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# Poster Presentations

**Poster001**

## The advanced pharmacy practice experience at the University of Oslo

**Anne RØV-JOHNSEN, Ingunn BJÖRNSDOTTIR**

**Background**

The Advanced pharmacy practice experience (APPE) in European countries is to a certain extent directed by the EU directive requirement of pharmacy students having a 6 months training in a community or hospital pharmacy. However, a wide variety has been found in how the APPE is structured. Looking outside of the EU, the variation becomes even larger, in terms of duration and placement of the training. FIP has emerged around the assumption that pharmacists worldwide have a certain basis in common. Therefore, a description of the organization of APPE in one country can be a good basis for discussion APPE in general.

**Purpose**

To describe the APPE at the University of Oslo (UiO) and planned changes to the structure and contents in the next 2 years.

**Methods**

The contents of the current and future APPE are described based on the course handbook "Pharmaceutical Apprenticeship", the course descriptions for the existing (FRM4000) and future (FARM3130) course, material in the course's web-based learning platform and planned changes to the evaluation form.

**Results**

At UiO, the APPE is in the 7th semester of the Master program in pharmacy and consists of approximately 21 Weeks in a community or hospital pharmacy, with periods of instruction at the University. Each student submits a mandatory folder consisting of tasks and essays in topics such as prescription evaluation, communication and ethics. Examination consists of a 1 hour multiple-choice, and a 15 minutes oral presentation of prescriptions and other problem-solving tasks.

**Conclusions**

The APPE at UiO is mainly a training period, with evaluation of written tasks. Planned changes include a move to the 6th semester, revision of the course contents and changing the examination form.

**Poster003**

## Daratumumab: multiple myeloma outcomes

**João P. RAPOSO, Carla T. BARROS, Filipe CAETANO**

**Background**

Multiple myeloma (MM) is an incurable malignancy of plasma cell that accounts for 10% of haematological diseases. In Portugal, the incidence is estimated in 514 cases per year. In 2016 daratumumab was approved in EU in monotherapy. Later, it was also investigated the combination of daratumumab with bortezomib or lenalidomide. The addition of daratumumab to bortezomib or lenalidomide demonstrated a significant reduction in the risk of disease progression or death in patients who have at least received one prior therapy.

**Purpose**

This study aims to contribute with real-world data on daratumumab treatment outcomes, which are scarce.

**Methods**

Retrospective cohort chart review study over a 19-month period (July 2016 to January 2018).

**Results**

Thirteen patients with MM were enrolled with a median age of 71 years (range 60-79) and most of them men (53.8%). The prevalent type of MM was IgG (69.2%) and IgA (15.4%). Standard cytogenetic risk was observed in 76.9% of the patients and high risk in 23.1%. The median previous treatment lines were 2 (range 1-4), including Bortezomib (92.3%) and lenalidomide (84.6%). Five patients were treated with daratumumab in monotherapy (38.5%), five (38.5%) daratumumab + lenalidomide and 3 (23.1%) daratumumab + bortezomib). Four (80%) of five patients that were treated with daratumumab in monotherapy have deceased with a median of 50.5 survival days (range 30-102). By the end of the study all patients in combined therapy were alive as well the one that was in monotherapy. Across all groups the most common adverse events of grade ≥35% were: peripheral neuropathy (61.5%), anaemia (46.2%) and equally rhinorrhoea, productive cough and peripheral oedema (38.5%).

**Conclusions**

Our study indicates that there is improved patient's survival treated with the combination therapy as demonstrated in the POLLUX and CASTOR trials. The safety profile is comparable to those of mentioned studies.

**Poster004**

## Evaluation of oral production accuracy of Portuguese brand names of medicines

**Carla PIRES, Susana CORREIA, Márcia COSTA, Afonso M. CAVACO, Marina VIGÁRIO**

**Background**

Incorrect productions of medicine names may cause medication errors. Studies evaluating oral productions of Portuguese brand names are scarce, although medicine agencies recommend that medicine names are pronounceable.

**Purpose**

To evaluate the influence of the phonological and orthographic structure.

**Methods**

Participants: 37 customers of pharmacies (older/less educated: 58.7 ±12.8 years-old; 7.5 ±3.2 years of schooling) and 30 students from a humanities faculty (younger/more educated: 25.9 ±9.3 years-old; 14 ±1 years of schooling) in the Lisbon area, 2014/15. Students were asked to read aloud 12 names (repeated 3 times). Pharmacy customers read the 12 names only once, for time limitations. Names were classified in three groups: 1) names with "y", "k", or "w", letters not belonging to Portuguese native vocabulary (e.g. Propycil®), 2) names not written according to the Portuguese orthographic rules (e.g. Qutenza®), and 3) names complying with Portuguese orthography (e.g. Claritine®). Names were sequentially presented in a screen and audio recorded. A

trained linguist transcribed/coded 1495 outputs. Only adults capable of performing the task were enrolled. Non-parametric Chi-square ($p<0.05$) was applied.

**Results**

Overall, less educated have produced significantly more errors than more educated ones ($X2 = 92.875$, $p<0.001$); 31% vs. 14.4% incorrect productions. Percentage of correct productions in canonical vs. names with letters "y", "k", or "w" vs. non-canonical names: more educated (90.3% vs. 82.6% vs. 75.3%), and less educated participants (64.6% vs. 68.5% vs. 44.3%).

**Conclusions**

Less educated participants performed worst, suggesting that this population might be more vulnerable to medication errors. Brand names not complying with regulations requirements seem to favour production errors. More investigation is needed towards creating linguistic norms to develop/adapt suitable medicine names.

**Poster005**

## Are Portuguese brand names of medicines readable?

**Carla PIRES, Susana CORREIA, Afonso M. CAVACO, Marina VIGÁRIO**

**Background**

Misunderstandings involving medicine names may cause serious medication problems. According to regulations, medicines names must be readable and pronounceable. However, investigation on readability of medicines names is limited.

**Purpose**

To quantify and characterize phonological errors in a reading task of Portuguese medicines brand names.

**Methods**

Undergraduates from a Portuguese faculty were conveniently selected from non-biomedical courses to minimize prior knowledge on names investigated (2014). Overall, 12 names were tested repeated 3 times. Thirty participants, above age 18 and able to perform the task, read aloud names successively displayed on a screen. Productions were audiorecorded. 1081 names were produced and phonetically transcribed by a trained phonetician, who also identified and coded the errors as: substitutions - a segment is replaced by another (clarotine for claritine®); insertion - a segment is added (claritines for claritine®); metathesis - segments interchange positions (cliratine for claritine®); deletion - a segment is deleted (claritin for claritine®); inadequate vowel reduction. Hesitations and/or lengthening were also coded.

