years old (28–89) [51.2% >65 years old, 39.1% 45–65 years old and 9.7% <45 years old]. 54.5% men. 1,634 revised drugs, 4.8 drugs/patient (13.8% of patients did not take medicine at home). Potential interactions detected: 67 in 49 different patients (14.4% of patients studied); 1.5% minor interactions, 22.4% moderate and 76.1% major interactions. Interactions detected were more frequent in metastatic setting (52.2%): 85.7% major and 14.3% moderate, followed by adjuvant treatment (19.4%) and neoadjuvant treatment (10.4%). Interactions were most frequent with erlotinib, paclitaxel, pemetrexed, methotrexate, capecitabine and pazopanib as cytostatic drugs and omeprazole, simvastatin, dexketoprofen and acetylsalicylic acid as usual drugs. Highest frequency of severe interactions was between erlotinib with proton pump inhibitors and NSAIDs (11.8% each).
Conclusion The vast majority of potential drug interactions are major and could be reduced by encouraging communication between the pharmacist, oncologist and primary care doctor.

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No conflict of interest.

PS-115 ADVERSE DRUG EVENTS REQUIRING INTENSIVE CARE UNIT ADMISSIONS: THE ROLE OF NON-COMPLIANCE WITH TAKING PRESCRIBED MEDICINES

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Background Adverse drug events (ADEs) are defined as any injury from a medical intervention related to a drug including non-compliance. ADEs can even be responsible for intensive care unit (ICU) admissions.
Purpose To assess the incidence of ADEs leading to ICU admission.
Material and methods This observational study lasted one year in an adult medical ICU of a university hospital. All ICU stays were screened by two independent investigators to determine if an ADE could have been responsible for the ICU admission. The ADE preventability was independently assessed using a Schumock and Thornton scale. A main leading cause was identified for each preventable ADE-related stay.
Results During the study period, 743 ICU stays were included. Of these stays, 173 (23.3%) were related to an ADE. Preventability rate was 59% (102 stays) with an excellent inter-rate reliability (kappa-test = 0.98). The main leading cause of preventable ADEs was not taking a medicine (non-compliance) in 30% of ADE-related admissions and 4% of all admissions (31 stays). Drugs related to non-compliance problems were curative in 81% (25 patients) and prophylactic in 19% (6 patients). They were related to the following diseases: diabetes 32% (10 patients), epilepsy 19% (6 patients), infections 19% (6 patients), chronic heart failure 16% (5 patients) and other diseases 14% (4 patients). Reasons for non-compliance were investigated: misunderstanding 32% (10 patients), uncontrolled psychiatric disorders 32% (10 patients), refusal of treatment 27% (8 patients), cognitive disorders 6% (2 patients) and memory lapse 3% (1 patient).
Conclusion To our knowledge, this is the first study to investigate ADEs as a cause of ICU admission that includes non-compliance problems, which appeared to be the major cause of ADE-related ICU admissions. Non-compliance analysis can be used to plan corrective measures such as patient education and social and psychiatric care.

REFERENCES AND/OR ACKNOWLEDGEMENTS

NA

No conflict of interest.

PS-116 EXPOSURE TO ANTICHOLINERGIC AND SEDATIVE DRUGS: RELATIONSHIP BETWEEN DRUG BURDEN INDEX (DBI), ANTICHOLINERGIC RISK SCALES (ARS) AND FALLS IN ELDERLY HOSPITALISED PATIENTS

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Background Falls have a major impact on public health for elderly. Some scores and scales assess the risk of falls or iatrogenic risk. Few are specific to assess the impact or relationship between drug exposure and falls in elderly.
Purpose Our objective was to evaluate relationship between iatrogenic scores, DBI, ARS and fall risk.
Material and methods A multicenter retrospective study was performed in 5 geriatric hospitals. For faller and nonfaller hospitalised elderly, characteristics, comorbidities and drugs prescriptions were collected. DBI and ARS scores were calculated. Relationship between scores and falls were assessed. Description of drugs classes involved in scores was performed.
Results A total of 315 patients, with a mean age of 87 years, were included, 117 of them were fallers. History of fall within 12 months (OR = 6.5 [3.9 – 10.1]), orthostatic hypotension (OR = 4.3 [2.3 to 7.9]), blurred vision (OR = 1.8 [1.1–2.8]), Mini Mental State Evaluation <20/30 (OR = 2.1 [1.3 to 3.4]), and antidepressant prescription (OR = 1.7 [1.05 to 2.8]) were significantly associated with a fall risk. Within this population, 61% of patients had DBI > 0 and 21% ARS ≥ 3. The drugs that contributed to DBI were respectively among fallers and non-fallers: benzodiazepines (16.2% (19/117)/20.2% (40/198)) and

opioids (6.0% (7/117)/14.1% (28/198)). For ARS, these classes were, benzodiazepines (8.6% (10/117)/6.6% (13/198)) and antidepressants (5.1% (6/117)/7.6% (15/198)). Statistical analysis didn't show any relationship between DBI > 0 or ARS > 0 and fall risk (p > 0.05).

Conclusion Results showed that because of multifactorial characteristic of fall, predicting its risk should be based on a set of factors, directly related or not with patient, with or without drug prescriptions. A specific iatrogenic score, routinely used to identify prescription and fall risk patients would help clinicians and pharmacists to optimise therapeutic for elderly.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-117 DATA QUALITY ANALYSIS OF ADVERSE DRUG EVENTS IN A VOLUNTARY REPORTING SYSTEM

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Background In 2009, SINEA, a voluntary reporting system for adverse events (AEs) in healthcare was implemented, designed for direct online reporting. It cannot ensure the consistency of the information, nor the quality of the reports.

Purpose To determine the number and type of errors found in the SINEA database reports of drug adverse events (DAE); to propose improvements to reduce them and to note the differences in the results of the raw and refined databases, in order to skip the refining process if possible.

Material and methods AEs reported between 1 January 2014 and 30 August 2014 were extracted and revised by a pharmacist to refine the database considering the field "describe_what_happened" as the gold standard. Percent of medicines errors (MEs), adverse drug reactions (ADRs), potential (PME) and real (RME) medicines errors, description of the effect on the patient, the impact on assistance and the most frequently reported drugs (MFD) were compared in both raw and refined databases. Cohen's kappa (k) statistic defining concordance was calculated.

Results 364 AEs were reported, of which 66.7% were classified as MEs, 2.7% as ADRs (2 wrongly classified as both, thus total percent > 100%) and 31% as other events. After refining, MEs totalled 69.5%; ADRs, 5.8% and events not related to medicines, 24.7% (k = 0.85 CI95% [0.80–0.90]). Before refining, 73.6% of MEs were considered PMEs versus 82.3% after refining (k = 0.65 CI95% [0.54–0.76]). With refined data, the MFD was trastuzumab (20.9%), due to exhaustive notification in oncology (all PMEs). The "active_ingredient" field was empty in 133 reports in the raw database. A mean of 1.8 ± 1.9 errors per report were detected.

Conclusion Although concordance is good, the tough refining process cannot be skipped as it provides quality information so that improvements in pharmacotherapy can be implemented. Data quality could be improved by reducing the number of type-in text fields and using checkboxes or drop-down lists and by increasing the staff's knowledge of DAEs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-118 COMPARATIVE ANALYSIS OF THE SAFETY IN CLINICAL PRACTICE OF BOCEPREVIR AND TELAPREVIR IN THE TREATMENT OF HEPATITIS C

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Background Telaprevir and boceprevir have revolutionised the treatment of chronic hepatitis C. We are currently starting to have evidence of effectiveness and safety in clinical practice. Making a direct comparison of safety between the two drugs will allow a better understanding of their toxicity profile.

Purpose To compare the safety of peginterferon, ribavirin and telaprevir against boceprevir combination treatment in clinical practice.

Material and methods Retrospective observational study (01–01–2012 to 01–06–2014) of patients with HCV genotype-1 who had completed the combined treatment with telaprevir or boceprevir. Variables were collected to characterise patients and treatment.

Toxicity was graded according to the Division of AIDS v.1.0 criteria. Grades 1 and 2 were defined as mild-moderate toxicity, and grades 3 and 4 as severe toxicity. A descriptive and comparative statistical analysis was performed using SPSS v.15.0.

Results 164 patients were included: 65.2% treated with telaprevir and 34.8% with boceprevir. Increased neutropenia for boceprevir (77.2% vs. 45.8% p < 0.001) and greater hyperbilirubinaemia (35.5% vs. 8.8% p < 0.001) and hyperuricaemia (48.6% vs. 8.8% p < 0.001) for telaprevir. Toxicity grades: G1-G2 greater neutropenia (47.4% vs. 30.8% p = 0.028) for boceprevir. With more hyperuricaemia telaprevir G1-G2 (43.9% vs. 8.8% p < 0.001) and higher hyperbilirubinaemia both G1-G2 (22.4% vs. 8.8% p = 0.021) and G3-G4 (13.1% vs. 0%, p = 0.002). Further adjustment of ribavirin dose (73.7% vs. 46.7% p = 0.001), hospital admissions (21.1% vs. 8.4% p = 0.021) and use of colony stimulating factors (8.8% vs. 0.9% p = 0.20) with boceprevir.

No differences in discontinuation of treatment (8.7% boceprevir vs. 7.4% telaprevir p = 0.369), blood transfusions (16.8% telaprevir vs. 15.8% boceprevir p = 0.526) and use of exogenous erythropoietin (42.1% telaprevir vs. 29.9% boceprevir p = 0.082).

Conclusion Different toxicity profiles were observed, highlighting a higher ribavirin dose adjustment and hospital admission with boceprevir treatment. Furthermore, incidence of neutropenia was higher with boceprevir, and hyperbilirubinaemia and hyperuricaemia with telaprevir.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-119 EFFECT OF ANTICOAGULATION AND ANTIPLATELET THERAPY ON THE INCIDENCE OF INTRACRANIAL BLEEDING AFTER THROMBOLYSIS IN PATIENTS WITH ACUTE ISCHAEMIC STROKE – A PHARMACOEPIDEMIOLOGICAL APPROACH

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Background The rt-PA is an effective therapy in patients with acute ischaemic stroke. Well known complication of the treatment is intracranial bleeding (haemorrhagic transformation, or parenchymal haemorrhage) which can hinder the improvement and can be lethal.
Purpose Identifying the effect of anticoagulants and antiplatelet drugs, taken before the stroke, on the intracranial haemorrhage rate after rt-PA treatment.
Material and methods The Debrecen Thrombolysis Database was used. Between the 1st of January 2004 and the 31st of December 2010, 415 patients were treated with rt-PA at the Department of Neurology, University of Debrecen. For the analysis 370 patients' data was used, who fulfilled the protocol. Odds ratio (OR) and Relative risk (RR) were calculated.
Results

Abstract PS-119 Table 1

Group	Patient's number	Intracranial bleeding	No intracranial bleeding	Mean dose of administered rt-PA (mg)
Anticoagulants users* (A)	40	8 (20%)	32	66.83
Antiplatelet drugs users (B)	32	3 (9.4%)	29	66.59
No previous therapy (C)	298	43 (14.4%)	255	62.87

*The INR (International Normalised Ratio) value before thrombolysis was below 1.7.

Comparing groups A and C: $OR_{anticoagulants}$ = 1.48; 95% CI = 0.64–3.43; p = 0.358 and $RR_{anticoagulants}$ = 1.386; 95% CI = 0.70–2.73; p = 0.346 are in the group which was pre-treated with anticoagulants. Among antiplatelet drugs users (B versus C) $OR_{antiplatelet\ drugs}$ = 0.61; 95% CI = 0.17–2.1; p = 0.437 and $RR_{antiplatelet\ drugs}$ = 0.649; 95% CI = 0.21–1.97; p = 0.447 were found. If those taking anticoagulants and antiplatelet drugs were compared (A vs. B) $OR_{anticoagulants/antiplatelet\ drugs}$ = 2.41; 95% CI = 0.58–9.98; p = 0.223 and $RR_{anticoagulants/antiplatelet\ drugs}$ = 2.13; 95% CI = 0.61–7.39; p = 0.232.
Conclusion There was a non-significant trend that may suggest that antiplatelet therapy before stoke reduces the risk of intracranial bleeding, anticoagulant therapy increases it despite the acceptable INR level. Findings have to be confirmed on larger patient population.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-120 CHALLENGES IN EVALUATION OF ELECTRONIC SWITCH MODULES FOR HOME MEDICATION

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Background Most clinical decision support systems (CDSS) offer the opportunity to automatically switch patients' home drug treatment to drugs that are listed in the hospital formulary. Only limited data are available regarding the quality of those automatic switches in clinical practice.
Purpose To evaluate a methodology for comparing electronic switch modules incorporated in hospital CDSS.
Material and methods A classification model with 13 categories and a six-item scale was developed to determine the quality of switches from home to hospital medicines. This model was applied to 250 drugs and three different CDSS, implemented in three university hospitals. Electronic switches were compared to manual switches by two experienced clinical pharmacists for each hospital. The functionalities of the systems were assessed by a questionnaire.
Results The type of switch differed significantly within the three hospitals: same drug: 27–36%, generic substitution: 48–62%, therapeutic substitution (TS): 4–12%, special order (SO): 3–13%. Although the majority of switches was conducted correctly in our setting, the quality ranking of the switch differed significantly, especially in case of TS and SO, although the numbers of those switches were low. Incorrect and/or incomplete switches were caused either by missing alternatives in the hospital formulary and/or limited functionality of the software in terms of customisation.

