

# FOURTH YEAR STUDENTS PROJECT DESCRIPTIONS

## **History of Pharmacy**

*Gerard Abela*

The study aims to portray the history of the prescribing trends in pharmacy throughout the years. The names of the drugs and the year in which they were prescribed are being collected from the Daily Sales Register of a local community pharmacy. The data will be divided into groups according to the time frame to analyse variations in prescribing trends. From the data collected between 1945 and 1950, sulphathiazole was the most commonly prescribed drug in 1945, 1946 and 1947 but was much less popular between 1948 and 1950.

## **Bioequivalence: The Case of Doxazosin**

*Svetlana Agius*

Accreditation is a procedure by which an authoritative body gives formal recognition that an institution or person is competent to carry out specific tasks. The project aims to understand the requirements of ISO 17025 for achieving accreditation of a bioequivalence testing laboratory, to evaluate the laboratory and determine the degree of conformity to ISO 17025. Existing documentation is reviewed and missing documentation is developed to facilitate accreditation of the laboratory.

## **Point-of-Care Anticoagulant Monitoring**

*Melanie Azzopardi*

Seventy patients receiving warfarin had their INR monitored at a community pharmacy using the CoaguChek<sup>®</sup>S device. Patient knowledge of anticoagulation therapy was assessed (time 0). An educational intervention was held and patient knowledge is reassessed through a second interview after 3 months. The effectiveness of this educational intervention will be demonstrated using Chi-squared analysis. A regression model will be established by comparing the CoaguChek<sup>®</sup>S INR result with reference laboratory result, which will be used to propose anticoagulant dosage adjustments in collaboration with prescribers.

## **Point-of-Care HbA<sub>1c</sub> Monitoring**

*Stephanie Azzopardi*

A random sample of 50 diabetic patients (18 males, 32 females) were interviewed and subjected to HbA<sub>1c</sub> testing, followed by an educational intervention and distribution of a booklet (time 0). HbA<sub>1c</sub> testing was repeated after 3 and 6 months to assess progress in diabetes control. The mean age was 64 years (range 34-81 years) and mean duration with diabetes was 11 years. The educational intervention resulted in a lower mean %HbA<sub>1c</sub> in the second (7.6%) and third (7.7%) visit compared to the first visit (7.9%).

## **GDP: The Example of a Wholesaler**

*Vanessa Azzopardi*

Wholesalers occupy an essential niche in the pharmaceutical supply chain providing a link between manufacturers and patients. Wholesalers must conform to established standards to achieve Good Distribution Practice. A booklet of Standard Operating Procedure templates is currently being compiled, as an addition to the Green Guide, to ensure that a high level of medicinal product quality is maintained. The booklet will be validated by an expert team of five persons.

## **Assessing the Feasibility of Computerising Patient Profiles in a Geriatric Hospital**

*Rodianne Bondin*

A computer program for pharmacy patient profiles previously designed using Microsoft Access, was updated and a test run is being carried out at Karin Grech Hospital (KGH). Patients admitted to KGH are identified and the time taken by the pharmacists to fill in the profile electronically is recorded and compared to the time taken to fill in the profile manually. The daily cost of medications per patient is calculated using the computer program.

## **Distribution of Free Medicine in Malta**

*Gilles Briffa Rizzo*

The 'Pharmacy of Your Choice' scheme, is a new system of free medicine distribution in Malta which was launched in January 2008. This scheme was introduced as a pilot study in the localities of Gharghur, Mgarr, Mellieha, Naxxar, Mosta and St. Paul's Bay, as an alternative to the previous Government Dispensary System. A questionnaire is developed to determine the perception of the public in these localities focusing on issues such as 'patient-pharmacist confidentiality', 'out of stock items' and 'queues'.