**Results**

Of 1081 names transcribed, 83.3% were fully correct, 10.6% contained errors, 5% were produced with hesitations and/or lengthening, and 1.1% were not analyzed due to audio problems. In the names containing errors (n=114), 187 errors were identified: 44.4% had deletion errors, 29.4% had substitution errors, 13.9% had incorrect insertions, 10.7% had metathesis, and 1.6% were produced with incorrect vowel reduction.

**Conclusions**

Brand names of Portuguese medicines are prone to pronunciation errors even for educated users. Adaptation to Portuguese grapho- and phonotactics might be needed, as recommended in national and international regulations. More studies are necessary to investigate the potential impact of the different types of errors in medication errors, and error type in other social groups (e.g. older, less educated subjects; health professionals).

**Poster006**

## Conceptual approaches to the sustainability of healthcare services and their application to pharmacy

**Carmen Crespo-Gonzalez. Victoria Garcia-Cardenas. Shalom I. Benrimoj**

**Background**

Implementation research aims to develop methodologies to incorporate evidence-based innovations into practice. Following implementation, accomplishing sustainability of the innovation is critically essential to ensure the long-term continuity of services. A number of conceptual approaches to the sustainability of evidence-based innovations in healthcare exist. These approaches aim to guide the process, determine factors influencing and form part of the evaluation. However, the sustainability of innovations in pharmacy services is an area yet to be studied. Therefore there is a need for a conceptual framework to underpin the development of sustainable professional pharmacy services.

**Purpose**

To evaluate the conceptual approaches for the sustainability of innovations in healthcare in order to develop a framework specific for professional pharmacy services.

**Methods**

A systematic literature search was undertaken in February 2018 in PubMed, Scopus and Web of Science to identify conceptual approaches/theoretical frameworks for the sustainability of healthcare innovations. All the titles and abstracts were screened and potential articles identified. A table was created for data extraction (type and characteristics of conceptual approach, innovation used, setting, target user).

**Results**

From the 3033 articles screened, 2585 articles were eliminated after title and abstract screening. 448 full-text articles were reviewed providing 68 sustainability conceptual approaches. The proposed framework for pharmacy services includes two major components: the service and the context domains with factors which moderate the sustainability of the pharmacy service (e.g. adaptability, funding, leadership, and training). The context domains include Individuals (e.g. pharmacy staff), Pharmacy, Local setting (e.g. healthcare professional, stakeholder) and System. Continued evaluations of the service components delivery are crucial to prove sustainable service effectiveness.

**Conclusions**

Monitoring the service progress is essential to identify the factors affecting its sustainability, allowing their adaptation to the change in circumstances. The proposed framework will guide pharmacy practice researchers and practitioners to evaluate the sustainability of professional services previously implemented.

**Poster007**

## Oral anticoagulant therapy with warfarin education of hospitalized patients: evaluation of prior knowledge and related variables

**Cristina R. SIMONI, Caroline TORTATO, Vanelise ZÓRTEA, Daniel M. SILVA, Cristina J. DOBLER, Bruno S. ROCHA, Diogo PILGER, Luiza F. FLORES**

**Background**

Oral anticoagulants (OA) are widely used to prevent and treat thromboembolic events, with vitamin K antagonists, such as warfarin. It has been shown in recent studies that patients' understanding of anticoagulant therapy is of fundamental importance for safety and effectiveness.

**Purpose**

The purpose was to quantify the patients with prior knowledge about the use of OA therapy, to verify the association between prior drug use knowledge and the variables gender, age, indication of use and use prior to hospitalization.

**Methods**

A cross-sectional study was carried out in which the profile and prior knowledge about the use of OA of patients admitted to the Hospital de Clínicas de Porto Alegre using warfarin in the period from January 2014 to March 2017.

**Results**

Of the 1635 patients taking warfarin, 50.8% were men, the mean age observed was 59.52, and 51.4% used this medication prior the hospitalization. There was no statistically significant difference in the type and time of counseling performed by the pharmacist in the different genders. Regarding previous knowledge about the therapy, it is possible to infer that men knew more about the frequency/dose of medication (68.6%), time and what to do in case of forgetfulness (45.8%) and (54.4%), with a significant difference for these data ($p < 0.05$).

**Conclusions**

Knowing the prior knowledge profile and its related variables in the performance and pharmaceutical counseling is relevant for the elaboration of education strategies that improve the safety and the quality of life of the patient before the treatment with OA. Studies comparing patient knowledge before and after pharmaceutical counseling are necessary to evaluate the effectiveness of the education performed, and also important for improving orientation strategies.

**Poster009**

## Drug-nutrient interactions in medically-complex older adults: the need for interdisciplinary collaboration

**Katherine L. FORD, Susan J. WHITING, Eric L. LANDRY, Derek J. JORGENSON**

**Background**

The combined use of prescription and non-prescription medications with vitamin and mineral supplements (VMS) poses risk for adverse drug-nutrient interactions. A review of the literature indicated limited data on the extent to which these interactions may be negatively affecting patients and the role that pharmacists should play to mitigate the interactions.

**Purpose**

The purpose of this study was to assess the potential for adverse drug-nutrient interactions in older adults with complex medication use and to determine if there is a need for interventions to ensure the safe combined usage of medications and VMS.

**Methods**

A retrospective chart review was completed on 229 medically-complex patients 50 years of age and older who had new assessments of medications completed between January 2014 and January 19th, 2017 at the University of Saskatchewan Medication Assessment Centre (Canada). Data on medication and VMS use was extracted from the medical records. The potential for drug-nutrient interactions was investigated through four case studies, chosen based on the top drug users.

**Results**

Data indicate that 76.9% (n=176) of patients reported using ≥1 VMS daily. Total product count ranged from 1-45 per day, with a mean 9.8 and median of 9. Each case study indicated risk for nutrient malabsorption from drug-nutrient interactions. Proton Pump Inhibitors were most commonly observed and can cause impairment of 6 nutrients when used long term.

**Conclusions**

Concomitant use of medications and VMS was common, with many potential drug-nutrient interactions noted. The development of practice support tools and education for pharmacists would aid in identifying the riskiest and most common drug-nutrient interactions. This study highlights the need for improved interdisciplinary collaboration between pharmacists and dietitians since VMS use was so common in these medically complex patients.

**Poster010**

## Evaluation of student learning outcomes at an internal medicine pharmacist clinic in Canada

**Eric L. LANDRY, Katherine LYSAK, Derek J. JORGENSON**

**Background**

The creation of a referral-based system of pharmacist specialists could be useful in assisting community and hospital pharmacists to manage highly complex patients. The University of Saskatchewan College of Pharmacy and Nutrition recently opened the Medication Assessment Centre (MAC), which accepts complex general medicine referrals from any health professional and which considers itself an internal medicine pharmacist specialist clinic. The MAC is also used as an experiential learning rotation for students in the undergraduate pharmacy program. This internal medicine pharmacist clinic model has not been previously evaluated.