In theory, all types of switches were possible with each system; however, the algorithms and the covariates considered with which to suggest an appropriate drug were different. Each system had different functionalities with no system scored highly in all aspects.
Conclusion The assessment of switch quality seems to depend on the diversity of the hospital formulary and on the ability to implement hospital-specific policies. In future, if the selection of drugs used to test the feasibility of electronic systems were narrowed to TS switches, potential limitations of such systems could be assessed more thoroughly.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-121 MODEL FOR ADVISING ON INTERACTIONS AND ADVERSE REACTIONS OF TYROSINE KINASE INHIBITOR TREATMENT

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Background Tyrosine Kinase Inhibitors (TKIs) are drugs that cause significant adverse reactions and interactions in patients. Prescription and dispensing of TKIs both take place in Hospital Pharmacies. Primary Care physicians (GPs) do not have very much information about either these drugs or patients on TKI treatment.
Purpose To describe a model for giving advice with recommendations about interactions and adverse reactions of TKIs, to provide support and information for PC physicians.
Material and methods Patients on TKI treatment were identified by the APD-ATHOS Prisma and Oncofarm software. The databases were searched for adverse reactions and interactions due to TKIs, together with their management. We selected the most common adverse reactions and interactions, including those that

could cause the patients to consult their general practitioner. Then, we made a document with all the information and PC pharmacists established a link between this document and the Electronic Clinical History of each patient to enable GPs to identify patients who were on TKI treatment and also recommendations about their management.
Results 44 patients were identified (37 with imatinib, 4 with dasatinib and 3 with nilotinib). 29 adverse reactions were found (9 common to all 3 TKIs, plus 8 with dasatinib, 8 with nilotinib and 4 with imatinib). Interactions were classified into: drugs that increase or reduce the effects of TKIs and drugs whose effects and toxicity are increased or decreased by TKIs. The most significant interactions were: imatinib-simvastatin, imatinib-acetaminophen, imatinib-ibuprofen; nilotinib/dasatinib-proton pump inhibitors, nilotinib/dasatinib-histamine-2 receptor antagonists, nilotinib/dasatinib-drugs that prolong the QT interval, nilotinib/dasatinib-oral anticoagulants and dasatinib-food.
Conclusion The way of giving advice should help GPs to identify and manage frequent adverse reactions and interactions of TKIs. This process will be repeated for other oral anti-cancer drugs. Further studies are necessary to confirm the usefulness of this tool.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-122 RISK MANAGEMENT OF PRESCRIPTION AND PREPARATION OF CYTOTOXIC DRUGS IN HOSPITAL PHARMACIES

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Background Errors with cytotoxic drugs in oncology can have serious consequences because of their narrow therapeutic index.
Purpose To compare the safety mechanisms available in all hospital pharmacies preparing cytotoxic drugs in our country. The main focus was on patient safety as well as the staff involved in the preparation.
Material and methods The survey was based on an anonymous online questionnaire, which contained 29 questions focusing on the organisation of work, amount, frequency and the type of preparation, prescription and preparation method and the safety of the pharmaceutical staff. The questionnaire was sent to all 37 hospital pharmacies with cytotoxic preparation units. All responses were evaluated and presented graphically, in absolute numbers and percentages.
Results 35/37 (94.6%) questionnaires were completed. 33 (94%) pharmacies prepare cytotoxic drugs for all hospital departments. 19 hospitals (54%) use a computerised physician order entry (CPOE) system. 77.2% of the pharmacists can see and check the protocol, patients' body surface and the dose. 24 pharmacies (69%) also prepare monoclonal antibodies. Gravimetric control of the prepared dose is used in 3 (9%) pharmacies. 3 (9%) pharmacies use a robotic system for preparation. 4 (12%) pharmacies use barcodes to identify the material and the final product. 43% of the cytotoxic preparation units periodically record errors.
Conclusion Our questionnaire identified 38 critical points of the prescription and preparation process, each of them represents a contribution to safety of the chemotherapy process. The overall level of safety in the prescription and preparation of cytotoxic drugs is rather unbalanced in our country and varies from 6.3% to 87.5% (compared to the ideal state). We have proved that CPOE plays one of the key roles in eliminating chemotherapy errors. The data from this study will help when sharing experience among hospital pharmacies.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-123 ADVERSE DRUG REACTIONS CAUSING ADMISSION OVER 11 YEARS IN A PAEDIATRIC HOSPITAL

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Background Adverse drug reactions (ADRs) in children are a significant cause of hospitalisation. A systematic review published in 2013 estimates this incidence in the range from 0.16–4.3%.
Purpose The main objective was to describe the incidence of ADRs leading to admission in a paediatric hospital. Secondary objectives were to determine the drug classes causing ADRs, duration of hospitalisation and to compare the incidence obtained with the current literature.
Material and methods A retrospective study of all ADRs codes in the medical records of paediatric patients. ADRs were coded by a medical archivist for an 11-year period in a database.
Results A total of 73,864 hospitalizations of children were evaluated. We detected 520 ADRs resulting in hospital admission. We calculated on average 47.4 ADRs coded per year for an annual average incidence of 0.7%. ADRs coded occurred amongst 0–5 year-olds and 12–17 year-olds in 53.7% and 18.2%, respectively. 49.3% were females. Mean hospitalisation time due to ADRs was 6.3 days.

The organ systems most commonly involved were the haematopoietic system (63.4%), central nervous system (10.6%), digestive system (8.8%) and skin (6.1%). The classes of drugs most frequently involved were antineoplastic drugs (65.0%), drugs active on the central nervous system (8.6%) and anti-infective agents (5.8%).
Conclusion The incidence of ADRs as a cause of hospital admission in this study (0.7%) falls within the range of incidences in the current literature. The organ system most commonly involved is the haematopoietic system and the class of drug most frequently involved is antineoplastic drugs. Drug surveillance studies are necessary to characterise risk factors within this population and to test prevention strategies to effectively promote the safer use of drugs in children.

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No conflict of interest.

PS-124 IMPROVING THE PRESCRIPTION OF BENZODIAZEPINES IN AN ELDERLY POPULATION

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Background Benzodiazepines (BZP) in the elderly often have pharmacokinetic changes that could represent a potential risk of adverse effects. It is therefore recommended to avoid them or to reduce their usage time, if possible.
Purpose To evaluate the effect of an intervention on the use of BZP in patients admitted to a nursing home.
Material and methods A team composed of a nurse, a doctor and a pharmacist evaluated the drug treatment of the new admissions to one nursing home, trying to adjust the prescriptions and decrease the risk of adverse effects, according to the patient's condition.

Descriptive comparative study before and after an intervention, in patients admitted to a nursing home over 22 months (2013–2014).

The number of BZP taken by the patients was evaluated at admission (pre-intervention period) and at discharge (post-intervention period). The percentages were compared using the χ^2 test.
Results Two hundred patients were included.

In the pre-intervention period, 51% were taking BZP (36% were taking one kind of BZP, 5% two, and 1.5% three), 22.5% were long half-life.

At discharge 42% were still taking BZP (40% were taking one kind of BZP, 2% two and no patients were taking three), only 11.9% were long half-life (a reduction of 47% $p = 0.008$).
Conclusion The intervention of this multidisciplinary group reduced the percentage of patients taking BZP discretely, however an significant reduction in combinations of BZP was achieved and especially in the long half-life benzodiazepines, which are the most risky.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Hospital d'igualada

Fundació sanitaria sant josep

No conflict of interest.

PS-125 ELECTRONIC ALERT SYSTEM FOR PRIMARY CARE DOCTORS FROM A MEDICINES RECONCILIATION APPLICATION

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Background Our Healthcare Area is implementing Medicines Reconciliation (MedRec) supported by The European Union Network for Patient Safety and Quality of Care. In a situation of limited human resources, computerised MedRec tools could help introduce medicines reconciliation.
Purpose To describe a MedRec application that generates electronic alerts for general practitioners (GP) when patients are discharged from the Hospital with reconciliation errors (RE), and its impact in Primary Care after 3 months of implementation.
Material and methods We have developed an application that can be integrated into the patient's electronic medical records. The Application records the discrepancies (intentional/unintentional) of every MedRec Form made at admission or discharge and, at pharmacist demand, generates an electronic alert for the GP when a patient goes home with RE unsolved prior to hospital discharge (discrepancies between prescription at discharge and the active electronic prescriptions which allow regular pharmacy dispensing). In this retrospective observational study we measured REs and their severity at discharge, and the percentage of MedRec responded to by the GP after the alert was sent (considered correct if done before 5 days post-discharge). Data were analysed using SPSS.
Results 46 reconciliation errors were found in a total of 63 patients (0.73 per patient) evaluated. Eight (17.4%) REs were considered highly relevant. All REs were found in 34 patients (54%), the other 29 patients being properly reconciled at discharge. From the 34 alerts generated for the corresponding GP, only 15 (44%) were acted upon and the patient's medicines reconciled in less than 5 days. Five (62.5%) of the highly relevant REs were amended in less than 5 days post-discharge.
Conclusion Less than a half of the alerts sent by the MedRec application were acted upon in a reasonable time. This means, although it can help in decreasing medicines errors in Primary Care, more time/training is needed for the GPs become more familiar with the tool.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

PS-126 THE RATIONAL USE OF PROTON PUMP INHIBITORS IN A GERIATRIC CENTRE

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Background The kind of patients we can find in a geriatric centre have various comorbidities, which implies that they usually have more than one medicine. It is common to have drug interactions.
Purpose To evaluate the rational use of proton pump inhibitors (PPIs) in a geriatric centre with 300 beds attached to a second-level hospital.
Material and methods We performed a cross descriptive study in all patients of a geriatric centre with PPI treatment in July 2014. Medical histories were reviewed and a database was designed: PPI, drug dose, diagnosis and concomitant NSAID treatment.

PPI criteria for use were based on the current evidence available. Esomeprazole was limited to patients with a nasogastric tube, as it´s the only one that can be administered in this way.
Results PPIs were prescribed in 80% of patients.

Omeprazole was prescribed in 197 patients: 39% (77/197) had a gastrointestinal diagnosis and 61% (120/197) had no indication recorded, of which 57.5% (69/120) were on chronic NSAID treatment. Drug dosages were: 52.3% (103/197) 20 mg/24 h, 20 mg/12 h in 46.7% (92/197) and 0.5% (1/197) with 20 mg/8 h or 40 mg/8 h.

The 42.5% (51/120) of patients whose treatment indication was unknown were re-evaluated: In 19.6% (10/51) the drug was suspended, in 58.8% (30/51) doses were changed to 20 mg/24 h. The remaining 21.6 (11%) patients were not changed without a clear medical reason.

Esomeprazole was prescribed in 45 patients: 24% (11/45) had digestive diseases and 76% (34/45) had no indication recorded, of whom 61.7% (21/34) were on chronic NSAID treatment. Drug doses were: 66.7% (30/45) 20 mg/24 h and 40 mg/24 h in 33.3% (15/45).

The 38.2% (13/34) patients whose treatment indication was unknown were re-evaluated: in 69.2% (9/13) the drug was suspended, 30.8% (4/13) were switched to omeprazole 20 mg/24 h.

Only 28.9% (13/45) were carriers of a nasogastric tube.

Conclusion Inappropriate use of PPIs was observed in terms of indication and drug dose.

Prophylaxis of gastropathy in patients on NSAIDs was the most common correct indication.

It is important to incorporate clinical pharmacists in geriatric centre teams to ensure and promote the rational use of medicines.

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1 http://dx.doi.org/10.4321/S1130-01082008000200003

No conflict of interest.

PS-127 ELEVATED TRANSAMINASE LEVELS IN PATIENTS TREATED WITH TOCILIZUMAB

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Background Treatment with tocilizumab has been associated with an increase in transaminase levels which may be related to treatment discontinuation.

Purpose To examine changes of transaminase levels (AST/ALT) in patients with rheumatic diseases treated with tocilizumab, as well as analyse the checking interventions.

Material and methods Retrospective observational study. Patients on treatment with tocilizumab between January 2007 and July 2014 were included. The data collected were: demographic, diagnosis, duration and dosage pattern of treatment, AST/ALT levels and concomitant treatment with methotrexate. The data were collected through outpatient electronic medical records.

Results We included 21 patients (86% male, 45.6 ± 13.8 years). 71% of patients had rheumatoid arthritis. The mean treatment duration was 24.4 ± 15.8 months. After the start of treatment with tocilizumab, 52% patients had values above the upper limit of normality (ULN, ALT > 50 U/L and AST > 40 U/L); 36% of them received methotrexate. In 9 patients (82%) the results reached values 1–3 times >ULN and in 2 patients (18%) values were observed 3–5 times >ULN. In 64% of patients the levels remained >ULN during treatment. Higher ALT/AST levels occurred in two patients who received doses of 8 mg/kg of tocilizumab. One of them was also on methotrexate treatment.

The increase of AST/ALT levels occurred in 73% of patients between the first and third doses of treatment. In 3 patients a pharmacological intervention was made. The interventions were to decrease the tocilizumab dose (2 patients) and to decrease both the dose of tocilizumab and methotrexate.[1] Two of them succeeded in normalising AST/ALT levels.

Conclusion Half of the patients treated with tocilizumab suffer an increase in AST/ALT levels, which in most cases is maintained over time. Concomitant treatment with methotrexate seems to predispose to an earlier increase of transaminase levels.

Tocilizumab risk management should include continuous monitoring of transaminase levels so as to identify patients with a higher risk.

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No conflict of interest.

PS-128 THROMBOTIC MICROANGIOPATHY ASSOCIATED WITH THE USE OF CICLOSPORIN IN PROPHYLAXIS OF GRAFT-VERSUS-HOST DISEASE IN PATIENTS UNDERGOING ALLOGENEIC HAEMATOPOIETIC STEM CELL TRANSPLANTATION

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Background Transplantation-associated thrombotic microangiopathy (TMA) is a feared complication of allogeneic hematopoietic stem cell transplantation (HSCT) owing to its high rate of mortality. The use of calcineurin inhibitors or sirolimus for graft-versus-host disease (GVHD) prophylaxis has been suggested as a potential risk factor.

Purpose To analyse the incidence of TMA in patients undergoing HSCT who received ciclosporin as prophylaxis against GVHD; to investigate the cause of this phenomenon.

Material and methods Retrospective observational study that reviewed the medical records of patients who had suffered from TMA after allogeneic HSCT in the haematology service of a tertiary hospital from 2010 to 2014. To obtain the results, the diagnostic criteria associating TMA with the bone marrow transplant of the International Working Group were measured.

Results Of the 50 patients undergoing allogeneic HSCT, 10 suffered ciclosporin-associated TMA. In 4 TMA emerged with the addition of ciclosporin to sirolimus and in 6 when sirolimus was added to ciclosporin. The reason for the addition of these immunosuppressants was acute GVHD in 3 patients and in 7 due to chronic GVHD. The response to TMA was to suspend ciclosporin and maintain sirolimus and corticosteroids in 4 patients whereas in 6 both ciclosporin and sirolimus were suspended. In 4 patients phenytoin was added, in 2 haemodialysis was performed, in 3 plasmapheresis was done and in 1 rituximab was administered. In all the cases the duration of active levels of basal ciclosporin after it had been suspended was about two or four months.

Conclusion The appearance of TMA in patients undergoing allogeneic HSCT is a concern. All cases present moderate to severe haemolytic anaemia, negative direct Coombs, thrombocytopenia, elevated LDH and creatinine, schistocytes >4% and kidney disorders. The cause of the sustained increase in the time of ciclosporin levels is still unknown, it is thought that an ABCB1 genetic polymorphism can produce this phenomenon.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Pharmacogenetics

No conflict of interest.

