

# Poster communications

com-001

## THE STATUS OF MEDICATIONS IN HOMES: AN OBSERVATIONAL STUDY IN QATAR

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Improper drug storage and disposal can have direct impact on public safety, the environment, and healthcare services. No previous studies have examined how medications are stored, used or disposed-off in Qatar homes.

### Objectives

To explore how medications are stored in Qatar homes and how unwanted medications are disposed off. The study also aimed at to identifying the public's source of information related to medicines.

### Methods

For the purpose of this cross-sectional observational study, a list of telephone numbers was generated from Qatar's telephone directory through systematic sampling method. Individuals consenting to participate were interviewed using a multi-part pre-tested survey instrument.

### Results

Forty-nine households were included in this telephone survey. The sample contained homes of residents that represented an ethnic mix of which only 18% were Qatari nationals. 28% of those interviewed stored medications in their bedroom, and the remaining stored their medications in the fridge, the kitchen and other places in their homes. Most stored classes of medicines were analgesics, antihistamines, nutritional supplements and medications used for the respiratory system. Most respondents disposed off unwanted medicines by throwing them in the trash. Around 78% of medicine bottles did not have child-Resistant closures (CRC). In around 15% of cases, dosage of the drug taken was different from the instructions on the label. Sharing of prescription medicines was not uncommon. The majority of respondents sought information related to drugs from doctors.

### Conclusions

The results raise concerns about how medications are stored, used, and disposed-off in the community. The fact that no household routinely returned unwanted medications to a pharmacy for proper disposal places the environment at risk.

com-007

## ORGANISATIONAL CULTURE GAP ANALYSIS: IDENTIFYING THE TYPICAL AND BENEFICIAL DIMENSIONS OF CULTURE WITHIN SIX COMMUNITY PHARMACIES

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Organisational culture has been described as 'the way things are around here. Despite the importance of cultural change for business transformation, the concept of organisational culture has gone largely unnoticed in pharmacy research.

### Objective

The aim of our paper is to identify and explore cultural gaps within selected community-based pharmacies.

### Methods

Mean rating scores (n=47) were calculated for 8 cultural clusters and mapped onto a typical and a beneficial pattern match for each case site. Pattern matches provide an understanding of the gap between the two ratings based on the gradient of the lines joining cultural clusters – the rungs of the ladder. Software can be used (Concept System<sup>TM</sup>) to generate a Pearson correlation describing the strength of the relationship between the typical and beneficial ratings.

### Results

Eight cultural clusters were mapped: leadership and staff management; valuing each other and the team; free thinking fun and open to challenge; trusted behaviour; customer relations; focus on external integration; providing systematic advice; and embracing innovation. Pearson's correlations ranged from r=0.71 to r=.90 suggesting a high level of correlation between the means of the typical and beneficial ratings. Although the variance between average ratings might be quite small, the relative difference can still be meaningful to participants in the cultural setting. The diagrams suggest a requirement for external integration, providing systematic advice and embracing innovation to become more typical in the majority of pharmacies. This is line with health policy expectations. Trusted behaviour is deemed to be both the most typical and the most beneficial cultural dimension in most pharmacies.

**Conclusion**

Through pattern matching we have identified cultural gaps. The dimensions of focus on external integration, providing systematic advice and embracing innovation require further exploration through interviews in case sites.

**com-010**
**THE COLLABORATION AMONG PHARMACISTS AND PHYSICIANS TO IMPROVE OUTCOMES NOW (CAPTION) TRIAL TO IMPROVE BLOOD PRESSURE CONTROL**

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**Objective**

The objective of the CAPTION trial is to evaluate the implementation of a physician\pharmacist collaborative intervention to improve BP.

**Methods**

Eight regional training programs were provided for lead physicians and pharmacists from each clinic. The training involved strategies to implement the intervention model and BP treatment guidelines. The study is a prospective, cluster-randomized controlled trial in 27 clinics throughout the US. Clinics were randomized to: a 9-month or 24-month interventions or a control group. Patients (n=1,134) with uncontrolled BP will be enrolled including 648 clinic into an active observation group. Another 486 patients will be in a passive observation group to determine if the intervention is implemented more broadly in the clinic for non-enrolled subjects. All patients will be followed for 24 months. Clinical pharmacists in each office will make drug therapy recommendations to physicians, or directly manage patients. BP will be measured by a trained research nurse. We will also evaluate whether provider-level variables (attitudes and intent to deliver the intervention) are predictive of the outcomes.

**Results**

The training program for providers revealed barriers and facilitators to implementation of the pharmacy intervention. These included potential problems with scheduling of patients, communication with physicians, time for physicians and pharmacist to consult or see patients and billing for the pharmacists' services.

**Conclusions**

The ongoing CAPTION trial has identified important barriers and facilitators for both conducting a complex clinical trial but also for

implementation of new clinical pharmacy services. Strategies to overcome barriers and methods to facilitate implementation of important clinical pharmacy services will be described.

**com-011****MEDICINES OVER A LIFETIME**

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What part do older people's experiences of medicines, over their lifetime, play in their current decision-making regarding medicines? Studies to date have focussed on older people's recent attitudes and beliefs and linked them with issues of adherence.

**Objective**

The aim of this study is to examine older people's attitudes towards and experiences of medicines over their lifetime, and how taking medicines fits into the wider context of their lives.

**Methods**

Ten people, aged 75 and over, were purposefully selected and interviewed two to three times using open-ended questions. Each interview was digitally recorded and transcribed verbatim. The interviews covered participants' experiences of medicines from childhood to the present day. This study received Ethical Approval from the University of Otago Human Ethics Committee in March 2009. The interviews were conducted between May 2009 and February 2010.

**Results**

The participants took a wide range of home remedies and over-the-counter medicines when they were young. In the 1930s people could not afford visits to the doctor and families tended to find health solutions at home.

Most people did not begin taking regular prescription medicines until later in life and some struggled initially with this transition.

People were willing to take their current prescription medicines if they believed it was good for their health and most people trusted their doctors. Some were reluctant about taking certain medicines such as pain-killers and a few can be described as very reluctant to take medicines.

**Conclusion**

Although the participants grew up with little experience of prescription medicines and visiting a doctor, they have a pragmatic attitude towards their prescription medicines. While they would all prefer not to take any medicines, they are willing to take them if they are beneficial to their health. This is reinforced by the strong faith they have in their doctors.

## com-012

**BELIEFS TOWARDS MEDICATIONS FOR ACUTE CORONARY SYNDROME AND THEIR RELATION TO ADHERENCE ONE MONTH AFTER HOSPITAL DISCHARGE**

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**Objective**

To determine patients' beliefs towards medicines for acute coronary syndrome (ACS) using the repertory grid technique and relate identified beliefs to adherence.

**Methods**

A randomised, controlled, interventional study of patients discharged from hospital (October 2009 to June 2010) with a diagnosis of ACS, and followed into the community for twelve months. Post discharge all patients will undertake a repertory grid based interview at 1, 6 and 12 months, to determine their beliefs towards their ACS medicines. Adherence will be measured using the MARS® questionnaire. In the intervention group patient's 'necessity' beliefs (statement by the patient reflecting a desirable outcome) towards their ACS medicines generated using the repertory grid, will be communicated by the researcher to the community pharmacist who will reinforce these with the patient at 3, 6 and 12 months. Control patients will be provided with normal care by their community pharmacist. The method forms part of a large intervention study to explore whether community pharmacists reinforcing positive beliefs towards medicines improves adherence, with the findings at one month reported in the results. Ethics approval was obtained from the relevant hospital and university ethics committees.

**Results**

43 patients have been interviewed at one month post discharge, and 36 of these generated a repertory grid. Necessity beliefs were generated by 17 (47%) patients, necessity and concern beliefs by 18 (50%) and solely concerns beliefs by one (2.8%). Higher levels of self-reported adherence (higher MARS® scores) were associated with increased frequency of necessity beliefs: MARS®=25, 'necessity' and 'necessity and concerns' beliefs n=22 (61%), 'concerns' belief n=1 (2.8%); MARS®=24, 'necessity' and 'necessity and concerns' beliefs n=9 (25%); MARS®=23, 'necessity' and 'necessity and concerns' beliefs n=4 (11.1%).

**Conclusion**

Interim results at one month suggest that necessity beliefs are associated with higher levels of self-reported medication adherence.

## com-015

**HOW DO OLDER PEOPLE LIVING AT HOME IN NEW ZEALAND MANAGE THEIR MEDICINES?**

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**Objective**

To identify the medicine-taking practices of people 75 years and over living at home in New Zealand.

**Methods**

A purposely-developed questionnaire was used to interview people 75 years and over living at home in Dunedin, New Zealand. A random sample of 810 people ≥75 years was generated from the electoral roll, and following initial screening 632 people were mailed an invitation to participate. After excluding those unable to be contacted or now in hospital or residential care, 524 people were telephoned, and those agreeing to participate, were interviewed at home. The University of Otago Ethics Committee gave approval for the study.

**Results**

In total 316 interviews were completed, a 61% response rate. Participants were 75-98 years, New Zealand European/European (84%), "New Zealanders" (14%), or Maori (2%). Forty-five percent lived alone. Half (49%) saw a specialist regularly, and a third (34%) had been admitted to hospital in the past 12 months. People were using a median of 7 (1-19) prescription medicines and 1 (0-14) non-prescription medicines. The majority (58%) believed medicines are effective, and almost all (92%) described systems/routines to help remember to take them. Occasional doses were missed following a change in routine (e.g. holiday). Males were more likely to report "trouble remembering" than females (Odds ratio=1.86, CI 1.10-3.14, p=0.02). Some people had problems with reading and understanding labels (9%, 4%) and leaflets (12%, 6%), and difficulty swallowing solid dose-forms (14%). Around 17% wanted to know more about their medicines, and some were confused about their medicines following discharge from hospital. Six percent had difficulty paying for their medicines.

**Conclusion**

Overall these people 75 years and over in New Zealand managed their medicines well. Nevertheless some practical problems were identified and could be addressed by improving labelling, leaflets, and information on medicines, and tailoring dose-forms where needed.

## com-017

**EVALUATING COMPLEMENTARY MEDICINES RESOURCES: SIFTING FACT FROM FICTION**

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**Objective**

Objective: To develop an approach to evaluate the quality of complementary medicines (CMs) information resources to identify high quality resources and to aid decision support.

**Methods**

CMs information resources (n=52) were identified from reputable sources (June-October 2008), and short-listed, using criteria for accessibility and currency, content and coverage, transparency (authority), and content quality (accuracy). Resources that had limited content or failed the above criteria were excluded. Short-listed resources (n=26) were comprehensively assessed on three major constructs of quality (technical quality, content quality and clinical utility), using criteria and measures derived from the literature and consensus of a multidisciplinary validation panel. Each resource was scored across these constructs (triangulation), with a total score calculated, standardised to a percentage and ranked. Resources that scored above the upper confidence intervals (95%) for the mean of the Total Score and for either, all three constructs of quality or two of these three constructs, were classified as Tier 1 and 2 resources respectively.

**Results**

There were six Tier 1 and three Tier 2 resources identified. These were (in rank order):

- Natural Standard Professional Database
- Natural Medicines Comprehensive Database (Health Professional ed)
- Natural Standard Professional monographs (a subset of above)
- Medicines Complete (containing both Herbal Medicines and Dietary Supplements)
- Natural Standard Clinical Bottom Line monographs (a subset of above)
- Drugs, Supplements & Herbal Information (Medline Plus)
- Barnes et al. Herbal Medicines (part of Medicines Complete)
- Natural and Alternative Treatments (EBSCO)
- Braun & Cohen, Herbs and natural supplements: An evidence-based guide.

**Conclusions**

While there is no single ideal CMs information resource, the identified Tier 1 and, to a lesser degree, Tier 2 resources have the technical quality, content quality and clinical utility to support health professional and consumer decisions about Quality Use of Complementary Medicines.

## com-019

**TELEPHONE SURVEY OF PATIENTS EXPERIENCES OF REPORTING ADVERSE DRUG REACTIONS**

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**Objective**

This part of a larger evaluation was designed to obtain detailed patient feedback on current UK yellow card adverse drug reaction (ADR) reporting systems and advice on how these could be improved.

**Method**

Semi-structured telephone interviews were conducted with a maximum variation sample of patients selected from those who had previously consented following completion of questionnaires about the yellow card scheme. Interviews were recorded digitally, with consent, transcribed verbatim and analysed using the method of constant comparison by one member of the research team in collaboration with another team member. Ethical approval was obtained for the study.

**Results**

Twenty-seven telephone interviews were carried out. Many of the interviewees had stumbled upon the scheme, either in a pharmacy, a doctor's surgery or via the media, and were concerned that they knew nothing about the scheme prior to making their report. Most interviewees had found the reporting process to be straightforward. The majority of the interviewees were clearly able to link their ADR temporally to the medicine when making their report. Many of them talked about how the reaction improved on discontinuing the drug and reappeared when the medicine was taken again. Other interviewees had reported that the reaction became more severe when the dose was increased. In effect the interviewees were using the same kind of logic as that underpinning the Naranjo algorithm<sup>1</sup>. Many of the patients said that they reported out of altruism, they did not want someone else to suffer like they had. A few had reported more out of a desire for solidarity; they expected a response, and thought that they

would be linked with similar suffers. Others clearly understood the importance of the pharmacovigilance process.

### Conclusions

Raising awareness of the reporting scheme should be prioritised. Future promotion of the scheme could incorporate explanations about pharmacovigilance.

## com-020

### WHAT INFORMATION SOURCES DO PARENTS USE WHEN MEDICATING THEIR CHILDREN?

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### Objective

The aim of this study was to describe the information sources that parents use regarding their children's medication and to determine how reliable parents think these information sources are.

### Methods

This study is part of a larger cross-sectional population survey with a random sample of 6000 children under 12 years of age conducted in spring 2007. The response rate of the questionnaire was 67%. Parents were asked about the use of information sources and their reliability with a list of 16 information sources.

### Results

The information sources that parents reported having used the most were doctors (72% much or to some extent), patient information leaflets (PIL) (67%), public or school health nurses (52%), and pharmacists (44%). Regardless of the child's age, doctors were the parents' most used information source. Doctors were the most used information source also when the child had at least one of the four most common long-term diseases among children in Finland (asthma, diabetes, epilepsy, juvenile rheumatoid arthritis). Parents considered doctors (50%), PILs (31%), pharmacists (27%), nurses (20%), and public or school health nurses (17%) very reliable information sources.

### Conclusions

Parents seek information from health care professionals and PILs, and furthermore, they find these information sources reliable. The fact that parents consider PILs reliable information sources further emphasizes the importance of individualized patient counseling by health care professionals, since the quality of leaflets may not be uniform. Pharmacists should highlight their competence in patient counseling and providing reliable information about medicines.

## com-022

### INVESTIGATING THE USE OF AN ELECTRONIC DISCHARGE SUMMARY SYSTEM (INFOFLEX) IN PRIMARY CARE

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Accurate, complete discharge information is essential to continuity of care when patients are discharged from hospital. Electronic methods have been suggested to improve the quality and timeliness of discharge information sent to GPs (primary care doctors). In February 2007, an electronic discharge summary system, InfoFlex, was introduced in Gloucestershire, UK. This system enables the hospital to send additional medicines-related information (medication changes, new medication indications and whether medicines should continue) to GPs.

### Objective

This study aimed to ascertain how this additional information was used and to discover the opinions and experiences of GPs receiving discharge summaries through InfoFlex.

### Methods

A mixed-methods study - questionnaire survey of 160 randomly selected GPs (81 GP practices) in Gloucestershire during October 2008 followed by in-depth interviews with four volunteer GPs during 2009, analysed using interpretive phenomenological analysis. The study received NHS ethical approval.

### Results

Completed questionnaires were received from 101 GPs (63% response), from 68 practices (84% response). InfoFlex was preferred by 71% of GPs, with greater support from GPs who had previously used a paper-based system. GPs perceived that 58% of discharge summaries arrived within seven days of hospital discharge and 41% reported this was quicker with InfoFlex. The majority of GPs found the additional medicines-related information accurate and useful. GPs were satisfied with the legibility and standardised format of InfoFlex but were dissatisfied with incompatibilities between InfoFlex and GP computer systems and delays in receiving medicines-related discharge information.

### Conclusion

Electronic discharge summaries were preferred by the majority of GPs because they contained more accurate medicines-related information, arrived more quickly, and used a legible, standardised format. All doctors should be encouraged to communicate medication changes electronically to primary care, ideally within 72 hours of hospital

discharge. Information technology should be developed to standardise compatibility between different computer systems.

#### com-023

### **PRESCRIPTION PATTERNS: A CRITICAL REVIEW OF THE LITERATURE ON THE SOCIO-DEMOGRAPHIC CHARACTERISTICS OF MEDICINE PRESCRIPTION AND UTILIZATION**

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#### **Objective**

To critically review the research literature which addresses the relationship between patient characteristics and patterns of prescribing published between 1985 and 2009.

#### **Methods**

The search strategy involved the use of a number of databases including: ISI Web of Science, Medline, PubMed, Social Science Citation Index, Scopus, Psycinfo and Google Scholar. Key words included: medicines, medicines use, prescriptions, patterns, socio-demographics, epidemiology, drug use, antibiotics, psychotropics, disparities, trends, children, women, elderly, socio-economic, gender, inappropriate prescribing, reviews. The search was restricted to English language and papers which explicitly addressed socio-demographic characteristics of patients.

#### **Results**

Two hundred papers were reviewed. The majority address patterns of prescribing in Western Europe, North America and Australasia and a minority address patterns of prescribing in the developing (majority) world. A significant number address psychotropic medicines focusing variously on: children, women, and the elderly. Inappropriate prescribing emerges as an issue for children and the elderly in relation to antibiotic and psychotropic drug use. The issue of prescribing disparities and increased consumption of drugs underpins most of the research in this field. The research is quantitative, observational in nature and a-theoretical. Significant associations are observed for a range of socio-demographic characteristics, in particular age and race/ethnicity, however the results have limited utility for explaining how and why prescription disparities emerge, are sustained and are variable internationally.

#### **Conclusions**

There is a need to develop theoretical models and research frameworks which can generate some insight into the causal pathways underpinning the socio-demographic characteristics of prescribing patterns and what the implications are for health outcomes. Greater engagement with social science research could facilitate this development.

#### com-024

### **THE ASSOCIATION OF SOCIO-ECONOMIC FACTORS WITH CHILDREN'S HEALTH STATUS -A POPULATION-BASED SURVEY IN FINLAND**

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Several studies have shown that socio-economic inequalities, especially low income increase probability for poor health among children.

#### **Objective**

The aim of this study is to describe the association of socio-economic factors with health of Finnish children. Parental education level, household net income, and working status are regarded as socio-economic factors.

#### **Methods**

This study is part of a population-based survey of the use of medicines among Finnish children under 12 years (n=6000) which was conducted in spring 2007. A questionnaire was sent to parents, and a response rate of 67% was achieved. The outcome measures were the child's health status reported by a parent on a 5-point Likert scale, current disease(s) diagnosed by a physician reported by a parent, and current symptoms from a 21-item symptoms list reported by a parent. Later on, new classes were formed to indicate poor health, the prevalences of psychosomatic symptoms and long-term diseases. Data was analysed using logistic regression analysis with 95% confidence intervals (CIs).

#### **Results**

In total, 3% of parents reported their child's health status as poor. In contrast, the prevalences of psychosomatic symptoms and long-term diseases were 11% and 11%, respectively. Poor health status was most commonly reported for children aged 0-2 years, and psychosomatic symptoms for 0-2- and 7-11-year-old children, whereas, the prevalence of long-term diseases was most common among oldest children (7-11 years). No significant association was found between education level, household income, and working status with poor health status, psychosomatic symptoms, or long-term diseases among children.

#### **Conclusions**

In contrast to previous findings, socio-economic factors were not associated with children's health in our study, which indicate that socio-economic inequalities do not affect health of Finnish children at this age.

**com-027****HOSPITAL PHARMACISTS' ROLE IN THE MANAGEMENT OF METABOLIC SYNDROME IN THE UNITED ARAB EMIRATES (UAE): A QUALITATIVE STUDY**

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Metabolic syndrome is a significant problem in the UAE and hospital pharmacists' role in managing metabolic syndrome has not been explored in this area. This study explores contextual factors that define pharmacists' contribution to metabolic syndrome management and key impediments of their involvement in patient care.

**Objective**

To identify the role of hospital pharmacists in the UAE in managing patients with metabolic syndrome and factors influencing pharmacists' involvement in their care.

**Methods**

In one of Abu Dhabi's leading hospitals during 2009, 11 semi-structured interviews with hospital pharmacists were conducted followed-up by one focus group for further exploration. All audio-recordings were transcribed verbatim and analysed thematically using the principles of constant comparison. Nvivo software aided data organisation. Ethical approval was obtained.

**Results**

Hospital pharmacists admitted that patient counselling is rarely provided to any group of patients including patients with metabolic syndrome. Time and workforce shortages; involvement in non-clinical tasks; lack of available space for private counselling; and patient's refusal of drug use assessment emerged as key factors that influence pharmacists' active participation in patient care. Pharmacists were disappointed by the use of nurses as drug educators which limits the utilisation of their knowledge despite their high accessibility. Furthermore, fear of offending patients when discussing weight problems or alcohol consumption, prevented pharmacists from initiating lifestyle advice. This was overcome when pharmacists participated in outreach campaigns, suggesting that such strategies could be used to enhance pharmacists' role in patient care hence in metabolic syndrome management.

Conclusion: This study provides new insight into hospital pharmacists' role in patient care including metabolic syndrome management in the UAE. The overwhelming barriers that shape the extent and intensity of pharmacists' role in the UAE need to be addressed to improve care for patients with metabolic syndrome.