**Purpose**

To evaluate the impact on learning outcomes of pharmacy students who participate in experiential education rotations at the MAC, which is a referral-based internal medicine pharmacist specialist clinic.

**Methods**

Web-based survey administered to all pharmacy students enrolled in any year of the pharmacy program during the 2016-17 academic year. The 38-item questionnaire included both Likert-scale and free-text questions.

**Results**

Overall response rate 72% (n=250/349). Of the 250 respondents, 82 (33%) had participated at the MAC at least once. A majority of students agreed or strongly agreed that participation at the MAC improved: ability to identify drug therapy problems (68%), interview skills (75%), therapeutic knowledge (84%), and understanding of a pharmacist's role (89%). Many respondents (79%) felt that the MAC provided skills and knowledge not otherwise learned in class (e.g., empathy, compassion, communication, prioritization of patient issues, and critical thinking). In addition, 93% of student volunteers felt confident in their ability to apply the knowledge and skills gained at the MAC.

**Conclusions**

Pharmacy students who participated at the MAC perceived the experience had a positive impact on knowledge and skills. Future studies should assess if this internal medicine pharmacist clinic model has an impact on patient care outcomes and community/hospital pharmacist workflow.

**Poster011**

## Optimizing care for pediatric eczema patients in primary care

**Ellen S. KOSTER, Daphne PHILBERT, Marcel L. BOUVY**

**Background**

Atopic dermatitis (AD) affects 10-20% of the children worldwide. The cornerstone is keeping the skin soft by using emollients and topical corticosteroids are used during exacerbations to reduce inflammation. Several factors leading to poor adherence and resulting in reduced treatment efficacy have been described, e.g. lack of knowledge, steroid phobia, misinformation or by pharmacy staff.

Purpose

Our aim is to improve treatment for children with AD. To achieve this we will (1) implement a newly developed intervention for pharmacy staff to improve knowledge and patient-centered communication and (2) test intervention effectiveness in improving medication use and clinical outcomes in patients.

**Methods**

Based on data collected during the first phase – telephone interviews with 29 parents of a child with AD and 18 pharmacy staff members – an intervention toolbox was developed. The toolbox includes a knowledge test for pharmacy staff, information about eczema and treatment and patient education materials.

**Results**

Results from study phase 1 showed that many parents mentioned fear of steroid adverse effects, with intentional non-adherence as a consequence. Both pharmacists and pharmacy technicians themselves mentioned that technicians often lack knowledge to support patients optimally in correct medication use. Currently, the intervention is implemented in 10 Dutch community pharmacies. First results from the intervention study will be available at time of the conference.

**Conclusions**

Patient counseling is a key aspect for optimizing treatment. Pharmacy staff should have sufficient knowledge on treatment and their own perceptions about prescribed medicines should not influence patient counseling. After completion of the project, we expect more knowledge about the treatment of AD in patients and caregivers. This project will therefore contribute to improving care for young patients. Materials will be made available free of charge afterwards.

**Poster012**

## Comparing the efficacy of intervention strategies to enhance medication adherence: a network meta-analysis

**Elyssa WIECEK, Shalom I. BENRIMOJ, Fernando FERNANDEZ-LLIMOS, Fernanda S. TONIN, Andrea TORRES ROBLES, Victoria GARCIA-CARDENAS**

**Background**

Extensive efforts in the literature have been reported to enhance patients' medication adherence with a wide variety of interventions tested in a diversity of settings, clinical conditions, populations, and adherence measures.

**Purpose**

The objective of this study was to determine the comparative effectiveness of interventions aimed at enhancing medication adherence.

**Methods**

A PubMed search was conducted in November 2017 for meta-analyses analysing adherence interventions. Primary studies from these meta-analyses were identified. Experimental studies that assessed an intervention to improve adherence in adult patients and reported adherence outcomes using any adherence measure were included. Data was extracted for study characteristics, interventions, and adherence outcomes. Interventions were categorized into four groups or combinations: educational, attitudinal, technical, and economic. Network meta-analysis was performed to allow estimates for all possible comparisons of interventions using direct and indirect evidence. Four networks were created based on follow-up time of adherence measurement.

**Results**

Data was obtained from 61 meta-analyses and 438 primary studies with 234 studies being included in the network meta-analyses. Significant improvement of adherence compared to standard care at follow-ups greater than 10 months (n=89) was found for economic combined with technical (odds ratio [OR] 0.03, credible interval [CrI] 0.01-0.14), educational combined with attitudinal and technical (0.44, 0.20-0.98), educational combined with technical (0.56, 0.43-0.73), educational (0.57, 0.43-0.75), technical (0.60, 0.46-0.77), and attitudinal interventions (0.61, 0.41-0.90). Economic combined with technical was most effective compared to all interventions, though it is critical to acknowledge only one study accounted for this strategy with a 60% increase in adherence rates among heroin and crack cocaine users. No compelling evidence distinguished other long-term intervention strategies.

**Conclusions**

Several interventions can improve adherence while economic combined with technical interventions and complex interventions demonstrated superior long-term efficacy. Effective interventions

should be further tested across other populations and settings to determine their full potential.

**Poster013**

## Generating real-world evidence related to pharmacy interventions – is it possible?

**Ema PAULINO, Joana BRITO, Sofia MAXIMIANO, Maria J. MENDES, Ana L. PINTO, Patrícia SOARES, Mariana ROSA**

**Background**

Pharmacy practice research has been described by the King's Fund as "research which attempts to inform and understand pharmacy and the way in which it is practised, in order to support the objectives of pharmacy practice and to ensure that pharmacists' knowledge and skills are used to best effect in solving the problems of the health service and meeting the health needs of the population". However, research has been mostly conducted in time-limited studies that aim to assess a specific service implementation and its determinants and/or outcomes. A group of 400 pharmacies in Portugal has developed a framework to support the implementation and documentation of several pharmacy-based services on an ongoing basis, as a means to generate continued real-world evidence on their impact and persistence.

**Purpose**

To describe the development, inception and roll-out of a service implementation framework that aims to enact pharmacy services in pharmacies.

**Methods**

Descriptive study. Manuals, guides, formularies, and nationally-validated assessment tools were consolidated in a service implementation framework based on the patient pathway, and made available to pharmacies. Data from service and project implementation, as well as individual patient interactions is collected using GoogleForms®. A team of pharmacists provides training and ongoing consultancy to pharmacy team members.

**Results**

Since 2013, 72 posters were presented in national and international conferences either by the pharmacy group or individual pharmacies belonging to the group. Data has been presented grouped by disease areas and/or type of service. Data monitoring over time has shown that documentation of services decreases if pharmacy teams are not stimulated.