PS-129 MERCURY TOXICITY AND TREATMENT WITH DIMAVAL

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Background Mercury is a heavy metal with known toxicity. Its toxic effects have been well investigated, and the treatment consists of removing the patient from the source of exposure, supportive care, and chelation treatment.
Purpose To describe our experience treating mercury toxicity with DMPS (2,3-dimercaptopropane-1-sulfonate) and supportive care in a group of workers exposed occupationally to metallic mercury vapour.
Material and methods Blood chemistry data were collected for each patient, as well as urinary analysis, physical examinations and patients' complaints. Symptomatic treatments and chelator required were monitored. In order to assess DMPS efficacy, a follow-up of symptoms and blood and urinary mercury levels was performed.
Results A total of 14 workers, all males, aged 28 to 51 years, who had been exposed occupationally to mercury vapour were included. They all received symptomatic treatment and mercury mobilising agents. DMPS treatment was started 4 to 7 months after exposure to the metal and consisted of the p.o. administration of 100 mg per day as three divided doses for 7 days. 6 patients in total required a second cycle of treatment. Symptoms observed were similar in all the patients, and consisted of modest alterations in mood (anxiety, insomnia and occasional headaches) treated with non-steroidal anti-inflammatory drugs, cardiovascular signs, respiratory symptoms and gastrointestinal alterations such as nausea and diarrhoea treated with proton pump inhibitors and antiemetic drugs. During DMPS treatment, one patient presented a skin rush. The highest mercury blood and urinary level reached were 857 mcg/L and 1,830.47 mcg/L respectively. They all returned to normal values after Dimaval treatment but symptoms did not respond. 23% of patients required hospitalisation.
Conclusion Mercury intoxication is a life-threatening situation. DMPS seems to be an encouraging mercury antidote.

REFERENCE

1 http://www.hindawi.com/journals/jeph/2012/460508/abs/

No conflict of interest.

Other hospital pharmacy topics

OHP-001 ANALYSIS OF INVESTIGATIONAL PRODUCTS EXPIRY DATES

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Background Spanish legislation considers it mandatory for clinical trials (CT) sponsors to supply investigational medicinal products (IMPs), and that the handling, storage and dispensing of IMPs in hospitals is the responsibility of the pharmacy services. This involves management of the expiry date by hospital pharmacists.
Purpose To analyse the expiry dates of IMPs received in our pharmacy service.
Material and methods Retrospective observational study in a tertiary level hospital (1,493 beds). 100% IMP deliveries between January and March 2014 were reviewed. Data collected: protocol number, reception date, IMP and number of IMP packs received, batch and expiry date. Data extraction: computer CT management application. Variables studied:%CT with deliveries with an expiry date <3 months, between 3–6 months, 9–12 months, 12–18 months, 18–24 months, 24–36 months and >36 months; number of packs with an expiry date included in the previous ranges and average days between reception until expiry.
Results 3,373 packs were received corresponding to 182 IMPs and 224 deliveries for 91 CTs. In 9.9% of CTs IMPs were received with an expiry date <3 months (112/3,373 packs), in 22% of CTs between 3–6 months (498/3, 373), 36.3% between 6–12 months (1,157/3,373), 20.9% CT between 12–18 months (920/3,373 packs), 5.5% between 18–24 months (290/3,373), 3.3% between 24–36 months (245/3,373), and in 2.2% expiry date was >36 months (169/3,373). Average days between reception until expiry, in the same ranges, were as follows: <3 months = 63 days, 3–6 months = 144 days; 6–12 months = 282 days, 12–18 months = 442 days; 18–24 months = 649 days; 24–36 months = 799 days and >36 months = 1,336 days.
Conclusion In 68.1% of CTs IMPs were received with an expiry date lower than a year, and in 46.8% of these, the expiry date was lower than 6 months. Short expiry dates involve additional workload for pharmacy services and a continuous and systematic review of expiry dates. Computer applications for CT management with configurable warning alerts assist hospital pharmacists in correct expiry date management.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-002 HEALTH PROFESSIONAL PARTICIPATION IN MOBILE APPLICATIONS RELATED TO MULTIPLE SCLEROSIS

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Background Smartphone applications have been increased efficiency within health practice. However, recent concerns regarding quality of content and regulation have been raised.
Purpose To describe the characteristics and content of mobile applications related to multiple sclerosis (MS), as well as assess the level of participation of health professionals (HP) in their development.
Material and methods A descriptive observational study was carried out during August 2014. Smartphone applications specifically relating to MS were searched for using a keyword search with the term "MS" in the Apple App Store (iOS) and the Google Play Store (Android).

Data recorded for every applications included: name, platform, cost, category, user star rating, number of downloads (available for Android only), updated date and target audience.

The applications were analysed and categorised based on the information content into four groups: (1) diagnosis and management, (2) general information, (3) news, (4) tracking. Besides, we specifically examined the authorship in order to assess the prevalence of HP participation in their development.

Results Twenty-one applications were identified for Android, 22 apps for iOS, among which there were 12 duplicates. Most of these applications were free of charge (83.8%) and uploaded under the medical category (51.6%).

A total of 23 had customer satisfaction ratings; nine with <3.9 stars (out of 5). The highest rated application was "Multiple sclerosis @Point of care". Eleven applications had exceeded 1,000 downloads. The most downloaded application was "MS Diagnosis and Management". 64.5% had been updated in the last year. A total of 15 applications were aimed at patients, while 11 focused on HP (five for both of them).

Eight applications included information about diagnosis and management; four, general information; ten, news and nine, tracking. The participation of HP in the development of applications was 54.8%.

Conclusion Almost half of the applications do not have the scientific backing of a HP so they should be certificated.

REFERENCE

1 *Evid Based Med* 2013;**18**(3):90–2

No conflict of interest.

OHP-003 DRUG SHORTAGES IN HOSPITAL PHARMACY: THE CAUSES AND THE CONSEQUENCES

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Background Drug shortages have become an increasing problem worldwide. Pharmacists are devoting more and more time to this issue and all classes of medicines are affected. Drug shortages can have a serious effect on patient care and drug costs.

Purpose Conducting such a study we are able to see how much of the pharmacists' time is spent on dealing with drug shortage questions and what are the outcomes for patients. Having a good system for documenting drug shortages would ensure an easy way for pharmacists to track and record shortfall. Furthermore, it enables us to report back to the hospital and health care authorities.

Material and methods Drug shortages were recorded and analysed from April 2013 to September 2014 in a 900-bed hospital pharmacy.

To examine detailed information about the distribution, storage statuses and shortage durations of the drugs a statistics program AptStat, the State Agency of Medicines web page and the hospital pharmacy program were used. An approximate working time spent on dealing with shortage issues and effects on treatment outcomes were recorded.

Results During the documenting period 34 drug shortages were recorded in the pharmacy.

The shortages were caused by delivery problems (30%), production problems (32%) and other reasons such as rarely used. Unregistered medications took longer to deliver (38%).

The following solutions were used to overcome drug shortages: the drug was substituted with a different concentration (12%), another medicine (29%) but for 59% we had no substitute.

12% of the shortages reached patient level and had effect on treatment outcome. Pharmacists spent totally 21 extra working hours on shortages.

Conclusion This study confirmed that drug shortages cause problems for pharmacists and patients. Constant recording of causes and consequences of shortages is necessary for finding better solutions.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-004 BOTULINUM TOXIN: PROFILE OF USE AND FINANCIAL ANALYSIS IN A SPANISH HOSPITAL

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Background Botulinum toxin (BT) is a neurotoxin produced by *C. botulinum* that blocks the release of acetylcholine at peripheral cholinergic nerve endings.

Purpose To evaluate the profile of BT use in our hospital, as well as the savings due to the manufacture of pre-filled syringes in the Pharmacy Department.

Material and methods Retrospective study (Jan–Dec 2013). Data collected: IU consumed of BT, doses, Medical Department, number of patients, indication and cost. Vials of BT (100 IU) were reconstituted with sterile saline 0.9% (in a Horizontal Laminar Flow cabinet). The reconstituted solution was stable for 4–24 h at 2–8°C.[1,2] After reconstitution pre-filled syringes were prepared and conditioned with the exact doses requested. After processing, the remaining material was discarded in an appropriate container.

Results BT manufactured (IU): 11,615, 259 patients (682 doses). Consumption/ Medical Department, Pain Unit: 4,208 IU, General Surgery: 3,074 IU, Rehabilitation: 1,900 IU, others: 2,433 IU. Doses more frequently used were 7 IU/0.21 mL by General Surgery (392), 75 IU/2 mL and 100 IU/2 mL by Pain Unit (31 units and 19 units, respectively) and 5 IU/0.15 mL by Ophthalmology (48). The main ward using pre-filled syringes was General Surgery (400), followed by Ophthalmology (135), Pain Unit (75), others (72). The cost of BT was €28,482.5. 80% of BT was used in blepharospasm and focal spasticity. The manufacture of pre-filled syringes in the Pharmacy Department represented a saving of 81 vials. We estimate a potential saving/year (direct cost) of €12,729.6 (-45%).

Conclusion The Pain Unit and Surgery General presented the higher consumption of BT. The manufacture of pre-filled syringes by the Pharmacy Department allowed us to optimise the consumption of this drug, achieve considerable cost savings as well as ensure the sterility of the process.

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No conflict of interest.

OHP-005 PATTERNS OF USE OF BIOLOGICAL ANTI-TNF AGENTS AMONG PATIENTS WITH RHEUMATOLOGICAL DISEASES

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Background The role of biological anti-TNF agents (ATBA) in the treatment of rheumatological diseases (RD) has expanded, but dosing patterns have not been thoroughly explored.
Purpose To describe patterns of ATBA use among patients with RD.
Material and methods To describe patterns of ATBA use we retrospectively collected dispensing records of etanercept, adalimumab, golimumab and infliximab in first line (FL) or subsequent line (SL) settings, from 2011 to 2013, in a general teaching hospital. Variables included: average dose according to the standard dosing interval, dose escalation and discontinuation (gap in treatment >60 days or switch). Time to discontinuation was assessed with Kaplan-Meier curves and U Mann-Whitney tests for average comparisons (SPSS 15.0).
Results Over 3 years, average doses dispensed were: etanercept (N = 238) 40.2 ± 10.9 mg/week, adalimumab (N = 344) 44.9 ± 8.6 mg/2 weeks, golimumab (N = 38) 52.2 ± 1.6 mg/month, and infliximab (N = 139) 489.1 ± 188.6 mg/8 weeks. The overall percentages with dose escalation or discontinuation were greater in the SL for all ATBAs (42.2% SL vs. 28.6% FL, p = 0.039). The proportion with dose escalation was greater for infliximab patients (71.8% SL vs. 52.2% FL, p = 0.012), as well as for discontinuations (15.2% SL vs. 8.6%, p = 0.029). Time to discontinuation was significantly shorter for SL than FL for all ATBAs (median 10.6 vs. 14.9 months; p = 0.018). The hazard ratio for discontinuing SL vs. FL was 1.321 (p = 0.020).
Conclusion In RD ATBAs have higher rates of discontinuation, dose escalation, and shorter time to discontinuation in SL than in FL, therefore the correct selection of FL is a key question in this setting.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-006 HOSPITAL-BASED HTA: EVALUATION OF GRANULOCYTE-MONOCYTE APHERESIS FOR ULCERATIVE COLITIS

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Background Ulcerative colitis (UC) is a chronic inflammatory bowel disease; conventional treatments (corticosteroids and anti-TNF alpha) are associated with an increased risk of adverse events (AEs). Safer long-term treatments are needed.
Purpose To investigate the efficacy and financial impact of granulocyte-monocyte apheresis (GMA), performed with a column containing cellulose acetate beads that act as carriers to selectively adsorb granulocytes and monocytes/macrophages, for patients with active UC refractory to conventional treatment, from the Hospital's perspective.
Material and methods A search of medical literature was conducted using PubMed (up to 2001) with these keywords: Adacolumn[All Fields] AND ((Meta-Analysis [ptyp] OR Clinical Trial [ptyp]) AND English[lang]). Papers were included if they provided information on at least two of the following outcome parameters: response/remission rate, clinical disease activity index, number of AEs, steroid-sparing effect; we performed a statistical analysis of these data. A cost consequence analysis was performed with a bottom-up-approach.
Results We included 25 studies: 14 randomised clinical trials, 14 observational studies, 1 meta-analysis. Studies were heterogeneous in terms of inclusion criteria and follow-up evaluation. Due to the heterogeneity of enrolled patients, remission and response rate ranged between 28% and 83%. However, we selected data from the analysis of the outcomes which suggested that an intensive GMA regimen is suitable for achieving clinical remission in patients with active UC refractory to steroids or not eligible for biological treatment. The cost for 1 year's treatment with GMA (5 weekly sessions/year) was about €7,000.00 for devices and about €1,500.00 for personnel cost (plus a standard 17% of general costs). In all studies, the rate of AEs was lower than with other treatments.
Conclusion GMA's place in treatment is II-III line for patients with active UC refractory to steroids or not eligible for biological treatment. GMA was found to be a safe. sustainable therapeutic approach from the Hospital perspective compared with infliximab or adalimumab and an effective adjunct to standard treatment.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-007 PARENTERAL NUTRITION IN HOSPITALISED PATIENTS. A QUALITY CONTROL STUDY

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Background Adequate coverage of the nutritional needs during hospitalisation is of the utmost importance for patients' recovery.
Purpose To evaluate the quality of parenteral nutritional support in our hospital to find points for improvement.
Material and methods Prospective observational study of all patients with parenteral nutrition (PN) over a period of two months. PN prescription was considered justified, if was in agreement with the ESPEN 2009 criteria. PN length was appropriate if it was for less than 7 days for peripheral PN (PPN) or for more than 7 days for central PN (CPN).

Protein and energy needs were calculated by weight and adjusting for metabolic stress factor (Low, Moderate and High: 1, 1.2 and 1.4 g protein/kg/day respectively for proteins and 150, 130 and 110 nonprotein Kcal/gN respectively for energy).

Nutritional needs were calculated only in patients with CPN and recorded weight. PN was considered adequate if it covered 85–115% of the calculated needs.

Spss 20.0 was used for statistical calculation.
Results 49 patients were included. The average age was 65 ± 14 years and average body mass index was 26 ± 5 Kg/m^2. 40 patients (81.6%) had CPN and 9 (18.4%) PPN. PN prescription was justified in 46 patients (93.6%). PN length was optimal

in 30 patients (75%) with CPN and 3 (33%) with PPN ($p = 0.043$).