**com-028****HEALTH PROFESSIONALS TALKING ABOUT CULTURAL INFLUENCES IN MANAGING PATIENTS WITH THE METABOLIC SYNDROME: A QUALITATIVE STUDY IN THE UNITED ARAB EMIRATES (UAE)**

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The metabolic syndrome concept has become increasingly accepted in clinical practice particularly after its recognition by leading cardiovascular organisations and the development of guidelines facilitating its diagnosis and management. This study examined the cultural and social related issues that impact metabolic syndrome management in the UAE.

**Objectives**

To understand issues about the management of the metabolic syndrome within the religious, cultural and traditional context of the UAE by exploring the perceptions of health professionals.

**Methods**

Twenty-seven semi-structured interviews and one focus group were conducted with health professionals working in a hospital in Abu Dhabi in 2009. Audio-recordings were transcribed verbatim and analysed thematically using the principles of constant comparison. Nvivo software aided data organisation. Ethical approval was obtained.

**Results**

All health professionals acknowledged metabolic syndrome's high prevalence in the UAE and the need for collaboration to enhance public awareness of this endemic. Some of the challenges in managing metabolic syndrome stemmed from social eating habits and lifestyle practices governed by cultural norms and traditional obligations, such as meal invitations and restricting women's participation in exercise programmes. Although The 'God willing philosophy' was believed to influence patients' lack of autonomy and poor compliance, other religion influenced health behaviour was welcomed and believed to hold therapeutic benefits and sometimes encouraged by practitioners such as blood cupping and drinking Zamzam water. The reliance on housemaids, personal drivers and other products of modernity lead to limited physical activity and influenced the syndromes' prevalence in the UAE. Difficulties in convincing patients about their treatment plan were occasionally attributed to language barriers and poor cultural competency where exercise and healthy lifestyle are unfamiliar concepts to patients in the UAE.

**Conclusion**

Clinical practice in the UAE must embrace a variety of patients' factors, including personal and cultural influences to ensure successful management of the metabolic syndrome.

**com-030**

**HOW TO WRITE READABLE TEXT: 14 SOLUTIONS TO 14 PROBLEMS. THE PFIZER/ARNOLD & MARIE SCHWARTZ HEALTH LITERACY INITIATIVE**

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**Objective**

The purpose of this web-based instructional module, a pharmacy educational innovation, is to help pharmacy students learn to write and evaluate written patient medication and health information so that anyone can understand it, including people with limited health literacy.

**Method**

For each of 14 problems and solutions in writing readable text, the module contains five instructional pieces in increasing levels of complexity, like a pyramid. From top to bottom of the pyramid, these pieces include an overview, a criterion checklist to self-assess learning, a short video overview, text explaining the principles underlying each problem and solution, and finally a literature review on why the principles work. The pyramid illustrates relationships among components, from simple and brief at the top to complex and longer at the bottom, but a learner can learn through any sequence. A pharmacy student might go from top to the bottom. A graduate student might begin with the literature review and end with the checklist. A drug regulatory affairs professional needing information "just-in-time" might begin with the short videos.

**Results**

The materials are electronically packaged to be placed on a server and available to anyone on the Internet. Conference participants can view the module on a lap top computer.

**Conclusions**

As patients are less likely to act if a written reason for a requested health behavior from a pharmacist is difficult to read, they will benefit from health and medication information that is easy to read, understand and learn from. This instructional module will help pharmacy students and pharmacists learn to write readable text.

**com-032**

**MEDICATION BELIEFS AND CONCERNS AMONG PATIENTS WITH TUBERCULOSIS AND DIABETES MELLITUS**

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**Objective**

To explore tuberculosis and diabetes mellitus (TBDM) patients' beliefs and concerns about their medications to understand pharmaceutical care needs.

**Methods**

Semi-structured interviews with twenty patients with both tuberculosis and diabetes mellitus (TBDM) in a Malaysian tertiary care setting. All interviews were audio-recorded, transcribed verbatim, translated and analysed using NVivo 8. Transcripts were thematically analysed using the constant comparison approach. This study received ethical approval from the Ministry of Health's Research and Ethics Committee (Malaysia) and was conducted between April and September 2008.

**Results**

Despite expressing fear and feeling the burden of consuming multiple medications especially anti-TB drugs, majority of the patients expressed that their health improved upon TB treatment and acknowledged the necessity of medications. Many patients mentioned problems including adverse drug reactions, drug interactions, multiple medications, consuming medications on an empty stomach, and reduced efficacy of medicines. Conversely, four patients mentioned that they were accustomed to taking medicines and did not express any major concerns. Those who experienced adverse drug reactions of anti-TB drugs appeared to be more concerned about their treatment compared to those who did not. Some patients believed that taking long term medication may be detrimental in itself. Seven patients also believed in the benefits of incorporating traditional remedies mainly for DM. While some believed that their current treatment caused other medication-related problems, they had not communicated such concerns with their physicians. Although directly observed treatment was felt to be effective, some believed that they were capable to self-supervise their treatment. Generally, patients were more concerned about anti-TB medication as compared to anti-diabetic medication.

**Conclusion**

TBDM patients expressed various and varying degree of beliefs and concerns according to the



severity of illnesses, effectiveness of the treatment, occurrence of adverse drug reactions and other medication-related problems. Many of these concerns had not been discussed with their physicians.

### com-033

#### DELAY IN LICENSING NEW IMPORTANT INNOVATIVE PRODUCTS THAT PROVIDE HEALTH GAIN IN FINLAND AND NEW ZEALAND

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The launch of medicines is likely to be delayed in countries with small potential sales volumes and low expected prices resulting from cost containment policies. Finland, as a member of the European Union, benefits from the centralized marketing authorisation processes whereas in New Zealand, all applications are reviewed by the national authority. In an earlier part of the study, it was found that 29% more new innovative products were registered and 40% more were launched in Finland than in New Zealand.

#### Objective

To explore the delay in licensing new innovative medicines in Finland and New Zealand.

#### Methods

A list of innovative medicines was obtained from an article published by Roughead et al. using medicines classified by the United States Food and Drug Administration and the Canadian Patented Medicines Price Review Board. The delays in registration in Finland and New Zealand, measured as time from registration in the United States, were calculated for all of the listed entities registered before 1.8.2008 in all three countries. The registration dates were sought from regulatory authorities web databases. For New Zealand, also the status of pending applications was checked.

#### Results

35 entities were included in study. The mean/median delay in registration between United States and Finland was 266/224 days and between United States and New Zealand 782/593 days. Range was from -662 to 1254 days for Finland and from -682 to 3630 days for New Zealand. Of the 21 medicines not registered in New Zealand, two had applications pending.

#### Conclusions

According to these and earlier results, on average, the access to new innovative medicines seemed better in Finland than in New Zealand. The

amount of pending applications suggest that the delay is more likely to be due to companies not applying for market authorisation than to a lengthy application process.

### com-035

#### ACCURACY OF MANUALLY PREPARED DOSE ADMINISTRATION AIDS IN VICTORIAN AGED CARE FACILITIES – A PILOT INVESTIGATION

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The use of dose administration aids (DAAs) in Australian aged care facilities (ACFs) is common, having been adopted to reduce medication administration errors and increase the efficiency of medicine administration.

#### Objective

The objective of this pilot investigation was to audit a sample of manually prepared DAAs in an aged care setting, to determine the rate of discrepancies between the contents of the DAA and the medication chart.

#### Methods

This observational study, which was approved by the Monash University Human Research Ethics Committee, consisted of audits at two ACFs that were conducted on December 10th and 14th, 2009. The contents of the DAAs prepared by the participating pharmacy were compared with the medication charts, and incidents were documented and reported to nursing and pharmacy staff. Incidents were categorised according to: type; medicine class; potential medication related problem (MRP) that could have resulted; whether they were actual errors; significance in terms of potential to cause patient harm; and whether they were random or systematic (likely to have occurred in previous DAAs or to reoccur in future DAAs). The primary outcome measure was the rate of errors per number of DAAs audited.

#### Results

One hundred and thirty-six DAAs, containing a total of 617 medicines, prepared for 91 residents were audited. Eighteen actual errors were found, which equates to a rate of 1 error per 5.1 patients, per 9.2 DAAs or per 34.3 medicines. 10.84% of packs contained errors. Nervous system medicines were most commonly involved in errors, and the most frequent type of error was unauthorised/inappropriate alteration of dosage form/drug packaging. Potential MRPs commonly associated with errors were sub-therapeutic dosage/effect and improper drug selection. Twelve and 17 of the 18 errors were respectively deemed to be significant and systematic.

**Conclusion**

The error rate (10.4%) was higher than rates observed in previous research.

**com-038****TRANSITION FROM DIDACTIC TO SELF-DIRECTED LEARNING FOR UNDERGRADUATE PHARMACY STUDENTS**

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**Objective**

To evaluate second year pharmacy students' experience and assessment outcome on the introduction of a self-directed learning (SDL) approach

**Methods**

A total of 17 students from the 2006/07 cohort were invited to attend two focus groups discussion which took place in May 2008. Informed consent was obtained from all participants. Audio-recorded discussion was transcribed verbatim and checked by another researcher. Themes related to learning approach and experience were identified from the transcripts and analysed. Participants' assessment marks from the SDL and a didactic course within the same subject area (i.e. Physiology and Pharmacology) were compared using the Student's t-test (paired).

**Results**

The mean assessment marks obtained by the students were similar 60.2±8.5% and 61.6±13% for the SDL (reproduction) and didactic (central nervous system) course respectively (n=17; p=0.622). In general majority of the students were positive about the SDL approach and commented on its usefulness, convenience and flexibility. A few concerns that were highlighted included not able to ask questions directly, lost of motivation and the SDL approach took up a lot of time. More than half of the participants used the same learning approach for the SDL course as any other didactic courses. For those who viewed it differently they stated that they had gained more knowledge and learnt a new approach of self-learning. On the other hand, a small number of students also felt that the SDL approach was difficult as they did not know how much they should learn.

**Conclusion**

Overall, the introduction of SDL at an early stage of the undergraduate pharmacy course was well received by students with a few concerns highlighted. The assessment outcome of the SDL course was not statistically different from the didactic course within the same subject area.

**com-039****MALAYSIA CONSUMER USE OF MEDICINE AND REPORTING OF ADVERSE DRUG REACTIONS – A PILOT STUDY**

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**Objective**

To assess the association between current user of medicine and adverse drug reaction (ADR) reporting amongst pharmacy clients in Malaysia.

**Methods**

A pilot questionnaire survey was conducted in two pharmacies in March 2010. Some questions were adapted from a recent UK Omnibus survey and additional questions were developed based on the findings of a previous study. Demographic data including gender, age and ethnicity were collected. University ethical approval was obtained.

**Results**

Eighty pharmacy clients were approached and 56 (70%) agreed to participate. Insufficient time (n=14), language barrier (n=3) and not interested (n=7) were the reasons provided by the non-respondents. The gender distribution of participants was almost equal with 46.4% male and the mean age is 53.9±15.8 years. Chinese made up the majority (44.6%) followed by Malays (28.6%) and Indians (23.2%). Sixty-four percent were current users of medicines and 48.2% stated that they were using complementary or traditional medicines. Most of the medicines (91.7%) were prescribed by doctors and the majority knew the name of their medicine (83.3%). Interestingly, all participants (n=20) who reported that they have had side effects from medicines were either very confident (45%) or fairly confident (55%) that the side effect was due to their medicine and 75% had informed their doctor. Less than 20% of respondents were aware of the local ADR reporting scheme set up by the Malaysian Adverse Drug Reaction Advisory Committee (MADRAC). Most of them preferred to report any future ADRs to MADRAC through phone (44.6%) or online (39.3%).

**Conclusion**

Those who had experienced ADR were confident that it was related to their medicine and most have reported it to their doctor. A large proportion of pharmacy clients in Malaysia are still not aware of the local ADR reporting system.

## com-041

**CO-LOCATION – IS IT THE KEY TO COLLABORATION?**

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**Objective**

The aim of this study was to explore the importance of physical co-location on interprofessional relationships between pharmacists and general medical practitioners (GPs) in the primary care setting.

**Methods**

Utilising a grounded theory approach and based on a literature review, a qualitative research method with a semi-structured interview guide was used to achieve the aim of this study. Purposive sampling identified community pharmacists and GPs who were “accessible” to one another i.e. co-located or in adjoining premises. All identified pharmacists and GPs were invited to participate in the study and were given the option to participate either in an individual interview or a focus group. Interviews and focus group discussions were audio-taped, transcribed and analysed for the emergence of themes and concepts.

**Results**

A total of 11 community pharmacists and 18 GPs participated in the study. All pharmacists and one GP chose to engage in individual interviews while the remaining GPs participated in one of three focus group discussions. Pharmacists described a spectrum of relationships with co-located GPs, ranging from independent to interactive. In cases where the relationship was considered to be “collaborative”, pharmacists described the need to be pro-active, positive and accessible. GPs varied in their views about pharmacists. Some lacked understanding of the pharmacist’s role, identifying them as a barrier to patient medication use, while others saw them as an allied health care professional with specialized expertise. Time and lack of efficient communication mechanisms continued to be a problem and a pro-active approach was required, usually on the part of the pharmacist.

**Conclusion**

Co-location is not an essential element to interprofessional relationship between pharmacists and GPs, however, amongst those health care professionals who were co-located, more collaborative relationships could be identified.

## com-043

**CLINICAL PRACTICE AT THE COUNTER – HOW PHARMACY STAFF IN DENMARK VIEW A PUBLICLY REIMBURSED ASTHMA SERVICE**

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**Objective**

As part of a sustainability-study concerning the first publicly reimbursed cognitive service in Denmark, the communication practices of pharmacy staff was investigated with regard to how they present the service to pharmacy customers. The service introduces correct inhalation techniques for asthma devices to customers at the counter in an attempt to improve their overall health status.

**Methods**

Field observations and interviews with pharmacy staff and owners were conducted in seven Danish community pharmacies between April and October 2008. Observations included how staff communicates with customers at the counter, whereas the interviews dealt with their perception of the service.

**Results**

In general, pharmacy staff proposed the inhalation technique service simply by asking customers if they felt like having their inhalation technique checked sometimes suggesting the service could improve bad inhalation habits. Occasionally, customers were asked whether they found their asthma status acceptable despite the fact the studies indicate that asthma-patients’ understanding of the disease do not match symptom severity. Only rarely did staff assess customers’ clinical need for the service or explained the clinical relevance of the service for the overall health status.

**Conclusion**

Based on an assessment of the communication practices of pharmacy staff when offering a publicly reimbursed inhalation technique service, it appears that Danish pharmacy staff does not relate the inhalation technique to the overall asthma treatment and therefore fail to use the clinical potential of the inhalation technique service to improve the asthma status of relevant customers. This result implies that the clinical mentality of pharmacy staff still needs to be developed.

**com-044****WHAT DO PATIENTS THINK OF MEDICINES USE REVIEWS – IS THE SERVICE FULFILLING ITS AIMS TO IMPROVE KNOWLEDGE AND USE OF MEDICINES?**

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Recent reforms of the United Kingdom community pharmacy contract saw the commissioning of the Medicines Use Review (MUR) service which aims to improve patients' knowledge and use of their medicines. Recent quantitative research suggests that MURs are fulfilling these aims.

**Objective**

This abstract presents data on this issue from a qualitative study exploring patient and professional perceptions of MURs and how they are managed in 'real life'.

**Methods**

Following approval from the Nottingham Research Ethics Committee two pharmacies were recruited and five weeks of observations carried out in each pharmacy. Fifty-four MURs were observed and 34 patients interviewed about their experience. Interviews were audio-recorded, transcribed verbatim and analysed.

**Results**

Despite the service being available since 2005, most patients' were unaware of MURs and when asked to undertake a review were surprised by the offer but did not mind being approached in an 'ad hoc' way. However, patients revealed that this reduced the opportunity to think about what they may want to ask or recall existing concerns about their medicines. During the MUR patients perceived that the pharmacist was 'checking' medication with them. Observations suggest that this arises due to the questions that the pharmacist is required to ask as part of the MUR, the structured way the consultation was performed and existing perceptions of the pharmacist role. Patients reported that the MUR did little to increase their knowledge of their medicines and rarely affected the way they used their medicines. Nevertheless patients felt comfortable speaking with the pharmacist and felt reassured that they were 'doing the right thing'. Many viewed the MUR as useful but acknowledged that patients other than themselves such as older patients may benefit most.

**Conclusion**

This study challenges the notion that MURs improve patients' knowledge and use of medicines and contrasts with available quantitative evidence.

**com-045****COMMUNICATION BETWEEN PHARMACIST AND DOCTOR IN WEST FRANCE**

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**Objective**

In France the doctors must give the preference in prescription to INN to a commercial name. Pharmacists have the right of the substitution. This system exists for 7 years now and we have researched the manner in which it has changed the relationships between pharmacists and doctors.

**Methods**

We used the method of questionnaire with 200 general practitioners and 200 pharmacists in the 3 west regions (Pays de la Loire, Poitou-Charente and Aquitaine) of France. We use the same panel since 10 years. Doctors and pharmacists have been choosing on a regional basis: 60% in urban agglomeration and 40% in villages.

**Results**

Both doctors and pharmacists are persuaded that the relationship between doctors and pharmacist is the same as before the introduction of the system of substitution.

**Conclusion**

Doctor and pharmacist need collaborate. If some years ago a part of doctors has considered that a possibility to substitution downgrade their professional respect, the substitution by pharmacist is now widely accepted and not disturb the communication doctor-pharmacist-patient.

**com-046****ANXIOUS OR CONTENTED? EXPLORING JOB-RELATED WELL-BEING AMONGST EARLY CAREER BRITISH PHARMACISTS**

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**Objective**

Concerns about job stress amongst British pharmacists are increasing. Using indicators measuring how often a pharmacist feels tense, calm, relaxed, worried, uneasy and content, one objective of our work is to examine job-related

well-being and situational co-variates (gender, ethnicity and sector of practice).

### Methods

Early career pharmacists taking part in a longitudinal study completed a survey about their working life in June 2009. Participants were contacted using addresses supplied by the regulatory body for pharmacy in Great Britain; ethical approval was granted by university ethics committees. The survey contained six items measuring job-related well-being derived from the Job-Related Anxiety-Contentment scale. Using SPSS single item scores were determined, ranging from -2 to +2; summated scores were then used to create a well-being index, with larger positive values indicating lower anxiety/higher contentment (range -12 and +12). Mean scores and standard deviations for the index were then produced, with one-way ANOVA and t-tests used to compare subgroups.

### Results

421/991 (42.1%) questionnaires were returned; of the 403 still in practise, 78.4% were female, 63.8% white, 61.5% worked in community pharmacy. Almost half (47.2%) reported feeling tense all or most of the time compared with 13.9% who said they felt job-related tension only occasionally or never. Combined scores produced a mean well-being index for the whole sample of -.94 (SD=4.240). Females scored lower than males (-.95 vs. -.91;  $t=0.095$ ,  $p=0.184$ ), as did respondents from minority ethnic (ME) groups when compared with their white peers (-1.48 vs. -.66;  $t=1.840$ ,  $p=0.323$ ); community pharmacists also had lower well-being scores compared to hospital pharmacists (-1.15 vs. -.63;  $t=-1.98$ ,  $p=0.232$ ).

### Conclusion

Compared with other occupational groups, early career pharmacists have low mean scores on the overall indicator of employee well-being (-.94 vs. 1.2). Given job-related well-being has been linked to job performance findings may have implications for pharmacists' competence.

com-047

## PHARMACEUTICAL CARE FOR PATIENTS WITH DEPRESSION: A SURVEY OF PHARMACISTS' ATTITUDES, CURRENT PRACTICES AND BARRIERS

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### Objective

To investigate attitudes of pharmacists towards patients with depression, as well as pharmacists' current practice and perceived barriers towards pharmaceutical care for these patients.

### Method

A survey instrument was addressed to all pharmacists of the Flemish community pharmacy chain "Surplus Network" in May 2009. The instrument consisted of 1) a modified version of the Depression Attitude Questionnaire 2) a set of 10 potential roles in order to investigate pharmacists' attitude and current practice in depression care versus other disorders and 3) a list of potential barriers in providing pharmaceutical care for patients with depression. Data analysis was performed using SPSS 17.1. Discrepancy scores were obtained by subtracting the current practice score from the related item attitude score. Paired samples t-tests and Wilcoxon tests were used to compare current practice scores and items in depression care with scores and items for other disorders.

### Results

149 out of 181 pharmacists completed the survey. Pharmacists generally had a positive attitude toward depression and depressed patients. However, current practice is rather low compared with what pharmacists indicate that they should provide. The scores with the highest discrepancy between attitude and current practice were observed for maintaining a trusting relationship, monitoring adherence to depression medication and follow-up of side effects. Furthermore pharmacists provide significant less care to depressed patients compared to patients with other disorders ( $p<0.05$ ). The main perceived barriers to providing depression care were lack of information about patients and their treatment, and the idea that depression is a difficult condition.

### Conclusion

In spite of pharmacists' positive attitude towards depression and their willingness to play a role in depression care, current practice is far from ideal. In the near future, interventions will be planned in order to improve pharmacists' competencies in the care for depressive patients.

com-049

## THE ROLE OF COMMUNITY PHARMACISTS IN DETECTING AND REPORTING OF ADVERSE DRUG REACTIONS IN SOUTH ESTONIA

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Community pharmacists are in an ideal position to detect and report on adverse drug reactions (ADRs). In Estonia pharmacists are not officially authorized to report ADRs.

### Objective

To analyze perception towards and participation in detecting and reporting of adverse drug reactions (ADR) among community pharmacists in South Estonia.

### Methods

Cross-sectional study was undertaken in community pharmacies (n=40) located in three cities of South-Estonia. Community pharmacists were invited to fill in the study instrument consisted of 18 multiple choice questions. Statistical analysis was carried out by SPSS v. 15.0.