**Conclusions**

It is possible to conduct research on an ongoing basis in community pharmacies. Better tools for data collection and assessment need to be developed in order to increase evidence generation efficiency.

**Poster014**

## Pharmacist role stress and strain: a scoping review

**Faith YONG, Victoria GARCIA-CARDENAS, Shalom I. BENRIMOJ**

**Background**

Pharmacists are often a point of care in primary healthcare systems, and governments are increasingly looking to the community pharmacy sector to provide public health functions. The effects of this changing role may have an effect on pharmacist workload, job dissatisfaction and work stress. Role stress causes subjective individual role strain, which are social, psychological and physiological responses to the individual role occupant. Pharmacist role stress has been implicated in poor pharmacist retention, negatively affecting organisational missions and visions and career commitment.

**Purpose**

To identify the factors that affect community pharmacist role stresses and strains.

**Methods**

The following databases were searched: PubMed, Scopus and Web of Science. Inclusion criteria were: English language only, published between 1990 and 2018, community pharmacists, role stress and role strain.

**Results**

The search strategy identified 4768 articles, with 105 items included in the review. Preliminary results produced 45 factors affecting role stress categorised in five major categories: Interpersonal Interactions (11 factors), Social Setting (16 factors), Individual Attributes (15 factors), and Extra-Role (3 factors). The most frequent role stress factors were pharmacist-patient interactions, pharmacy environment and workload. There are 9 factors relating to role strain. The most frequent reported role strain factors were Job Satisfaction/Dissatisfaction and Role Overload.

**Conclusions**

The application of these findings may improve the working conditions and role expectations of pharmacists in modern pharmacies which provide cognitive pharmacy services. The results suggest that the community pharmacy setting is a complex environment that influences pharmacist work behaviour strongly, and interactions with many role partners need to be considered. Pharmacists also have individual attributes that affect their experience of role stress.

**Poster015**

## Mapping pharmacy journals through lexicographic analysis of article titles

**Antonio M. MENDES, Fernanda S. TONIN, Roberto PONTAROLO, Fernando FERNANDEZ-LLIMOS**

**Background**

Pharmacy, as an area of knowledge, encompasses both technological, analytical and care components, which challenge categorizing it as a single Subject Area.

**Purpose**

To map the available pharmacy journals as regards their scope.

**Methods**

Journals publishing in English with titles comprising one pharmacy-related term (i.e., "pharmacy", "pharmacist*", "pharmaceuti*", "pharmacol*", "pharamacotherap*") were identified in four electronic databases (i.e. National Library of Medicine Catalog; PubMed Central Journal list; Scopus CiteScore Metrics; and Journal of Citation Reports. The titles of all articles (published between 2006-2016) were extracted and gathered in a single textual corpus. The following analyses were performed (Iramuteq 0.7 alpha 2):

lexicographic analysis to determine the text segments (ST) and frequency of words; descending hierarchical classification (DHC) to categorize words and journals with similar lexical groups; and factorial correspondence analyses (FCA) to obtain bidimensional graphs.

**Results**

A total of 285 journals were identified. In the lexicographic analysis, 316,089 article titles were analyzed with a satisfactory performance. The DHC generated a dendrogram with six distinct lexical classes. The classes were separated into three main branches: sub-corpus A (classes 2 and 6); sub-corpus B1 (classes 1 and 5); and sub-corpus B2 (classes 3 and 4). The most representative words and journals for each class were: cell, apoptosis, expression ($p<0.0001$) – Class 2; receptor, channel, rat ($p<0.0001$) – Class 6; patient, trial, treatment ($p<0.0001$) – Class 1; pharmacy, pharmacist, care ($p<0.0001$) – Class 5; delivery, formulation, release ($p<0.0001$) – Class 3; and determination, HPLC, chromatography ($p<0.0001$) – Class 4. The two Cartesian planes (words and journals) obtained in the FCA showed a clear separation between sub-corpuses A and B, but without clear distinction between the classes of the same sub-corpus.

**Conclusions**

Through an objective method of textual analysis of articles' titles, we could classify pharmacy journals into three major sub-corpuses with six sub-areas: 2 - Cell Pharmacology; 6 – Molecular Pharmacology; 1 – Clinical Pharmacology; 5 – Pharmacy Practice; 3 - Pharmaceutics; and 4 – Pharmaceutical analysis.

**Poster019**

## Pharmacist-led medication review with follow-up on primary care cardiovascular older adult patients (POLARIS)

**Francisco MARTÍNEZ MARDONES, Antonio AHUMADA, Victoria GARCIA-CARDENAS, Shalom I. BENRIMOJ, Cristian PLAZA-PLAZA**

**Background**

A pilot study of the impact of pharmacist-led medication reviews with follow-up was conducted for three months in 2017 with 66 patients in eight primary care centers, based on the results reported by the conSIGUE study. We found a general trend to improve clinical parameters and reduce the number of medications. A larger study would allow assessing additional outcomes like changes in quality of life and cost-effectiveness of the service.

**Purpose**

To assess the impact of a pharmacist-led medication review with follow-up in primary care in clinical outcomes, health-related quality of life and economic outcomes.

**Methods**

A cluster randomized controlled trial will be held for 12 months in primary care centers of the public health system of Chile. We will include patients older than 65 years and with more than five chronic medications. The intervention arm will receive medication review with follow-up. Control group will receive usual care. Participating pharmacist will be trained in cardiovascular prevention pharmacotherapy in the elderly, interviewing skills and educational methods. A practice change facilitator will assist the pharmacist in any matters regarding the methodology and will assess barriers and facilitators to the implementation of the service. A personalized plan will be developed for every pharmacist. Primary outcomes will be the rate of controlled health problems, changes in health-related quality of life and a cost-utility analysis. Secondary outcomes such as blood pressure, glycated hemoglobin, lipid profile, overall cardiovascular disease risk, number of medications and adherence will be assessed as well.

**Results**

Recruiting of patients finalized with 746 participants in 22 primary care centers, and 295 of them have received at least two interviews.

**Conclusions**

This study will allow assessing the impact of pharmacist-led medication review with follow-up on cardiovascular older patients in Chile.

**Poster020**

## A case study of stakeholder experiences and views of a novel electronic Monitored Dosage System: Biodose Connect

**Funmi AGBESANWA, Simon BISHOP, Matthew J. BOYD**

**Background**

Monitored Dosage Systems (MDS) have been widely utilised to encourage medicines adherence. Electronic MDS (eMDS) have additional features such as audio-visual reminders and real-time monitoring for added support. Little evidence exists on the impact of such devices within distinct patient groups and services. Biodose Connect™ is a novel eMDS providing prompts and remote monitoring; it can also hold both liquid and solid oral dosage forms. The purpose of this study was to explore the views and experiences of stakeholders within an assisted-living setting piloting this novel eMDS, and to identify its impact on them.