Nutritional needs were calculated in 37 patients. Caloric and protein intakes were suitable in 22 (59.5%) and 15 (40.5%) patients respectively. 6 patients (16.2%) had caloric overfeeding and 20 (54.1%) had protein overfeeding. 9 patients (24.3%) had insufficient calories and 2 (5.4%) insufficient protein. 10 patients (20.4%) met all objectives and therefore had appropriate PN.

Conclusion PN prescription is generally justified but PPN length is often inappropriate.

In the light of these results, the appropriate coverage of nutritional needs and PPN prescription for seven or fewer days, are the most important points to improve.

REFERENCES AND/OR ACKNOWLEDGEMENTS

To the other professionals from pharmacy department and clinical units, who contributed to conducting this study.

No conflict of interest.

OHP-008 ABILITY OF A SPANISH PHARMACIST REGISTRAR TO CARRY OUT THE INTEGRAL MANAGEMENT OF A PHARMACY DEPARTMENT

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Background "Assessment of Registrar Pharmacist Competency in Hospital Pharmacy" was published recently.

Purpose To demonstrate the ability of Spanish pharmacy registrars with the current document "Assessment of Registrar Pharmacist Competency in Hospital Pharmacy (ARCPH)" to carry out the overall management of a Pharmacy Department after completing their training.

Material and methods A Spanish pharmacy registrar (R4) trained according to the Current Teaching Plan (CTP) spends his last training stage in a Pharmacy Service (PS) of a Primary Level Hospital (PLH). He trains in overall management for a month there. R4 pharmacists were offered a questionnaire about the areas of training, similar to those provided in the CT. Once they had finished this rotation, senior pharmacists evaluated every task carried out using a range between 0–3 (minimal rating = 0 points, 3 points maximum rating) according to the ARCPH indications.

Results The R4s were trained in 100% of the areas included in the CTP. In the assessment areas, the following scores were obtained: Evaluation and selection of drugs (2.3), Inventory Management (1.9), masterful formulation (2.8), Validation of the prescribing and dispensing of drugs (2.6), Drug Information and health products (2.4), artificial nutrition (2.1), outpatient pharmaceutical care (2.7), direction and management of PS (1.9). The average overall assessment of the evaluated areas was 2.33, thus reaching a level of training listed as "optimal".

Conclusion Spanish pharmacist registrars trained according to the CTP are able to train in overall management of the PS in a PLH. This is the first evaluated case based on the recently published document ARCPH.

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No conflict of interest.

OHP-009 OPTIMISING USE OF RANIBIZUMAB IN THE HOSPITAL PHARMACY: FINANCIAL IMPACT STUDY

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Background In June 2013, it was decided to start a protocol for the use of ranibizumab. Patients were grouped in order to fractionate vials in 0.5 ml syringes as a savings strategy under aseptic conditions. 3 doses of ranibizumab suitable for use are obtained from each vial (0.5 mg/0.05 ml).

Purpose To evaluate and quantify the financial impact of the optimised use of ranibizumab.

Material and methods Data were collected from patients treated with ranibizumab from June 2012 to May 2013, and were compared with patients treated from June 2013 to May 2014, analysing the cost without such optimisation. Total consumption of vials and fractions, the number of patients and the different diagnoses were analysed. Data sources: DOMINION dispensing program.

Results 240 patients were treated from June 2012 to May 2013: 213 (88.75%) with exudative age-related macular degeneration (ARMD) (516 doses), 16 (6.66%) with diabetic macular oedema (24 doses), 10 (4.16%) with neovascularization secondary to pathological myopathy (14 doses) and 1 (0.41%) with macular oedema secondary to retinal vein occlusion (3 doses). The cost of ranibizumab without fractionation was €430,462. 400 patients were treated from June 2013 to May 2014: 364 (91%) with ARMD (1,140 doses), 29 (7.25%) with diabetic macular oedema (57 doses), 6 (1.5%) with neovascularization secondary to pathological myopathy (13 doses) and 1 (0.25%) with neovascular glaucoma (2 doses). The cost without fractionation would have been €1,029,124. However, due to fractionation it was €440,336 achieving a saving of €588,788 (714 vials) in one year, with an average of €1,471 per patient.

Conclusion The grouping of patients and the fractionation of ranibizumab vials reflects an increase in the burden of care and results in significant savings for the health system. The pathology for which the use of ranibizumab increased was ARMD, around 90%.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-010 VAC THERAPY TO REDUCE SURGICAL WOUND COMPLICATIONS: THE OPINION OF THE PHARMACIST

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Background Vacuum Assisted Closure (VAC) treatment is an innovative system that promotes wound healing by applying negative pressure (vacuum) at the wound site. The use of VAC Therapy removes oedema fluid, increases blood flow and cell proliferation and reduces bacterial colonisation.

Purpose Since oncological surgery is often radical with a long rehabilitation phase and complications with the surgical wound, the physicians decided to use VAC Therapy to help two patients to recover from serious operations. After a careful study of related literature, pharmacists addressed the supply, ensuring the prescribed device was safe and clinically appropriate.
Material and methods In this pilot experiment VAC Therapy was used on two patients:

- D. G. M., female, aged 76, suffering from abdominal wall sarcoma.
- M. L., male, aged 78, suffering from sacral chordoma.

Pharmacy databases and electronic medical records were also evaluated.
Results Both patients had undergone complete resection of the tumour. After surgery VAC Therapy was used.

Patient D. G. M. was treated for 6 weeks and regained full functionality in 120 days, for a total cost of €2,219.00.

Patient M. L. was treated for 2 weeks and regained full functionality in 60 days, for a total cost of €669.90.

No complications were recorded and the treatment was well tolerated with a therapeutic compliance of 100%.
Conclusion VAC Therapy avoids further extensive reconstructive operations allowing fast patient recovery.

The device is expensive but it can be a valid option for patients with high risk of poor healing and reduced compliance. The cost can be written off by reducing the time of hospitalizations, and risk of complications and infections.

The pharmacist played a key role in the choice of the most appropriate treatment for the patient and cost/benefit valuation.

REFERENCE

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No conflict of interest.

OHP-011 EVOLUTION OF THE PHARMACIST'S JOB IN THE AREA OF CLINICAL TRIALS

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Background Over the last few years we have seen an increase in the area of clinical trial activity. Specialist pharmacists have evolved in the clinical trials area and their role is already not limited solely to receiving, storing and dispensing the investigational product (IP).
Purpose To evaluate the evolution of the pharmacist's job in the area of clinical trials and related areas.
Material and methods A retrospective observational study over six years. We collected the study variables: the number of meetings of the ethics committee, the number of clinical trials protocols evaluated, the number of clinical trials managed, the number of drugs received for clinical trials, the number of drugs dispensed in clinical trials, and the number of monitoring activities. The annual percentage increase of each of the variables was calculated.
Results The annual percentage increase between the years 2008–2009, 2009–2010, 2010–2011, 2011–2012, 2012–2013 for the variables studied were respectively 48%, 7%, 36%, 13% and 12% in the number of clinical trials protocols evaluated, -5%, 7%, 11%, 13% and 5% in the number of clinical trials managed, 26%, 16%, 56%, 18% and 4% in the number of drugs received for clinical trials, 79%, 36%, 69%, -69% and 32% in the number of clinical trials drugs dispensed and 16%, 29%, 42%, 3% and -3% in the number of monitoring activities.
Conclusion More and more clinical trials require a specialist pharmacist for specific jobs such as the randomization of subjects, IP masking, remote monitoring, sending information to monitors and intravenous cytostatic preparations made by the Pharmacy Service. Although monitoring activities were maintained in the years 2012 and 2013, it was difficult to measure the time spent on each; however the demand is perceived by the pharmacist as increasing over time.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-012 MANAGEMENT OF LEKSELL FRAMES: IMPROVING THE STERILISATION PROCESS OF A CRITICAL DEVICE

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Background Leksell frames are high precision CE-approved medical devices used in the stereotactic department, gamma unit and neurosurgery. They can be considered as "critical" because of their use and price. The French legislation recommends a prionicidal detergent to clean sterilisable devices, whereas the company only recommends enzymatic detergents.

Our position is uncomfortable. We have both to respect the recommendations provided by the company in order to protect the device's surface and the legislation concerning the risk of prion colonisation, but those 2 elements are contradictory.
Purpose To highlight the impact of the cleaning process on the frames in order to optimise their management and guarantee they are used correctly. The cleaning process is selected by and under the pharmacist's responsibility.
Material and methods We analysed the treatment of the frames from their use during surgery to their sterilisation. To build up a picture library we inspected the frames and their containers.
Results We noted 2 major concerns:

The plastic containers were damaged, linked to the high rate of use of the frames (14 sterilisation cycles/month). The use of metal containers would be more suitable.

4 out of the 11 frames were showing signs of several anomalies concerning the graduations and their visual appearance. Those anomalies could be linked to the anodized aluminium surface damaged by the alkaline detergent.
Conclusion The absence of a comprehensive approach of the data sheet provided by the company (neither including our detergent on the agreed list, nor prohibiting it) is a true concern, and involves the company in case of deficiency. After sharing feedback with other hospitals, it appeared they were being confronted with the same issues. The alkaline detergent seems to damage the graduations and to accelerate the wear of our frames. Although we haven't experienced any aftermath yet, we must be aware of this concern. The consequences of misuse could be highly damaging for the patient.

REFERENCE

1 Elekta's data sheet for use of the Leksell stereotactic system

No conflict of interest.

OHP-013 COST-EFFECTINESS STUDY OF CABAZITAXEL IN ACTUAL PRACTICE

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Background Prostate cancer is the second most frequent malignant tumour among men, with approximately 900,000 new cases per year.

However, the financial situation of our public health system and the tight budgets of hospitals demand the best use of healthcare resources. Therefore, physicians should use cost-effective strategies in clinical practice.

Purpose To analyse the incremental cost-effectiveness ratio (ICER) of cabazitaxel as a treatment for metastatic prostate cancer in our hospital, and to compare those results with the available literature.

Material and methods A retrospective observational study was carried out to estimate our population progression-free survival (PFS), measured by the Response Evaluation Criteria in Solid Tumours (RECIST). The study lasted 15 months and included all 0–1 ECOG performance status patients who received cabazitaxel for metastatic prostate cancer in our hospital.

Afterwards, costs were calculated using actual dosages and current prices including industry discounts. Administration or indirect costs were not considered.

The incremental cost-effectiveness ratio (ICER) of cabazitaxel was obtained.

Finally, the literature perspective and our estimation from real practice were compared.

Results Ten patients were treated with cabazitaxel for metastatic prostate cancer during the inclusion period. Median age was 68 years old (range 61–83). The median dose was 20 mg m^{-2}. Four patients required dose reductions (10–15 mg m^{-2}). The median PFS was 7.0 months.

Pharmacological costs were €15,923.5 per patient treated, and therefore our estimated ICER was €2,274.78/month of PFS.

While published ICERs were estimated at €12,546.32/month of PFS, we obtained a much lower ICER. Hence, a discrepancy of €10,271.54/month of PFS was found.

Conclusion The summary of products characteristics (SPC) recommended dose is higher than actual practice, and consequently costs are overestimated in studies based on SPC data.

On the whole, pharmacoeconomic analyses should be applied in specific settings since general analyses may not be congruous with actual scenarios.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-014 ELASTOMERIC INFUSION SYSTEMS: SAFE AND EFFICIENT ADMINISTRATION

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Background To ensure safe administration of continuous 5-FU infusions to outpatients.

Purpose To make general recommendations for the use of elastomeric infusion devices for cancer patients with continuous 5-FU infusions.

Material and methods Revision of the technical specifications for all the infusion devices available, as well as review of the literature and studies available that show differences in the accuracy of infusion speed. These differences are due to factors in the infusion itself and to factors related to the behaviour and life style of the patient.

The sources of information were:

1. Technical datasheets of the different infusion devices.
2. Information from healthcare Products "Medical devices": Advice to patients.
3. Literature search in PubMed using the key words "elastomeric infusion devices" and "5-FU infusion" and the resources available through the SEFH Website.

Results Elastomeric infusion devices provide an infusion accuracy of ±15% if the established conditions are followed.

Other variables affecting the accuracy of the infusion are:

1. Temperature. It modifies the viscosity of the mix. It is estimated that a change of one degree in temperature changes the flow speed by 2–3%.
2. Viscosity. Viscosity has an inverse effect on flow, and speed decreases when viscosity increases.
3. Concentration. Concentration will have a significant impact on viscosity.
4. Atmospheric pressure. Low pressures (600 mmHg) may reduce the infusion speed significantly.
5. Back pressure. If infusion devices are calibrated in a particular position a change in that position may change the amount infused.
6. Storage. It is important to temper the infusion device before use, to avoid variations in the viscosity of the fluid and in the texture of the elastomer membrane, etc.

Conclusion It is necessary to educate patients and nurses to reduce the incidence of infusion errors.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-015 RELEVANCE OF THE PHARMACEUTICAL COMPOUNDING INDIVIDUALISATION IN RUSSIA. MIDLINE RESULTS OF THE STUDY

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Background Due to legislative and financial circumstances there is a problem of compounding pharmacies closing in Russia.

Purpose To analyse the relevance of compounding from the physician's perspective in order to find new practice directions for compounding pharmacies.

Material and methods A questionnaire survey of physicians was conducted at outpatient and inpatient departments. The questionnaire consisted of 8 questions which were intended to identify groups of patients who do not find commercially available medicines suitable.

Results The study was initiated 1 October 2014 and is scheduled to interview paediatricians, general practitioners (GPs), dermatologists, surgeons, cardiologists, etc. By 15/10/2014 the

study had involved 15 paediatricians, 6 GPs working in outpatient departments.

The average work experience of the respondents was: paediatricians – 28 years, GPs – 42 years.

Research has shown that there are patients for whom commercially available dosages of drugs are not suitable (in paediatric practice – 87% of patients, in GP practice – 17% of patients).

The research has also shown that there are patients for whom commercially available dosages of drugs are not suitable in the standard combination treatment: in paediatric practice – 47% of patients, in GP practice – 67% of patients.

In addition patients were experiencing problems with the use of different dosage forms:

Abstract OHP-015 Table 1

	Paediatricians, %	GPs, %
Tablets	93	50
Capsules	80	50
Pills	93	50
Oral solutions	80	33
Oral sprays	33	17
Suppositories	87	33

Most physicians believe that difficulties in using the medicine can cause patients to stop treatment: in paediatric practice – 87%, in GP practice – 33%.