### Results

Ninety two (response rate 82.9%) community pharmacists participated in the study. Of the respondents 63.8% had detected an ADR and 51.6% had reported or would potentially report it. Approximately 2/5 of the study participants had detected and reported ADR (to a physician, patient, a drug company or the State Agency of Medicines). However, 1/4 of those detected ADR never reported it. The most frequent reason for not reporting ADR was already known ADR (68.5%). Younger community pharmacists with less working experience self-reported higher incidence of detecting ADRs than their older colleagues with longer working experience (p=0.050).

### Conclusion

Community pharmacists in Estonia considered reporting of ADRs important contribution to ensuring of drug safety. Professional knowledge and perception towards ADRs of community pharmacists have an important role in detecting and reporting of described problems.

Sciences at Aston University. After piloting, in August 2006 a self-completion postal questionnaire was sent to practising community pharmacists in Great Britain (n=1998), with a follow-up to non-responders 4 weeks later. A final response rate of 51% (n=1023/1998) was achieved.

### Results

Respondents were asked to indicate their answer to the question "to what extent is your present job concerned with local public health issues?" on a three-point scale – "highly", "slightly" or "not at all" concerned with public health. They were also asked to indicate whether they were pharmacy owners, employee pharmacists or self-employed locum pharmacists. Less than half (43%, n=384/898) of respondents answering both questions believed that their job was highly concerned with public health. A relationship was observed between employment status and the level to which a respondent believed that their job was concerned with public health (chi-square test with P=0.001). Over half of pharmacy owners (51%, n=68/134) considered that their job was highly concerned with public health compared to 44% (n=193/443) of employee pharmacists and 38% (n=123/321) of locum pharmacists.

### Conclusion

This research suggests that community pharmacists in Great Britain are not 'fully engaged' with public health. Pharmacy owners may feel more enfranchised in the public health movement than their employees and locums. Indeed, one-in-ten locums reported that their job was not at all concerned with public health which, as locum pharmacists constitute over a third of actively employed community pharmacists, could be a limiting factor in any drive to strengthen the public health function of community pharmacists.

#### com-050

### COMMUNITY PHARMACISTS' ENGAGEMENT WITH PUBLIC HEALTH IN GREAT BRITAIN

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### Objective

The objective of the research was to examine to what extent community pharmacists in Great Britain believed that their job was concerned with local public health issues.

### Methods

The project (Pharmacy and Public Health) received ethical approval from the Research Ethics Committee of the School of Life and Health

#### com-051

### IMPLICATIONS OF RETIRED EU IMMIGRANTS FOR COMMUNITY PHARMACIES - SCANDINAVIAN RETIREES LIVING IN SOUTHERN SPAIN

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The overall objective was to study the implications of International Retirement Migration (IRM) for community pharmacies.

Decades of European integration has resulted in an increase in emigration inside the EU, especially towards the Southern European Countries. Many retirees have either immigrated or live part-time in another EU country.

**Objective**

This study addressed the challenges of retired migrants for community pharmacies – can pharmacists and pharmacies live up to the changing demands. The study focused on the challenges in providing appropriate pharmacy services for Scandinavian retirees living in the coastal regions of Spain.

**Methods**

A situation analysis, using national and regional statistics, to determine the demographic profile of EU citizens living in southern Spain. Semi-structured qualitative interviews were carried out with pharmacists and pharmacist inspectors.

**Results**

Foreign retirees are often individuals with chronic illnesses and frequent customers in community pharmacies. It is difficult to assess the needs of these patients/customers since many are not officially registered with the authorities. Major challenges reported by pharmacists include: lack of a common language; customers requesting prescription medicines without prescription and a tendency to self medicate

**Conclusion**

Lack of reliable statistics makes it difficult to assess the extent of the migration flow of retired people in the coastal areas of Southern Spain making it difficult for local authorities and community pharmacies to evaluate the needs of these patients. Common guidelines for pharmaceutical services in community pharmacy practice should be developed in the EU in order guide community pharmacists in their daily work and to assure medication safety.

com-052

**'ETHNIC MINORITIES' AS A SOCIAL CONSTRUCTION – A CASE STUDY OF CURRENT DANISH VITAMIN D POLICY DOCUMENTS**

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**Objective**

To explore how ethnic minorities at risk of vitamin D deficiency are constructed in current Danish policy documents regarding vitamin D supplementation.

**Methods**

Through a content analysis of 10 policy documents including definitions and explanations of ethnic minorities being at risk of vitamin D deficiency, an analysis of constructions of ethnic minorities at risk was conducted using the Social Construction of Technology (SCOT) theory as a framework for analysis.

**Results**

The analysis showed a large degree of interpretative flexibility regarding how ethnic minorities are constructed as a risk group for vitamin D deficiency. The 10 documents included 8 different definitions of the ethnic minorities groups at risk. A low degree of interpretative flexibility was found regarding the importance of skin colour and skin covering. Large disagreements were found regarding the importance attributed to the Islamic religion, other traditions, immigration, gender and age, and use of an evolutionary explanation for the increased risk.

**Conclusion**

Ethnic minorities at risk of vitamin D deficiency are constructed very differently in current Danish policies. A more precise definition of ethnic minorities in policies and research is required in order to identify which ethnic minorities are and are not at risk of vitamin D deficiency.

com-055

**LEARNING TOGETHER FOR WORKING TOGETHER; AN INTER-PROFESSIONAL APPROACH TO OBESITY MANAGEMENT**

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Obesity has reached epidemic proportions globally, and is a major contributor to the burden of chronic disease and disability. In England an inter-professional, multiagency approach to tackle obesity was proposed.

**Objective**

To support this, a postgraduate inter-professional course leading to a certificate in obesity management is offered by the University of Reading. This paper describes methods to develop inter-professional learning and results from the course evaluation.

**Methods**

The course, held in 2009/10, was set up in accordance with the University quality assurance processes. In addition to formal taught sessions it included activities designed to bring participants together; these included inter-professional group

discussions and “levelling” activities such as food savouring, exercise challenges and health walks. Evaluation of the course was approved by university ethics procedures and conducted by independent researchers from NHS Education South Central. Online surveys and focus groups were used.

### Results

The course attracted participants from medicine, nursing, pharmacy, dietetics and physical activity. The evaluation showed that participants recognised and valued the need to learn and work together. One participant summed this up as “Everybody has a place within this and everybody’s place is different but the picture is effectively the same, it’s just where you’re looking at the picture from is maybe different.”

### Conclusion

The evaluation indicates that learning together supports working together. The course is being continued and a further course to address childhood obesity, encompassing teaching and local authority staff in addition to health professionals, is in development.

com-056

## CONTINUING PROFESSIONALS’ EDUCATION OF BULGARIAN PHARMACISTS 2007-2009

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Continuing professionals’ education is very important for the health professionals to maintain a high level of knowledge and for the improvement of their professional practice, patient outcomes and generally the social health. In Y2007 was established a new system for continuing education of pharmacists in Bulgaria, following the formation of Bulgarian Pharmaceutical Union (BPhU) in February 2007.

### Objective

The aim of the current study is to analyze the results of the continuing professionals’ education of Bulgarian pharmacists that received approval from the Quality Commission of BPhU for the period 2007-2009.

### Methods

The retrospective analysis of the approved forms and topics of education, as well as the feedback questionnaires from the pharmacists was performed. The official register of the BPhU was considered as a source of information for the

approved continuing education programmes during the studied period.

### Results

The established accreditation system contains 4 categories of continuing education programmes. All forms need to be accredited by the Quality Commission of BPhU. 89 educational forms were accredited and performed for the studied period (n=26 in Y2008, n=44 in Y2007, n=23 in Y2009). The most popular form of continuing education of the pharmacists in Bulgaria are educational meetings (n=24 out of 26 forms in Y2007; n=41 out of 44 forms in Y2008; n=22 out of 23 forms). The educational meetings include seminars, symposia, lecturers, conferences, workshops etc. Strategies to increase attendance to the educational meetings are pointed in the feedback questionnaires as availability of interactive format and focusing on most common cases solved in the pharmacies. It may increase the effectiveness of the various forms of continuing education of Bulgarian pharmacists.

### Conclusion

We recommend greater involvement of academia in continuing professionals’ education of pharmacists not only as inclusion of academia representatives as lecturers, but also in the organisation of the process.

com-057

## HOW DO PHARMACY STUDENTS LEARN PROFESSIONALISM, AND HOW IS IT ASSESSED?

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### Objective

The importance of professionalism appears to be gaining increasing recognition in pharmacy. The aim of this study was to understand and clarify how professionalism is defined, learnt, facilitated and assessed in the academic environment.

### Methods

This qualitative study involved interviews with seven teaching staff (in direct delivery and/or curriculum overview), six focus groups with 38 (29 female) final year students, and observation of professional pharmacy practice classes. All took place in three established schools of pharmacy in Great Britain. A thematic framework was developed and applied to all textual data; triangulation of methods and constant comparison between groups of participants and schools was utilised.



## Results

Both staff and students acknowledged the difficulty of defining professionalism, but they were aware of common attitudinal and behavioural attributes, such as empathy, honesty & integrity, being responsible etc. Staff appreciated the difficulty of 'teaching' professionalism and acknowledged the importance of it, and its elements, transcending the curriculum, years of study and modes of delivery. The difficulty of defining professionalism 'as a whole' posed difficulties for its assessment. Therefore, only certain elements of professionalism were assessed, and they were those which could be easily identified, defined and isolated. The predominant example was communication, assessed particularly during practical classes using role-plays. During discussions about summative versus formative assessment, participants acknowledged the importance of formative assessment involving feedback to students, as the learning of professionalism was seen as a gradual process through their degree course and beyond.

## Conclusion

This study provides a better understanding of what professionalism means in an educational setting. It also describes the difficulty of assessing professionalism, particularly using summative assessment. Formative assessment, which provides feedback to students on how they can improve their professionalism, or elements of it, appears to have an important place in the education and training of pharmacy students.

### com-059

#### SCOTTISH COMMUNITY PHARMACISTS' VIEWS AND ATTITUDES TOWARDS 'PHARMACY-ONLY' NAPROXEN FOR MANAGEMENT OF PRIMARY DYSMENORRHOEA

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#### Objective

The objective of this study was to determine community pharmacists' views on 'Pharmacy-only' naproxen 250mg, recently reclassified in UK from 'Prescription-only' status licensed for the management of primary dysmenorrhoea in women aged 15-50.

#### Methods

A mail survey of all community pharmacies in Scotland (N=1138) was conducted in June 2009, with the questionnaire addressed to one pharmacist from each pharmacy. Pharmacists' levels of acceptance of the product and frequency of supply were measured using five-point scales, from 'not-at-all' to 'very high'. A five-point Likert-

type scale was used to measure agreement with a 24-item barrier/facilitator scale developed based on a literature review, qualitative interviews with community pharmacists and theoretical framework of diffusion of innovations. The North of Scotland Research Ethics Committee exempted this study from formal application.

## Results

A response rate of 49.5% was achieved. Over 77% and 47% of respondents rated their level of acceptance and supply frequency of naproxen as three or above on the five-point scale. A majority agreed that naproxen OTC: is a good opportunity to extend the pharmacists' role in patient care (62.8%), has a good evidence base (65.5%) and that they were confident to supply the product (90.1%). A majority disagreed that customer could misuse the product (50.5%). However over 43% were worried about the associated adverse events and over a quarter reported that patients had complained about the retail price. 65.3% of respondents disagreed that patients specifically request the product by name implying that supplies are based on pharmacists' recommendations.

## Conclusion

The majority of pharmacist respondents were positive about the reclassification of naproxen to pharmacy only status in the UK. Areas of concerns included risk of adverse events and lack of patient acquaintance to product availability.

### com-060

#### COMMUNITY PHARMACISTS IN GREAT BRITAIN WELCOME INCREASED PATIENT CONTACT FOLLOWING CONTRACTUAL CHANGES, BUT IS IT SUSTAINABLE?

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New pharmacy contracts commenced in England and Wales in 2005 and in Scotland in 2006. Few studies have considered the impact of contractual change from the perspective of Community Pharmacists (CPs), particularly in Scotland. In England, data gathered in 2005 suggested that community pharmacy workloads had intensified in recent years and a national review of the English and Welsh contract in 2007 indicated that this trend had continued post new contract. In Scotland, support for the proposal of extended services was identified in 2003 but the impact of their integration is largely unknown.

#### Objective

This study aimed to explore Community Pharmacists' experiences of contractual change across Great Britain.

**Methods**

Thirty community pharmacists theoretically sampled from areas representative of GB (15 Scottish, 10 English and 5 Welsh) participated in a telephone interview in November 2009. Interviews were recorded and transcripts analysed using content analysis.

**Results**

The new contracts are similarly perceived to have resulted in both positive and negative consequences. Pharmacists value their increased clinical role, and are happy to be "getting away from dispensing" which has "helped (them) to be more patient focussed". However increased patient contact, though desirable, is perceived to be at a cost to the pharmacist. A recurring theme was the increased workload resulting from the new contracts with the aspects of time limitations and non commensurate levels of financial gain particularly highlighted.

**Conclusion**

Pharmacists value the increased patient contact which has resulted from contractual change. However, it is clear that workloads have escalated, and this is likely to continue with prescription numbers increasing each year across GB. Working practices need to alter to allow the increase in patient contact to continue. Policy makers should be aware that spiralling community pharmacy workloads and funding restriction could undermine the benefits of the new contract.

**com-064****UNDERGRADUATE STUDENT ATTITUDES TO PUBLIC HEALTH TEACHING IN ESTABLISHED SCHOOLS OF PHARMACY IN THE UK**

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**Objective**

To explore UK pharmacy undergraduates' attitudes towards public health and public health teaching.

**Methods**

An invitation email, linked to a pre-piloted web-based questionnaire and information sheet was provided for circulation to all pharmacy undergraduates in participating Schools (12/22 invited). The questionnaire was open for the 2009 autumn term and included a prize draw. Survey items focused on experience, attitudes to public health, its importance to practice and how it is taught. The questionnaire comprised mainly Likert and semantic differential scale-type questions,

with some open questions. Ethics approval was obtained.

**Results**

Responses were received from 633 undergraduates, 63% (399) of whom were female, age range 18-41 (mode 20). This represented approximately 10% of the total number of students in participating Schools.

Ninety-eight percent agreed that '...it is important for pharmacists to know about public health' and 92% viewed their undergraduate public health teaching as likely to be useful in practice. However over a third found public health material difficult/fairly difficult to identify within their course. Views were divided on whether public health teaching should be integrated across the course or in one separate module, with roughly twice as many students preferring the former. Ways of integrating public health with clinical topics were suggested:

*"It should be taught disease based, encompassing all aspects such as preventive, treatment and the long term management"*

Approximately 75% of students expressed a desire for material to be practical, as opposed to theoretical:

*"[we need] training in how to deliver public health services. How to go about evaluating services, where to collect data etc."*

**Conclusion**

Responding students were positive about their public health role and its teaching but many struggled to identify public health material within their course. The low response rate may indicate that many pharmacy students lack appreciation of the importance of public health.

**com-066****THE INFLUENCE OF STRUCTURE ON PHARMACIST-PATIENT COMMUNICATION DURING APPOINTMENT-BASED CONSULTATIONS**

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Pharmacists' roles are evolving to focus increasingly on communication with patients. Pharmacists are conducting more patient consultations and employ a range of techniques to guide their communication in consultations. This paper examines the use of overt or implicit guides to structure a consultation and the impact on pharmacist-patient communication.

**Objective**

The objective of this study was to explore the communication between pharmacists and their patients in appointment-based consultations.

**Methods**

Five pharmacists holding appointment-based consultations with patients were recruited to this qualitative study. The pharmacists recruited a total of eighteen patients. Pharmacist-patient consultations were audio-recorded and observed by the researcher. Recordings were transcribed verbatim and analysed thematically. Observational notes were used to aid with contextualisation. Data was collected between July 2007 and March 2009. NHS Ethics Committee and local R&D committee approvals were obtained.

**Results**

Pharmacists observed in this study made use of a variety of methods for structuring consultations including official computerised or paper based forms, rehearsed segments of speech, patient medication records, brief written notes and mental checklists. These methods had a range of benefits and disadvantages for pharmacist-led consultations. Adhering to a strict protocol provided order in the consultation, ensured coverage of specific topics and helped reinforce information given to patients. However patient contributions were often cut short and practical difficulties were seen in completion of computerised forms as well as a reduction in eye contact and tailoring of the consultation. Informal guides afforded greater flexibility to the consultation but the patient's agenda was often not explored. Use of rehearsed scripts enabled cognitive focus on key aspects of the consultation and 'backgrounding' of routine communication tasks.

**Conclusion**

Pharmacists must pay careful attention to the methods that they use to structure their consultations to ensure that they meet the needs of both the pharmacist and patient.

com-070

### THE APPLICATION OF SYSTEMATIC CONTEXT ANALYSIS TO ENHANCE PUBLIC HEALTH INTERVENTION RESEARCH IN THE COMMUNITY PHARMACY SETTING

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Public health literature has identified that the context within which an intervention is located interacts with and affects program operation, effectiveness and relevance. Reductionist methodological approaches favoured in

intervention research to date has neglected and undervalued contextual analysis in favour of providing robust trials with high levels of internal validity. Public health intervention research is by its very nature irretrievably embedded within a social world so this lack of contextual analysis undermines meaningful considerations of intervention effectiveness and transferability.

**Objective:** This study aimed to critically examine the community pharmacy practice context in order to identify and describe contextual aspects that are likely to interact with public health intervention implementation, interact with intervention effectiveness and determine generalisability of intervention findings.

**Methods**

A literature review of relevant community pharmacy white and grey literature was undertaken guided by an analytical framework based on the socio-ecological model. A hermeneutic approach applying interpretive and dialectic methods was used to describe and categorise contextual variables identified in the literature.

**Results**

The community pharmacy is a complex setting that can be described according to internal and external elements of the social, political, physical, economic and organisational contextual domains. This review has identified that greater attention needs to be given to recognising and investigating the community pharmacy context within process and impact intervention evaluation to contribute to a more sophisticated understanding and evaluation of intervention studies. Providing contextual evidence may facilitate improved decision making regarding resource allocation, policy development and practice application and enhance the transferability of interventions in this practice setting.

**Conclusion**

Context analysis using the described contextual domains should be an explicit and ongoing practice in the design, implementation, evaluation and dissemination of public health interventions in the community pharmacy setting.

com-071

### NUTRITION INTERVENTION RESEARCH IN COMMUNITY PHARMACY: A SYSTEMATIC REVIEW OF THE LITERATURE USING AN ANALYTICAL FRAMEWORK

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The community pharmacy is an accessible, conveniently located and widely utilised health

care setting. It presents significant opportunities for settings based intervention through which to promote optimal nutrition amongst the community, in particular to pregnant women and new mothers.

### Objective

The aim of this research was to identify 1) how community pharmacy are currently being used for health promotion and disease prevention, specifically in regards to nutrition; 2) the determinants of effective public health activity (interventions) in community pharmacy relating in particular to nutrition related primary prevention.

### Methods

This systematic review of intervention research conducted in the community pharmacy setting, relating specifically to nutrition promotion was undertaken. Health databases (PubMed Central, Medline, Journals @ Ovid, Embase) were searched systematically. Reference lists were also searched for relevant articles. Abstracts were reviewed for inclusion according to defined criteria. The analytical framework developed partially based on Preffi 2.0, was used to deconstruct and analyse interventions from a public health nutrition perspective. Data abstracted from the studies included and related to: 1) problem analysis, 2) determinants, 3) target group 4) objectives, 5) intervention/strategy mix, 6) theoretical assumptions/logic 7) level of prevention 8) evaluation method and results 9) context effects and 10) sustainability/cost implications.

### Results

The results of this review (44 articles) identified a lack of published studies set in community pharmacies focusing specifically on nutrition promotion. Interventions appeared unsustainable with limited exploration of contextual and cost implications. The majority of studies in this review focussed primarily on secondary prevention.

### Conclusion

Despite an apparent opportunity within the community pharmacy setting to undertake nutrition promotion relative to primary prevention, there is a dearth of published intervention studies providing intelligence to guide intervention planning. This study highlights the need for settings based intervention studies which focus on evaluating primary prevention in community pharmacy relating to nutrition.

com-074

## LOOK-ALIKE AND SOUND-ALIKE MEDICINES: PROPOSALS TO REDUCE THE RISK OF CONFUSION

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### Objective

Numerous reports of 'commonly confused' medicines have been published internationally, highlighting cases and risks associated with drug and brand name nomenclature. This research aimed to (1) compile available reports, identifying pairs of look-alike/sound-alike (LASA) medicines relevant to Australian practice, and (2) identify possible reasons for confusion using expert opinion, in order to propose risk-reduction strategies.

### Method

Literature searches and anecdotal reports were used to identify LASA medicines internationally. Those relevant to local practice were identified using Australian product information references. Expert opinion was then sought from psycholinguistics researchers, representatives of professional bodies, practising pharmacists and medicines safety and regulatory experts, to determine the 'human factors' causes of accidental confusion and explore best-practice initiatives.

### Results

Lists of LASA medicines and case reports were sourced from three countries, while one paper listed examples from numerous countries. The Australian Pharmaceutical Defence Limited list, comprising 115 pairs of brand/drug names, was supplemented with 162 other pairs of medicines relevant to Australian practice. Ten of the 277 drug pairs were identified as cases of potential confusion between brand names, salts or formulations of the same drug. Of greater concern were the 267 pairs of unrelated drugs/brands apparently confused due to their orthographic similarity. Expert opinion supported literature reports that visual and audio distractions, workflow and time pressures were risks for confusion between medicine names. Best-practice initiatives under trial in some hospitals include Tallman lettering and/or contrast fonts to visually distinguish similar names. Procedural changes, including checking procedures and barcode scanning during dispensing, were also recommended, yet are not error-proof.