**Methods**

Ten semi-structured interviews prior to eMDS implementation and four semi-structured interviews post-implementation were conducted. Interviews were completed with the site manager, team leaders, assistants and the community pharmacist. Non-participant observations were completed with four service users over two days, recording the activities and behaviours of users with the device through field notes. This site provided care-at-home services including medication support for service users of varying needs. Data were audio-recorded, transcribed verbatim and thematically analysed. Observational data was thematically analysed.

**Results**

Stakeholders were enthusiastic about eMDS implementation and its potential change the management of medication. Committed proactive teamwork, communication and collaborative working provided positive experiences during implementation. Implementation process issues at the start of the pilot around eMDS set up meant that devices were not used efficiently, reducing the effectiveness of the device prompting and alerts. The eMDS also seemed more suitable with service users who had lower support needs. Many team members stated that the device made administration of medicines by care staff easier.

**Conclusion**

Overall stakeholders remain optimistic throughout the pilot of the eMDS. Emerging themes suggest that there may be particular individuals more suited to such technology. Planned future work

includes further follow up interviews at site and review of the eMDS adherence data.

**Poster021**

## What is the motivation of clinical pharmacists in general practice?

**Hannah BOWN**

**Background**

An ageing population and austerity changes mean that demand in general practice is increasing. However, between 2013 and 2014 GP training applications fell by 15%- supply is therefore not meeting demand. In response to this, NHS England rolled out the National Pilot for Clinical Pharmacists working in General Practice (CPGPs). Affording to the success of the pilot, an additional 1500 CPGPs are to be employed by 2020/21.

**Purpose**

Up to yet there has been little research into the motivations of pharmacists, and no research specifically exploring the motivations of CPGPs. The overarching aim of this study was to explore the motivations of CPGPs.

**Methods**

Individual semi-structured telephone interviews were conducted with thirteen CPGPs and were audio-recorded and transcribed verbatim. Three researchers thematically analysed the transcripts using the One Sheet of Paper technique, comparing findings throughout.

**Results**

Analysis uncovered three overarching themes: Pre-, Present- and Post-Motivation. These themes described how the CPGPs motivation changed with time in the role. Underpinning these themes were seven subthemes: patient-facing, characteristics, motivation to change, daily motivation, meeting expectations, relationships and later expectations.

**Conclusions**

CPGPs are highly motivated and greatly enjoy the role in general practice, with aspirations to develop it in the future. This study informs NHS England of the motivations of CPGPs, which could lead to a review of the role in which aspects that motivate pharmacists are strengthened. It is hoped that this work will stimulate further research into the motivation of pharmacists in general, but especially in primary care where the role of the pharmacist is expanding. Further research should also focus on pharmacists who take on this role in the future, to assess whether levels of motivation remain the same as those seen in this study."

**Poster022**

## Outcomes of diabetes management by pharmacists: The RxING practice tool

**Hiroshi OKADA, Yazid N. AL HAMARNEH, Ross T. TSUYUKI**

**Background**

Optimal community-based care for patients with diabetes remains elusive. Pharmacists are highly accessible primary care providers who have a strong interest in diabetes management.

**Purpose**

To evaluate the effect of pharmacist management on uncontrolled risk factors (poor glycemic control, uncontrolled blood pressure or cholesterol, or current smoking) in patients with diabetes.

**Methods**

RxING is a prospective registry used by pharmacists in primary care in Alberta. Patients with diabetes must have at least one uncontrolled risk factor to be eligible (poor glycemic control, uncontrolled blood pressure or cholesterol, or current smoking). Pharmacists practice to their full scope, which may include making recommendations to the physician, prescribing, adapting prescriptions and assessing adherence. Primary outcome is change in estimated CV risk. Secondary outcomes are change in HbA1c, blood pressure, LDL-cholesterol, tobacco use, and vaccination status.

**Results**

This preliminary analysis includes the first 63 patients enrolled by 21 pharmacists. Sixty one percent of patients were male and average age was 58 years. All patients have type 2 diabetes. CV risk was reduced from 24.7% to 20.0% after 3 months (p=0.633). HbA1c was reduced from 8.5% to 7.6%, BP was reduced from 139/84 mmHg to 132/80 mmHg, LDL cholesterol was reduced from 1.87 mmol/L to 1.46mmol/L and smoking was from 13% to 12%.

**Conclusions**

RxING is a practice and implementation tool which helps pharmacists systematically evaluate and document their interventions in patients with diabetes. With widespread use, this can help with practice change and also provide real-world evidence for pharmacist care.

**Poster023**

## The PharmD controversy: pharmacy undergraduate programme change in the context of a developing country

**Ifunanya IKHILE, Claire ANDERSON, Simon MCGRATH, Stephanie BRIDGES**

**Background**

The switch from B.Pharm to PharmD undergraduate pharmacy programmes in low and middle income countries is a widely contested issue in pharmacy education literature1. However, little research has been carried out on the motivation for implementing this switch in these countries2.

**Purpose**

This research aims to describe motivators, barriers, and facilitators to the implementation of the PharmD switch in the context of a developing country, using qualitative research methodology.

**Methods**

Qualitative data was taken from a larger study focused on developing a tool for the assessment of education relevance to practice. 25 semi-structured in-depth individual and group interviews were conducted with pharmacy education/practice stakeholders in Nigeria across the six geopolitical zones, audio recorded and transcribed. Transcripts were analysed thematically and specific motivators, facilitators and barriers identified.

**Results**

Identified motivators include keeping up with global trends, pharmacists' increasing clinical role, and a quest to contribute meaningfully to the health team, facilitators include an already existent model school, collaboration from foreign experts, perceived need for pharmacist's clinical role, students' enthusiasm, the doctor title while barriers include lack of clinical expertise and placement sites, funding, an already overloaded curriculum, resistance from medical practitioners.

**Conclusions**

This study found that the major motivator for the switch was to keep up with global trends around a patient-focused practice while lack of clinical expertise and placement sites were most frequently mentioned barriers similar to previous studies3, 4. Despite inherent weaknesses of this study such as non-generalizability, identified motivators, facilitators and barriers could be useful for developing countries that are planning to make the same switch, future work may include assessment of the impact of this switch on practice.