All GPs and 93% of paediatricians agreed that prescribing a large number of drugs simultaneously reduces patient compliance.

Conclusion The midline results identified that there is a number of patients who do not fit industry manufactured medicines in Russia. Such results show that there is a need for individual compounding in pharmacies.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-016 USE OF ANTIPSYCHOTICS AMONG ELDERLY NURSING HOME RESIDENTS

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Background Antipsychotic drugs should be used in people with dementia only when there is an identified need and the benefits outweigh the risks. Behavioural and psychological symptoms of dementia are common reasons for use of antipsychotic drugs among older individuals with dementia. These drugs are not approved for such use and both the Food and Drug Administration and European Medicines Agency have issued warnings to limit such use.

Purpose To describe the patterns of antipsychotic drug use in ten nursing homes, whose medicines are provided by the referring hospital's Pharmacy Department.

Material and methods This cross-sectional study included 6 nursing homes.

Results A total of 770 elderly residents living in 6 nursing homes were investigated. Overall, 28% of patients used antipsychotic drugs. Particular antipsychotics such as lithium, amisulpride, aripiprazole, ziprasidone, tiaprizal, risperidone injectable and paliperidone injectable were monitored by psychiatry although in some cases the last mental health reports found were from the last year. 20% of patients were treated with quetiapine; half were followed by psychiatry and the others had dementia. 22% of patients were treated with risperidone, 78% of them had dementia. 12% of patients were treated with haloperidol and 4% with levomepromazine; all of them with dementia.

Conclusion Many patients, 60%, were followed by the psychiatry service but despite recommendations to avoid the use of antipsychotic drugs in patients with dementia, a large proportion of residents continued to receive such agents for this condition. Future work should establish the appropriateness of antipsychotic drugs in patients with dementia.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-017 ABILITY OF INFUSION DEVICES TO DELIVER THE EXPECTED VOLUME OF ANTINEOPLASTIC DRUG IN SOLUTION: AN *IN VITRO* ASSESSMENT

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Background For several years, many infusion systems have been marketed for the administration of antineoplastic drugs (AD).

Purpose To compare the ability of these devices to deliver the expected volume of antineoplastic drug in solution.

Material and methods Seven infusion devices were assessed (see table 1) by simulated infusions with a radiotracer ($^{99m}TcO_4^-$) as drug substitute. The same activity (370 MBq) was diluted in 250 mL 0.9% NaCl bags. The evolution of the drug concentration at the egress of the infusion system was recorded continuously with a sodium iodine crystal detector. The area-under-curve of drug concentration according to time of both administration (AUC_{adm}) and rinsing (AUC_{rin}) steps were calculated using the linear trapezoidal rule after correcting for radioactivity decay. The rinsing volumes (V_{rin}), volumes required to get no more radioactivity, were measured in a graduated test tube. The values were compared using a Kruskall-Wallis test ($p < 0.05$).

Results Despite the differences in dead-space volume, AUC_{adm} were not significantly different (see table 1). The rinsing volumes were significantly different between the tested devices, ranging between 46.8 ± 5.7 mL and 92.2 ± 8.9 mL.

Conclusion The rinsing conditions required to administer the same dose are really different between devices. The impact of good handling practice of these devices has to be assessed on the pharmacokinetic parameters.

Abstract OHP-017 Table 1

Infusion set or device	Supplier	Dead-space volume (mL)	AUC_{adm} (cps)	AUC_{rin} (cps)	V_{rin} (mL)
KIS-1	Doran International	15.8 ± 0.1	482.5 ± 10.4		
MFX2307-KIS1	Carefusion Doran	18.4 ± 0.2	483.0 ± 36.9	31.0 ± 2.1‡	48.3 ± 3.6[b]
PCHIMX-KIS1	International	17.8 ± 0.1	499.2 ± 26.9	32.6 ± 1.2‡	54.0 ± 4.5[b]
PCHIMX-MS60	Fresenius	24.7 ± 0.9	500.6 ± 9.7	54.2 ± 1.8	66.8 ± 3.5[a]
Cyto-Ad set	Codan	33.0 ± 0.4	471.4 ± 32.1	53.8 ± 3.6‡	92.2 ± 8.9[b]
MFX2309	Carefusion	18.8 ± 0.2	484.7 ± 24.7	29.4 ± 1.2‡	47.0 ± 6.6 [a]
Tevatree 2	Teva	17.5 ± 0.2	506.7 ± 8.1	31.4 ± 2.5‡	54.7 ± 5.4[b]
Tevatree 4	Teva	17.9 ± 0.2	500.1 ± 21.5	32.4 ± 4.9‡	53.5 ± 5.4[b]
Chemoset	ICU medical	17.7 ± 0.3	502.1 ± 10.9	25.0 ± 1.9‡	46.8 ± 5.7[a,b]

†,‡p < 0.001
a,bp < 0.0001

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No conflict of interest.

OHP-018 CHEMICAL DEGRADATION OF METHOXSALEN AFTER ACID AND ALKALINE HYDROLYSIS

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Background Photochemotherapy is an effective treatment for psoriasis. The photosensitizer methoxsalen can be applied either orally or topically. When applied topically, the patient is immersed in a bath containing 0.0001% methoxsalen in warm water for 20 min, followed by UVA irradiation (PUVA bath (PUVAb)).

Methoxsalen is very toxic and has carcinogenic effects when it is swallowed or gets in contact with mucosa. It must be handled with caution.

Purpose To find an effective and simple method for chemical deactivation of methoxsalen, which could be used in the clinical setting after PUVAb.

Material and methods Materials: Methoxsalen powder, KOH, Ethanol, NaClO, $CHCl_3$.

Samples: 7 solutions of 200 mg of methoxsalen in 10 ml of ethanol.

Reagents: 3 solutions of KOH (1 M, 0.5 M, 0.2 M), and 3 of NaClO (5%, 0.5%, 0.05% (v/v)).

We mixed 10 ml of each reagent with a different methoxsalen sample and stirred. The seventh sample of methoxsalen was used as a blank.

We monitored the chemical reactions with thin layer chromatography at 10 and 30 min. Mobile phase was ethanol 1% in $CHCl_3$. We used UV light to visualise the chromatogram.

We performed a qualitative analysis of the remaining methoxsalen in each sample, after acid or alkaline hydrolysis.

Results The blank showed that methoxsalen is completely eluted by the mobile phase. In the six samples, we observed that part of the mixture is eluted (methoxsalen), while other compounds are retained in the stationary phase. These may be polar degradation products. The more concentrated the reagents, the smaller the quantity of methoxsalen remaining. The most extensive hydrolysis was seen in the mixture with 1M KOH.

Conclusion Both KOH and HClO hydrolyse methoxsalen. The most efficient reactive was 1M KOH, which hydrolysed almost the whole sample.

These results suggest that KOH 1M may be useful to deactivate methoxsalen after PUVAb, although further studies are necessary to characterise degradation products and evaluate their toxicity.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-019 BUDGET IMPACT OF FINGOLIMOD IN THE TREATMENT OF MULTIPLE SCLEROSIS

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Background The high cost of multiple sclerosis (MS) treatment justifies conducting financial analyses to reveal which therapeutic alternatives are more cost effective. From the Clinical Management Unit (CMU) of Pharmacy from Granada (Spain), we looked for various tools to reduce the impact of these drugs on the annual budget without affecting the health of the individual.

Purpose To analyse the cost of treatment with fingolimod in patients attending CMU Pharmacy Granada.

Material and methods Patients receiving drugs for the treatment of MS, dispensed from the CMU Pharmacy Services, were established as the study population. A time horizon of 5 years was chosen (2013–2017) and two scenarios: stage 1, with the standard treatment for MS, and stage 2, with the introduction of fingolimod as second line monotherapy. Only direct healthcare costs: drugs, administration and management of the disease were considered.

Results The average cost of treating patients, considering stage 1, involves an investment of €581,418 annually, with an average cost per patient per year of €12,872. The introduction of fingolimod as the only treatment option for second-line carries an average annual cost of €7,517,054 euros (average cost per patient per year of €12.762). Therefore, the second line treatment of MS based solely on fingolimod means less spending. In the second scenario, there are cost savings: €64,364. What differentiates the two situations are the costs of administration and disease management. On the one hand, the use of fingolimod, being an oral drug, eliminates the day hospital costs. However, it increases spending on disease management: cardiac and ophthalmic monitoring.

Conclusion The introduction of fingolimod does not have a significant budget impact since it involves an expenditure increase of 13% over the next five years. These results are similar to those published in previous relevant studies.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-020 PROSPECTIVE MONOCENTRIC STUDY: COMPLICATIONS RELATED TO PERIPHERALLY INSERTED CENTRAL CATHETERS (PICC)

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Background Peripherally Inserted Central Catheters (PICCs) are long-term intravenous catheters used for drug administration when the duration of parenteral treatment exceeds six days.
Purpose To analyse the incidence and nature of PICC-related complications in routine clinical practice.
Material and methods A monocentric, prospective study. All PICCs implanted between December 1, 2012 and March 6, 2013 were included. Clinical data of inpatients and outpatients were collected until May 1, 2013.
Results Of the 206 PICCs successfully inserted in 184 patients, 204 were analysed. They represented 5,116 catheter-days, of which 1,503 related to outpatients. Antibiotic treatment was the main use (70.5%). At the end of the follow-up, 194 PICCs had been removed with a median duration of 16.0 days (0–97). Complications led to the removal of 58 PICCs: two thromboses, 26 suspected infections, 12 obstructions and 18 accidental removals. The incidence rates were 2.45% or 0.98 per 1,000 catheter-days for catheter-related bloodstream infection with parenteral nutrition as a risk factor (OR = 13.0; CI_{95}: 2.77–82.38, p = 0.0002), and 0.98% or 0.39 per 1,000 catheter-days for thrombosis. Catheter obstruction occurred for 40/204 PICCs with blood transfusion and blood samples as risk factors (OR = 3.0; CI_{95}: 1.21–8.53, p = 0.01).
Conclusion Due to their low organic complication rates and their significant use for outpatients, PICCs appear to be a good alternative if there is a need for central venous access in case of a medium- or a long-term catheter. A better understanding of their usage and training of healthcare workers are required to avoid complications.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-021 IMPACT OF HOSPITAL PHARMACIST INTEGRATION OVER A GENERAL SURGERY SERVICE STAFF

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Background Hospital Pharmacist integration in a medical team improve inpatient care and safety.
Purpose We want to study the impact of this physical integration over the General Surgery service staff.
Material and methods During two months a pharmacist worked full-time in the General Surgery Area. To assess pharmacist's impact over the surgical team, we developed a questionnaire (table 1) qualifying from 1 (less favourable) to 5 (most favourable). The questionnaire was filled out anonymously by the Surgery staff two weeks prior integration (PRE) and after two weeks (POST). The average score was obtained and PRE-POST groups were compared.
Results 28 questionnaires were collected: 5 nurses' aides, 9 nurses, 14 surgeons. The results are shown in Table 1.

Abstract OHP-021 Table 1

Item	PRE	POST	p
1. Asses the role of Hospital Pharmacist reviewing medical prescriptions	3.7	4.6	**<0.01**
2. Asses how you believe that this revision increases patient's security	4.4	4.8	**<0.05**
3. How do you value the time the pharmacist employs reviewing prescriptions?	3.7	4.7	**<0.01**
4. In Off-Label drugs use. Do you believe pharmacist opinion is important?	4.0	4.6	**<0.05**
5. Asses the importance of making home treatment reconciliation at income	4.7	4.8	0.37
6. Asses the importance of pharmacists carrying out reconciliation process	4.3	4.7	0.09
7. Asses the usefulness of clinical pharmacokinetics	4.6	4.4	0.71
8. Asses the role of pharmacist prescribing, monitoring and resolving problems related to parenteral nutrition	4.5	4.6	0.86
9. Asses the impact of pharmacist's presence in the final quality of treatments	4.1	4.6	0.11
10. Asses globally pharmacist's role in your service	4.3	4.8	**<0.05**

Conclusion While the prior pharmacist's assessments were high, the visibility and its presence resulted in a significant improvement in the perception of the pharmacist figure, both globally and in specific aspects such as patient safety, the importance of treatments' review and work-time employed perception.

REFERENCES AND/OR ACKNOWLEDGEMENTS

none

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OHP-022 ADVANCES IN PHARMACY EDUCATION: EVALUATION OF A WARD-BASED CLINICAL TEACHING COURSE

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Background The pharmacy profession is changing towards patient-centred care. To meet the new challenges but also to drive the profession forward it is necessary to provide students with clinical competencies. Clinical courses with teacher practitioners are part of the pharmacy curriculum in countries like the UK or USA and are increasingly being established within Europe.[1]
Purpose To systematically evaluate the benefits of clinical teaching in our country: a quasi-randomised teaching and learning study.
Material and methods A clinical teaching course on a psychiatric ward was created for small student groups. Learning aims included: communication, drug histories, drug-related problems and counselling. The control group only participated in the theoretical part while the intervention group took part in the complete course. The effects were assessed by an objective structured clinical examination (OSCE) and a student questionnaire.

Results The intervention group achieved a significantly better overall result in the OSCE assessment (46.4 ± 9.5 vs. 28.2 ± 9.0 of 90 points; $p < 0.001$) with the most positive effect in communications skills (27.4 ± 5.4 vs. 16.3 ± 6.0 of 40 points; $p < 0.001$). The performance in the theoretical tasks was improved but unsatisfactory in both groups considering the maximum score (12.1 ± 4.1 vs. 8.1 ± 3.2 of 30 points; $p < 0.001$). 93% of the students rated the course as practice-orientated and 90% felt better prepared for patient contact. Many students suggested an extension of the course in the free text field of the questionnaire.
Conclusion The results suggest significant learning benefits from the ward-based course created. The overall satisfaction was high. Inclusion in the pharmacy curriculum should be considered. Further studies are required to optimise course structure.

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No conflict of interest.

OHP-023 IMPORTANCE OF PREVIOUS MICROBIAL CULTURES IN CARBAPENEMS USE

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Background Carbapenems are widely used as broad-spectrum antibiotics but in several cases microbiological cultures are not taken before carbapenem use, therefore hindering the down-scaling to targeted treatment.
Purpose To evaluate the increasing number of cultures requested before using carbapenems because of a pharmaceutical interventions and the results of the cultures; to describe the sensitivity of microorganisms isolated.
Material and methods Pre-Post and interventional study including adult patients using carbapenems (ertapenem, meropenem, and imipenem-cilastatin).