### Conclusion

Medicine nomenclature poses considerable risk in busy dispensing practices, particularly given the similarities identified between unrelated drugs. A suite of initiatives is proposed, which may include an interactive model for reporting and cautioning about LASA medicines, and use of distinguishing fonts for medicine names.

com-075

## EVALUATION OF MEDICATION-RELATED HEALTH LITERACY IN COMMUNITY PHARMACY CLIENTS IN AUSTRALIA

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### Objective

Health literacy is the ability to obtain, interpret and use health information. A validated measure of health literacy has not been published in Australia, yet health literacy is recognised as a challenge in medicines-related communication. This research explored health literacy issues in community pharmacy consumers, to advise initiatives to improve public health literacy.

### Method

An in-store survey of medicine purchasers, using a semi-structured interview guide, was undertaken by a team of 16 final-year BPharm students during August, 2009, at 12 pharmacies in the Brisbane region. The questionnaire was derived from available literature and measured aspects of functional, interactive and critical health literacy regarding use of medicines. The final survey instrument was pilot tested in approximately 100 lay consumers. Data were analysed descriptively.

### Results

Responses from 647 consumers were analysed. While 87% of respondents recognised a sample prescription, 20% could not readily match the prescription to a labelled medicine box. The majority of respondents (82%) interpreted "three times a day" as doses associated with breakfast, lunch and dinner. Given a blister strip containing nine tablets, 93% were able to identify three days' worth of tablets remaining at this dosing regimen. Interpretation of a standard ancillary label was highly variable. Advanced age, less formal education, non-English-speaking background and/or male gender were related to lower performance in some of these variables. Consumers indicated they would like more written information (15%) and counselling and other verbal services (23%), particularly, explanation of instruction labels and medicines information sheets, generic substitutions and warning labels.

### Conclusion

This health literacy measure applied comprehension and numeracy skills required of adults receiving prescription medications. While the majority of consumers adequately performed these tasks, some consumers' behaviours and responses were of sufficient concern to propose additional verbal and written information interventions by pharmacy staff.

com-076

### AN INITIATIVE TO IMPROVE THE PROFESSIONAL COMMUNICATION SKILLS OF PHARMACY STUDENTS

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Proficiency in communication skills is assessed in all four years of the BPharm degree at The University of Queensland, Australia.

### Objective

This research aimed to determine the impact of tailored communication training on academic performance and self-evaluated competence, when offered to two cohorts of first-year students.

### Methods

First-year students were invited to participate in workshops by an independent provider for 2h/week during Weeks 1-8 of Semester 2. The workshops, constructively aligned with curriculum, involved self-evaluation and communication exercises based on pharmacy scenarios. School-based mentoring involving oral examination-format role plays supplemented the workshops in Weeks 9-12. Outcome measures included academic performance and self evaluations. Data reported here compare the 2008 and 2009 participants.

### Results

Fifty-four students participated in 2008, and 42 in 2009, representing 24% and 15% of the class, respectively. The majority of participants had been identified using a variety of performance indicators as at risk of academic failure due to communication issues. In 2008, 81% of participants (85% in 2009) spoke either Chinese or Korean at home. Workshop attendance was high; 75% attended at least half of the workshops in 2008, and 86% in 2009. Feedback on the program was very positive. Students who attended at least four of the eight workshops achieved higher marks than the poor and non-attendees in communication-related and unrelated assessments: an oral examination, an experiential placement report, and two written examinations. Pre-program performance indicators predicted significantly higher failures than occurred following the intervention.

### Conclusion

Early introduction of this initiative is ideal, and positive academic outcomes have been demonstrated. Because of the emphasis on oral assessment through the BPharm program, students were receptive to the extra-curricular tailored assistance in communication skills. The protocol for identifying students is suitable for further application. Prospective monitoring of performance through years two to four of the BPharm is underway.

com-077

### THE PROVISION OF PHARMACIST ONLY MEDICINES FROM AUSTRALIAN INTERNET PHARMACIES: STANDARDS AND PRACTICES

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Internet pharmacies have become widely utilised by consumers seeking convenience and anonymity in medicine purchases.

### Objective

Our objective was to explore Internet pharmacy practice in Australia with focus on the provision of Pharmacist Only (S3) Medicines.

### Methods

Stage 1 involved a review of Australian Internet pharmacy websites against a checklist customised from published literature and Standards, covering, from a browsing consumer's perspective, website layout, consumer access to health information, advertising on the website and the sale and supply of medicines. Covert research methods were not applied, as access to pharmacies for observational research was required (Stage 2). In Stage 2, staff members of Brisbane Internet pharmacies consented to the researcher's visit, interview and documentation of their supply practice. Their interviews were recorded, transcribed and thematically analysed. Features of the practices were compared.

### Results

Twenty-six Internet pharmacy websites were identified Australia-wide in January 2009 and reviewed. The majority promoted, through various avenues, security and privacy policies, and the availability of pharmacists' advice for S3 medicines. Online advertisements of S3 medicines were largely aligned with medical conditions. Of the six Brisbane Internet pharmacies, staff of two practices participated in the interview. Despite the practices' contrasting size, both had well demarcated and quality-focused responsibilities for staff, including pharmacists' telephone consultation for S3 medicines and technical procedures for processing S3 orders.

### Conclusion

The website review identified generally high standards, although there was considerable variation in website design. It is recognised that quality control and professional procedures relating to S3 medicines provision and not explicit to browsing consumers may still be implemented pre-purchase. Inability to communicate with the consumer face-to-face was found not to be a barrier to Internet supply; this was supported by both website review and interview data. There is potential for Australian pharmacy bodies to revise practice standards for Internet pharmacy.

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Medicines for fever and cough and cold are the most commonly used over-the-counter medicines. Unfortunately these medicines are often used incorrectly with studies highlighting issues of inappropriate use and dosing errors. Furthermore, these medicines generate a large number of calls to poisons information centres in Australia each year as well as a number of emergency admissions due to incorrect dosing.

### Objective

To profile medication dosing of common over-the-counter medicines in children under the age of five.

### Methods

Parents and day-care workers were recruited from day-care centres in metropolitan Sydney. Caregivers' skills in medicating children were observed. The observations were based on a fever and a cough & cold scenario. Caregivers' actions were recorded, e.g. at what stage they decided to medicate, which medicine and dosing device they chose and the dose they stated and measured.

### Results

Preliminary results in the fever scenario show that 15% give medicine without taking temperature, and 50% give medicine in temperatures less than 38 degrees. Paracetamol is chosen most often (77%). In the cold and flu scenario, paracetamol is used often (61%), despite no fever being present. During all dosing scenarios, 48% (n=44) of caregivers have stated an incorrect dose for the child, and only 64% (n=44) have measured the dose they intended. Thirty-nine percent of caregivers (n=44) have been able to demonstrate both an accurately measured and correct dose of medicine.

### Conclusions

The ability of caregivers to accurately measure and administer doses is vital. The risk of dose error is increased in children's medicines as the doses are often small and inappropriate dosing devices are commonly used. Determining the motivations to use these medicines as well as dosing behaviours is necessary to establish adequate interventions to prevent harm from these medicines and improve the quality use of medicines in children.

com-081

## HOW DO PARENTS AND CARERS MANAGE FEVER AND COUGH IN CHILDREN UNDER FIVE?

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## com-084

**PHARMACY STUDENTS' STIGMA AND ATTITUDES TOWARD PROVIDING PHARMACEUTICAL SERVICES: THE IMPACT OF MENTAL HEALTH CONSUMER EDUCATORS**

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Contact with mental health consumers is known to reduce stigma and improve attitudes among pharmacy students. However it is not known if these changes persist over time and have an impact on pharmacy students' future professional practice as pharmacists.

**Objectives**

To evaluate the impact of a teaching intervention for pharmacy students involving mental health consumer educators, on mental health stigma towards depression and schizophrenia and attitudes towards providing pharmaceutical care for consumers with a mental illness over a 12-month period.

**Methods**

All pharmacy students (n=258) in the third year of a four year pharmacy degree in 2008 were invited to participate. A single group, pre-post-follow up design was used with all students receiving training from mental health consumer educators. A 26 item survey instrument, previously tested for reliability and validity, was used to assess the students' stigma towards severe depression and schizophrenia, and their attitudes towards providing pharmaceutical services to mental health consumers. Three focus groups were conducted to qualitatively evaluate the impact of the teaching intervention. The focus groups were digitally recorded, transcribed verbatim and thematically content analysed.

**Results**

The survey was completed by 225 students at baseline, 230 students post-intervention and 228 students at the 12-month follow up. There were decreases in stigma towards people with both depression and schizophrenia for 6 out of 8 items ( $p < 0.05$ ) and 9 out of 10 items ( $p < 0.01$ ) relating to professional service delivery had significant improvements after the intervention. These improvements were maintained over the 12-month follow-up period. Four themes emerged from the focus groups: knowledge and experience of mental illness, mental health stigma, impacts on

attitudes and self-reported behavior and the role of the pharmacist in mental health care.

**Conclusions**

Consumer-led education for pharmacy students may provide long-term decreases in stigma towards people with schizophrenia and depression and improve attitudes towards providing pharmaceutical services for these patients.

## com-086

**SHORTAGE OF PHARMACISTS IN SOUTH AFRICA: UNDERSTANDING AND ADDRESSING THE ISSUE**

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South Africa is currently experiencing an acute shortage of pharmacists.

**Objective**

A first study aimed to measure and compare motivations for studying pharmacy and career aspirations of pharmacy students at University of the Western Cape (UWC) and Nelson Mandela Metropolitan University (NMMU). A second study aimed to measure the impact of a career DVD on the levels of knowledge of high school students of pharmacy as a profession, and their interest in and intentions of pursuing a pharmacy career.

**Methods**

Questionnaires, measuring reasons for studying pharmacy, place and choice of practice setting after graduation and interest in post-graduate studies, were completed by pharmacy students at the two universities (n1=258, n2=132) in 2008. Ethical approval was received.

In a matched pre- and post-intervention study at 6 high schools in 2009, learners (n=461) responded to demographic variables, knowledge of the scope of practice and opinions on and behavioural intentions towards pharmacy as a career. Post-intervention (watching a career-oriented DVD) the same variables were measured. Ethical approval received.

**Results**

Only 52.3% of students indicated that pharmacy had been their first choice of study; 54.7% expressed the desire to emigrate from South Africa after graduation. 20% of the university students were foreign nationals. Similar results were found between UWC and NMMU.

In the school study, the intervention failed to significantly impact on knowledge and behavioural intentions. However, most learners were interested in receiving further information.

**Conclusion**

Although the university study was limited to only two (out of eight) pharmacy schools, the trends displayed are of concern. The school study identified a potential target for career information. Both studies highlight important implications for the future sustainability of and human resource planning for pharmacy profession in South Africa.

**com-089****PHARMACIST PRESCRIBING IN GREAT BRITAIN: WHY DO QUALIFIED PHARMACISTS NOT PRESCRIBE?**

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Since the introduction in Great Britain of pharmacist prescribing, studies have focused on structures and processes of its implementation. However, data suggest that one in three qualified pharmacist prescribers are currently not prescribing.

**Objective**

To explore why qualified pharmacist prescribers do not prescribe.

**Methods**

Design: Cross sectional questionnaire survey of all registered pharmacist prescribers in GB (n=1653). Respondents who had not prescribed gave open comments on their reasons. The themes emerging from these were categorised using framework analysis.

**Results**

The two main themes and their sub themes are discussed below:

**Procedural factors:** Aspects of clinical governance, such as the lack of defined roles and insufficient resources in terms of inadequate funding and facilities; poor remuneration; and a lack of sustainability of pharmacist prescribing services once commissioned were the main procedural factors impeding prescribing.

Some pharmacist prescribers had to 'invent' prescribing roles for themselves, sometimes confusing patients and other healthcare professionals. Similarly, inadequate facilities and strategies for implementing pharmacists' prescribing at the level of the Trusts and Health Boards often deterred many qualified prescribers from using their skills. For example, there were issues around prescribing quality assurance, such as the audit of prescriptions written by pharmacists and legal restrictions on prescribing of items, such as unlicensed medicines compounded from licensed ingredients.

**Personal factors:** Most qualified pharmacist prescribers who were not using their qualification

cited lack of opportunities, due to their personal circumstances, including: maternity leave; change of job or practice setting; and enrolling in further educational programmes. Moreover, many pharmacist prescribers had extensive managerial duties and responsibilities competing for attention with patient focused clinical duties including prescribing.

**Conclusion**

This study has identified both procedural (external) and personal (internal) factors that may explain why some pharmacists that qualify as prescribers are not able to integrate prescribing into their routine practice.

**com-091****ANALYSIS OF CROSS-CITATIONS PATTERN BETWEEN HOLLAND'S AND ZERMANSKY'S RESEARCH TEAMS ABOUT MEDICATION REVIEW**

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Clinical medication review led by pharmacists was included into the UK Community Pharmacy Contractual Framework in 2005, and it is currently being paid. This service has been widely discussed in scientific literature, presenting supporters and detractors.

**Objective**

To create a cross-citation map between AG Zermansky and R Holland research teams regarding medication review papers.

**Methods**

Two researchers separately conducted a survey in Pubmed, IPA, Web of Science, and Google Scholar retrieving papers authored by AG Zermansky or R Holland. The survey was repeated for all their co-authors. Bibliographic references of all the papers were also analyzed to obtain a more complete pool (basket of cherries). To obtain the cross-citation map, a bibliometric analysis was performed.

**Results**

A total of 27 papers from Zermansky's team about medication review were found, being 15 published before 2005 and 12 in 2005 or later. The first paper about medication review was published in 1996. These papers included 414 references, being 64 (15.4%) to other Zermansky's team papers, and 10 (2.4%) to Holland's team papers. The International Journal of Pharmacy Practice and the British Medical Journal were the most used journals (7 papers each one).

A total of 12 papers from Holland's team about medication review were found, being 1 published before 2005 and 11 in 2005 or later. The first



paper about medication review was published in 2005. These papers included 297 references, being 15 (5.0%) to Zermansky's team papers, and 22 (7.4%) to other Holland's team papers. The British Medical Journal was the most used journal (4 papers).

### Conclusion

The cross-citation map obtained reflects a non standard citing pattern between these two research teams. Year 2005, when the UK Community Pharmacy Contractual Framework came to life, made a difference in Holland's team publication pattern, but not in Zermansky's team publication pattern.

## com-095

### DESIGN, IMPLEMENTATION AND EVALUATION OF A MODEL FOR SERVICE-LEARNING IN PHARMACY (SLIP) AT A TERTIARY HOSPITAL

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A significant challenge in pharmacy education is the application of theory in practice settings. Service-learning is defined as experiential learning in which students engage in structured activities that address community needs.

### Objective

The objective of this study was to design, implement and evaluate a Service-learning in Pharmacy (SLIP) programme for in tertiary hospital pharmacies, aimed at promoting student learning while simultaneously alleviating pharmacy workload.

### Methods

This pre- and post-intervention enquiry was directed to final year pharmacy students (n=16) and pharmacists (n=9) employed at a hospital pharmacy. Qualitative evaluation methods included pre- and post- focus group discussions with students to assess student expectations of SLIP. Covert observation of pharmacists was used to assess views and receptivity toward student activities during the SLIP course. Quantitative evaluation methods included student competency assessments in areas of hospital pharmacy practice (compounding, dispensing and ward pharmacy), and questionnaires which assessed pharmacists' views and receptivity toward SLIP.

### Results

Qualitative: Pre-intervention, students indicated apprehension toward SLIP. Pharmacy managers were anxious about lack of time and space and the additional burden of training students. Post-intervention, students experienced a sense of professionalism and could connect with theoretical knowledge. Pharmacists' receptivity to SLIP

increased once student contribution to service delivery became evident.

Quantitative: Student competency in areas of hospital pharmacy practice increased as a result of their participation in the SLIP model. Students also made a valuable contribution to service delivery. This was quantified as the total number of services in compounding (n= 807), dispensing (n=2090) and clinic/ward services (n= 37).

### Conclusion

The SLIP model resulted in improved perceptions and receptivity of pharmacists to service learning initiatives. Students' level of competency increased in hospital pharmacy practice and they contributed to service delivery.

## com-100

### WHAT A DIFFERENCE A HOUSEHOLD MAKES: HOUSEHOLD RELATIONSHIPS AND MEDICINE-TAKING

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Much research on adherence has an individual and medical focus. People tend to be conceptualised as atomised individuals who comply or fail to comply with directions to take medicines. Failure to take medicines as directed tends to be regarded as deviant. Even research with a patient focus, which takes patient views as central, has tended to focus on individuals in isolation from their families or households. In the study reported here, we take households as our unit of analysis, and explore how interactions between household members affect medicines-taking practices.

### Objective

To explore whether and how relationships within households affect medicine-taking

### Methods

Group discussions, photo elicitation interviews, and medicine-related diaries from twenty households in New Zealand. Data were gathered between April 2009 and March 2010. Ethics approval was obtained from the Ethics Committee of Massey University, New Zealand.

### Results

Interactions around medicines in households included reminding, sharing of medicines, sharing

of routines of taking medicines, monitoring effects and side effects of medicines and adjusting routines around expected effects and side effects. Levels of intervention in other people's medicines taking and the management of others' practices varied greatly: some adults managed and closely monitored the medication-taking of others, such as children or elderly family members, while others explicitly refused to interact around the taking of medicines, arguing that this was an individual responsibility.

### Conclusion

Shifting the focus of research from individuals to households allows us to see how relationships and day to day interactions within households affect medicines-taking. It is important that health professionals are mindful of the role that other household members can play in medicine-taking practices.

## com-101

### COMMUNITY TREATMENT ORDERS FOR INDIVIDUALS WITH A MENTAL ILLNESS: A REVIEW OF OUTCOMES AND DRUG UTILIZATION TRENDS

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In response to the deinstitutionalization of mental healthcare over recent decades, community treatment orders (CTOs) were introduced in some countries to reduce the need for admission to inpatient mental health facilities. A CTO is a legal order which outlines a treatment plan which a person with mental illness must abide by in the community setting. The use of CTOs is controversial and it is unclear whether CTOs lead to benefits in clinical outcomes, social functioning or use of inpatient mental health facilities.

### Objectives

To undertake a review of the literature pertaining to the outcomes and drug utilization trends of individuals with a mental illness receiving CTOs.

### Methods

A review protocol was established and a search of English language articles was conducted using EMBASE and MEDLINE databases. MeSH and keyword search terms included: involuntary treatment, involuntary outpatient commitment, compulsory treatment, compulsory treatment order, community treatment order, community mental health services, drug utilization, psychotropic drugs, antipsychotic agents and

treatment outcomes. Reference lists of retrieved articles were examined to identify additional articles.

### Results

Retrieved articles have been categorized according to study methodology and outcomes assessed, and the evaluation of studies is in its final stages. CTO models vary in different countries. The majority of studies have reported outcomes for individuals with schizophrenia and other psychotic disorders, and focus on evaluating treatment adherence, the rates of hospitalization, and changes in social functioning. Two studies have evaluated the association between antipsychotic formulations and clinical outcomes. One drug utilization study was identified, which found that long-acting injectable antipsychotics are commonly prescribed amongst individuals receiving a CTO.

### Conclusions

Common outcome measures evaluating the effectiveness of CTOs include treatment adherence, hospitalization rates and the impact of social functioning however, findings are often inconsistent. There is limited information available on drug utilization trends for individuals receiving a CTO.

## com-104

### DESCRIBING 'REAL WORLD' ANTIPSYCHOTIC MEDICINE USE IN THE COMMUNITY

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Although beneficial in the management of psychotic and other mental disorders, antipsychotic medicines are also associated with considerable adverse effects and long-term health risks. These risks are heightened with the use of high doses and multiple antipsychotic medicines.

### Objectives

To profile antipsychotic medicine use in the community setting. Specific objectives were to:

- Determine the frequency, types and combinations of antipsychotic medicines being used
- Identify perceptions of key issues regarding medicine use
- Compare the accuracy of self-reported medication regimens with community pharmacy dispensing records

### Methods

This was a descriptive study of consumers attending mental health support group meetings through the Schizophrenia Fellowship of New South Wales, Australia. All attendees who were currently taking an antipsychotic medicine were

invited to participate. Participants completed a self-reported questionnaire providing their demographic details, medical conditions, current medication regimen, any perceived issues regarding their medicines and also adverse effects experienced. Medication lists were compared with a 12-month dispensed medication history obtained from the participants' nominated community pharmacy.

### Results

Sixty-three participants completed the questionnaire. The mean age of participants was 41.5 years and 65% were male. Schizophrenia was the primary indication for the use of an antipsychotic medicine for 47 (75%) participants and 37% were taking multiple antipsychotic medicines. Of the 23 participants taking multiple antipsychotic medicines, 13 (57%) included olanzapine, often with another second-generation antipsychotic (43%). All but one participant reported having experienced an adverse effect. Of the 41 dispensed medication histories obtained, 26 (63%) participants provided incomplete or erroneous information regarding their prescribed medicines.

### Conclusions

Antipsychotic medicine use in the community is potentially sub-optimal and patients often lack awareness of their medication regimen details, highlighting the importance of patient medicine education and regular monitoring of treatment outcomes. This presents an ideal opportunity for pharmacists to increase their involvement in mental healthcare.

54% while problems with prescribed items comprised 44% and only in 2% of prescription was the problem type not recorded. The most frequent categories of prescribed item problems centred around dosing and regimen issues (43%) while possible adverse drug reactions (5.6%) and interactions and allergies (3.5%) were among the least. In almost 14% of cases pharmacists were unable to provide a medicine without further clarifying details such as drug/product/form and in almost 10% of cases a change, an omission or a reintroduction of a prescribed item occurred with a reason being apparent to the pharmacist. Drugs for infections, cardiovascular and central nervous system disorders accounted for over half the problems. Omission of a child's age was the most common problem with drugs for infections whereas dosing and regimen problems were common for cardiovascular drugs. Pharmacists reported that 9.2% of problems were potentially serious from their perspective and they considered that 12.2% were potentially serious from the patient's perspective. Multiple methods were used to resolve most problems, with patients (61%), computerised medication records (57%) and prescriber contacts (39%) the three most frequent. Over 800 of all prescriptions with problems were completely resolved while 58 were partially resolved and 13 remained unresolved.

