



PHARMACEUTICAL RESEARCH AT THE DEPARTMENT OF PHARMACY

Three members of the Department of Pharmacy have recently successfully completed their PhD studies.

They were working on research projects in the field of clinical pharmacy with a focus on rheumatology, point-of-care pharmacogenetic testing and clinical analysis. Results from the projects have led to innovative tools, application of innovative point-of-care testing, methods of analysis and pharmacokinetic correlations.

AN EVALUATION OF A PHARMACEUTICAL CARE MODEL IN PATIENTS WITH RHEUMATOLOGICAL DISORDERS

Louise Grech

One of the exciting challenges of undertaking a PhD research in any field lies with the potential of the research's contribution towards innovation and subsequently dissemination of the innovative outcomes through the best possible networking platforms. This study, which is an example of translational pharmacy practice, aimed at developing and implementing valid instruments essential for a pharmacist-led pharmacotherapy assessment service in the field of rheumatology. The idea of this research was first discussed within a group of multicultural and dynamic clinical-research pharmacists from the University of Malta and the University of Strathclyde, where the late Professor Steve Hudson, with whom I had conducted my Masters of Philosophy research, was based. The outcome of the research was development and clinical implementation

of an innovative medication assessment tool specific to rheumatoid arthritis, denoted as the RhMAT. In clinical practice, the RhMAT provides a quality system to assess pharmacotherapy adherence to evidence-based medicine within the philosophy of pharmaceutical care models and highlighted the impact of the role of the pharmacist in further improving quality of care and service provided to rheumatology patients. Results obtained through the innovative RhMAT were disseminated through various local and international pharmacy conferences. The work was successfully disseminated at international fora within top-expert authorities leading the field of rheumatology namely the British Society for Rheumatology, the European League Against Rheumatism and the American College of Rheumatology.

PHARMACOGENETIC IMPLICATIONS IN CLOPIDOGREL THERAPY: A PHARMACIST-LED MANAGEMENT APPROACH

Francesca Wirth

The aim of this research in the contemporary field of personalised medicine was to genotype patients undergoing percutaneous coronary intervention (PCI) for the CYP2C19 loss-of-function (LoF) *2 allele, enabling pharmacogenetics-guided individualisation of antiplatelet therapy. Presence of the CYP2C19 LoF *2 variant allele is associated with reduced CYP2C19-mediated activity which impairs clopidogrel bioactivation and increases the risk of stent thrombosis and other adverse outcomes after PCI. The research was undertaken in collaboration with the Department of Cardiology and Molecular Diagnostics Unit at Mater Dei Hospital, where different genotyping assays including a novel rapid point-of-care method were used and compared. Around a fourth of the patients (26%) were

genotyped as carriers of at least one *2 allele, implying that they have reduced production of the active metabolite of clopidogrel, hence predisposing them to complications post-PCI. These patients were candidates for alternative antiplatelet therapy to clopidogrel. Moreover, a correlation between presence of the *2 allele and development of coronary in-stent restenosis was obtained, making this study one of very few studies reporting such an association. The findings have important implications for Malta since they demonstrated that implementation of pharmacist-led antiplatelet therapy individualisation in clinical practice, guided by pharmacogenetic testing, has the potential to limit patient morbidity and mortality post-PCI, as well as reduce healthcare costs.

DISTRIBUTION OF CIPROFLOXACIN IN THE PERIPHERIES

Janis Vella

Peripheral arterial disease (PAD) is a chronic and debilitating condition, with smoking and diabetes mellitus (DM) being the greatest risk factors. Patients suffering from PAD and DM are more likely to develop foot infections which are difficult to treat. Poor control of these foot infections often necessitates lower limb debridement and amputation. The study was carried out in collaboration with the Department of Surgery of the University of Malta. Blood and tissue samples were collected from 50 patients (33 male and 17 female) who were admitted for debridement or amputation procedures at Mater Dei Hospital. These patients were suffering from varying degrees of PAD. These samples were analysed using innovative High Performance Liquid Chromatographic methods. The concentration of ciprofloxacin, a commonly used antibiotic to treat these foot infections, was found in the samples. This was done

to determine whether the administered antibiotic was reaching the site of infection at concentrations which were high enough to eradicate the causative organism. Concentrations of ciprofloxacin found in the tissue were compared to patient history and characteristics to determine which factors influence the amount of antibiotic reaching the tissue. It was found that the concentration of ciprofloxacin reaching the tissue was dependent on the degree of PAD, the number of medications that the patient was taking and the concentration of ciprofloxacin in plasma. This study helps in more adequate dosing of ciprofloxacin in PAD patients. This can cause less undesirable effects and better treatment outcomes, avoiding unwanted complications and achieving higher levels of therapeutic success in the process.

Information about activities and research projects within
the Department of Pharmacy is available at www.um.edu.mt/ms/pharmacy.

The site also includes links to published research papers and poster presentations
presented at international conferences.