From June 2014, the department of pharmacy set a recommendation that a sample must be taken from the patient for microbiological culture before carbapenem was used, and the physicians have to check this recommendation to complete the electronic prescription of a carbapenem.

The record of every patient with carbapenem prescription was studied for 3 consecutive months; May, before the intervention was set up; June and July, with the intervention already in progress.

It was defined as a previous culture, 7 days before prescription.
Results Two hundred and sixty one patients (100 in May, 84 in June, 77 in July) were studied; mean age was 60.1 years, 62.1% males.

In May, 75.0% of the carbapenems prescriptions had a culture made before antibiotic use, in June, 82.1% and in July 87.3%.

During the study period, 209 culture requests were done before carbapenem prescription, 48.4% were negatives, 51.6% positives. 89.8% of the microorganisms isolated were sensitive to narrow-spectrum antibiotics, but just 21.6% of prescriptions for them were down-scaled.
Conclusion The outcome shows a clear improvement in the number of cultures requested by physicians; this allows an optimal use of antibiotics, facilitating the down-scaling strategy which avoids the appearance of antibiotic resistance.

Most of the microorganisms isolated were sensitive to antibiotics with a narrower spectrum, which gives more value to the culture at the beginning of the treatment and makes checking the down-scaling of treatment by the department of pharmacy important.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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OHP-024 PHARMACIST FOCUS GROUP ABOUT QUALITY OF MEDICINES AND RELATED ISSUES

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Background The quality of medicines is commonly established through pharmacopoeia testing. Medicines with quality issues can either be substandard or counterfeit according to the World Health Organisation. Limited research has addressed the perceptions of stakeholders about medicine quality and related issues and none were identified within the selected population. Furthermore, few studies report views about generic medicines as being counterfeit or of inferior quality, which could influence the acceptance and use of such medicines.
Purpose To generate a range of views, attitudes and behaviour regarding medicine quality and related issues from the perspective of experienced pharmacists. Additionally, this study will inform the question design for future studies with different stakeholders in the selected population and find translation for technical terms such as counterfeit.
Material and methods A focus group study was video-recorded and conducted in English with five experienced pharmacists following their informed consent. The questions were developed following a literature search and were arranged in a particular order where general questions were asked first and questions regarding counterfeits were asked at the end. Data were analysed thematically using a systematic strategy for focus group analysis.
Results Eight themes emerged including the definition, perception, challenges, knowledge, experience, practices, price and recommendations for medicine quality. A good quality medicine was described in terms of its effect, similar to other studies. Participants believed that the quality of medicines in the selected country was high in contrast to some patients' views. A single term was used to describe counterfeit medicines in their native language.
Conclusion The result of this study indicates a possible gap between the pharmacists and some patients' views about the quality of medicines in the selected country. Emerging themes were used to inform the question design in future studies with different stakeholders. The translation of the term counterfeit was achieved.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

OHP-025 INVESTIGATIONS FOLLOWING INCREASING COMPLAINTS ABOUT INFUSION SETS FOR SAFE ADMINISTRATION OF CYTOSTATICS

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Background Systematic use of flushed infusion lines is recommended by the French "Good Compounding Practices" for the administration of chemotherapy drugs. When they are packaged in syringes, the CytoBolus Adapter Set (CODAN) is currently used in a department of paediatric haematology. Since September 2013, 27 adverse events have been reported, including 20 occlusions and 6 leaks of this device. Viscosity has been cited by the manufacturer as a possible causal factor.
Purpose The purpose of this study was to identify risk factors that lead to CytoBolus Adapter Setmalfunction, especially viscosity.
Material and methods An Ishikawa diagram was built after meeting with nurses, pharmacists and CODAN representatives.

Three connectors were assessed: the CytoBolus Adapter Set, the PhaSeal system and a plain tube (VYGON). *In vitro*, three solutions with an increasing viscosity were processed by 4 automated Orchestra infusion systems at two extreme flow rates: 1 ml/h for 20 h and 50 ml/h for 1 h. Each combined setting was repeated 3 times.

A two-way ANOVA test was used to compare means of calculated volumes, based on the density of each solution.
Results Cause and effects analysis identified potential causes of the events including cold storage, properties of the solvent, misuse and mishandling, or the lack of resistance of the connector.

No significant differences were observed in the volume delivered by the three medical devices at 50 ml/h whatever the viscosity. Volumes delivered by the PhaSeal system were unexpectedly lower with water for injection than dextrose 5% ($p = 0.00405$) and dextrose 10% ($p = 0.00334$) at 1 ml/h but were still acceptable given the 3% precision of the Orchestra (standard NF S 90–251).

In all the 216 experiments, neither obstruction nor cracking was observed.
Conclusion The viscosity does not appear to be the determining factor that leads to malfunction. Further investigations appear necessary of other causal factors.

REFERENCES AND/OR ACKNOWLEDGEMENTS

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No conflict of interest.

OHP-026 COSTS OF TRIPLE THERAPY AND THE HOSPITAL PHARMACIST'S ROLE

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Background Recently, there have been major improvements in hepatitis C cure rates, mostly because of the use of the new protease inhibitor (PI) drugs, but this entails a significant increase in treatment costs. The application of stopping rules, included in their product information, can avoid adverse effects and save costs to the Health System.
Purpose To analyse the costs of curative treatment and costs associated with PI treatment failure, including those arising from non-compliance with stopping rules for boceprevir (BOC) and telaprevir (TVR) and to establish some measures to reduce costs.
Material and methods Retrospective observational study of PI treatment costs in two hospitals, from January 2012 to February 2014. Data were obtained from the pharmacotherapy management database Farmatools.
Results 56 patients were treated with triple therapy: 18 received boceprevir and 38 telaprevir. In each group (BOC and TVR): 4 (22%) and 23 (60.5%) were treatment-naïve; 3 (17%) and 9 (24%) were prior relapsers; 4 (22%) and 3 (8%) were prior partial responders and 7 (39%) and 3 (8%) were prior null responders. Overall, 40 (70%) patients were cured. We spent €921,600 on telaprevir and €346,500 on boceprevir. Since 39 and 11 patients were cured in each group, the cost benefit was €31,779 and €31,500 respectively. However, we spent €277,157 on patients whose treatment finally failed (22% of the total cost). In one of the hospitals, we analysed the costs arising from non-compliance with stopping rules, which were €5,333 for telaprevir and €17,067 for boceprevir.
Conclusion We found efficacy and cost differences between the two PIs, probably due to the different characteristics of the populations treated. Good coordination between pharmacist and physicians from the beginning of each treatment as well as early pharmaceutical intervention may result in minimising the costs of the triple therapy, especially those associated with non-compliance with stopping rules.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-027 LITERATURE ABOUT THE ROLE AND THE IMPACT OF PHARMACISTS: PERCEPTIONS OF PHARMACY STUDENTS

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Background The limited exposure of pharmacy students to evidence of the role and impact of pharmacists does not contribute to encouraging the prospective evaluation and participation of pharmacy students in such research.
Purpose The main objective was to assess the exposure of pharmacy students to the literature on the role and impact of pharmacists. The secondary objective was to assess their opinion of the website Impact-Pharmacie, an international platform for such evidence.
Material and methods We developed a questionnaire of 29 questions designed to explore students' exposure to the literature on the role and impact of pharmacists. Students' opinions of the website Impact-Pharmacie were assessed with a scale from 1 to 10. We used an Annual Meeting of the International Pharmaceutical Students' Federation, held in Portugal 2014–08–05, to introduce a cohort of pharmacy students to the literature on the

role and impact of pharmacists during a workshop. The website Impact-Pharmacie served as support for the presentation. We administered the questionnaire on a voluntary basis; descriptive statistics were performed.
Results Thirty students participated in the survey (57% of participants). Respondents were from 15 different countries: Armenia, Austria, Canada, Egypt, France, Germany Portugal, Romania, Slovenia, Spain, South Korea, Taiwan, Thailand, Tunisia, United Kingdom. Concerning exposure, 40% (12/30) of students had never read articles describing the role and impact of pharmacists, 43% (13/30) of students had read between 1 and 5 articles. Pharmacy students were in favour of using the best evidence on pharmacy practice models. Respondents considered the website Impact-Pharmacie to be clear (average score of 6.6), relevant (6.8) and applicable (5.9) for use in pharmacy curriculums.
Conclusion Pharmacy students have limited exposure to the literature on the role and impact of the pharmacist. Students' found the website Impact-Pharmacie useful as a portal for this literature.

REFERENCE

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No conflict of interest.

OHP-028 COST-EFFECTIVENESS OF TRIPLE THERAPY FOR HEPATITIS C COMPARED WITH DUAL THERAPY IN CLINICAL PRACTICE

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Background New treatments for Hep C are more effective but also increase the cost of treatment and side effects also increase.
Purpose To compare the cost effectiveness of double therapy with interferon plus ribavirin (group 1) with triple therapy including telaprevir or boceprevir (group 2).
Material and methods Cross sectional and retrospective study that included patients who started treatment for Hep C since 2014, with genotype 1 and >3 months on treatment. Computerised medical records were reviewed and the outcome of treatment defined as sustained viral response (SVR) or failure; the occurrence of anaemia and neutropenia was recorded. Prescriptions for colony stimulating factors (CSFs) was obtained from the pharmacy program.
Results 70 patients initiated treatment during the study period: 33/70 (47%) in group 2 (20 used telaprevir).

Median duration of treatment in patients who ended treatment (65) was 47 weeks (IQ: 40–47). In 43 patients (66%) a sustained viral response (SVR) was achieved. Group 2 patients responded more than those in group 1: 23/28 (82%) vs. 20/37 (54%) with a relative risk of 1.52 (CI95%: 1.08–2.14). The absolute risk reduction (ARR) of no response was 28% (CI95%: 7–50%) and the number needed to treat (NNT) was 3.56 (CI95%: 2.02–15.01).

Mean global cost for group 1, including hematopoietic stimulating factors, was €16,769 ± 5,063 while for group 2 it was 39,849 ± 9,640. These results yielded an incremental cost-effectiveness ratio (ICER) of 82,164 euros (CI95%:46,621–34,430). Haematological toxicity that needed CFSs affected 30/70 patients (43%). This finding was higher in group 2 than in group 1, without statistical significance: 16/28 (57.1%) vs. 14/37 (37%) respectively. Treatment of haematological toxicity added a mean of €2,490 ± 2,494 per course.
Conclusion Treatment with triple therapy is more effective than dual but it's ICER is very high from the payer's perspective. Given the large socioeconomic impact of Hep C, an approach based on cost-utility analysis would be preferable from a societal perspective.

REFERENCE

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No conflict of interest.

OHP-029 CONTINUOUS IMPROVEMENT PROCESS: INVOLVEMENT OF THE STAFF IN A PHARMACY SERVICE

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Background A Quality Management System (QMS) analyses, controls and monitors the processes in order to identify areas that require improvement.
Purpose To describe the incidents detected by the staff of a Pharmacy Service (PS) during the implementation of a QMS based on the ISO 9001:2008 standard.
Material and methods Descriptive study (December 2013–August 2014). The quality improvement logbook, in which the incidents were recorded, was designed by the PS Quality Manager (PSQM), based on the experience of other hospitals and according to a general procedure, authorised by the PS Quality Subcommittee and reflected in the PS Organisation Handbook. The logbook was presented in a PS meeting, where its location and how to fil it in [record number, date, process involved, description of the incident, reporting/detecting staff, first actions taken] were explained. Once the incident is booked, it was reviewed by the PSQM and the responsible pharmacist. If needed, due to frequency and/or severity, the PSQM proceeds with the opening of a nonconformity and/or a corrective/preventive action, communicating this to the PS Manager. These are evaluated by the PS Quality Subcommittee.
Results 60 incidents in 4 key processes and 1 support process were recorded. Process distribution: logistics (37), dispensing (11), sterile (6) and non-sterile (5) preparation, pharmacoeconomics management (1). With respect to the logistics incidents, 18 of them were identified jointly by nursing and administrative assistants and the most common incidents involved the lack of a standard label on the outer package, to indicate that the drug can't be dispensed outside the hospital (25) and incorrect temperature in fridge (4). In relation to incidents to do with productions, 6 nonconformities were opened (expired drug dispensed, wrong non-sterile preparation dispensed, autologous serum contamination, laminar flow cabinet contamination, mislabelling of a cytostatic and delay in orders for non-sterile materials).
Conclusion It is important to educate health staff in detecting weaknesses or failures in the system in order to perform the "Deming Continuous Improvement Cycle".

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-030 SURVEY OF GOOD PRESCRIBING PRACTICE OF KANOKAD AND FEIBA USED AS ANTAGONISTS OF DIRECT ORAL ANTICOAGULANTS (DOAs) AFTER IMPLEMENTATION OF A VALIDATED PROTOCOL

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Background Our institution established in October 2013, in collaboration between the pharmacy unit, haematology laboratory, clinicians and according with recommendations of the GIHP, a prefilled prescription form (PPF) for Kanokad® (Prothrombin Complex Concentrate) and Feiba® (activated Prothrombin Complex Concentrate) used in the indication of antagonising DOAs. The PPF has the form of a flow chart and indicates to the prescriber which product and dose to prescribe according to the clinical situation. The PPF was validated by the Hospital Drug Committee.

Purpose The objective of this study is to realise an inventory of good prescribing practices of Kanokad® and Feiba® relative to the established protocol.

Material and methods A retrospective study over 12 months (October 2013–September 2014) was performed with analysis of the prescriptions of Kanokad® and Feiba®. The conformity of the prescriptions was determined based on the choice of the product and the respect of the recommended dosage.

Results 16 patients were treated in the indication of antagonising DOAs. 8 patients received Kanokad®, 7 Feiba® and 1 Feiba® followed by Kanokad®. DOAs concerned was Rivaroxaban (63%) and Dabigatran (31%) (unknown for 1 patient). Indications were: treatment of severe bleeding (76%) and prevention of bleeding during surgery (18%) (unknown for 1 patient). The choice of the medicine and dosage was in consistent with the protocol for 87.5% of patients. For 12.5% of the prescriptions, the prescribed dosages were lower than recommended, and we could not check-up the choice of the product (PPF incomplete). They concerned a unit which has an emergency reserve stock of Kanokad® (pharmaceutical validation performed retrospectively).

Conclusion The PPF is generally well applied. Measures were implemented for the 12.5% non-compliant prescriptions: prescribers were contacted and the PPF was sent them by E-mail. Furthermore, the PPF will now be joined to the Kanokad® bottles at each renewal of the emergency reserve stock.