## **Developing a Drug Information Bulletin**

*Alison Brincat*

A Drug Information Bulletin has been compiled to reflect the current pharmaceutical information of new medicinal products placed on the local market and variations in the Summary of Product Characteristics of locally available drugs. The bulletin is designed to be user-friendly and practical. It is divided into two categories: the first focusing on new medicinal products available and the other deals with variations. The bulletin is being distributed to 1000 pharmacists and students. Evaluation of the publication is undertaken.

## **Is the Pharmacy Department Meeting the Needs of the Pharmaceutical Industry?**

*Glorianne Camilleri*

The undergraduate pharmacy curriculum has been mapped out focusing on industrial pharmacy related topics, and compared with that offered by the University of Perugia, Italy, and other universities in the United Kingdom and France. Eleven pharmaceutical companies operating in Malta were listed and their contact persons identified. A set of eight questions were formulated and these are being used for interviews with pharmacists working in the areas of Quality Assurance, Quality Control, Research and Development, Regulatory and Production. Suggestions will be presented in a discussion paper.

## **Implementation of Protocols on Allergy Disorders**

*Kathlene Cassar*

Locally developed protocols on the management of skin, nose and eye allergies were presented in an A3 poster and disseminated in 20 community pharmacies. To encourage the integration of protocols into day-to-day care, patient education material, medication records and focus groups were used. Observational studies were carried out to assess practicality of implementation of the protocols and pharmacists' compliance. Sixteen out of the 20 pharmacists agreed on the need for protocols as a supporting tool in community pharmacy. The main limitation was a high workload leading to time constraints.

## **Health, Travel and the Use of Medication**

*Maria Cuschieri*

One hundred tourists (52 males, 48 females) were interviewed during their stay in a hotel, to identify which health problems are most commonly encountered whilst travelling by air. The availability of medication from local community pharmacies to tourists during their stay in Malta was also evaluated. None of the tourists said they ever had a problem with acquiring their medication (0 %). Information is being gathered from the Malta International Airport and various sources regarding health problems whilst travelling. This is being compiled in booklet form.

## **The Effects of Treatment on the Quality of Life in Rheumatoid Arthritis**

*Stephanie Falzon*

Two quality of life questionnaires were administered to 80 Rheumatoid Arthritis (RA) outpatients. These questionnaires are being re-administered to the same patients after six months of treatment. Data is being analysed using SPSS® version 17.0. Results show that general health is most affected by RA whilst social functioning is least affected. An overall improvement in disability resulted after six months. The lowest scores for disability resulted with treatments containing three or four drug combinations and methotrexate in combination with glucocorticoids.

## **Training and Development for Pharmaceutical Industry Personnel**

*Stefanie Farrugia*

The project aims to evaluate the feasibility of training and development programmes for local pharmaceutical industry personnel, making best use of resources available and to introduce the concept of training as a motivation, by creating appropriate training needs which combine both obligations of Good Manufacturing Practice and personal development and growth. Feedback from employees at local pharmaceutical industries will be used to develop appropriate training course.

## **Microbiological Testing Requirements of the Local Industry**

*Maria Fenech*

Since not all pharmaceutical products can be produced as sterile preparations, microbiological control is essential. A feasibility study for setting up a microbiological laboratory that is run according to Good Manufacturing Practice is being conducted. The European Pharmacopeia is reviewed and each microbiological test is divided into various steps. The equipment, apparatus, microbiological media and the amount of purified water needed are listed, and quotations are obtained from local companies. Once cost analysis is performed, break-even analysis shall be conducted.

## **Manufacture of Active Pharmaceutical Ingredients**

*Wei Liu*

The study is divided into three inter-related sections which are past, present and the future of Active Pharmaceutical Ingredient (API) manufacture. The methodologies employed include literature review and semi-structured interviews which are not limited to a set number of questions, but with leading keywords to promote discussion. The interviews carried out during visits to the API plants in Malta were tape-recorded and converted into verbatim transcriptions.