### Conclusion

Pharmacists deal with a wide range of problems, particularly at first dispensing and the majority of problems if unresolved would have a clinical impact on the patient.

## com-105

### PRESCRIPTION PROBLEMS AND PHARMACIST INTERVENTIONS

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#### Objectives

To determine the types of prescription and medicine-related problems and their impact on pharmacists and patients.

#### Method

A convenience sample of community pharmacists volunteered to record prescription interventions on a piloted data collection form in a region north of Dublin over one week.

#### Results

Nine pharmacies returned information on 905 prescriptions and 1,340 problems. Almost 80% of problems occurred with the first dispensing and problems with the prescription form accounted for

## com-107

### ASSESSING HEALTH LITERACY IN PORTUGUESE ELDERLY USING THE NEWEST VITAL SIGN (NVS)

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#### Objectives

To assess health literacy in a Portuguese sample of elderly living in a Lisbon low income neighborhood; and to associate health literacy with self-reported medication adherence.

#### Methods

A convenience sample of aged using day-care centers in Amadora (Lisbon metropolitan area) was recruited. Individuals with no ability to write or read, individuals not identifying the date or the place they were, and individuals not using any medicine were excluded. To assess health literacy, a translated version of the Newest Vital Sign (NVS) was used. To assess their self-reported medication adherence the Medida de Adesão aos Tratamentos (MAT) [a Portuguese pre-validated instrument] was used.

## Results

201 elderly were recruited. 39 (19.4%) were excluded due to lacking the ability to read and write and 59 (29.4%) were excluded due to not being able of identifying the current date and/or place. One (0.5%) was excluded by not being using any medicine. The 102 included in the study presented an average age of 73.1 (SD=8.0) and 71.6% were females. Only one individual (1.0%) was able of correctly responding the six questions of the NVS; one (1.0%) responded four; three (2.9%) responded three questions; nine (8.8%) responded two questions; 45 (44.1%) responded one; and 43 (42.2%) did not respond any question correctly.

Mean score to the seven questions at the MAT resulted 36.1 (SD=4.7), what represents 86.0% of the maximum possible score (6x7=42). No association was found between self-reported adherence (MAT) and health literacy (NVS) (Kruskal-Wallis  $p=0.546$ ).

## Conclusions

Although in a small sample, we could identify very low health literacy in low income elderly in Portugal. No association between health literacy and self-reported adherence was found. The use of the NVS as a health literacy assessment instrument has to be reconsidered, as Portuguese population is not familiar with 'Nutrition Facts' labeling.

### com-108

#### INVESTIGATION OF COMMON PROBLEMATIC STEPS IN INHALER TECHNIQUE FOR PHARMACISTS AND ASTHMA PATIENTS: AUSTRALIA VS. JORDAN

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#### Objectives

To compare the most problematic steps for two inhaler devices, Turbuhaler (TH) and Accuhaler (ACC), for pharmacists and patients coming from two distinctly different backgrounds, Australia and Jordan.

#### Methods

This study took the form of a comparative, retrospective vs. prospective study. Assessments in 2004 (Australia) and 2009 (Jordan). Ethics approval was obtained from the University of Sydney Human Ethics Committee and the Jordanian Ministry of Health Ethics Committee. Community pharmacists were recruited (Australia  $n=31$ ; Jordan  $n=42$ ) and assessed on their ability to correctly perform each of the steps in the TH and ACC checklists. People with asthma using TH

or ACC were recruited (Australia  $n=42$  and  $n=53$ ; Jordan  $n=40$  and  $n=51$ , respectively) and assessed on their inhaler technique utilising the same inhaler checklists.

## Results

For ACC, although Australian pharmacists demonstrated significantly better technique than Jordan counterparts for steps 3 (exhaling to residual volume) and 4 (exhaling away from the device), percentages of correct technique were low for both groups (16% vs 0%,  $p=0.007$  and 20% vs. 0%,  $p=0.008$ , Chi square test, for steps 3 and 4, respectively).

For TH technique, significant differences were found between pharmacists from Australia and Jordan mainly for the second step (holding the device upright while loading, 45% vs. 0% correct,  $p<0.001$ ).

The majority of patients from both Australia and Jordan (91% vs. 100%,  $p<0.05$ ) were not able to correctly demonstrate the steps performed incorrectly by the pharmacists, in both TH and ACC technique.

Majority of pharmacists and patients from both countries were able to perform the other steps correctly.

## Conclusions

Despite the differences in backgrounds, pharmacists from both Australia and Jordan had difficulty with the same steps in demonstrating the use of TH and ACC. In both countries, the errors made by patients were similar to those made by pharmacists.

### com-109

#### INHALER TECHNIQUE TRAINING ON THE RESPIRATORY WARD: FEASIBILITY OF TRAINING HOSPITAL STAFF

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#### Objectives

To evaluate the feasibility and effectiveness of a community-pharmacy tested inhaler technique education session (the Inhaler Technique Module or ITM) on the inhaler technique of hospital pharmacists and respiratory ward nursing staff.

#### Methods

Ethics approval for this pre post assessment study was obtained from the Sydney University Human ethics committee and the Central Sydney Area Health Service Ethics Committee. The study was conducted in a large teaching hospital in Sydney's inner west. Following assessment of inhaler technique (utilising standard inhaler checklists), ITM was delivered to all hospital pharmacists

(n=11) and nurses (n=16) on the respiratory ward. Inhaler technique was once again assessed after completion of the ITM. If participants could not demonstrate correct technique at this time, they were offered individualised inhaler technique education. The impact of completing the ITM on nurse behaviour was evaluated through process evaluation for 2 weeks following education.

### Results

At baseline, 0/11 pharmacists and 0/16 nurses demonstrated correct inhaler technique prior to completion of the ITM. There was a significant improvement in the proportion of pharmacists being able to demonstrate correct inhaler technique following completion of the ITM for the Metered Dose Inhaler (MDI) (6/11 post education,  $p \leq 0.05$ ) and a significant improvement in MDI and TH for nurses (MDI 9/16, TH 10/16 post training  $p \leq 0.05$ ). There was no significant improvement in TH technique for pharmacists.

Process evaluation indicated that following completion to the ITM, 69% of patients on the respiratory ward received inhaler device education by the nurses after the educational intervention, compared to 0% prior to the intervention.

### Conclusion

While delivering ITM in the hospital setting is partially effect in training hospital staff in the correct use of inhaler devices, training staff on the correct use of inhalers appeared to increase the proportion of patients on the ward receiving inhaler device education.

was conducted for each patient by the researchers (experienced clinical pharmacists) to identify the patients' TRPs based on published literature.

### Results

Demographics: 76% of patients were overweight/obese, 24% were smokers, and 62% drank 2 or more cups of coffee a day. 82% of the patients were diagnosed with hypertension, 44% with coronary artery disease, and 47% with diabetes. Only 26% of hypertensive patients had blood pressure controlled. TRPs prevalence: 31% of patients were found to have unnecessary drug therapy (25% drug without indication, 6% duplication of therapy). 54% had untreated conditions, and 76% had ineffective/incomplete drug therapy. 26% had inappropriate dosage regimen (5% low dose, 14% high doses, 7% wrong timing). 10% were found to have actual adverse drug effects and 4% had potential adverse drug effects. Significant correlation between adherence and ability to read the label on the medication was found ( $p=0.047$ , Chi square test). No significant correlation between income and the presence of untreated conditions were shown ( $p=0.115$ ). 97% of patients visit their community pharmacies at least once a month.

### Conclusion

This study shows that TRPs in Jordanian outpatients with chronic diseases visiting community pharmacies are of concern and signifies the integral role of pharmacists to identify and resolve these TRPs.

## com-110

### IDENTIFICATION OF TREATMENT RELATED PROBLEMS FOR OUTPATIENTS WITH CHRONIC DISEASES THROUGH COMMUNITY PHARMACY: A STUDY FROM JORDAN

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#### Objectives

To evaluate the prevalence and types of treatment related problems (TRPs) for outpatients with chronic diseases visiting the community pharmacy in Jordan.

#### Methods

Ethics approval for this single phased observational study was obtained from the Jordanian Ministry of Health and the study conducted in 2009. 78 patients with chronic conditions (mean age  $58.9 \pm 12.3$ , 53% females) were recruited randomly while visiting their community pharmacies. Data collected included patient's demographics, income, pathology, medical history, medication record, and adherence. A comprehensive medication review

## com-111

### HOME MEDICINES REVIEWS WITH INDIGENOUS AUSTRALIANS – THE HEALTH PROFESSIONALS' PERSPECTIVE.

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Home Medicines Reviews (HMRs) have been found to improve patient health, however Aboriginal and Torres Strait Islander people are a very low user group of the HMR program.

#### Objectives

HMRs may be a useful tool in improving medication concordance and reducing medication misadventure for Aboriginal patients if a more culturally appropriate model of the HMR program was available.

#### Methods

This qualitative research analysed the barriers and enablers to HMR service delivery from the perspective of Aboriginal Medical Service (AMS) staff, which included Aboriginal Health Workers, nurses and General Practitioners (n=30). The AMSs (n=11) which participated in the study

varied in size, location, governance and model of medication service delivery. The semi-structured interviews were recorded, transcribed, de-identified and thematically analysed.

### Results

AMS staff felt that HMRs could be a useful tool to educate and empower patients regarding their medications. For HMRs to be appropriate for Aboriginal patients it is necessary that an Aboriginal Health Worker be present during the interview and the process should be organised by the Aboriginal Medical Service, rather than by the general practitioner or pharmacist. Lack of relationship, lack of trust and patient "shame" often inhibited the pharmacist from conducting home visits and effective reviews.

### Conclusion

The AMS is "the key to the door" and HMRs will only occur for Aboriginal patients where the AMS has developed a strong relationship with a pharmacist and has appointed an Aboriginal Health Worker to facilitate and drive Quality Use of Medicine (QUM) processes. HMRs could assist in improving the health of Indigenous Australians, if pharmacists were to work more closely with Aboriginal Medical Services, develop a greater understanding of Aboriginal culture and assist in the training of specialised QUM Aboriginal Health Workers.

## com-112

### COMPREHENSIVE PROSPECTIVE ASSESSMENT FOR TREATMENT RELATED PROBLEMS IN HOSPITALIZED INTERNAL MEDICINE PATIENTS

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Inappropriate use of drugs may be harmful and could evoke significant morbidity and mortality. The prevalence and nature of treatment related problems (TRPs) have been investigated previously. However, many studies had methodological problems related to their design, retrospective nature, definition of TRPs and to the correct and complete assessment of patients data. On the other hand, we were not able to find any adequate report of TRPs from the developing countries or from Jordan.

### Objectives

The aim of this study was to identify the prevalence and nature of TRPs in hospitalized internal medicine patients in Jordan.

### Methods

402 patients were included and followed up until discharged from hospital. We have utilized a systematic, prospective, bedside, comprehensive clinical assessment approach that allowed us to effectively and accurately identify potential and actual TRPs.

### Results

The average number of the identified TRPs was 9.35. Eighty three percent of the submitted recommendations were accepted by physicians. Almost every patient suffered from multiple TRPs. Efficacy related problems were the most common TRP category followed by safety related problems and indication related problems. Patient related and miscellaneous problems were also very common and suffered by more than 70% of patients.

### Conclusions

We found that TRPs are substantially high in patients hospitalized at the internal medicine department. Most of TRPs identified by pharmacists were clinically significant and thus, if not resolved, can result in significant morbidity. Drug choices, indications, dosage regimen, and patient monitoring should be given the highest priority in internal medicine department.

## com-114

### IMPROVING HEART FAILURE MANAGEMENT FOR ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLE: HEALTH PROFESSIONALS' RESOURCE NEEDS.

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### Objective

Self-management resources have been developed to support heart failure patients however standard resources are unlikely to be suitable for many Aboriginal people. The objective of this study is to identify health professional needs for resources supporting heart failure (HF) management for Aboriginal clients.

### Methods

A purposive sample (n=54) of health professionals working in a range of Aboriginal healthcare settings was recruited. Semi-structured in-depth interviews and focus groups were conducted exploring the impact of health care setting on HF information needs, presentation of the clinical evidence-based information to Indigenous Australians and ensuring cultural and linguistic appropriateness in resource development. Thematic content analysis of field notes was used

to identify emerging themes. Ethics approval from University of Sydney Human research Ethics committee was obtained.

### Results

In-depth interview (n=37) and focus groups (n=2) were conducted nationally. Content analysis identified the following themes. Information needs were similar across all settings. Participants reported the need for a high quality HF resource providing a simple overview of HF management for Aboriginal Australians. Presentation of clinical evidence based messages requires modification to facilitate use by Aboriginal clients. Resources should promote collaboration between patients and health professionals and include minimal simple language and rely on visual imagery for presenting information. While there was support for a brochure style resource interest was also expressed in other formats.

### Conclusion

Existing heart failure resources are unsuitable for many Aboriginal patients. A revised and practical resource is needed for use by health professionals and heart failure patients. The needs analysis provided insight into the requirements for an effective resource. The key messages need to be communicated simply and visually. Self management messages need to be practical for the target audience. The information collected in this study will be used to guide the development of resources tailored to the needs of Aboriginal clients.

2 an exploration of medicines use over time using hospital records, visitor accounts, a field visit and oral sources.

### Results

Prior to the 1960s people had very limited access to 'modern' medicines, instead using various rituals and a few herbal medicines. Khunde Hospital, run by an international non-government organisation, became the main provider of health services and the main source of medicines for the community. Medicines were provided without patient charges, leading many people to think they were no good. As people travelled, they found that elsewhere the same medicines cost a lot. This encouraged increased use of the hospital, although within a continuing plural medical environment. Over forty years, changing patterns in the use of health services have emerged and these are being reflected in changing patterns of medicines use. More medicines now circulate in the community. Chronic disease is increasing and people need to take medicines on a long-term basis. Currently, health staff do not consider adherence as a problem.

### Conclusion

Medicines have had a central role in the introduction and spread of 'modern' medicine in the region. As with use of health services more broadly, multiple factors influence medicines use. An understanding of their complexities over time is important in developing strategies to improve medicines use and contain costs.

## com-115

### CHANGING PATTERNS IN MEDICINES USE IN THE MOUNT EVEREST REGION OF NEPAL

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#### Objective

The contribution of medicines has received inadequate recognition in historical studies about the introduction and spread of 'modern' health care. This paper explores medicines use among the inhabitants of the Mount Everest region of Nepal, where considerable change has occurred since the opening up of the area to Western visitors in the 1950s.

#### Methods

Two related studies have been undertaken:

1 an in-depth historical case study of the main provider of health services for the area, using a range of archival and oral primary sources, as well as participant observation and practice from two years previously spent living at the hospital. The study received ethical approval from the University of Otago;

## com-117

### ASSESSMENT OF THE REALM AND NVS AS SCREENING TOOLS FOR HEALTH LITERACY

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#### Objective

The aim of this project was evaluate the health literacy (HL) of a population attending an Out Patients Department (OPD) in two Cork hospitals.

#### Methods

Ethical approval was granted by the local Research Ethics Committee. Patient demographics were collected. Six additional questions were included relating to patients self-rated reading ability. Patients and/or carers attending the OPD were approached to participate in the study. Verbal consent was taken from participants. The REALM and NVS questionnaires

were then administered. Analysis was conducted using SPSS V 15.

### Results

A total of 606 patients were approached to participate in the study; 499 consented (82.34%). The average REALM score achieved, (possible maximum score of 66), was 61.96 (SD=5.68), while the average NVS score, (possible maximum score of 6), was 3.06 (SD=1.98). Using a score of 59 as the cut-off point for low HL, 98 participants (19.6%) were found to have inadequate HL measured by the REALM. The NVS identified 288 participants (56.51%) as having low HL, using scores of 3 or less as the cut-off point. Patient demographics were collected and compared to prevalence of inadequate HL as measured by REALM and NVS. Statistically significant relationships were established for low health literacy and patient age, age leaving school, level of education and occupation. Gender was not found to be significant.

The sensitivity of NVS relative to REALM was calculated at 87.63%, while the specificity was 49.76%.

### Conclusions

Low HL was shown to be prevalent in the Cork out patient population. REALM and NVS appear to be suitable tools for detecting inadequate health literacy in a clinical setting, with NVS shown to have a high sensitivity relative to REALM. However, this study was limited by sample size, and further data collection is required before REALM and NVS can be validated for use in the Irish setting.

### com-118

#### CHRONIC CHILDHOOD MEDICAL CONDITIONS – THE IMPACT ON PHYSICAL, PSYCHOLOGICAL AND SOCIETAL ATTRIBUTES

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It is widely acknowledged that chronic medical conditions (for example asthma, epilepsy and diabetes) in childhood can restrict certain activities, increase school absence, encourage isolation and have significant lifestyle disruption. However, a review of the literature indicates a scarcity of studies that explore the ongoing physical, psychological and societal impact of childhood chronic medical conditions.

#### Objective

The aim of this study was to explore young adults' recollections of their childhood experiences of asthma, epilepsy or diabetes.

### Method

Semi-structured, recorded interviews were conducted with university students to explore their personal experiences of childhood asthma, epilepsy or diabetes. The transcribed data were thematically analysed. Approval was obtained from the University research ethics committee.

### Results

Sixteen interviews were conducted (asthma n=6; epilepsy n=5; diabetes n=5), the interviewees (7 female, 9 male) ranged from 19 to 30 years (mean 23 years), and were diagnosed at a mean age of 4 years (range 0 to 8 years). Themes common to all conditions included how the medical condition had influenced their career choices, reduced self-esteem and impaired ability to socialise, and the awareness that 'life was made different because of their condition'.

### Conclusion

It is important that healthcare professionals appreciate the ongoing physical, psychological and societal impact that childhood asthma, diabetes or epilepsy can have on adulthood. Optimising treatment to include these factors will require the treatment to take a holistic approach, utilise a multidisciplinary team approach and maximise the involvement of the child in all decisions.

### com-119

#### TOO MUCH FOR SOME, AND NOT ENOUGH FOR OTHERS? PATTERNS OF ANTIBIOTIC USE IN A NEW ZEALAND TOWN

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#### Objective

High and often inappropriate consumption of antibiotics contributes significantly to the growing problem of antibiotic resistance. Infectious diseases are more common amongst indigenous people and people of lower socio-economic status, but little is known about whether antibiotic use is also higher in these groups. Indigenous people in New Zealand (Māori) have a very high rate of acute rheumatic fever and rheumatic heart disease, so prophylactic antibiotic treatment of



sore throat is recommended for Maori aged 3 -45 years.

### Methods

Data on 619,264 dispensings to 38,027 individuals were obtained from all community pharmacies (plus outpatient dispensings from the hospital pharmacy) in Gisborne, New Zealand, for the year October 2005 – September 2006. Patient demographics were obtained from the dispensing data and linking to a central health information register. Ethical approval was given by a Ministry of Health approved ethics committee. All medicines in the Anatomical Therapeutic Chemical (ATC) system category J01 were included.

### Results

51% of the population (22,894 people) received a prescription for one or more antibiotics during the study year and on average inhabitants received 9.16 Defined Daily Doses of antibiotic treatment. Use was higher for females than for males (prevalence ratio: 1.18), and was highest in young people (under 25) and the elderly (75 and over). Use was lowest amongst those living in areas with high levels of social deprivation (high: 48%, mid: 50%, low: 53%), and lower amongst Māori (48%) than non-Māori (55%). Fewer people in rural areas received a prescription than those living in urban areas. This was true for both Māori and non-Māori, but the difference was much bigger for Māori than for non-Māori.

### Conclusion

Prevalence of use in the general population was very high (and higher than reported in other studies). However use was lower in the group (Māori) most likely to need antibiotics.

## com-120

### STUDENTS' OPINIONS ON THE CONTRIBUTION OF THE MANDATORY INTERNSHIP FOR THEIR CLINICAL SKILLS

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To complete pharmacy education, European Union established a mandatory internship period of six months duration. In Portugal, this internship is usually divided in two months in hospital pharmacy and four months in community pharmacy.

### Objective

To assess pharmacy students' expectations, before starting (PRE) and students' opinions immediately after completing this period (POST), about the internship's contribution to their education for future clinical activities.

### Methods

Two identical questionnaires (only different in the verbal time) were emailed to all students in the Faculty of Pharmacy Class of 2011 (who were starting their internship), and to all students in the Class of 2010 (who finished their internship period). The questionnaire had 65 items to be answered in a 5-point Likert scale, being the score 1 the worst option. Items included questions about their beliefs of internship contribution for acquiring clinical knowledge and skills for their future practice, but also their thoughts on pharmacists' role, and their views for their own professional future. PRE and POST answers were compared with Kendall tau's coefficients (negative Kendall-tau represent a decrease in the opinions after the internship).

### Results

197 (77.9%) PRE students and 73 (40.6%) POST students answered the questionnaire. 49 items (75.4%) obtained a four or five score at Likert scale by the PRE students, while only 33 (50.8%) by the POST students obtained those scores. 39 (60.0%) items presented statistically differences between PRE and POST scores: only three items had a positive Kendall tau's (improvement in opinions): 'Internship contributed to see myself as a professional worried about medicines', 'My knowledge on pharmaceutical care came from the undergraduate education', and 'Internship contributed to gain competences on using documentation'. Mean negative Kendall-tau's coefficients was -0.259 (range -0.505 to -0.093), 'Internship fulfilled my expectations about pharmaceutical care activities in the community pharmacy period' and 'Internship contributed for gaining competences on rational use of drugs', respectively).

### Conclusions

Pharmacy students' opinions about the contribution of the internship for their future clinical activities decreased after this education period.

## com-122

### PATIENT-CENTRED ILLUSTRATED MEDICINES INFORMATION MATERIALS FOR LOW-LITERATE HIV/AIDS PATIENTS

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A basic requirement informing medicine-taking behavior is adequate knowledge. Barriers to communicating medicine-related information to develop an adequate knowledge base, including literacy, language and culture, present challenges to pharmacist-patient communication.