REFERENCES AND/OR ACKNOWLEDGEMENTS

none

No conflict of interest.

OHP-031 ANTIFUNGAL PROPHYLAXIS IN INVASIVE ASPERGILLOSIS

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Background Invasive aspergillosis (IA) is a serious problem in haematology patients, especially in patients with acute myeloblastic leukaemias (AML) and allogeneic haematopoietic stem cell transplant (allo-HSCT) recipients. Mould-active prophylaxis is increasingly used in patients at risk of IA, but its effectiveness is still unknown.

Purpose To describe the antifungal prophylaxis (AP) in patients with haematological disease diagnosed with IA.

Material and methods An observational study was performed in the Haematology Unit of a tertiary centre. All patients diagnosed with IA were prospectively recorded from January 2012 to December 2013. The information about antifungal prophylaxis (AP) prescriptions was obtained from the electronic centre database.

Results Thirty-eight invasive fungal infections (IFIs) in 37 patients were evaluated, 23 (60.5%) were men. Mean age was 51 (20–79) years. The diagnoses were: acute leukaemia (44.7%, n = 17), allo-HSCT (34.2%, n = 13) and other (21.1, n = 8). IFI diagnosis was: probable (89.5%, n = 34) and proven (10.5%, n = 4). 6 (15.8%) patients had a previous history of IFI (50% aspergillosis and 50% candidiasis). 57.9% (n = 22) of cases had not had AP versus 42.1% (n = 19) who had. The AP was: primary (75%, n = 12) and secondary (25%, n = 4). The antifungal drugs used were: fluconazole (50%, n = 8), posaconazole (37.5%, n = 6) and voriconazole (12.5%, n = 2). 26.3% (n = 10) of IFIs were cured. In cases where the patient died (73.7%, n = 28), death was attributed to IFI in 35.7% (n = 10) of patients, 70% (n = 7) of whom had not received AP. Death was not attributed to IFI in 64.3% (n = 18) of patients.

Conclusion IA is frequent in haematology patients in spite of antifungal prophylaxis and the prognosis for patients diagnosed with this infection remains being poor. In over half the cases of IFI no antifungal prophylaxis had been attempted. The most used antifungal drug was fluconazole, which has no activity against Aspergillus spp. In the vast majority of IFI-attributable deaths, prophylaxis had not been attempted.

These results have prompted the review of hospital AP protocols to accurately define patient groups at greatest risk of IFI and, when appropriate, to initiate effective antifungal prophylaxis.

REFERENCE

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No conflict of interest.

OHP-032 RADIOPROTECTION CONTAMINATION EVENTS: RETROSPECTIVE STUDY FROM 2008 TO 2014

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Background In 2008, the French national nuclear safety authority published recommendations for the reporting of significant radioprotection events. To go further, the radioprotection department of our hospital started recording non-significant radioprotection events that occurred in the nuclear medicine department.

Purpose To retrospectively analyse these records to understand these events and to improve radioprotection in our department.

Material and methods Events reported in the 6 past years were classified and analysed. The people who made the reports or were involved were identified. In addition, we devised a quiz to check if the staff knew the register and its location.

Results 76 events were reported, which equated to 92 contamination events. Six types of contamination were identified: environment, staff, patient, errors occurring during radiopharmaceuticals preparation, related to radiopharmaceuticals, medical device dysfunction. Contamination was most frequently classified as affecting the environment (49%) and staff (32%). These results illustrate the problems of preparing and conditioning radiopharmaceuticals. Despite regular briefing on radioprotection measures and practices, it is difficult to completely eradicate any radioactive contamination.

Eleven people had reported events and 16 persons were involved in them. Among the staff, 2 people had reported 75% of events. These results pointed out more awareness of radiation protection issues of these two workers rather than a problem of how they handle radioactive sources. In fact, they were involved in departmental quality processes (risk management, controls, personal protective equipment).

The quiz revealed that all staff knew about the radioprotection events register but only paramedics were using it. Only one worker did not know where it was kept. These results were quite positive, apart from the medical staff.

Conclusion In 2014, these results will be presented during the next triennial radioprotection training sessions. Medical doctors in particular will be encouraged to report incidents. Finally, a new analysis of the register will be made within 3 years before the next regulatory training period in order to check radioprotection practices and reports.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Décision 2008-DC0103 ASN.

No conflict of interest.

OHP-033 PATIENTS' HOME TREATMENT UPON HOSPITALISATION

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Background Some patients directly hospitalised via the emergency department are changed from their current home treatment. The pharmacy department aims to identify any errors and rectify them.

Purpose

- To find out how many home treatment prescriptions could lead to an error in patients hospitalised by the emergency medical service.
- To identify any issues and analyse them.

Material and methods Prospective observational study. 366 Patients hospitalised from January 2014 were followed.

The analysis included: medicines prescribed 48 h after admission, age, gender, team on duty and problems related to the home treatment. We classified the issues found as:

1. Treatment not followed at all
2. Treatment partially followed.
3. Patient's previous medicines not stated.
4. Patient's previous medicines stated incorrectly.
5. Illegible writing.

Data source: Savac (prescription and clinical history records), Selene (specialist care medical history records).

Results 366 consultant prescriptions were analysed. 30% of them were for a home treatment.

Patient characteristics: Males: 51%; 85% of the patients were over 60 years; the Internal Medicine ward had the highest number of admissions, 32%; 4.7% of the patients had problems related to home treatment

Based on our classification of the issues found to do with home treatment, the following frequencies were obtained:

Type 1: 31.5%;
Type 2: 6.25%;
Type 3:37.5%
Type 4:18.7%;
Type 5: 6.25%

Conclusion Issues related to home treatment were identified in 4.7% of the patients.

The most common issue was type 3: Patient's previous medicines not stated.

The ward with the highest number of issues detected was the orthopaedic surgery department.

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No conflict of interest.

OHP-034 TRACEABILITY OF IMPLANTABLE MEDICAL DEVICES (IMDS) IN HOSPITAL: INDUSTRIAL CODIFICATION SYSTEMS STILL INSUFFICIENT

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Background Tracking implantable medical devices (IMDs) by batch number is mandatory under French law for safety issues in case of adverse events or recalls. The pharmacist is responsible for the database of IMDs and health care providers are in charge of matching a given IMD with patient identity after surgery.

Purpose In order to optimise traceability, this study assessed the use of the industrial barcodes printed on device packaging. We wished to avoid having to re-label with our own barcodes upon delivery of the devices to the pharmacy.

Material and methods We used a healthcare program (PHARMA, Computer Engineering) able to read international standardised barcode systems (HIBC, EAN/GS1, DataMatrix) and print/read its own barcodes containing the required regulatory information (reference, batch number, expiry date). This specific pharmacy barcode is pasted by the pharmacy on each corresponding IMD. During a 2-month assessment, the industrial barcode of devices implanted during radiology interventions was scanned, in order to add the information to the patient records. In case of failure, the pharmacy barcode was used.

Results Eighty-nine IMDs were implanted in 20 patients. Nineteen products from 10 suppliers were tested. Traceability was recorded in all cases: the industrial barcode was read successfully for 32 IMDs (36.0%) whereas the pharmacy label was used in 57 cases (64.0%). The following main difficulties restricted the use of industrial barcodes: (1) related to the industrial barcode

itself (40.3% of IMDs had no barcode, no standardised barcode or lacked information such as the lot number), (2) user-related issues e.g. confusion with several barcodes (35.1%) and (3) software inability to recognise an industrial barcode (17.5% of the devices).

Conclusion Awaiting a unique device identification (UDI) system for medical devices as stated in the recommendations 2013/172/UE, the relabeling method seems to be the best option to ensure the traceability despite the extra workload on the pharmacy team.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-035 INTERDISCIPLINARY COLLABORATION OVER NATUROPATHIC TREATMENT TO RELIEVE THE SYMPTOMS OF HAND-FOOT SYNDROME IN CANCER PATIENTS

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Background Many oncology patients want naturopathic treatment. Physicians are doubtful about this kind of treatment because of the lack of evidence. Patients getting chemotherapy containing an anthracycline or taxol might suffer from hand-foot syndrome, which causes pain, redness and swelling.

Bathing the hands or feet with linseed boiled with water to a viscid pulp can relieve the symptoms and leads to a subjectively improved feeling of well-being. The patients are able to walk and use their hands in everyday life.

Purpose To achieve acceptance of linseed bath treatment by a multidisciplinary group in a university hospital.

Material and methods An interdisciplinary work group developed a guideline for applying this treatment under scientific criteria. A data entry form was developed to document the effects systematically. All ambulant patients of the Medical Highschool Hannover, treated with this kind of chemotherapy, get this guideline and are asked to fill in the form one hour before and one hour after taking the linseed bath. The results were catalogued in a database and evaluated.

Results The different perspectives of the experts involved, including the clinical pharmacist, and the scientific approach, led to high acceptance and support of physicians and nurses. Practicability, the quality of the products, indications and contraindications were carved out optimally.

The method is simple, cheap, easy to handle and the response rate was positive (N-25). Up till now we have demonstrated the benefit of this treatment in more than 200 cases.

Conclusion Acceptance of naturopathic treatment in an university hospital could only be achieved if developed under scientific criteria. Because of the systematic documentation we could show the positive effects of the linseed-bath. Physicians and nurses could be assured of the benefit and the oncology patients learned a method to help themselves.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Because of the good results every ambulant patient, who is treated with anthracycline or taxol based chemotherapy, is recommended to try linseed baths.

No conflict of interest.

OHP-036 IMPROVING OUR PHARMACY OUTPATIENT UNIT: ARE WE GOING IN THE RIGHT DIRECTION?

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10.1136/ejhpharm-2015-000639.511

Background Patient satisfaction reflects the quality of service provided by healthcare professionals.

In our Outpatient Unit (OU) important changes have been implemented: change of location, a Programme of Scheduled Appointments (PSA) and opening hours have been extended.

Purpose After the implementation of the changes:

To assess the degree of outpatient satisfaction

To collect all comments/suggestions in order to identify areas we could improve further.

Material and methods Non-experimental, cross-sectional study over a period of six months (1 March–1 September) on all patients who attended our OU.

Patients completed two types of questionnaire (all anonymous and voluntary).

All the questions had 5 possible answers, arranged in an ordinal Likert-type scale (1: completely disagree to 5: completely agree) and a section for comments/suggestions.

1. Overall satisfaction was assessed with a previously validated questionnaire, including three sections (patient satisfaction, pharmaceutical care and surroundings).
2. The patient's opinion about the changes was assessed with a satisfaction survey designed by us that contained three direct questions.

Results A total of 432 patients completed the questionnaires (response rate of 99%). 5% with no education, 43% with basic education, 52% with college education.

Abstract OHP-036 Table 1

Satisfaction	Assessment of the nurses	Assessment of the pharmacists	Global satisfaction	Resolution of patient needs
average scores (1–5)	4.63 ± 0.56	4.59 ± 0.62	4.56 ± 0.41	4.57 ± 0.55
Pharmaceutical care	**Availability to answer questions**	**Treatment information**	**Consultation privacy**	**Personal dedication**
average scores (1–5)	4.58 ± 0.56	4.35 ± 0.74	4.29 ± 0.53	4.0.2 ± 0.57
Surroundings	**Schedule**	**Location**	**Signage**	**Waiting time**
average scores (1–5)	3.96 ± 0.72	4.06 ± 0.91	2 ± 0.86	3.95 ± 1.04

Direct questions about the changes revealed that the worst valued was the new location (3.2 ± 0.55), the best was the extension of opening hours (4.8 ± 0.22).

The most frequent suggestion was to open the OU in the afternoons (22%).

Conclusion Overall, a high degree of satisfaction was observed.

We identified significant opportunities for improvement, some of which could be implemented in the short term, such as the signalling of the consultation. Others will be dealt with in the long term, such as the demand for continued care in the afternoon.

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No conflict of interest.

OHP-037 FINANCIAL IMPACT OF SIMPLIFYING ANTIRETROVIRAL THERAPY IN HIV PATIENTS

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10.1136/ejhpharm-2015-000639.512

Background In recent years, simplification of antiretroviral therapy is increasingly being recognised as an attractive therapeutic alternative for cost minimization. Currently, this kind of treatment is used in patients without a prior history of failure of protease inhibitors (PIs), with an undetectable viral load for the last 6 months and signs or symptoms of toxicity from nucleoside analogues.
Purpose To describe the cost savings that have been achieved by changing triple therapy in antiretroviral treatment to monotherapy with a protease inhibitor (PI) boosted with ritonavir in HIV patients.
Material and methods Cross-sectional study in which all patients who were on antiretroviral monotherapy on a particular date (1 March 2014) were included. The following variables obtained from the SAP application were recorded: the current and previous treatment, as well as the duration of each of the schemes. The prices of antiretroviral drugs used were those for which the Pharmacy Department had acquired them.
Results A total of 953 patients were on antiretroviral treatment on 1 March 2014, 33 of whom were prescribed monotherapy boosted with ritonavir; 21 with darunavir/ritonavir and 12 with lopinavir/ritonavir. Median duration of treatment was 23 months (standard deviation (SD) = 18.69). The treatment simplification in these patients has meant savings of €263.000 (monthly average of €286 per patient (SD = €156)). The simplifications that showed higher rates of reduction of direct acquisition costs of the drugs were the switching of atazanavir/ritonavir+ tenofovir + abacavir for darunavir/ritonavir (−55% (€449/month/patient)), and atazanavir/ritonavir + tenofovir+ efavirenz for lopinavir/ritonavir (−52% (€446/month/patient)).
Conclusion Simplification of antiretroviral therapy translates to an average monthly saving of 290 euros per patient, which has meant savings of €260,000 euros in comparison to the previous treatment these 33 patients had received. It is necessary to carry out more studies to corroborate that simplified antiretroviral therapy is, besides being financially attractive, a strategy as effective as traditional antiretroviral therapy.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

OHP-038 TRACEABILITY OF IMPLANTABLE MEDICAL DEVICES: A RETROSPECTIVE STUDY FROM 2010 TO 2013

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10.1136/ejhpharm-2015-000639.513

Background In 2009, our general hospital purchased software (Genois) for tracking implantable medical devices (IMDs). Tracing IMDs after implantation not only involves nurses but also pharmacy assistants when problems occur.
Purpose To identify and analyse traceability errors and provide the appropriate solutions and improvements.
Material and methods Each year, an audit is performed to compare the actual stock of IDMs to our computerised database. A first rate is calculated after the inventory phase and a second one results from the pharmacist and nurse reassessment, which consists of comparing different sources of available information from the Genois and Blocqual systems and from operating room logbooks. Audit results were analysed retrospectively and errors were pointed out.
Results Between 2010 and 2013, the number of IDMs tracked increased from 1,089 to 4,346 implants. This rise reflects progressive computerization of traceability and the increased workload of operating rooms. The intermediate rate of untraced IDMs remains stable (about 2%) over the period while the final rate shows a significant decrease from 1.1% (2010) to 0.2% (2013). This difference is owed to improvements in input errors (34 in 2013) and computer traceability oversights (52 in 2013).