## **Drugs and Art**

*Clint Pace*

Art is a single area of human culture which has evaded the social clampdown on illegal drugs and where drug use is generally accepted. The association of the artist with drugs is under evaluation as people's impressions do not always reflect reality. Local artists will be assessed on their drug habits and whether they consider drugs as a necessity or a commodity to service their talent.

## **Prescribing of Analgesics by the Community Pharmacist**

*Simone Pace O'Shea*

A pilot study was carried out to assess the feasibility of the documentation system developed which involved keeping medical records of 30 patients at a community pharmacy. Protocols were written for the prescribing of analgesics by pharmacists when dealing with 6 different pain conditions (back, dental, dysmenorrhoeal, arthritic, musculoskeletal and headache). A review panel consisting of 20 individuals from different professions was chosen to evaluate the protocols prepared. The system will be applied in a community pharmacy and evaluated.

## **Stability Testing of Medical Oxygen**

*Gayle Papps*

The effects of increasing temperature and humidity levels on the stability of medical oxygen in cylinders are not well established or officially documented. This project investigates influence of increased temperature and humidity levels on oxygen purity, impurity traces of carbon monoxide, carbon dioxide and water, pressure, and cylinder rusting over six months and one year. Statistical analysis is used to determine any significance between each temperature and humidity level investigated, as well as any difference between the six month and one year period.

## **Satisfaction with Pharmacy Services**

*Annelise Saliba*

Two locally developed self-administered questionnaires were reviewed and psychometrically evaluated. One questionnaire was distributed to 15 community pharmacies in Gozo to assess the pharmacists' attitudes towards a more patient oriented service and supplementary pharmacists' prescribing. The other questionnaire is being distributed to a random sample of 400 members of the general public to assess their perceptions with regards to community pharmacy services. Cronbach's alpha correlation coefficient for community pharmacist and general public questionnaires was 0.91 and 0.82 respectively. Descriptive statistics are carried out and the Pearson chi-square test is used.

## **Protocols for Introducing New Drugs in Cancer Care**

*Francesca Schembri*

The guidelines published by the National Institute for Health and Clinical Excellence (UK) and Food and Drug Agency (USA) for the use of capecitabine in breast and colon cancer were obtained and are being reviewed. Key issues concerning the drug's clinical efficacy, toxicity, effect on the quality of life and affordability were identified and 5 documents were designed to guide analysis of these issues. A system of scores will be designed to quantify benefits and risks of this drug. A framework will be developed to support decisions of funding and accessibility to new drugs.

## **Production of Modified Release Dosage Forms**

*Karl Schembri*

A review and comparison of the different methodologies used in the production of modified release dosage forms is carried out. The review consists of a discussion of the various techniques used, highlighting the advantages and disadvantages, information on the excipients used, description of the manufacturing equipment and a discussion about the different parameters that affect the production process. To date, different pelletizing techniques, ion exchange resins, osmotic pumps and diffusion controlled systems have been discussed.

## **Pilot Study of Setting-Up a Museum Related to the Healthcare Professions**

*Elaine Seychell*

The project focuses on three particular sections: pharmacy, dentistry and urology. It will serve to transform what was once a haphazardly arranged set of historical items into a collection of educational significance. The pharmacy section is being prepared and will be set up in the Pharmacy Department. The dentistry and urology sections are exhibited in the foyer of the Medical School at Mater Dei Hospital. Photographs of artefacts from private and public collections will be displayed together with the rest of the items.

## **The Effect of Medicinal Plants on Maltese Honey**

*Silvan Spagnol*

Samples of local honey are currently being screened for pharmacological activity using the Brine-shrimp test. The major floral sources of these samples have been determined by pollen analysis. Consequently, it will be possible to establish whether the floral source has any effect on the activity of honey. It would also be possible to identify the presence of phytochemicals in honey and compare them to those found in the flowers-of-origin. Current and potential pharmaceutical applications of honey will be discussed accordingly.