**Poster024**

## Development of a checklist for community pharmacies to facilitate the identification of DRPs and improve patient counselling at hospital discharge – a study design

**Tamara L. IMFELD-ISENEGGER, Helene M. STUDER, Markus L. LAMPERT, Kurt E. HERSBERGER**

**Background**

After hospital discharge, problems with continuity of care (medication discrepancies, administrative problems and the necessity for further education) are frequent in community pharmacies. A large number of DRPs might be disclosed with a systematic pharmacist-led medication review (MR). Existing checklists and tools for identification of DRPs in community pharmacies are designed for use in a clinical MR. However, community pharmacies often have no access to clinical data and their MR is limited to a type 2a MR according to the PCNE classification.

**Purpose**

Development of a checklist for community pharmacies having no access to clinical data to facilitate the identification of DRPs and improve the counselling of hospital discharged patients.

**Methods**

Clinical pharmacists working in a Swiss hospital pharmacy (cantonal hospital of Zug) with an associated community pharmacy counselled patients at hospital discharge and documented all causes of their interventions in a database (June 2016 – April 2018). In a first step, an in-depth analysis of the frequency and characteristics of the documented DRPs will be conducted. Moreover the patients' demographic data and drugs linked to the DRPs will be analysed and correlated with the cause of the interventions. Afterwards an expert panel of clinical pharmacists and community pharmacists will evaluate those issues causing these DRPs that are identifiable by the community pharmacy without any access to clinical data (laboratory test results and diagnosis). In a third step, the identified issues will be used to develop a checklist for the community pharmacy to facilitate the identification of DRP and improve patient counselling at hospital discharge.

**Conclusions**

Further validation steps will be needed until this checklist will be part of a tool kit for community pharmacies counselling patients at hospital discharge.

**Poster026**

## Coverage of the Global Competency Framework by the Spanish Competency Framework

**Inês NUNES-DA-CUNHA, Fernando FERNANDEZ-LLIMOS**

**Background**

The Global Competency Framework (GCF) from the International Pharmaceutical Federation (FIP) was created with the aim of supporting the educational development of pharmacy practitioners. In Spain, the competencies that qualify pharmacists for the practice of the profession are established in the CIN/2137/2008 Ministerial order.

**Purpose**

This work aims to compare the Spanish Competency Framework (SCF) with the GCF, regard to the competencies that a graduate must achieve for a patient-centred practice.

**Methods**

Evaluation of the GCF coverage by the SCF. A pairing between the two competencies frameworks was made by consensus among the authors. The coverage of the items was differentiated into highly covered items and partially covered items.

**Results**

In the FIP framework, 100 competencies are described using behavioural terminology, categorized into four main domains: "Pharmaceutical Public Health", "Pharmaceutical Care", "Organisation and Management" and "Professional/Personal". The SCF defined that students must acquire at least 67 specific competencies. This study shows that 28 behaviours of the GCF are being covered within the SCF. The "Pharmaceutical Public Health Competencies" domain is covered in 100%, with 75% of the items classified as highly covered and 25% as partially covered items; the "Pharmaceutical Care Competencies" domain is covered in 28%, with 57,1% of the items classified as highly covered and 42,9% as partially covered items; the "Organisation and Management Competencies" domain is covered in 25%, with 37,5% of the items classified as highly covered and 62,5% as partially covered items; and the "Professional/Personal Competencies" domain is covered in 23,1%, with 33,3% of the items classified as highly covered and 66,7% as partially covered items. In the SCF there are two specific competencies related to pharmaceutical care that, given its broad scope, we have not been able to pair with the competencies defined in the GCF.

**Conclusion**

There is still room for improvement in SCF regarding the compliance of GCF.

**Poster027**

## Interviews about the advanced pharmacy practice experience (APPE) at the University of Oslo

**Ingunn BJÖRNSDÓTTIR, Naila ALI, Nada R. ISMAIL, Anne RØV-JOHNSEN**

**Background**

The length of the Advanced pharmacy practice experience (APPE) in European countries is decided by the 6 months EU directive requirement, that also specifies community pharmacy training, alternatively hospital pharmacy supervised training. This gives considerable flexibility in structure and content. Looking outside of the EU, the variation becomes even larger, as some countries require less than 6 months, some more, and some do not tie the training period to a pharmacy. Since FIP is based on pharmacists having a common ground, pharmacists might benefit from discussing and evaluating different APPE structures and learn from each other. A description of the APPE at the University of Oslo (UiO) is given elsewhere, but evaluation is focused on here.

**Purpose**

To analyse stakeholder views regarding the APPE period: the views of the supervisors in pharmacies and the student perspective.

**Methods**

Two series of qualitative in-depth interviews, with 9 supervisors in January 2017 and with 7 pharmacy students in November/December 2017. The interviews were transcribed verbatim and analysed with the Systematic Text Condensation approach.

**Results**

Mandatory assignments were described as challenging and time-consuming. The supervisors considered a solid pharmaceutical knowledge to create the basis for evaluating prescriptions and making pharmaceutical decisions and saw the pharmacist's role as being simultaneously problem solvers and using pharmaceutical judgment. The students expected to apply their theoretical knowledge in practice setting and get good training in the roles expected of a professional pharmacist, and described the supervisor and location of the internship pharmacy as major determinants of the outcome of the internship. The supervisors considered the students to use much time on technical issues, and to be uncertain at the end of the APPE while still seeing 6 months as sufficient.

**Conclusions**

Expectations of students, supervisors and university need alignment. Standardisation and continuing education for supervisors is needed.

**Poster031**

## Adherence to and preferences for vitamin D in different pharmaceutical forms and administration frequencies – a study design

**Jean-Pierre ROTHEN, Jonas RUTISHAUSER, Philipp WALTER, Kurt E. HERSBERGER, Isabelle ARNET**

**Background**

The importance of vitamin D supplementation, particularly during winter, is increasingly recognised in Europe. Most supplements in Switzerland are oily or alcoholic liquids intended for daily administration. Although intermittent, weekly and monthly, administration has demonstrated equal efficacy, patients' preference and adherence have rarely been studied.

**Purpose**

To assess adherence to and preference for vitamin D in different pharmaceutical dosage forms and frequencies of administration in outpatients.

**Methods**

Experts, health professionals and patients, discussed during a focus group, which pharmaceutical form and which administration frequency of oral vitamin D supplementation would lead to the best adherence at different ages of life. Power calculation showed that 59 patients per group will be sufficient to detect a difference of 25% in timing adherence with a 80% power.

**Results**

Study design: Interventional, randomized, cross-over study with 8 general practitioners in Switzerland. Patients obtain vitamin D supplements either as tablets (5600 IU) and capsules (20'000 IU) or oily (5600 IU) and alcoholic drops (24'000 IU), for weekly and monthly administration over 3 months, respectively. Blood samples and questionnaires are obtained at inclusion, 3 and 6 months. Adherence is monitored electronically, for the solid forms with POEMS technology, and for the liquid forms with Time4Med smart cards. Patients ≥18 years old with vitamin D level <50 nmol/l at baseline, taking at least one oral medication are recruited. Patients with hypercalcemia or nephrolithiasis are excluded. Primary outcome is adherence (taking and timing). Secondary outcomes are preferences and improvement of vitamin D levels.