A new version of the software compatible with current interfaces will include a barcode scanner, to decrease the number of input errors. IMDs traceability structure will be reviewed: the 3 different recording medias actually in use will be reduced to one, through the Genois software.

Errors on untraced and lost IDMs are mainly due to packaging issues (batches containing 2 or more IDMs) or related to implanted life-long IDMs (implanted subcutaneous ports): a method of traceability to the single unit has been set up.
Conclusion Traceability of IDMs has been improved thanks to the close collaboration between the pharmacy and the nurses. The next step in management of IDMs is the computerised input of IDMs indications.

REFERENCES AND/OR ACKNOWLEDGEMENTS

Art L.5212–3 CSP.

No conflict of interest.

International posters

INT-001 APPROPRIATENESS OF PRESCRIBING DIRECT ORAL ANTICOAGULANTS: A PROSPECTIVE STUDY

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Background Direct oral anticoagulants (DOACs) have been developed to address some of the limitations of Vitamin-K antagonists. Deviations from the recommended use have been reported, sometimes leading to serious adverse events.
Purpose Our objective was to evaluate the appropriateness of prescribing DOACs in real-life clinical practice.

Material and methods We conducted a prospective study including patients admitted to a 450-bed teaching hospital from April to June 2013 and taking rivaroxaban or dabigatran in prevention of stroke or systemic embolism in non-valvular atrial fibrillation. A clinical pharmacist collected clinical and pharmaceutical data from the electronic medical record and patient interview. Appropriateness of prescribing was evaluated using 9 criteria of the Medication Appropriateness Index.[2,3] Explicit instructions specific to the appropriate use of DOACs were added based on EU summary of the product characteristics and (inter)national guidelines. The primary outcome measure was the prevalence of patients with ≥1 inappropriate criterion.

Results Fifty-two patients were evaluated (median age 74 years; 29 and 23 taking Xarelto® and Pradaxa®, respectively). Twenty-eight (53.8%) patients had at least one inappropriate rating: 1 inappropriate criterion in 26.9% and >1 in 26.9% of patients. The most frequent inappropriate criteria were: wrong dosage (32.7%, e.g. dose not adapted to renal function); inappropriate choice and modalities of administration (28.8%, e.g. prescription of a DOAC in a VKA-naïve patient with extreme body weight, once daily administration of Pradaxa®); and unpractical modalities of administration (25.0%, e.g. Pradaxa® in non-adherent patients). Twenty-four patients (47.0%) had experienced one adverse event. The clinical pharmacist made 29 interventions during the study period; e.g. 11 request for specific coagulation assay, 8 switches to another oral anticoagulant.

Conclusion The quality of prescribing DOACs was suboptimal. Off-label use was frequent and suggests that reinforcing education of patient and health care professionals is needed.

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No conflict of interest.

INT-002 COLLABORATIVE MEDICATION REVIEWS OF HOME-DWELLING PATIENTS IN A HEALTH CENTRE

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Background Home-dwelling patients have many kinds of symptoms that may be related to their medications and poor coordination of their drug therapy management. In Kirkkonummi municipality, about 84% of home-dwelling patients use multiple medicines (>6 medicines) which pose a risk for inappropriate medication, medication-related problems and additional costs.

Purpose Our objective was to identify those home-dwelling patients who would benefit from pharmacist-conducted medication reviews. The goal of this community-based project was to improve patients' quality of life and reduce medication-related problems, and thus, support coping at home as long as possible. The procedure is expected to reduce costs: a pharmacist-conducted medication review costs approx. 40€ compared to an inpatient treatment period costing approx. 4,000€. Also reduction of the use of Health Centre's emergency room and hospital is expected. Furthermore, the project facilitates implementation of collaborative practices in mediation management at the Health Centre.

Material and methods Home care nurses identified patients with established criteria. The medication risk assessment was intended to be made to all home care patients and the report to be reviewed by the clinical pharmacist. The physician could then make the required changes in the medication. The medication review was preferred to take place prior to the patient's annual control visit with the physician. The patient must meet one of the following criteria in order to have the medication risk-assessment, followed by the pharmacist-conducted medication review:

1. A health care professional (physician or nurse) is concerned about the patient's medication or suspects a medication-related problem
2. The patient has particular treatment-induced adverse drug reactions, such as constipation, dry mouth, urinary retention, dizziness, falls, confusion, sweating, restlessness or daytime sleepiness
3. The patient's GFR is less than 60 ml/min/1.73 m^2
4. The patient has orthostatic hypotension.

The medication review will use the nurse-conducted medication risk assessment, patient's medication list, laboratory test results, and it includes review of the following aspects:

1. medication dosing, timely administration, duplication of medication
2. drug–drug interactions
3. anticholinergic medication, serotonergic, orthostatic and sedative burden
4. potentially inappropriate medicines in the elderly (elderly medication database by Finnish Medicines Agency)
5. medication-related laboratory tests
6. renal function and its effect on the medication
7. possible connexion of patient's symptoms to medication
8. problems in administering the medication and potential alternative formulations
9. medication without indication
10. diagnosis without necessary medication

Results Medication changes were made to 90% of the reviewed patients (n = 31). The emphasis was on interactions and renal function, thus the amount of medicines and/or their doses were reduced.

Conclusion Physicians have received well the new collaborative medication review service. Home care nurses will also learn to identify medication-related problems and use medication review tools. Patients, however, are often attached to their medicines and making changes can be challenging. The need for this kind of collaborative medication review service is obvious and it will be further developed to meet the local needs.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

INT-003 STABILITY OF VITAMIN C IN DIFFERENT SOLUTIONS FOR PARENTERAL USE IN ONCOLOGY

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Background Vitamin C is perceived by the public as a "miracle-pill" capable to heal various illnesses, even cancer. Several *in vitro* and *in vivo* studies suggest that ascorbic acid in

pharmacologic concentration exerts anticancer effect, however current clinical evidence (mainly based on case studies) about the therapeutic effect of high-dose intravenous (iv.) vitamin C is ambiguous.

Purpose One of our oncology patients who refused further chemotherapy required and was given vitamin C intravenous treatment. The aim of this study was to investigate the role of the clinical pharmacist in the preparation of the high dose vitamin C infusion.

There are two methods to prepare the infusion: diluting from a registered iv. product or preparing parenteral medication from the active ingredient. Although we used the first method (registered product), we decided to investigate the second method as an alternative for future patients. We collected data about the stability of ascorbic acid in different solutions, the technology of the preparation, the quality control and the storage of the infusion.

Material and methods Two different methods of preparation of concentrates for infusion were examined and compared. Both solutions were diluted aseptically to the concentration of 3 m/V % which was the highest concentration that can be administered to the patient.

After diluting with different vehicles at different pH, the concentration of the active ingredient in the solutions was measured after the preparation and after storing at different temperatures.

Results Concentrates must be filtered instead of sterilisation. The stability of ascorbic acid was mainly affected only by two conditions (pH, temperature). Ascorbic acid was more stable in the pH range of 4.0–5.0°C and in frozen condition.

Conclusion Results from my study can help in establishing a standard formula and recommendations on preparing a stable ascorbic acid concentrate for infusion in hospital pharmacies which have a sterile compounding license.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

INT-004 PATIENT ADHERENCE TO TNFα INHIBITORS IN PATIENTS WITH RHEUMATOID ARTHRITIS AND PSORIATIC ARTHRITIS

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Background Patient adherence to treatment plays a fundamental role in clinical outcome, healthcare costs, treatment safety and quality of patients' life.

Purpose The objective of this study was to calculate patient adherence to treatment with tumour necrosis factor alpha (TNFα) inhibitors (adalimumab, etanercept and infliximab) in rheumatoid arthritis (RA) and psoriatic arthritis (PsA).

Material and methods Observational cohort study based on two registries: Firstly, the ICEBIO registry, which is a national registry on biologic use for rheumatic conditions in Iceland and secondly the medication prescription registry system at our hospital. The present study included 499 patients registered in ICEBIO, 321 with RA and 178 with PsA. All patients were receiving their first biologic treatment during the study period (2009–2013). Medication adherence was calculated using medication possession ratio (MPR) and proportion of days covered (PDC) to create an adherence score, which was used to classify patients as adherent (80% or higher for either score) or non-adherent.

Results Of the 499 patients 53% received infliximab, 34% etanercept, and 13% adalimumab. Patients treated with infliximab were more likely to adhere to treatment than those treated with etanercept or adalimumab ($p < 0.0001$). With infliximab, patients showed 99.1% (CI 98.7–99.6) and 94.9% (CI 94.0–95.7) adherence, calculated with MPR and PDC, respectively. In contrast, etanercept showed 89.6% (CI 87.5–91.8) and 81.7% (CI 79.6–83.8), and adalimumab 94.3% (CI 92.0–96.7) and 86.0% (CI 83.2–88.9), respectively. If MPR and PDC were combined, more than 80% of patients were adherent to treatment.

Conclusion Medication adherence is high in Icelandic RA and PsA patients treated with TNFα inhibitors. Patients on etanercept had the lowest rate of adherence and those on infliximab had the highest rate. Mode of administration probably play a fundamental role in adherence to treatment among rheumatic patients.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

INT-005 A STUDY OF USE OF COLISTIN IN THE EMERGENCY CENTRE, CLINICAL CENTRE OF SERBIA

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Background Colistin (polymyxin E) is a mixture of cyclic polypeptides colistin A and B, and is one of the last line of antibiotics for the treatment of multi-resistant strains of Pseudomonas aeruginosa and Acinetobacter spp. Drug is registreted in Serbia in 2014.

Purpose In 2014 it was noticed increased use of colistin in relation to the previous years. The goal of this study is to analyse its usage due to increased bacterial resistance and difficulties in its supply.

Material and methods By a retrospective descriptive study of patients treated with colistin from June to September 2014, we analysed number of patients, dosage, type of bacteria and the number of used ampoules per patients. Use of colistin was monitored in patients in intensive care units and departments of internal medicine and surgery at Emergency Centre.

Results In this period, 36 patients were treated, and it was spent 1,631 ampoules. In 18 cases (50%) the posology was 1 MIU/8 h, in 16 cases (44.4%) the posology was 2 MIU/8 h and in 2 cases (5.6%) the posology was 2 MIU/8 h i.v and 1 MIU/8 h by inhalation. Colistin was used in the following units: intensive care units (89%), surgery (6%) and internal departments (5%). At 95% of patients, the drug was introduced in the therapy based on microbiological confirmation of infection with Pseudomonas aeruginosa (resistant to previous therapy with aminoglycosides and carbapenems) and multi-drug resistant strains of Acinetobacter spp. Empirically treatment was started in 5% of patients.

Conclusion Due to the increased number of patients with severe intrahospital infections, it is necessary to establish strict control in the use of colistin (based on antibiograms hemoculture or cerebrospinal fluid).

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

INT-006 OPTIMISATION OF A PHARMACEUTICAL SERVICE THROUGH CONTINUOUS EVALUATION AND ADAPTION

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Background Since January 2013 clinical pharmacists have conducted medication history and review (pharmacist notes) in the Emergency Department (ED) at Bispebjerg Hospital, Copenhagen. Inclusion criteria are patients over 50 years using ≥5 drugs. The aim of the service is to identify drug-related problems, increase patient safety and contribute to a safer medication process.

The pharmaceutical service has been adopted from another hospital. In order to ensure optimal use of the service, it is continuously being evaluated and adapted.

Purpose The purpose is to optimise the pharmaceutical service through continuous evaluation and adaption.

Material and methods The data consists of pharmacist notes compiled in 2014, lists of patients admitted to the ED, a daily logbook and physician's medical records.

- Monthly analysis of approximately 15% of the produced pharmacist notes. The notes are compared with the physician's prescriptions to establish the application rate.
- The efficiency is calculated from the number of compiled pharmacist notes in relation to the number of patients over 50 years admitted to the ED.

Adaption:

- Assessment of the changes in the process: The Model for Improvement is applied. Dates of any changes relevant for the pharmaceutical service (i.e. changes in structure of pharmacist notes, organisational changes in the department) is correlated to the application rate and number of compiled pharmacist notes, to assess the influence of the amendments to the pharmaceutical services.

Results The application rate increased from 70% to 79% from January to July 2014.

The efficiency increased from 46% in week 1 to 75% in week 31 in 2014.

Conclusion By continuous evaluation and adaption, the pharmacist increased the application rate and the efficiency; thereby ensure continuous improvement of patient safety in the ED.

REFERENCES AND/OR ACKNOWLEDGEMENTS

No conflict of interest.

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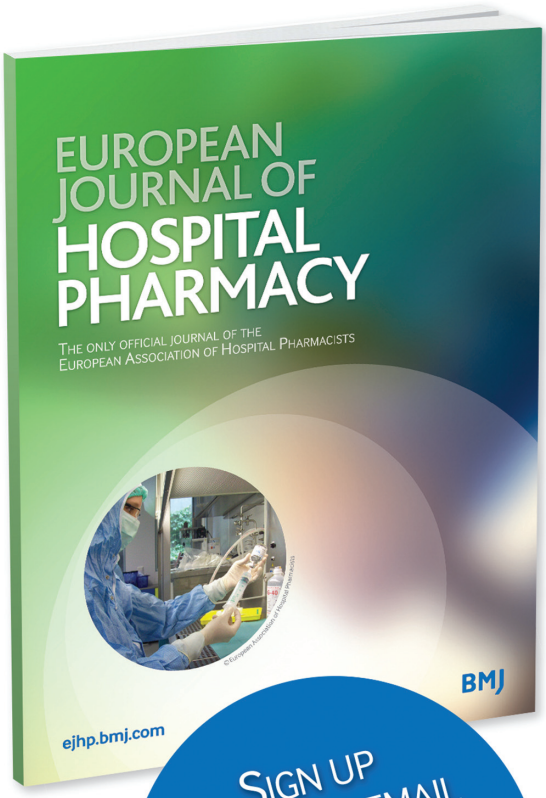

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