## **An English-Maltese Dictionary of Medical and Pharmacy Terms**

*Miran Spiteri*

The compilation of an English-Maltese Dictionary of medical and pharmacy terms (from letter 'F') is undertaken. Translated terms published in Aquilina's 'English-Maltese Dictionary' and in the Medicines Authority 'Glossary of Terms' are used as the references source. To date, 1,591 words of 'Mosby's Medical, Nursing and Allied Health Dictionary' starting with letters 'F', 'G' and 'H' have been translated and validated with linguists and laymen. Validation with healthcare professionals is now being carried out using questionnaires and a booklet of translated terms is being compiled.

## **Point-of-Care Diagnostics in Infections**

*Angele Vella*

After 14 different types of point-of-care diagnostic kits for the rapid detection of microorganisms were identified, the test for the detection of *Helicobacter pylori* (*H. pylori*) was chosen to run a feasibility study for the local community pharmacy setting. Twenty patients presenting to a community pharmacy and suspected of being infected with *H. pylori* will have a fingerstick blood sample taken and tested using the Ulti Med *H. pylori* Test Cassettes. The practical and pharmaco-economic implications to run such a service in a community pharmacy setting will be evaluated.

## **Newsletter for the Pharmacy Department**

*Antine Vella*

'The Pharmacy Department Review' is a bimonthly publication that aims to enhance communication between the Pharmacy Department and its past and present pharmacy students. To date three newsletters have been issued in full colour using glossy paper. The newsletter is circulated to pharmacists and students both in printed and electronic format. The '*Maltese Directory of Pharmacists*' compiled by Christianne Mizzi in 2005 was used to obtain the electronic addresses particularly those of non-practicing pharmacists.

## **Sale of Non-Prescription Medicines from Pharmacies: Price Comparisons**

*Rebecca Vella*

Retail prices of Non-Prescription Medicines (NPMs) available locally will be compared to their respective counterparts in the United Kingdom. The sample will be defined by price per gram of Active Ingredient, using a specifically formulated Price Index. A price comparison between originator NPMs in Malta and their generics will also be performed. Patient and pharmacist questionnaires were formulated and distributed. The results of these questionnaires were statistically evaluated and conclusions were drawn. An educational patient leaflet regarding the process involved in the setting of prices to medicines will be developed.

## **Microbiological Testing Requirements in the Production of Intravenous Fluids**

*Thomas Vella*

The local annual demand for intravenous fluids has been determined from Mater Dei Hospital records. Business proposals of similar investments and price estimates sent by foreign turnkey contractors are being used to calculate the cost of establishing and running an intravenous fluid manufacturing facility in Malta. An in-depth review of the Blow-Fill-Seal production process is being carried out. European Union standards on aspects of microbiological testing, cleanroom design, quality assurance and Good Manufacturing Practice are being studied through Eudralex Guidelines and the European Pharmacopoeia.

## **Determination of Amylase in Gastric Juice**

*Kirsten Zammit*

Hyperamylasaemia detection through the quantification of salivary and pancreatic alpha-amylase in gastric juice may lead to an understanding of effects brought about by Proton Pump Inhibitors (PPIs). A clear relationship is seen between gastric pH and the salivary and pancreatic alpha-amylase enzymes. Thirty seven patients were tested. Twenty eight patients were taking PPIs; 21 of these were examined for both enzymes and 7 were tested for pancreatic amylase only. The remaining 9 patients were not on PPIs and were tested for both enzymes as a control.

## **Pharmaceutical Care of Patients Undergoing Heart Surgery**

*Natalie Zerafa*

Fifty patients undergoing heart surgery were interviewed using the 'Past Medical History' and 'Assessing Treatment Outcome' questionnaires. Twenty five patients were used as the control group and 25 patients were offered a pharmacist intervention. This intervention consisted of a treatment chart presenting a simple pictorial explanation of each drug and dosage regimen. All (n=50) the patients were interviewed 6 weeks after the operation, and the results were compared. The mean percentage compliance score showed statistically significant differences between the two groups.