**Objective**

The objectives of this study were to develop simple, illustrated, easily understood information materials for common antiretroviral regimens used in South African patients attending public health facilities, and to investigate the influence of these materials on patient knowledge of HIV/AIDS and antiretrovirals.

**Methods**

Medicine labels and information leaflets containing illustrations were developed. HIV/AIDS patients taking antiretrovirals who were older than 18 years, with less than a grade 10 education were recruited from two local clinics. They were randomly allocated to either a control (standard care) or an experimental (standard care plus illustrated labels and leaflet) group. Interviews were conducted at baseline and 1 month at which demographic data were collected, knowledge of HIV/AIDS and antiretrovirals was assessed, and acceptability of the information materials was determined. Data were collected between September and December 2009. The influence of age, gender and education on knowledge was evaluated. Data were analysed using chi-squared tests and ANOVA at a 5% level of significance. Ethical approval was obtained from all institutions involved.

**Results**

Results from the experimental group were higher for all three knowledge categories: (1) information pertaining to use of antiretrovirals – control (62%) versus experimental (89%); (2) side effect information - control (58%) versus experimental (88%); (3) general HIV/AIDS information – control (89%) versus experimental (96%). Patient age of greater than 50 years and education levels of less than three years were associated with significantly lower knowledge.

**Conclusions**

Patients are being inadequately counselled about side effects, but have a good basic knowledge of the disease and selected aspects of antiretroviral use. The illustrated labels and leaflets significantly influenced knowledge acquisition and were enthusiastically received.

com-123

**GENDER GAP IN PHARMACY SCHOOLS IN JAPAN**

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**Objective**

According to The Global Gender Gap Report 2009 comparing 134 countries, Japan ranks 101st overall. It ranks 84th for educational attainment, and 110th for political empowerment. In 44 designated high-income countries, Japan ranks

37th. Although Japan is regarded as a developed country, the gender gap is still very large. This paper presents the results of an analysis of staff demographic characteristics (gender, academic position, school characteristics) of schools of pharmacy in Japan.

**Methods**

The Japanese Council on Pharmaceutical Education publishes data on pharmacy education annually, including the demographics of faculty members in the 74 schools of pharmacy (17 publicly funded, 57 private). The 2009 report was analysed to determine the characteristics of academic staff in relation to gender.

**Results**

The total number of faculty members was 4513 (Male 3580, Female 933) in 74 schools. In all schools, the ratio of Female to Male for each academic rank was Professor 0.09, Associate Professor 0.17, Lecturer 0.34, Assistant Professor 0.39, Research/Teaching Assistant 1.49. The trends were similar in private and public schools, except the gender gap was greater at senior levels in public schools, and females predominated at lower levels in private schools.

**Conclusion**

Males predominate in the majority of categories of academic staff, especially at the senior levels. This is particularly marked at the Professor level and in the public schools. The only exception to this trend is at the junior staff levels, more so in the private schools. Despite the fact that the majority of Japanese pharmacy students are female, there is still a very strong gender gap amongst academic staff.

com-125

**LESSONS LEARNED FROM IMPLEMENTATION OF AN ASTHMA MANAGEMENT SERVICE IN COMMUNITY PHARMACY**

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The Pharmacy Asthma Management Service (PAMS) is an evidence-based service involving 96 pharmacies in four states in Australia: NSW, ACT, VIC and QLD.

**Objective**

To determine the barriers and facilitators to uptake of an in-pharmacy asthma management service.

**Methods**

25 PAMS-trained pharmacists, 8 general practitioners (GPs) and 21 participants in PAMS were interviewed in focus groups or individually via telephone, or in person during June-November 2009 for qualitative analysis. Pharmacists were from urban and rural sites, and had experience with the PAMS ranging from commencement of the service delivery to completion of the six-month service period (allowing reflection on service delivery). The interview guides were tailored for pharmacists, GPs and patients. Each focus group/interview lasted 20-60 minutes and was recorded. The verbatim transcripts were thematically analysed, with consensus achieved by three investigators on interpretation of the results.

**Results**

The success of service delivery was related to how seriously the pharmacist/pharmacy owner had taken up the challenge of professional services. Those who recruited patients successfully believed that professional services were vital to the success of pharmacy, and thus had instituted changes to make them work. GPs were largely unaware of PAMS, despite targeted publicity. Patients were very supportive of the service, and reported substantive benefits in terms of their asthma control, awareness and self-management. Despite the positive experience with implementation of PAMS, two areas for consideration were identified: how to recruit patients successfully, and forging communication channels with GPs.

**Conclusions**

The feedback from pharmacists and patients was positive. Service delivery could be facilitated with more formal training in recruitment and a formalised process for communication with GPs.

gyms in one UK city. Consent from each gym owner and each participant was obtained.

**Results**

Nine interviews were conducted with users of three gyms. Responders' ages were 20-54 years and indicated a variety of education attainment levels, ethnic backgrounds and occupations. Respondents spent £38-£250 per month on supplements. They obtained information on such supplements from gym instructors, supplement suppliers, specialist magazines/books, friends, fellow gym users/sportsmen and the internet. For example, one gym owner stated "Internet research (Wikipedia), books, bodybuilding magazines". Reasons for supplement use varied, but included "[If I] don't take 'em then can't achieve look-presence-physique.", "Maintain/increase weight, lose weight, help you get through a workout" and "Grow quicker, make you workout harder, achieve results quicker". When asked if they used community pharmacies as a source of advice the responses varied, for example, "No don't make me laugh I know all I need to know" and "No never occurred to me, may consider it now" to "Yes, asked about supplements for energy and stop tiredness". Typically respondents thought that community pharmacists' knowledge was insufficient "[They know] nothing about bodybuilding supplements, they just know how to keep fit and healthy; they will tell me to stop taking supplements and stop bodybuilding" whereas others thought they would have some knowledge "Would/should know the impact on the body, not full knowledge of supplements/brand names".

**Conclusion**

This exploratory study has identified a number of reasons why gym users use legally available sports supplements, although most gym users did not see a role for community pharmacy.

com-129

### MALE GYM USERS' USE OF LAWFUL SPORTS SUPPLEMENTS AND THEIR VIEWS OF COMMUNITY PHARMACY: AN EXPLORATORY QUALITATIVE STUDY

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**Objective**

The objectives of this study were to determine the reasons male gym users took lawful sports supplements and what role, if any, community pharmacists may have relating to such supplements.

**Methods**

Following university ethics committee approval, semi-structured interviews were undertaken with male users of three purposively-selected private

com-130

### IT DOESN'T ADD UP. VARIATION IN PHARMACEUTICAL CALCULATIONS PASS MARKS AT UK SCHOOLS OF PHARMACY

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Following a four year undergraduate MPharm degree, graduates in the UK complete a 12month period of professional training. Towards the end of this training they must pass a registration examination that contains a pharmaceutical calculations section which must be passed independently at 70%. The appropriateness of this pass mark is a matter of debate.

**Objective**

This study aimed to determine the thresholds employed by Schools Pharmacy (SoPs) for

pharmaceutical calculations assessments within the undergraduate degree programmes.

### Methods

University ethics approval was obtained. A questionnaire was developed following semi-structured interviews with 18 staff at UK SoPs. In 2008, staff responsible for elements of pharmaceutical calculations teaching at 21 UK SoPs were sent the questionnaire by post and e-mail. Responses were anonymised and data were analysed using SPSS version 15.0. Final year MPharm students (n=108) at one SoP (where pass mark=70%) were also surveyed in 2008 to establish their views on the most appropriate pass mark for a final year pharmaceutical calculations assessment.

### Results

Questionnaires were returned from 19/21 SoPs (90% response). Pharmaceutical calculations pass marks from each SoP (or if there was more than one pass mark for different assessments at a SoP, the highest pass mark) were 40% (n=3), 50% (n=2), 60% (n=2), 70% (n=8), 80 (n=1), 90 (n=1) and 100% (n=1). One SoP did not state. All 108 students responded (100%). Of the 105 students who answered the question, 100 (95%) stated the pass mark for final year pharmaceutical calculations should be at least 70%.

### Conclusion

There was great variation in the pass marks between different SoPs but it is not known whether there are any differences in the numeracy competence of graduates or potential patient safety issues. The most appropriate pass mark for calculations assessments, identified by undergraduate students from one SoP, was greater than that used by some UK SoPs.

## com-135

### FACTORS ASSOCIATED WITH MEDICATION EXPENDITURE IN AN ACUTE PSYCHIATRIC HOSPITALIZATION SERVICE

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In order to establish efficient rational use of drug policies, an in-depth analysis of factors associated to expenditure should be previously performed.

### Objective

To assess covariates associated with medicines expenditure in an acute psychiatry hospitalization service.

### Methods

Patients admitted from 1st Jan 2008 to 30th-Jun-2008 to the Acute Psychiatric hospitalization service at Hospital Nicolas Peña (CHUVI), Vigo-Spain were included in the study. Nursing medication administration records of those patients were analyzed to collect all the medication used by those patients. Medication expenditure was calculated using the retail price of the doses actually administered. Diagnoses were gathered from patient records. Two multiple linear regressions were performed: one using diagnoses (dummy variable for each diagnose) and the other using the number of different medicines in "N" therapeutic classes.

### Results

During the study period, 295 there were 295 admissions corresponding to 248 different patients, amounting for 4,771 hospitalization days. Total drug expenditure was 55.326 Euros, corresponding 48,448 (87.6%) to drug in the "N" therapeutic class. Average total cost/day was 12.2 Euros (SD=18.2) and "N" class cost/day was 10.5 Euros (SD=15.8).

Diagnoses linear regression (R-square=0.124) could only identify diagnose of "schizophrenia" as significantly associated with class "N" expenditure (beta=12.443; p<0.001).

Therapeutic classes linear regression (R-square=0.146) identified the N05AX: Other antipsychotics (due to risperidone) (beta=+7.305; p<0.001) and the N06: Psychoanaleptics (beta= -1.503; p=0.048) significantly associated with class "N" expenditure, while N05AH: Diazepines, oxazepines, thiazepines and oxepines (due to olanzapine) remained close to significance (beta=+1.576; p=0.070).

### Conclusions

We could find some predictors for medication expenditure in an acute psychiatric hospital service: diagnose of schizophrenia, use of N05AX (Other antipsychotics). These results should be taken into consideration for future expenditure rationalization policies.

## com-137

### THE INFLUENCE OF PHARMACISTS' ANXIETY ON THE PERCEPTION TO PATIENTS IN A COMMUNITY PHARMACY: A PILOT PROJECT

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### Objective

To explore the anxiety level of pharmacists employed in a community pharmacy and the

correlation between their anxiety and perception of their own work with patients.

#### Methods

In total, 79 community pharmacists participated into the project. Two instruments were used: Burns standardized anxiety inventory and the scale of general attitudes and beliefs on pharmacists own work with patients, developed for the purpose of the survey. The project was conducted between 1st of January and 1st of March 2010.

#### Results

About half of the pharmacists (51%) were extremely anxious, while the one third (34%) showed a slight anxiety. There is a slight negative correlation ( $r=-0,223$ ,  $p<0,05$ ) between the dimensions of criticism by patients and score on the scale of anxiety. This may be indicated by moderate but significant correlation between the anxiety of pharmacist and a tendency to believe they do not receive criticism by patients. The results also showed a mild negative correlation between anxiety and being into conflict situations with patients ( $r=-0,262$ ,  $p<0.05$ ). Pharmacists with a higher anxiety perceive that their patients waste their precious time. The regression analysis shows that the level of anxiety is significantly determined by the perception of critics, considering that they do not receive critics from their patients (-2.074), and by their time waste in working with patients (2.213). R Square is 0.42, which means that the analysis explains 42% of variance.

#### Conclusion

The results indicate the pharmacists' anxiety is significantly correlated with the perception of their own professionalism (being out of conflict situations, and without critics from patients). It is also determined by their tiredness. More anxious pharmacists are probably in the later stages of "burn out" compared to others, perceiving more than others the loss of precious time while working with patients.

com-138

#### LIVING UP TO EXPECTATIONS: CONSUMERS' OPINIONS ABOUT WRITTEN MEDICINE INFORMATION

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Written medicine information (WMI) in conjunction with verbal counselling has proven to have a positive impact on consumers and may aid in increasing knowledge, satisfaction and adherence to therapy. The literature reveals however, that consumers do not value the current WMI available. Deficiencies in content and layout may contribute to this.

#### Objective

To identify consumers' written medicine information needs and expectations.

#### Methods

Focus group discussions (n=8) were conducted with consumers (n=62) in Sydney metropolitan and rural New South Wales. Focus groups were approximately one hour in duration, and covered the following broad themes: opinions about WMI; consumers' needs and expectations of medicine information; and barriers and facilitators for CMI provision and use. All discussions were audio-recorded, transcribed verbatim and thematically content analysed.

#### Results

Overall, consumers wanted WMI that was clear, concise and patient-centred. Opinions varied with regard to the depth and quantity of information, with a greater preference towards summarised, single page formats that could be easily scanned and read. Consumers found other features of WMI appealing: two columns, side effects tables with corresponding actions to be taken if the side effect occurred, telephone contact numbers and website addresses for further information. Consumers wanted side effect numerical descriptors as opposed to verbal descriptors in order to assess the likelihood of a side effect occurring, and wanted side effect information at the beginning of the WMI. There was an emphasis on wanting information about the benefits of taking the medicine in order to balance the risk information within the WMI. Not all consumers wanted to receive WMI every time they collected a prescription medicine; some did not want to receive a WMI at all. Many consumers trusted their healthcare professional, and did not believe they needed any further WMI.

#### Conclusion

Consumers have highlighted specific information that is needed in their written medicine information to optimise CMI use, and in order for them to adequately assess the potential risks and benefits associated with taking their medicine.

com-145

#### FACTORS AFFECTING THE QUALITY OF THE PHARMACIST-PATIENT RELATIONSHIP

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#### Objective

To identify and describe communication factors predicting the quality of the pharmacist-patient relationship.

### Methods

From January 9-14, 2010, we conducted a cross-sectional study involving a convenience sample of 417 consumers recruited from an internet panel self-identified as having a chronic illness and interested in participating in online surveys. Respondents completed a 3-part survey with 45 close-ended and 4 open-ended questions. Respondents were provided an incentive to participate. The present analysis is based on 261 consumers indicating they had filled at least one prescription in the past 90 days, took one or more medications for a chronic illness, and used only a chain or independent community pharmacy. Data was entered into SPSS 18.0 and analyzed using descriptive, bivariate, and multivariate statistics. University IRB approval was obtained.

### Results

Most respondents were middle-age Caucasian females with some college or greater education level taking an average of 4.70 medications and utilized chain pharmacies. After controlling for predictors of the pharmacist-patient relationship, significant communication factors of a positive pharmacist-patient relationship were: being male, the longer the patient knew the pharmacist, the greater the frequency of pharmacist or patient initiation of contact with one another, the greater the frequency of pharmacist asking questions or providing advice, if the pharmacist knew the patient by name, and the more often pharmacists talk about topics outside of healthcare.

### Conclusions

This is the first known US study exploring communication factors affecting the community pharmacist-patient relationship. It is unclear whether the significant communication variables led to or were a result of an established pharmacist-patient relationship. More research with larger and more diverse samples and prospective designs are needed to clarify and confirm findings. Evidence from this pilot suggests multiple pharmacist-patient communication variables are significantly associated with how patients perceive their relationship with their community pharmacists.

com-146

### BETTER USE OF MEDICINES: USING CLINICAL PHARMACY FOR EMPOWERMENT OF NURSING HOMES IMPLEMENTING SAFE MEDICATION

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### Objective

To develop and test a model to use clinical pharmacy at nursing homes, with the aim of supporting nursing homes in providing quality

medication management and safe medication for nursing home residents.

### Methods

The model for empowerment was developed in four Danish nursing homes in two municipalities (January 2008 - June 2009). The elements were:

1. A series of courses of front staff (to assure competence in safe medication)
2. An observation and documentation tool aiming at increasing staff competence regarding residents' drug use
3. A model for collaboration with local community pharmacists around medication review of the individual citizen in dialog with the nursing home staff
4. A model for a quality-assured review of the nursing homes' routines regarding documentation of medication use.

The model was developed in an action research cycle with a formative evaluation. Observed errors, drug-related problems and interventions were followed by community pharmacists' and nursing homes' continuously registering the interventions. The self efficacy and knowledge at staff level were evaluated at start and end by a quantitative questionnaire. Qualitative methods were used on the nursing staff helping to develop the model.

The overall evaluation uses Realistic Evaluation to analyse the model.

### Results

The results of the tests showed high satisfaction among nursing staff (score 4, x) with the course and a limited increase of knowledge (67.3 to 69.0%) of the used knowledge score. A significant improvement of self efficacy was seen among the nursing staff, just over 40% were more confident in their own responsibilities in relation to citizens' medication, and self-efficacy scores improved with an average of 32% for all parameters. The staff saw themselves as more competent in relation to their knowledge of medicines and the use and administration of medicines.

In cooperation with community pharmacists, the nursing home staff managed to observe errors and drug-related problems and to develop solutions. Changes in treatments were carried out in collaboration with patients' doctors, but the collaboration model with doctors was not fully implemented.

### Conclusions

It proved possible to use clinical pharmacy for empowerment of nursing homes so that nurses experienced enhanced self efficacy regarding competence to act in relation to safer medication for the residents.

## com-149

**DRUG-RELATED PROBLEMS IN PATIENTS WITH HIV**

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Drug Related Problems (DRP's) are recognized as a significant cause of morbidity, mortality and increased hospital costs. The implementation of pharmacotherapy monitoring is an important process for the prevention and decrease of DRP's.

**Objectives**

This study had as main objective the therapeutic assessment of inpatients infected with human immunodeficiency virus as well as the analysis and classification of potential drug related problems.

**Methods**

A cross sectional study was conducted between Nov. 2008 and Feb. 2009 in a convenience sample of 55 inpatients of a university hospital in Lisbon. The information was gathered by consultation and content analysis of patients' clinical records. The therapeutic assessment was performed using at least two bibliographic references.

DRP's were defined according to the European System of Classification of Drug Related Problems V6 (Pharmaceutical Care Network Europe). The study was approved by the Ethic Committee.

**Results**

Sixty four different DRP's were recorded. The majority of them were potential interactions (26.6%), followed by inappropriate schedule administration (25.0%) and dose or administration frequency superior to what is advocated (18.8%). The majority of DRP's identified corresponded to anti-infective drugs (73.4%). Of these 48.9% were antibacterial.

Of the 55 patients, 43 had at least one DRP (78.2%) with a mean of 3.8 per patient.

Most of DRP's identified occurred before the administration of the drug (prescription) and as such could be avoided (98.1%).

It was not observed an association between the occurrence of DRP's and disease severity.

**Conclusion**

It can be concluded that pharmacotherapy monitoring is an important process that allows optimization of drug therapy through early DRP's detection.

## com-153

**MEASURING CAPACITY IN COMMUNITY PHARMACY USING ORGANISATIONAL FLEXIBILITY**

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The implementation of services requires pharmacies to adapt to a changing environment, requiring them to have the capacity to change. Organisational flexibility (OF) provides a framework to investigate this capacity. OF can be divided into four types: steady-state, operational, structural and strategic flexibility.

**Objective**

The objective of this study was to test the applicability of an existing OF scale to Australian pharmacies.

**Methods**

A survey was used to apply the OF scale, testing 3 underlying factors (operational, structural and strategic flexibility - steady-state was not part of the original scale). The sample was 2006 randomly stratified pharmacies. The scale originally consisted of 28 items. Through a process of consultation with practicing pharmacists and researchers, the scale was reduced to 19 items. Following pre-test and pilot stages, items were modified. The final scale was made up of 20 items (operational: 7, structural: 6 and strategic: 6). A confirmatory factor analysis was conducted to assess validity and reliability.

**Results**

Survey responses were received from a total of 395 (19.7%) pharmacies. The individual one-factor models of operational, structural and strategic flexibility fit the data and suggested that the multiple-factor measurement model should be tested. The measurement model did not yield an interpretable response. Operational flexibility covaried negatively to the other factors (strategic: -.14, structural: -.03), while structural and strategic flexibility had a covariance of 1.03. Despite this, the results highlighting the individual factor fit suggests the constructs have application to pharmacy.

**Conclusion**

The models illustrated the elements of each type of OF pertinent to pharmacy. The individual items within each factor highlighted the types of pharmacies currently in Australia as well as their capacity to foster change and implement services. The scale could be used to identify group of pharmacies that require individualized assistance to build capacity and integrate services.

## com-154

**BUILDING CAPACITY IN AUSTRALIAN COMMUNITY PHARMACIES: AN EDUCATIONAL WORKSHOP**

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Optimal implementation of services has not yet been achieved in Australian pharmacies. Literature suggests pharmacies require more extensive support to integrate services into daily practice.

**Objective**

Therefore, the objective of this research was to identify the needs of pharmacies when implementing services to be used in developing and trialling a support program.

**Methods**

A needs assessment was conducted using a survey distributed to approximately half of the pharmacies in Australia (n=2006). The data from the 395 respondents (19.7% response rate) were analysed using exploratory factor analysis (EFA). The trial support program was developed from the EFA results and consisted of a workshop and an on-site pharmacy visit, with 19 participants. Feedback interviews and questionnaires were administered to evaluate the program.

**Results**

The needs assessment showed three factors were important (42.6% variance): (1) planning and performance, (2) people and processes, and (3) service awareness and infrastructure; and three factors needed improvement (46.9% variance): (1) planning, performance and service awareness, (2) infrastructure, and (3) people and processes. The evaluation indicated that the workshop was positively received with high satisfaction reported. There was evidence of a positive effect on the business planning and operational management. All the pharmacists reported having taken immediate steps to implement changes to their operations. Participants stated that the intervention had offered solutions and knowledge in relation to issues that had previously seemed beyond their capacity as well as professional and business acumen to resolve.

