

Challenges facing hospital pharmacists in antimicrobial prescribing

Workshop

Saturday 30th September

EHP Academy, 2017

Please find below some suggested answers for cases that have been discussed during this workshop. These are only our suggestions since recommendations would vary depending upon local culture and sensitivities and formulary choices. We hope you find these suggestions useful.

The facilitating team

Case 1

A 75 year old healthy male, with a normal BMI, has been admitted to a surgical ward as an elective patient the day prior to his planned surgery. He is due to have a transurethral resection of the prostate (TURP) and is started on intravenous ciprofloxacin 200mg twice daily the night before his operation. Following the procedure, he is kept on the unit for observation. The ward pharmacist, while screening the patient's medication list, notices that 48 hours later he is still on intravenous ciprofloxacin despite no complications. The patient has received six doses of ciprofloxacin 200mg intravenously.

Discuss the stewardship issues with this episode of surgical prophylaxis – consider choice and duration of antibiotic therapy. You may wish to use resources provided during the workshop and your experiences in practice to facilitate the discussion.

A) Duration of therapy

- Current evidence based guidelines recommend single dose prophylactic antibiotic therapy unless there are specific circumstances including, foreign materials in surgical site, prolonged length of operation or poor nutritional status. There appear to be no specific circumstances indicating the need for prolonged antibiotic therapy in this patient.
- A single dose of an antibiotic for surgical prophylaxis should be given within one hour of the procedure (IV route). (There are some surgical interventions where multiple dosing required – see specific guidance for information about these)
- Though there appear to be no negative consequences of prolonged use of ciprofloxacin in this patient, there is no need for the antibiotic. Therefore recommend to stop the ciprofloxacin.
- Post-operative antibiotics are only indicated if there is risk of infection due to complications with the procedure.

B) Choice of antimicrobial

- When choosing antimicrobials for surgical prophylaxis, need to consider risk of infection. Is prophylaxis required? Evidence indicates need for single dose prophylaxis in this type of intervention due to increased risk of bacteriuria and post op infection.
- Also need to consider what spectrum required for effective cover, together with local resistance patterns.
- Ciprofloxacin is associated with high risk of Clostridium difficile infection (CDI), particularly in elderly patients so not a good choice in this respect though good Gram negative cover.
- Alternative antibiotics for TURP – need to provide Gram negative cover, consider gentamicin 120mg IV, or cotrimoxazole 960mg IV. Although co-amoxiclav and cefuroxime would also provide Gram negative cover they are also associated with a higher risk of CDI.

Case 2

A 40 year old man is referred to the Emergency Department by his GP complaining of a spreading red area on his arm accompanied by feeling feverish. On examination his temperature is 38.5°C; his arm feels hot and is swollen. He has no past medical history and reports he was working in his garden the previous day cutting down bushes which resulted in a few small scratches to both arms and hands. He is diagnosed with cellulitis and is started on intravenous flucloxacillin 1g every 6 hours.

Comment on the choice of therapy. You may wish to use resources provided during the workshop and your experiences in practice to facilitate the discussion.

- This patient is suffering from skin and soft tissue infection. Likely causative organisms are commensal flora of skin such as Staphylococcus aureus. Initial empirical treatment needs to cover these. Flucloxacillin is an appropriate choice.
- Dosage of flucloxacillin – could use up to 2g 6-hourly. Higher doses of up to 2g indicated if patient has bacteraemia or has BMI > 30.
- Would require at least 7 days of therapy (intravenous, then oral. Oral flucloxacillin is administered at a dose of 1g irrespective of initial dosing)
- Though it is unlikely in this patient based on the information provided, consider risk of MRSA – if he has a history of MRSA would use vancomycin. Vancomycin is a glycopeptide antibiotic and has a bactericidal activity against Gram positive bacteria. Many guidelines recommend use of vancomycin in patients with proven or suspected MRSA. It requires TDM is potentially more toxic than other antibiotics, hence use of vancomycin only if MRSA suspected.
- Choice in penicillin allergy several options used in practice e.g. vancomycin switching to oral doxycycline/cotrimoxazole. Other options include clindamycin or clarithromycin

Over the following 24 hours the area of cellulitis recedes and his temperature settles. He is keen to return home so the following day his antibiotics are changed to flucloxacillin orally 1g four times daily. He is discharged with a further 1 week supply of flucloxacillin. However the next day he returns to hospital as his arm has become more swollen and red again. He is not keen to be re-admitted but medical staff recommend at least a further 2 days of IV therapy so he is referred for out-patient antibiotic therapy (OPAT).

Discuss the issues with course duration and provision of care for this patient.

a) OPAT services

Patient Selection A number of criteria required for patient to be suitable for OPAT therapy, e.g. not intravenous drug abuser, able to travel to clinic daily, condition unlikely to deteriorate.

Suitable Antibiotics Numerous potential options – take into account here that patient only to receive a further 2 days of IV therapy. Likely to change over to once daily preparation since administered as outpatient. E.g. ceftriaxone

b) IVOST (intravenous to oral switch) policy

Most hospitals have an IVOST policy which outlines what oral antibiotics patients will be switched over to following intravenous administration. Following his further two days of intravenous antibiotic, the patient may be switched over to flucloxacillin orally or doxycycline if penicillin allergic.

RESOURCES FOR CASES

European Association of Urology, 2015 http://uroweb.org/wp-content/uploads/19-Urological-infections_LR2.pdf

Good Practice Recommendations for Outpatient Antibiotic Therapy (OPAT) in adults in the UK: A Consensus Statement. Available at: <http://e-opat.com/opat-good-practice-recommendations-now-published/>

Scottish Intercollegiate Guidelines Network SIGN 104 Antibiotic prophylaxis in surgery, 2014 <http://sign.ac.uk/guidelines/fulltext/104/index.html>

Summary Of Adult Surgical Antibiotic Prophylaxis Guidelines For Acute Sector Staff Working Within NHS Grampian Available at: http://foi.nhsgrampian.org/globalassets/foidocument/dispublicdocuments---all-documents/NHSG_EmpSPr.pdf

ADDITIONAL RESOURCES ON ANTIMICROBIAL STEWARDSHIP

A Practical Guide to Antimicrobial Stewardship in Hospitals. Available at: <http://bsac.org.uk/wp-content/uploads/2013/07/Stewardship-Booklet-Practical-Guide-to-Antimicrobial-Stewardship-in-Hospitals.pdf>

Antimicrobial Stewardship from Policy to Practice: Experiences from UK Antimicrobial Pharmacists Available at: <http://link.springer.com/article/10.1007/s40121-015-0080-z/fulltext.html>

Antimicrobial Stewardship: Managing Antimicrobial Resistance Massive Open On-line Course Available at: <https://www.futurelearn.com/courses/antimicrobial-stewardship/2/>

Buyle F, Metz-Gercek S, Mechtler R et al. Development and validation of potential structure indicators for evaluation antimicrobial stewardship programmes in European hospitals. Eur J Clin Microbiol Infect Dis. 2013; 32: 1161-70

Public Health England Start Smart Then Focus Available at: <https://www.gov.uk/government/publications/antimicrobial-stewardship-start-smart-then-focus>