

Decoding the human genome – has it improved pharmacotherapy?

Genetic information has the potential to help hospital pharmacists improve health care through science.

In his keynote presentation Professor Lawrence Lesko, Director of the FDA Office of Clinical Pharmacology, USA, asked what were the professional opportunities, or consequences, for the hospital pharmacist of having access to genomic information about their patients? Professor Lesko believes that ultimately genomics and the Internet will change clinical practice, since anyone can now pay to have their DNA analysed just from a “tube of saliva” and the Internet allows patients easy access to clinical information. Patients, equipped with this knowledge, will subsequently expect a more personalised medicine, but will genomics improve pharmacotherapy? The answer to this is yes said Professor Lesko. First of all genomic information will improve dosing by personalising the pharmacokinetic and pharmacodynamic properties of a drug. Professor Lesko highlighted the case of warfarin, the most widely used anticoagulant in the world. The pharmacogenetics of warfarin (similar to the European alternative acenocoumarol) are well understood, with genetic factors the main cause of inter-patient variability in warfarin dosing regimens. Genetic testing of patients for variations in CYP2C9 (involved in warfarin metabolism) and VKOCR1 (involved in vitamin K metabolism) enzymes may help improve initial dosing estimates. In these cases lower initiation doses means the target international normalised ratio (INR) would be achieved and maintained earlier, thus reducing the risk of excess bleeding during the first month of therapy. The safety of drugs and the risk of adverse reactions can also be improved with the use of genetic risk markers, as in the case of abacavir and carbamazepine where drug/test combinations which can improve therapy are already available.

Furthermore, the efficacy of many drugs can be increased by restricting the eligi-

bility of patients. For instance, imatinib is recommended as the choice of treatment for patients who have a gastrointestinal stromal tumour that is KIT-positive. Professor Lesko believes that the hospital pharmacist is well positioned to identify gaps in pharmacotherapy, for example, they can advise healthcare providers and patients about genomic information and motivate physicians to order genetic tests. However, there are also many barriers holding back the field of pharmacogenetics, one of which is education and information. It is with this in mind that a full length article about genomics and its effect on pharmacotherapy by Professor Lesko will be published in a future issue of *EJHP Practice*.

The role of hospital pharmacists in implementing IT and automation

Half the battle when introducing automation is getting reluctant staff to use it. This seminar gave tips on how to implement and benefit from new IT.

Different people react differently!

Facilitator Ms Helena Jenzer led an interesting seminar on IT and automation at the 14th EAHP Congress, Barcelona, Spain.

First speaker, hospital pharmacist Dr Esther Gómez de Salazar, shared her experiences of a technology upgrade at the 1,070-bed Hospital Ramón y Cajal, Madrid. This CPOE project has increased patient safety and resulted also in large time-savings when distributing drugs to wards, she said.

Dr Gómez de Salazar commented that the objectives of any automation implementation must be clear, the support of hospital management is crucial, and health teams must collaborate. The involvement of hospital pharmacists is vital because a diverse skill-mix helps ensure special needs are met.

The growth of technology in pharmacy represents a cultural shift. Dr Gómez de Salazar noted that within hospital depart-

ments, individuals will react differently to change. Some staff are “hard nuts to crack,” she said. To cope with this reluctance to change, Dr Gómez de Salazar recommended that implementations be flexible. Time must be given so that people can adopt and learn at differing speeds within a given deadline.

Oncology suited to automation

Second speaker, hospital pharmacist Ms Natàlia Creus, spoke on the benefits of technology to the oncology ward at the Barcelona Hospital Clinic. She said that the complex and ever-evolving oncology environment is ideal for automated processes. She argued that oncology pharmacy is time-demanding and can be error-prone (from transcription mistakes to missing information or undefined operating procedures). “Now is the time to change that!” she urged, and listed CPOE advantages including improved bar code usage and easier labelling.

Ms Creus recommended that pharmacists involved in a technology upgrade use the Leap Frog CPOE evaluation tool (<https://leapfrog.medstat.com/cpoe>). The easy-to-use online tool helps health teams design, develop, update and maintain technology.

Before beginning a major IT implementation, Ms Creus suggested starting with a simple project that would provide easily recognisable benefits and demonstrate the value of technology.

Her tips were:

- Lead with an area that is easy to improve
- Use the “quick win” to build trust in technology
- Implement in more complex areas.

In closing, Ms Creus commented that strong will and a determination to succeed are essential if hospital pharmacists are to improve the quality of care with automation.

Dr Jenzer facilitated the discussion in an eloquent way, pointing out weaknesses and strengths of the presented approaches, adding extra value to this instructive seminar.