**Conclusions**

This study will provide information on patients' preference and its influence on adherence to vitamin D supplementation, comparing liquid and solid forms under two types of intermittent administration."

**Poster034**

## What are the experiences of clinical pharmacists in general practice starting and integrating into their role?

**Kathryn ELLIS**

**Background**

As outlined in NHS England's 2017 General Practice Forward View, there are plans to provide a pharmacist in general practice per 30,000 of the population by 2020/2021 following the pilot scheme launched in 2015. There is limited research into this role in the UK, but integration of clinical pharmacists has been studied more extensively in other countries.

**Purpose**

The aim of this research was to look at the experience of clinical pharmacists starting their role and integrating into general practice, based on self-perceptions of the quality and range of their induction and their relationships within the team. The objectives were to understand the themes of induction, relationships, role identification/development, mentoring, and training and development and how these impact clinical pharmacists starting their role and their integration.

**Methods**

A qualitative methodology involving a total of thirteen semi-structured telephone interviews were conducted with clinical pharmacists from the pilot scheme that met the sampling criteria using an iteratively developed interview guide. Analysis was undertaken using the one sheet of paper (OSOP) method by three researchers.

**Results**

Analysis revealed five key themes resulting from the interviews; induction, relationships, role identification/development,

mentoring, and training/development. Two subthemes were also identified; induction needs under induction and GP trust under relationships.

**Conclusions**

This research documents the varied experiences of pharmacists beginning their role and their integration into general practice. The key findings have implications in practice for successful integration. Induction needs were identified, mentoring had a lack of structure, and the importance of relationships was highlighted - particularly building GP trust. The role of the clinical pharmacist was found to be varied, with a limited common definition enabling flexibility for the individuals and the practices.

**Poster036**

## Assessing knowledge of community pharmacists on cancer: a pilot study in Ghana

**Kofi B. MENSAH, Frasia OOSTHUIZEN, Varsha BANGALEE**

**Background**

GLOBOCAN estimates that 16,600 cases of cancer occur annually in Ghana. Community pharmacists are the first point of contact to the public due to their accessibility, wide spread and credibility. They provide first aid, treatment of common illness, health information, etc. Their roles expand beyond patients to their circle of family and friends. The facts that they provide should be correct and help in building awareness.

**Purpose**

The goal of this pilot study was; (1) to collect a preliminary data on community pharmacists' knowledge, risk factors, signs and symptoms of cancer, (2) ascertain the adequacy of the research survey in determining their level of knowledge, (3) To assess the visibility of a full scale study.

**Methods**

A cross-sectional study was conducted using a self-administered questionnaire to assess the knowledge, signs and symptoms, risk factors on cancer among 150 community pharmacists.

**Results**

Score for knowledge on cancer among community pharmacists indicated that 84% had poor knowledge. Their responses towards a list of warning signs and symptom of cancer indicated poor level of knowledge (70%). Community pharmacists recorded poor level of knowledge (62%) on causes and risk factors for cancer. Gender, age and years of practice had a relationship on the scores obtained.

**Conclusions**

This pilot study provided a valuable data which indicated that community pharmacists in Ghana have poor level of knowledge on cancer. The findings obtained from the study agree with findings of other studies conducted in this area which suggest that survey instrument was adequate to assess the knowledge level of community pharmacist in Ghana. Again response indicated a visibility of conducting a full scale research in this workforce to get a better assessment of the level of knowledge of community pharmacists on cancer in Ghana.

**Poster038**

## Pharmaceutical care services for promoting the rational use of clopidogrel in coronary syndromes

**Luana J. CAMPOS, Fernanda S. TONIN, Flávia R. ARROTEIA, Orli D. BOEIRA, Ildemar M. CANTO, Carlos J. SIGNORINI, Ana F. OLIOTA, Andréia C. SANCHES**

**Background**

Acute Coronary Syndrome (ACS) is the major cause of mortality worldwide. Dual antiplatelet therapy (DAPT) with Clopidogrel/Acetylsalicylic Acid (12 months regimen) is the main prevention therapy for atherothrombotic events in patients with ACS. However, in clinical practice drug treatment is usually maintained for a considerably longer than recommended. This lead to an increase risk of adverse effects and excessive costs.

**Purpose**

The aim of our study was to promote the rational use of Clopidogrel in ACS patients through pharmaceutical care services in the city of Cascavel-Parana/Brazil. Patients with ACS were followed between November/2017 and April/2018.

**Methods**

The population of the study was composed by n=100 patients using Clopidogrel for ACS. Of these, 12% used Clopidogrel alone and 37% were on DAPT within the established time. However, around half of the patients (51%) used DAPT in disagreement with the clinical guidelines and reported the appearance of bruising or some type of bleeding. For these patients, pharmacotherapeutic orientations were performed, and a letter was sent to prescribers requesting a reassessment of the therapy by the cardiologist.

**Results**

Of these, 59% (30/51 patients) had their drug therapy re-adapted, as recommended by clinical protocols, with the suspension of Clopidogrel. In 41% of the cases (21/51 patients) a medical justification was presented for the continuation of the treatment.

**Conclusions**

The written pharmaceutical intervention (letter to prescribers) is an instrument that can significantly contribute to the promotion of the rational use of medicines, generate savings for the health system and improve the quality of life in patients.

**Poster039**

## Pharmacy-practice research: opinions and perspectives from researchers to a pharmacy R&D unit

**Luís LOURENÇO, Marta LOPES, Lígia REIS**

**Background**

Following the experience running research studies, a community pharmacy located in Lisbon district created a Research & Development (R&D) Unit.

**Purpose**

To collect the opinions and perspectives of health and non-health researchers concerning "community pharmacy" participation in research studies.

**Methods**

Exploratory study based on a survey to researchers from different scientific fields. The study initiated in April 2018 and it is still running. A convenience sample was used.

**Results**

Opinions and perspectives of 45 researchers, 23 (51.1%) Portuguese and 22 (48.9%) from other countries were collected, mainly from health sector (64.4%) and pharmacists (89.6%). Most researchers show agreement to the statements related to the proposed "attitudes towards research" and "barriers to research participation". The degree of agreement was not so marked on the "recognition of the purpose of research" (31.1% some disagreement), the fact that the "pharmacist does not have time to research" (40% some disagreement) and the "lack of skills to investigate" (26.7% some disagreement). 86,7% mention that research studies in community pharmacy should be based in collaboration protocols, 75,6% that pharmacies should be organized in a network in order to run studies and 73,5% that there must be a body that certifies pharmacies in the context of research. The model in which "research projects are designed by institutional partners and the pharmacy carries out the project" (model 2) and the one in which " the initiative of the research project is from the pharmacy but supported by the university" (model 3) were preferred. 82.2% showed interest in collaborating with the R&D Unit.