**Conclusion**

The level of change required in pharmacy is complex and required significant support. Building the capacity of pharmacy must address business management to foster sustainable service delivery. To achieve this, existing programs for pharmacies need to be broadened to include the

elements identified in the needs assessment and highlighted from the program.

## com-155

**EVALUATING THE CLINICAL IMPACT OF PHARMACOTHERAPY FOLLOW-UP ON GERIATRIC POLYPHARMACY PATIENTS' HEALTH: A PRE-PILOT**

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Medication review with follow-up (SFT) in Spain is endorsed by the government and pharmacy associations as a valuable service.<sup>1</sup> However, the clinical impact on patients' health has yet to be analysed. A program (conSIGUE) has been developed to train and support pharmacists in SFT and evaluate its impact.

**Objective**

In a pre-pilot study, the objectives were to (1) train pharmacists, (2) provide on-site support and (3) assess the processes used.

**Methods**

Two phases of the pre-pilot were conducted in Granada (n=15) and Murcia (n=18). The participating pharmacists were required to recruit 5 patients (inclusion criteria: over 65 years and 5 or more medicines). The study was approved by the Ethics Committee. Training was designed based on literature in service implementation and the Dader method for SFT.<sup>2-5</sup> On-site support was provided by the researchers and local facilitators. The process was assessed through an analysis of pharmacists' interventions as well as focus group feedback. The training included clinical, methodology, political context, business management and communication with patients and physicians. The facilitators were trained to provide individualized support.

**Results**

SFT was provided to 109 patients. The pharmacists conducted 73 interventions (with 43 of the patients) directly with patients (n=32), physicians (n=33) or both (n=7). Overall, the participants stated their desire to continue providing SFT because of the perceived benefit to the patient and professional satisfaction. The results of the focus groups outlined key areas of



difficulty in the provision of SFT, which were: (1) Understanding the terminology used in SFT and its application, (2) Recruiting patients and (3) Collaboration with physicians.

### Conclusion

Feedback from participating pharmacists has highlighted key areas for future improvement. The facilitators were an essential element in service provision. conSIGUE illustrated that SFT provision results in a variety of interventions by the pharmacist which may improve the health of the patient.

## com-156

### HYPERTENSION TARGETS TO PHARMACEUTICAL INTERVENTION IN PRIMARY HEALTH CARE

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### Objective

To identify pharmaceutical intervention targets to improve blood pressure (BP) control and reduce cardiovascular disease (CVD) risk of hypertensive patients in a primary health care unit.

### Methods

We performed an observational study in primary health care unit of São Mamede de Infesta, Matosinhos, after Ethics Committee approval. Hypertensive patients who had an appointment with their general practitioners (GP) between 11 January and 14 March 2008 were recruited by consecutive sampling. After signing a consent form, 124 patients with essential hypertension, under antihypertensive therapy (tx) for over six months, were interviewed using an original validated questionnaire. Patients were asked to bring all their medicines used in the last 3 months. We assessed patient's anthropometric characteristics, BP levels and other CVD factors, medication adherence and perceived symptoms. Collected data were compared with clinical records.

### Results

Patients are mostly female (65%), mean age of 67 ±9 years, 59% with uncontrolled BP, 32% also have diabetes and 50% have dyslipidemia, body mass index of 30 ±5 kg/m<sup>2</sup>, waist circumference

of 107 ±12 cm in women and 106 ±10 cm in men. Most patients are non-smoking (77%), but the consumption of alcoholic beverages is widespread (21% have excessive alcohol consumption). Healthy lifestyle is not adopted, especially regarding diet and exercise. Tx of 18% of patients is different from the clinical records and, in most cases, drugs intolerance were not reported by GP. Forty-four patients (35%) are nonadherent to tx. All patients reported at least one symptom (P25-75 = 6-13). Symptoms are perceived as drugs side effects by 24% of the patients and 43% associate them to tx. Fifty-nine subjects (48%) did not report symptoms before and only 20% reported them to the pharmacist.

### Conclusion

Targets for pharmaceutical intervention in hypertension management, drug monitoring and health promotion were found.

## com-158

### INTRODUCING AUTOMATIC DRUG DISPENSING IN A BELGIAN NURSING HOME: A QUALITATIVE STUDY.

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Automatic drug dispensing systems (ADS) allow patient-specific, unit-dose packaging of medication. They claim to provide cheaper, more efficient and safer drug management. However, little is known about health care providers' (HCPs) expectations or the perceived problems when introducing ADS in a non-hospital environment.

### Objective

Therefore, we studied HCPs views regarding ADS introduction in a Belgian nursing home.

### Methods

Structured interviews between September and December 2009, before and after the introduction of ADS. Interviewees included dispensing pharmacist, nurses, nursing home management and coordinating physician. Interviews were audio-recorded, verbatim transcribed and qualitatively analyzed using a framework analysis approach.

### Results

Nine interviews before, and 8 after ADS introduction were conducted. Information: in the first round, most nurses mentioned a lack of information on ADS, contrary to the pharmacist, coordinating physician and head nurse. This difference was resolved only after introduction of ADS. Time management: most people expected to spend less time in medication management after introduction of ADS, except the pharmacist. After introduction, HCPs

reported to need extra time for distribution and administration due to the fact that not all medication is distributable by ADS, and hence required a combination of old and new system. Also administrative issues required more time. Medication errors: new errors arose, due to non-familiarity with the new IT system, and problems with the number and labeling of pouches. Also unexpected discontinuation of therapy caused problems. On the other hand, all participants felt more secure about medication management. User-friendliness: the new medication pouches were deemed more hygienic and easier for administration than the old distribution system. The pouches, however, were more space-consuming and thus difficult to manage.

### Conclusion

This analysis shows that health care providers have high expectations on the introduction of ADS, but that new problems can arise that have to be expected and handled appropriately.

### com-159

#### READABILITY TESTING OF PATIENT INFORMATION LEAFLETS IN PRACTICE: COMPLIANCE WITH LEGISLATION AND USE OF EXISTING TEST METHODS

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Recommendations on readability testing of Patient Information Leaflets (PILs) are described in European Commission (EC) as well as national guidelines. However, these recommendations are not obligatory, thus leaving the door open for market authorization holders and service companies to experiment with different readability testing methods.

### Objective

The aim of this study was to investigate to which extent readability testing companies comply with the EC and UK guidelines and with the Sless & Wiseman info design theory on which the recommendations are built.

### Methods

A digital survey consisting of 77 items and investigating current practice in readability testing was presented to the representatives of 45 service companies all over Europe. The results were examined against the criteria as presented in the EC and UK guidelines and the Sless & Wiseman theory.

### Results

Results were obtained from 12 service companies. Generally, we found that all respondents mostly

comply with legislative recommendations, as well as with the Sless & Wiseman principles. However, service companies seem to interpret guidelines in different ways with regard to the number and background of test persons and the number of test rounds. Furthermore, respondents formulated some critical remarks on the existing legislation. The survey also revealed that several service companies also use other testing methods than recommended, such as eye tracking, thinking aloud, focus groups and written surveys.

### Conclusion

The findings of this survey show that service companies are well on their way to meet the criteria of the EC and UK legislations regarding readability testing. It further shows that other testing methods than the face-to-face interview are in place and being used. More in-depth research should assess how these methods function in the field.

### com-161

#### HOW VISUALISING HEALTH ISSUES THROUGH INTERNATIONAL ONLINE COLLABORATION AFFECTS MALARIA EDUCATION IN KENYA

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International online collaboration between pharmacy and graphic design students resulted in the design of health awareness materials for a community in Kenya. Final design outcomes included a collection of educational malaria cards in the form of a game, intended for use in schools.

### Objective

This paper will present the response to the pilot materials by Kenyan schoolchildren and discuss the effectiveness of these materials in raising awareness and facilitating knowledge of malaria.

### Methods

Baseline data was collected from 120 schoolchildren, aged 10-16 years, from three Kenyan schools in early 2010. With approval from the University of Auckland Human Participants Ethics Committee, a pre-tested, structured questionnaire focused on knowledge and attitudes of malaria prevention and treatment, taking into account cultural and traditional practices. A six month post-intervention will compare the knowledge after intervention (malaria game) to knowledge without intervention (control). Semi-structured interviews with scholars and teachers explored current malaria education, traditional beliefs, recognition of symptoms and thoughts on the materials provided.

## Results

Due to rotation of teachers in Kenyan school systems, many children in the pilot school had not played the game at the time of baseline data collection. Preliminary results suggest, however, that there are substantial gaps in malaria knowledge amongst all schoolchildren tested. Fewer girls wore long sleeves and trousers outside at night ( $p=0.05$ ) or had insecticide-treated bed-nets ( $p<0.025$ ), while children living in the rural areas had a better knowledge of where their local health centres were ( $p=0.05$ ). The six month post-intervention study will reveal whether these differences are due to culture, location or education and whether they can successfully be addressed through the malaria card game.

## Conclusion

Ultimately this work demonstrates that through international online collaboration, interactions between diverse groups of people can result in tangible malaria education resources for rural, developing communities.

### com-164

## INCREASING EMPATHY SKILLS IN PHARMACY STUDENTS: A REVIEW

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### Objective

This paper reviews the literature relating to educational interventions intended to increase empathy in pharmacy students. The paper defines clinical empathy, describes the published studies, and discusses the effectiveness of the educational interventions.

### Methods

A literature search of educational interventions used to teach empathy in healthcare was carried out. There was no restriction on time of publication. Only articles published in English were reviewed, and these included both European and American papers. Papers relevant to the pharmacy context were analysed to enable a comparison of educational intervention, study design, measures used, and study results.

### Results

Seven interventions specific to pharmacy practice were identified. A definition of clinical empathy as comprising cognitive, emotive and behavioural elements was common to these papers. The studies described three main types of educational interventions: service learning, role playing, and communication skills training.

All seven studies reported increased levels of empathy, but only three of the studies contained a baseline comparison. All of the studies used self reported measures and none of the studies

contained a control group. Three of the measures used existing validated empathy measures. One study used two types of measures: self reported measures and observer reported measures.

Only one of the seven studies contained evidence of the more long term impact of the intervention on empathy.

## Conclusions

Three educational interventions demonstrate increases in empathy, offering promising evidence that empathy can be developed successfully using education among pharmacy undergraduates. This is supported by evidence from the general healthcare domain.

The evidence also shows that all three components identified as being important to the concept of clinical empathy (cognitive, emotive and behavioural) are being targeted within pharmacy interventions.

### com-165

## BEYOND ETHICAL PASSIVITY: CAN THE VALUES-BASED PRACTICE METHOD INFORM ETHICALLY ROBUST PHARMACY PRACTICE?

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### Objective

This study examined whether a mode of practice initially developed for Mental Health practitioners - Values-based Practice - has utility in the pharmacy practice context, and whether it might inform ethically robust pharmacy practice. Values-based practice (VBP) includes ten principles alongside guidelines for practitioner development.

This abstract addresses two areas of debate:

- The suggestion that pharmacists display limited forms of ethical reasoning ('ethical passivity'), which may be "inimical to healthcare practice and ...detrimental both to the welfare of patients and for pharmacy."
- The call for pharmacy to engage with the wider field of bioethics, and explore theoretical and conceptual interdisciplinary research.<sup>3</sup>

### Methods

The work was informed by a literature review and began with a comparison of the VBP model alongside pharmacy literature and governance documentation. Critical analysis of the similarities and differences between the two bodies of literature was undertaken, and a conceptual analysis of the likely application of VBP to the pharmacy context.

### Results

The ten principles of VBP share some common themes with the Royal Pharmaceutical Society of Great Britain's Code of conduct and Fitness to Practice guidance. Examples include an emphasis

on key practice skills, and on a user-centred service delivery model.

Differences arise from the VBP focus on in-depth user interaction.

### Conclusion

The relevance of VBP to pharmacy may lie in its utility as an educational and developmental tool. This may operate at both individual and institutional level, encouraging reflection on practitioners' own values, on the plurality and diversity of values held by others, and on how these may be respected in practice.

Using the VBP as an educational tool may encourage pharmacists to develop beyond 'ethical passivity', and enhance ethical decision-making skills, which may in turn facilitate ethically robust practice.

### com-175

#### QUALITY MANAGEMENT SYSTEM APPLIED TO CLINICAL PHARMACY ACTIVITIES

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#### Objective

Quality management systems are integrated into corporate culture. ISO 9001 standards normalize collective and repetitive activities, adopting a set of guidelines applied internationally. The Hospital Centre integrates three Hospitals with one pharmacy department (PD). Given the existence of diverse levels of differentiation in resources and operation in the original PDs, it was necessary to standardize procedures in Clinical Pharmacy.

#### Methods

Documents were drawn up and actions were developed to meet the mandatory requirements of ISO 9001 standards.

An annual training plan was defined for each clinical pharmacist. Key processes were defined: selection of medicines, pharmacovigilance, pharmacokinetics, drug information, pharmacotherapy follow-up, and nutritional therapy. Indicators, targets and quality objectives were established for each process.

#### Results

For the selection of medicines, the indicator is the average number of days that pharmacist's evaluation for restricted drugs took. Our measure was 3.8 days (standard <5 days).

Pharmacovigilance activities were centralized in PD, having been notified 22 adverse drug reactions (ADRs). An active pharmacovigilance program was implemented for new drugs included in the hospital setting since November 2009. Until March 2010 we have included 7 drugs, 8 patients

and reported 2 ADRs. All new drugs were included in the program (standard >60%).

The indicator set for clinical pharmacokinetics is the percentage of therapeutic levels obtained, which was 72.9% (standard >70%). To improve our results, we established a plan of action that includes training and discussion of clinical cases.

Between January and February 2010, 156 requests for drug information were recorded. To ensure information's quality, we requested collaboration of Center for Drug Information to assess the agreement of responses.

We are in the implementation phase of pharmacotherapy follow-up and nutritional therapy processes. For pharmacotherapy follow-up, two indicators are defined: the percentage of inpatients/outpatients followed. For nutritional therapy, an audit of all hospitalized patients undergoing parenteral nutrition will be conducted quarterly, for assessment of caloric intake adequacy.

### Conclusions

Indicators allow review and adaptation of clinical pharmacy activities. The standardization and implementation of procedures enables the documentation and improvement of clinical pharmacy activities.

### com-176

#### THE INFLUENCE OF DEMOGRAPHIC CHARACTERISTICS ON OSTEOPOROSIS RISK FACTORS IN ELDERLY WOMEN

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#### Objective

We conducted a cross-section study to identify demographic characteristics which could influence the osteoporosis risk factors in the Serbian female population.

#### Methods

In total, 221 women over 60 years (mean=68.64; SD=5.76) participated in the study. The study was conducted in pharmacy and ambulatory settings between 2006 and 2009. Demographic characteristics and risk factors were recorded through a self-reported questionnaire which had been designed to meet the purpose of the study. The risk factors which we analyzed were: physical exercise, calcium intake, body mass index (BMI), cigarette smoking and alcohol abuse. The relationship between demographic characteristics (number of family members, number of children, household income, education level and daily activities (companionship, going to the cinema and

theater, etc.)) and risk factors was estimated using Spearman's correlation analysis.

### Results

The demographic characteristics significantly associated with physical exercise were: number of family members ( $r=-0.192$ ,  $p<0.05$ ), number of children ( $r=-0.155$ ,  $p<0.05$ ), household income ( $r=0.217$ ,  $p<0.05$ ), education level ( $r=0.163$ ,  $p<0.05$ ) and daily activities ( $r=0.383$ ,  $p<0.001$ ). Education level was in negative correlation with calcium intake ( $r=-0.253$ ,  $p>0.05$ ). There was no statistically significant influence of demographic characteristics on BMI, cigarette smoking and alcohol abuse.

### Conclusion

According to our results, osteoporosis factors are related to the number of family members, number of children, household income, daily activities and education level. These demographic characteristics have important influence on osteoporosis risk factors. Future prospective studies are needed.

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### THE EFFECT OF INTERVENTION BY COMMUNITY PHARMACISTS TO IMPROVE COMPLIANCE AND ADHERENCE OF PATIENTS TAKING DONEPEZIL (ARICEPT®)

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### Objective

The objectives of this study were to clarify issues in medication of patients who take Donepezil and the outcome of intervention by community pharmacists. Our survey aimed at not only patients themselves but their family and care-giver (we call it 'key person' here) since attitudes for medication of key person might influence patients' compliance and adherence of medication.

### Methods

Our survey targeted pharmacists working at over 100 community pharmacies in different areas of Japan. Pharmacists recorded information about patients' profile, key person, medication history, the situation of compliance and adherence, and problems related to medication using Donepezil. Pharmacists also recorded information about key-person's attitude toward medication using Donepezil. Besides, we requested pharmacists to perform prospective study tracing medication records for three months. During study period, pharmacists gave pharmaceutical care such as

individual instruction, counseling and support. We checked patient's compliance and/or adherence and compared the attitude before and after pharmacists' intervention.

### Results

Many key persons didn't know the situation of compliance and adherence of the patient.

Most of problem solving methods done by pharmacists are,

\*The enforcement of individual medication counseling and individual providing of information.

\*Arrangement of a compounding method or device such as one-dose-pack or powdering.

The individual instruction by pharmacists could make effects for improvement of patients' compliance and adherence of medication.

### Conclusions

We concluded that individual intervention of community pharmacist contributed to improve of quality of medication with Donepezil. Also, key person might influence patients' compliance and adherence of medication. Therefore, pharmacist should take care of key persons to improve quality medication using Donepezil

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### NEONATAL PARENTERAL NUTRITION PREPARATION PRACTICES IN PORTUGAL

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Neonatal Parenteral Nutrition (NPN) compounding is a very complex process. Standard operational procedures and professional training assure a better quality of the final product.

### Objective

To identify current NPN preparation practices in Portugal.

### Methods

The 50 national hospitals with Neonatal Care Units (NCU) were contacted to identify those preparing NPN. An email survey was submitted (between July and October 2009) to all the responsible for preparing NPN in Portuguese hospitals.

### Results

NPN is prepared in 30 of the 50 hospitals with NCU. Response was obtained from 22 (73%

response rate). In 60% the NPN is prepared in a class B at rest clean rooms (ISO 14644-1), as recommended in European Union Guidelines to Good Manufacturing Practice Medicinal Products for Human and Veterinary Use, but 30% of the responsible was unaware of its classification. 70% of respondents referred compound NPN in a class II (NSF/ANSI Standard 49-2004) horizontal Laminar Biosafety Cabinet (LBC), but 31% is unaware of its classification; and one respondent stated preparing the NPN without using a LBC and in a uncontrolled air quality room. The addition order of the NPN ingredients is very different between hospitals. One uses Iron sucrose. There isn't a standardized label in 9%. The information most frequently omitted in the label are the calcium:phosphate ratio (100%) and the patients weight (95.5%). The expiration date and conservation/storage conditions are also very different (from 24 to 72 hours) depending on storage temperature. The hydrosoluble mixture is protected from light in 79% and the lipid emulsion in 90%. The physical aspect visual checking of the final product is the only physicochemical quality test performed in Portugal for the final product by 95% to the hydrosoluble mixture and only by 17% of respondents to the lipid emulsion. The microbiological control of the lipid emulsion is performed by 23% of respondents and by 76% to the hydrosoluble mixture.

#### Conclusion

Variation in preparation conditions of NPN in Portugal suggests that developing national specific guidelines for good manufacturing practice of NPN should be considered.

#### com-184

### DEVELOPING A DRUG ADVERTISEMENT LITERACY GUIDELINE FOR CONSUMER

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According to Thai drug law, it is illegal to advertise prescription drug to consumers; however, the law could not protect consumers from various hidden persuasive ways of prescription drugs. Therefore, to reduce health risk from advertisement, a guideline is developed in order to help consumers identify what is factual health knowledge and what is disguised advertisement.

#### Objective

To develop a consumer guideline for drug advertisement literacy.

#### Methods

A first draft of the guideline was developed by review on communication theories and health and media literacy, including risk management to search for key concepts and then verified by meetings with groups of experts. After that it is

introduced to groups of consumers. Each group was asked to assess the same set of drug advertisements with and without the guideline to compare the results and then followed by a focus group discussion of the whole consumer groups in order to make overall comments for guideline improvement.

#### Results

The complete guideline developed consists of three sets of assessment, emotion awareness assessment, verbal and nonverbal communication interpretation and risk-benefit assessment, which each assessment could help consumers be aware of what they feel or "internal stimulants", what they see, hear or touch or "external stimulants" and aware of its health impacts in term of risk and benefit they could gain.

#### Conclusion

A drug advertisement literacy guideline for consumer is necessary more than ever because it not only protects consumers from subtle ways of communication but it also makes internal and external stimulants less influenced as ever and allows consumers to make their own decision on the basis of the real health risk and benefit.

#### com-187

### AN ORIENTATION AND LEARNING SKILLS COURSE FOR FIRST YEAR UNDERGRADUATES

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#### Objective

To provide an innovative course to help first year pharmacy students make the transition from School to University which research suggests is best provided in a context and subject-specific manner. The developers combined their experience to design an interwoven course that was integrated with the other first year modules.

#### Methods

Four components were devised: an orientation to the College, School and Course and student motivation for attending; a learning skills section including administration of a validated tool for assessing learning skills and attitudes, linked exercises in Pharmacy Practice on the role of pharmacists, the institutions of pharmacy and a personal reflection on their profession; and PBL-based on problems to which interdisciplinary knowledge and skills could be applied. Student views also were obtained via a focus group.

#### Results

Integration of the learning skills perspective and the discipline perspective was valuable but took

time to 'fit together'. Students view their profession primarily either as a specific knowledge and qualification associated with a specific job on graduation or as a responsible expert who must reach certain standards and must continuously maintain their education. The learning skills inventory enabled information and exercises to be linked to identified student need; thus students scored lower in the area of self-management, specifically concentration and time management as well as areas of self-directed learning such as self-testing and use of study aids to consolidate learning and improve understanding. Hence these became the focus of the learning skills component. The results of clarifying student expectations and understanding of learning were mixed.

### Conclusion

The Orientation and Learning Skills course for first year undergraduates has provided students the opportunity to develop skills that aid transition, to reflect on assignments and to obtain feedback on learning strategies. The course has evolved and improved since first implemented, utilising student and staff feedback.

## com-188

### CROSS-CULTURAL ADAPTATION AND VALIDATION OF THE "WOMEN'S HEALTH QUESTIONNAIRE" (WHQ) TO PORTUGUESE (EUROPEAN)

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When assessing mood and general health of women, hormonal changes effects and changes associated with age can confound results. To date, there is no feasible and validated instrument in Portuguese (European) to assess subjective reports of emotional and physical well-being of mid-aged women.

### Objectives

The aims of this study were to cross-culturally adapt the Women's Health Questionnaire (WHQ), specific for assessment of climacteric women quality of life, to Portuguese (European) and validate this Portuguese version.

The translated version of WHQ (graciously obtained from MAPI Research Institute) to Portuguese was evaluated by the committee, concerning instrument's semantic, idiomatic, experiential and conceptual equivalences and suggested necessary revisions to achieve acceptable content validity. We used a

multidisciplinary reviewers committee and a pre-test to establish the cross-cultural adaptation of the instrument (following international standard recommendations). The original questionnaire has 36 items assessing 9 domains of physical and emotional experiences of mid-aged women (Likert-4 levels) and is self-administered, anonymous, confidential and voluntary. After reformulation and approval, the questionnaire adapted version was pre-tested in 40 women aged 45-65 years, recruited by convenience selection in one pharmacy (those taking hormone replacement therapy were ineligible). Pre-test responses were analysed for instrument's psychometric properties, namely internal-consistency reliability, test-retest reliability and construct validity.

### Results

The cross-cultural adaptation resulted in the European Portuguese version called Questionário sobre a Saúde da Mulher (QSM). Pre-test analysis showed a good internal consistency for the cross-cultural adaptation ( $\alpha$ -Cronbach=0.917), without the exclusion of any item and a factorial structure with 9 domains that explained 95.4% of total variance.

### Conclusion

Results showed that QSM has a balanced structure, similar to the original version and revealed good metric properties, justifying its future use in research or clinic environments. The QSM is currently being submitted to field test (March and April 2010) in pharmacies chosen by convenience.

## com-192

### DEVELOPMENT OF "STOP FOR GOOD", A SMOKING CESSATION PROGRAMME IN COMMUNITY PHARMACY

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Smoking leads to approximately 7,000 deaths each year in Ireland. Smoking cessation services (SCS) are provided by the health service, but have not reached target levels. The potential of community pharmacy as a setting for these services has not been explored.

### Objective

The objective was to develop an SCS, to achieve the following aims: incorporate guidelines on best practice for SCS; focus on behaviour change; provide appropriate training to all staff; support patients in an individualized way; be delivered in community pharmacies; and generate an evidence base.

**Methods**

The design, the elements (skill development, training, support information, documentation) and content were developed using pre-agreed goals, outcome-linked methods and standards. From this the service was established, piloted, modified and implemented.

**Results**

Training enabled all staff to initiate brief interventions to highlight the benefits of stopping smoking, maximising the numbers of patients who took up the service. Patients were helped by smoking cessation facilitators who had been given more comprehensive training. Individualized support was provided to patients with regular follow up, incorporating CO monitoring, in 50 pharmacies with different patient population profiles and staff complements. In the first 3 months, 4,509 smoking cessation consultations had been conducted and many more brief interventions were made.

**Conclusions**

Smoking cessation interventions which adhered to best practice were easily facilitated within pharmacies through the provision of a structured service involving appropriate training and materials which could be tailored to patients. Evaluation of quit rates will be possible through evaluation of documentation.

com-193

**CHARACTERIZATION OF DRUG INFORMATION REQUESTS ABOUT PHARMACOTHERAPY FOR SPECIFIC PATIENTS CARRIED OUT BY HOSPITAL PHARMACISTS**

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**Objective**

Characterization of Drug Information Requests (IR) about pharmacotherapy for specific patients carried out by the pharmacists and assessment of information results provided.

**Methods**

Retrospective study from 2007 to 2009. Data was collect from our drug information standard form and electronic prescription. From the universe of IR, only those about specific clinical situations were selected (general subjects and bibliography research were excluded).

The variables analyzed were: inquisitor's profession, IR origin and thematic; type of information sources and its availability, therapeutic groups involved (ATC classification) and results of the information provided (5 categories). Those

variables were then transposed into a database, allowing statistical treatment.

**Results**

From a universe of 790 IR, 13,3% were about pharmacotherapy for specific patients with individualized data.

The IR were mainly made by physicians (75,2%) and nursing staff (11,4%). Mostly came from medical specialities (39,0%), surgical (29,5%) and ICU's (15,2%). The IR presented a large thematic variety: 21% dosing/route administration; 19% special populations; 15,2% therapeutic uses/alternative therapies, 15,2% adverse events, 13,3% interactions/compatibility/stability and others. The most present therapeutic groups were: J (41,9%), N (6,7%), P (5,7%), L (4,8%) and C (3,8%).

The main information sources used were Summary of Product Characteristics (93,3%), Micromedex-Drugdex evaluation (79,0%), drug information books (71,4%), Pubmed abstracts (27,6%) and articles (39,0%). Our information sources resolved 80% of the IR.

The information provided resulted in establishment (32,4%), modification (27,6%), and suspension (13,3%) of patient treatment, identification of adverse effects or interactions (21,0%) and 5,7% was not possible to determine.

**Conclusion**

Most of the IR concerns a patient treatment. Nevertheless, only those with specific reference to patient individualised data were accounted (13,3%). The results achieved evidence the foundational role of the hospital pharmacist regarding drug information and its decisive significance for the therapeutic decision making.

com-197

**MEDICATION COUNSELLING ASSESSMENTS: STUDENTS' FAILURES TO SUCCEED**

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At the department of Pharmaceutical Sciences (Utrecht University, the Netherlands) medication counselling is an important topic within the curriculum. Students attend different training sessions in small groups (3x3 hours, one with simulation patients) to develop the acquired level of medication counselling competency. At the assessments, students' medication counselling competency is evaluated while they interact with simulation patients; hereby we focus on both students' communication skills and their medication remarks. Unfortunately, only 50% of all students succeed this assessment at first chance.



**Objective**

To determine the reasons for students' failures to pass the assessment of medication counselling competency at first chance.

**Methods**

Among students who failed to succeed the medication counselling competency exam, a survey (open-ended questions) was held. Questions covered students' explanations for their failures, students' preparation for the exam and students needs for additional education. Students filled in the questionnaire during their waiting time before they entered the assessment room.

**Results**

46 Students (total population of the additional exam, December 2009) answered the questionnaire. To the majority (40 students) this concerned their first re-examination, whereas 6 students had already been re-examined before (up to 6 times). Their most frequently given explanations for their failures to succeed the assessment were their nerves (19 out of 46 students) and their communicative skills (15 times mentioned different skills).

In the preparation for the re-examination the students reported they need more practice (5 students) and have to focus on their communication skills during the assessment (20 students). Students' preferred additional education is training sessions with simulation patients (22 times mentioned).

**Conclusion**

Students' tension to pass the re-examination combined with limited communication skills, might be an important explanation for their failure. Additional training with a simulation patient might improve students' communication skills and help them to reduce their nervous feelings during the exam.

com-198

**WAS A PHARMACY ELECTORATE SWAYED BY THE LANGUAGE OF PESSIMISM?**

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**Objective**

To examine the manner in which pharmacy in England was 'constructed' through language used by candidates standing for election to a new English Pharmacy Board of the Royal Pharmaceutical Society of Great Britain (RPSGB) in 2010, specifically in relation to pessimism about the profession expressed by those who together campaigned (and won) under a 'stop remote supervision' (SRS) banner.

**Methods**

The elections covered 11/2009 to 01/2010. All 'candidate statements' (38) and 'letters from candidates' (29) published in this period were retrieved in 03/2010. The author wanted, especially, to learn about the version of the social world envisaged by the 9 SRS candidates. A social constructionist approach was taken and the author used discourse analysis to examine how language used by the different candidates symbolized and gave meaning to pharmacy. The statements and letters were marked and analyzed by considering and reconsidering the implications of the main representations before specifying dominant themes. Ethical approval was not required.

**Results**

The SRS campaign opposed legislation that would enable the remote supervision of pharmacies based on an argument that such legislation would threaten the profession's future and compromise patient safety. The elections, in fact, proved a resounding success for all 9 SRS candidates. This paper examines, in particular, the manner in which those candidates portrayed the demise of pharmacy in England through their candidate statements (9) and letters (10). Pharmacists were portrayed as powerless victims of a professional leadership body that was unrepresentative, self-serving, ineffective, remote, and passive in relation to its members' needs, painting a negative picture of pharmacy as a basis for change. This was in opposition to the generally positive and forward-looking statements by the non-winners.

**Conclusion**

Pharmacy was portrayed with pessimism and negativity, especially by the 9 winning candidates who had campaigned together to 'stop remote supervision'.

com-202

**THE ROLE OF SOCIAL NETWORK FORMATION, COMPOSITION, AND UTILIZATION IN ADULT PATIENTS WITH DIABETES MANAGEMENT OF ILLNESS UTILIZING THE COMMON SENSE MODEL**

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A focus group study of adult consumers using medication found social networks were used as resources for health information, social support, and emotional support. Consumers desired to be engaged in decision-making and management of their health problems. Social networks are expected to be helpful to patients with diabetes since they must manage their diet, exercise and medication, plus monitor their blood sugar.

**Objective**

(1) To describe the formation and composition of social networks and their use by patients with diabetes; (2) To discuss the use of social networks by patients with diabetes in Leventhal's Common Sense Model (CSM).

**Methods**

A review of the literature from 1960-present was conducted using ISI Web of Knowledge and ProQuest Dissertations & Theses. Two simultaneous search strategies were utilized. Search strategy one (890 articles, 224 theses) used keywords social network and illness. The second strategy (184 articles, 50 theses) used the keywords common sense model, Leventhal's model, illness representation model. All publications were limited to the English language. Both searches were narrowed to diabetes resulting in 29 articles and 8 theses and 14 articles and 3 theses, respectively.

**Results**

Social networks are characteristics by (1) density/complexity; (2) size; (3) symmetry/reciprocity; (4) geographic proximity; (5) homogeneity of network members; and (6) accessibility. Social networks can provide the support to impact psychological and physical well-being. No articles described social network formation or composition in a health context. Linkages between social networks and cognitive illness identity, cognitive and emotional coping strategies, identification and presentation of illness stimuli, and cognitive appraisals of coping strategies and behaviors have been proposed, but yet to be empirically tested.

**Conclusions**

Research to describe the formation and composition of social networks in patient management of diabetes is recommended before the impact of social networks on patient behavior using CSM is evaluated.

**com-206****DEMOGRAPHIC INFLUENCES ON CONSULTATION TIME IN COMMUNITY PHARMACY**

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**Objective**

To explore variation in length of consultations within community pharmacy. Consultation length can be considered a crude indicator of quality of treatment.

**Methods**

771 consultations were discreetly timed in 25 community pharmacies in four different centres

around New Zealand in the second half of 2009. In addition to timing the length of the consultation, observers also recorded gender of clients, as well as an estimate of their age and ethnicity. The project was approved by the New Zealand Multi-regional Health and Disability Ethics Committee.

**Results**

Consultations between pharmacists and patients lasted on average 87 seconds. Age and type of product both significant effects on consultation length. Older patients had longer consultations than younger patients, and dispensing a prescription involved a shorter interaction than an over-the-counter product sale. Interactions involving multiple products or pharmacy-only medicines took the longest. Women had slightly longer consultations than men, but this difference was not significant. Some interesting trends were observed in relation to ethnicity, but due to relative small numbers of some groups, these effects did not reach conventional levels of significance.

**Conclusion**

Differences in interaction length were observed, highlighting some potential inequities in service delivery in New Zealand community pharmacies.

**com-210****CROSS-CULTURALLY ADAPTATION TO BRAZILIAN-PORTUGUESE OF THE INSTRUMENT "ASSESSMENT OF THE COUNSELING PROCESS" IN COMMUNITY PHARMACY**

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**Objectives**

To translate and to cross-culturally adapt the instrument "Assessment of the counseling process" into Brazilian-Portuguese.

**Methods**

The instrument in study was translated, back-translated, corrected and semantic adapted by professional experts (judges), following international recommended methodological procedure. Then, a descriptive cross-sectional study using a sample of 50 students of Pharmacy Degree and cross-cultural adaptation by an expert panel was carried out from September 2009 to December 2009.

**Results**

The translated and adapted instrument consisted of 23 questions, which measured the assessment of the patient counseling in community pharmacy. The translation and back-translation steps were

satisfactory, but we needed to make grammar changes to establish the cross-cultural equivalency between the English and the Portuguese versions of the instrument. With regard to evaluation by professional experts (judges), seven items revealed less than 80% of concordance between experts and it needed to be changed. The test of the Portuguese version of the instrument suggested the necessity to revise five items to make them clearer and more comprehensive. According to the discussion of the expert panel, all items of the instrument were adequate. However, some items considered relevant were added.

### Conclusion

This study demonstrated that the Brazilian version of the instrument of "Assessment of the counseling process" in Community Pharmacy seems to have cross-cultural equivalency with the original English version.

## com-211

### REDUCING SELECTION BIAS IN SYSTEMATIC REVIEWS AS INFORMATION PROVISION FOR PHARMACEUTICAL PRACTICE

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### Objectives

The objective of this study is to present the methodological aspects of interrater agreement in the initial selection of studies for a systematic review with or without meta-analysis.

### Methods

As an example, we used data from the initial phase of the study called "Sources of information used as information provision in community pharmacy: systematic review". The data are the result of a reading carried out by two raters of article abstracts selected judiciously among nine electronic bibliography databases. For each study we posed the four questions: "Does the study involve pharmacists in community pharmacy?" "Is this a study that addresses the sources of information used in community pharmacy?"; "Does the study describe the design methodology used in research?", followed by a decision (inclusion/exclusion) concerning the study.

### Results

The data were analyzed using SPSS v.17 and a validation procedure was followed. The kappa agreement rate was applied to the following aspects: population, approach to information sources, study type, and decision. We identified 1,180 studies. The kappa agreement rates were:

k=0.65 for suitability of the population studied; k=0.60 for approach type; k=0.56 for study type; and k=0.63 for the inclusion/exclusion decision. Although the kappa agreement given the moderate (approach type and describe the description of the methodology) and good (population studied and the inclusion/exclusion decision) agreement between raters, we emphasize the need for the studies to be read initially by at least two raters. The consensus meetings carried out in the presence of disagreement were useful to solve differences of interpretation between raters, provided new understanding and deeper reflection, contributed to reduce the chance of non-inclusion of necessary studies, and thus enhanced control over a possible selection bias.

### Conclusion

The participation of at least two raters in the process of selecting articles and the employment index Cohen's Kappa possible to minimize the selection bias of articles for systematic review.

## com-213

### PHARMACIST INTERVENTION TO IMPROVE POST-DISCHARGE MEDICATION ADHERENCE IN CARDIOVASCULAR DISEASE – PRELIMINARY RESULTS

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### Objectives

To determine whether a pharmacist intervention improves post-discharge medication adherence compared with usual care for patients with cardiovascular disease.

### Methods

Design: Randomized, controlled trial conducted from August to October 2009.

Setting: A private hospital's cardiovascular ward.

Patients: 46 pre-discharge in-patients with cardiovascular disease were randomly assigned to intervention (n = 24) or usual care (22) group.

Intervention: The intervention protocol developed for this study was based on patient-centered verbal instructions and written material about prescribed medications.

Measurement: Medication adherence was assessed with Morisky-Green and Haynes-Sackett self-report measures after 30 days.

IRB approval: This study was approved by the IRB of Universidade Federal de Alagoas.

## Results

Medication adherence was 45,5% and 87,5% in the usual care (4,7 drugs/patient) and intervention groups (4,4 drugs/patient), respectively.

Limitations: The intervention involved 1 pharmacist and a single study site, furthermore, its salutary effect in medication adherence could be dissipated after few months, in which adherence were not assessed.

## Conclusion

Proposed pharmacist intervention for post-discharge patients with cardiovascular diseases probably can improve adherence to prescribed medication, however this outcome requires confirmation in a current larger study.

### com-217

#### THE INFLUENCE OF SOCIO-DEMOGRAPHIC AND LIFESTYLE CHARACTERISTICS ON THE PREVALENCE OF CARDIOVASCULAR DISEASE IN SERBIAN FEMALES

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#### Objective

To identify socio-demographic characteristics (SDC) and lifestyle habits (LSH) associated with cardiovascular disease (CVD) in 40-70 year old Serbian females.

#### Methods

A questionnaire was used to collect data in pharmacy and ambulatory settings within a cross sectional study during year 2006-2009. The following SDC and LSH were studied: age, body mass index (BMI), education, household income, physical activity, watching TV, marital status, and smoker (no/yes). The association between SDC/LSH and the presence of CVD was assessed using chi-square test. Logistic regression was used to assess CVD. Those subjects taking any medication for CVDs were considered as those who had CVD.

#### Results

779 women completed the questionnaire. The mean age was 52.6±7.94; 74.6% women lived with a partner; 70.1% had more than 12 years of education and 63.3% were non-smokers. The prevalence of being overweight (BMI: 25-29.9 kg/m<sup>2</sup>) and obese (BMI≥30 kg/m<sup>2</sup>) were 36.8%, and 19.2%, respectively. The prevalence of CVD in the total study population was 45.3% and it was statistically significantly higher in those age groups

50-59 and 60-70 versus 40-49 year old women (54.4% and 76.6%, respectively, vs. 20.8%, p<0.001). Also, in overweight and obese women, the prevalence of CVD was significantly higher compared to women of normal weight (53.4% and 62.2%, respectively, vs. 30.8%, p<0.001). Marital status [OR 1.77 (1.27-2.47)], education [OR 0.67 (0.49-0.92)], household income [OR 0.61 (0.37-0.99)], smoking status [OR 0.73 (0.54-0.99)], physical activity [OR 0.68 (0.46-0.99)], and time spent watching TV [OR 1.66 (1.24-2.23)], are significant predictors of CVD among Serbian women.

## Conclusion

The prevalence of CVD is highest in 60-70 year old women. Obesity is associated with a higher prevalence of CVD, especially in 40-49 year old women. Among the modifiable risk factors for CVD, marital status and watching TV had the strongest influence on the prevalence of CVD.

### com-218

#### IMPLEMENTATION OF PHARMACEUTICAL SERVICES IN PORTUGAL

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#### Objectives

The study aims to determine the perception of community pharmacists regarding the implementation of Pharmaceutical Services performed in community pharmacies in Portugal. It also aims to assess the different levels on implementation of the services in different areas of the country.

#### Methods

An empirical study was conducted using a survey sent to all pharmacies in Mainland Portugal and Islands. The survey was also published online, in the "Members only" area of the Portuguese Pharmaceutical Society website. Data collection took place between 15 January and 19 March 2010. This research was preceded by a preliminary study to test and validate the survey. 316 surveys were received, 307 of which were considered valid for study purposes. The cases were analyzed using PASW (version 18.0) software.

#### Results

95% of the respondents stated that they were engaged in pharmaceutical services, and only 5% said that they were not.

For pharmaceutical service considered in the study, a specific percentage of the perception of implementation was computed: 47.6% Pharmaceutical Care Programs; 38.4% First Aid;

49.2% Drug Administration; 62.9% Use of Diagnosis and Therapeutic Auxiliary Systems; 84.0% Dispensing Medicines and other Health Products; 72.6% Administration of Vaccines not Included in the NIP (National Immunization Program); 81.8% Health Education, Promotion and Information Campaigns; 68.1% Collaboration in Health Education Programs; 61.9% Pharmacovigilance; 92.2% Valormed, Needle Exchange and other collections; 12.1% Methadone Program; 27.0% In-home support; 87.9% Therapeutic Counseling and Promoting Proper Use of Medicines; 73.6% Interpretation and Evaluation of Prescriptions; 52.1% Therapy Supervision and Monitoring; 11.4% Other.

No significant geographical differences on the perception of implementation were found among the districts of Portugal and of the Autonomous Regions.

### Conclusions

Despite of the high perception of implementation of Pharmaceutical Services in Portugal, the individual analysis of each investigated service shows a low level of implementation. In some services, such as the Methadone Program and in-house support, and mid-level implementation of Pharmaceutical Care and Therapy Supervision and Monitoring Programs. The services with higher levels of implementation in Portugal are Dispensing Medicines and other Health Products, Therapeutic Counseling and Promoting Proper Use of Medicines and Valormed, Needle Exchange and other Collections.

As far as the geographical distribution is concerned, the degree of implementation of the services is much the same in all the districts and Autonomous Regions of Portugal.

### Results

7 keynote speakers were invited, representing 5 different countries.

From 220 abstracts submitted, 176 communications were accepted: 72 as oral communications and 104 as poster presentations, with 15 oral pertaining to the Education day. Communications and workshop were authored by 561 different researchers, from 34 different countries. These affiliations included 106 Universities, 25 hospitals, and 38 other institutions. The conference had a very good number of workshops (19) and for the first time symposiums (2), with 4 for Education day and 15 for the Main conference, with 51 facilitators.

### Conclusion

Regardless the outstanding social program, the 16th Social Pharmacy Workshop promises to be an unique opportunity to strength the social pharmacy global network.

com-221

## 16<sup>TH</sup> INTERNATIONAL SOCIAL PHARMACY WORKSHOP: FACTS AND FIGURES

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16th International Social Pharmacy workshop will take place between 23 and 26 August 2010 in Lisbon, Portugal.

### Objectives

To present data of communications, workshops and speakers participating at the 16-ISPW.

### Methods

Database with communications submitted, workshop proposals and keynote speakers invited to the 16-ISPW was descriptively analyzed.