**Conclusions**

It is recognized the need to develop research studies in the community pharmacy practice, both in professional and business related areas. Researchers are open to collaborate in the proposed initiative.

**Poster040**

## The Most frequently used facilitation strategies during the implementation of innovations in healthcare practice: a systematic review

**Lydia MOUSSA, Shalom I. BENRIMOJ, Victoria GARCIA-CARDENAS**

**Background**

To improve patient outcomes, healthcare practices undergo constant implementation of innovations. Implementation is a complex process that takes into consideration organisational, behavioural and climate aspects. An implementation intervention that considers these aspects is facilitation. Facilitators help implement innovations by; highlighting the need for change, identifying areas of development, educating members, promoting quality improvement while providing support. Whilst the role of facilitators is highlighted in the literature, research shows only 5-30% of trials of behavioural change are described in sufficient detail, making it difficult to provide consistent delivery, determine fidelity and undergo adequate evaluation.

**Purpose**

The main aim of this paper was to summarise the evidence on the effectiveness of strategies used by facilitators during the implementation of innovations in health care.

**Methods**

A systematic review was undertaken. Randomised controlled trials including an onsite facilitator facilitating the implementation of an innovation in a healthcare setting were identified through PubMed, SCOPUS and Web of Science. Qualitative data was then extracted and categorised according to the following categories: 1) Planning for change 2) Leading/ managing change 3) Monitoring progress 4) Evaluating change.

**Results**

The database search yielded 2,350 articles, which were screened and 35 studies were included. From these, 66 facilitation strategies were identified. Twelve of the strategies were used in more than 25% of the studies - these included; Baseline audit and feedback, goal setting, identification of an internal champion, tailoring the facilitation approach and providing training. The different combinations of the most common strategies were further compared regarding their effectiveness.

**Conclusions**

These findings provide facilitators with evidence-based strategies outlined in a structured facilitation process, while providing researchers, organisations and implementation teams a starting point for training, planning and evaluating facilitation interventions in healthcare practice.

**Poster041**

## Drug administration adjustments for elderly patients with dysphagia

**Marcela FORGERINI, Patrícia C. MASTROIANNI**

**Background**

Dysphagia is a common clinical manifestation among the elderly and it is an important symptom in dementia. It has been estimated that up to 45% of patients with dementia have some degree of swallowing difficulties. Furthermore, dysphagia can negatively affect patient's medication use, thereby influencing decisions about patient prescription, which consequently influences pharmacotherapy effectiveness and safety.

**Purpose**

Therefore, it was proposed to identify and evaluate the pharmacotherapeutic effectiveness and safety of patients with diagnosis of Alzheimer's disease and dysphagia .

**Methods**

An experimental, non-randomized study was conducted at the Elderly Reference Center of Araraquara with patients with a probable diagnosis of Alzheimer's disease. It was leading to Medication Therapy Management (MTM) according to the Pharmacotherapy Workup, method that collaborated to evaluate Medication Use Problems.

**Results**

Female elderly patient, 76 years, diagnosed with depression, hypothyroidism, Alzheimer's disease, mild cognitive deficit and moderate dysphagia (Score 4, Scale ASHA-NOMS) was identified with sertraline, and levothyroxine related problems. In addition, the patient was presenting apathy, fatigue, agitation, aggressiveness and hallucination. The MTM was used to adjust therapy to the patient's needs by macerating sertraline tablets and solubilizing them in 10-30 mL of orange juice. Patient was advised to take levothyroxine following fasting. Six months later, pharmaceutical follow-up identified an increase in the Mini-Mental Scale score from 22 to 26 and Clinical Dementia Rating (CDR) from 1.0 to 0.5 in conjunction with mood and physical improvements as well as a significant decrease in aggressiveness and agitation.

**Conclusions**

Cognitive deficit may be a result of drug therapy poor drug administration procedures, leading to drug ineffectiveness. Optimizing levothyroxine and sertraline administration, with knowledge of their physicochemical properties, improves their clinical effectiveness, including the cognition of the patient with Alzheimer's disease and dysphagia.

**Poster042**

## Safety assessment of omeprazole use: a systematic review

**Marcela FORGERINI, Stephania MIELI, Patrícia C. MASTROIANNI**

**Background**

Proton pump inhibitors (PPIs), such as omeprazole, are one of the most widely prescribed classes at worldwide. However, there are studies reporting the risks of hospital admission for adverse drug reactions and drug interactions related to the use of omeprazole. In addition, the safety of a drug can be modified over time due to increased use and patient characteristics, and risk assessment is required.

**Purpose**

Therefore, the guiding question sought what are adverse events and how effective omeprazole treatment is,

**Methods**

Propose to evaluate the safety of the use of omeprazole and a Systematic review of studies was conducted. PubMed, SCOPUS, LILACS, SciELO, EMBASE and EBSCO databases were searched through September/2016. Clinical, cohort, and case-control trials, cross-sectional and quasi-experimental studies, which reported outcomes ineffectiveness and/or safety about omeprazole use, were screened. The risk of bias of the different outcomes were assessed. 62 articles were included.

**Results**

50 studies reported adverse drug events [39 adverse drug reaction, five drug interactions, six ineffectiveness]. 14 adverse drug reaction are not described in the literature: spontaneous abortion(1); proliferative changes(1); chills(1); myocardial infarction(6); heart failure leading(1); stroke(2), thrombosis(2); eczematous eruption(1); among others. Severe adverse reaction occurred in patients who underwent heart-related surgeries or drug interventions, or in the concomitant use of such medications, with inhibition of the antiplatelet effects of drugs such as clopidogrel, increasing the risk of developing cardiac problems and decreased absorption of mycophenolate mofetil, leading to rejection of transplanted organs. All indications for the use of omeprazole were approved, therefore, there was no evidence of safety of omeprazole use in polymedicated patients.

**Conclusions**

The use of omeprazole should be monitored primarily in patients with heart disorders using antiplatelet agents concomitantly and in newly transplanted patients using mycophenolic acid, in order to avoid serious adverse reactions.

**Poster044**

## Pharma-care management in medicine efficacy and risk. Spanish community pharmacy

**Amparo PEREZ BENAJAS, Virginia MERINO SANJUAN**

**Background**

Farmacia del Mercat is in an historical and touristic area located 200 meters from the Central Market in the city of Valencia, Spain. It is an antique pharmacy with only 30 square meters of public attention zone. In 2017, we did a request about the origin of the pharmacy clients: 40 % were neighborhood clients, 30 % worked in companies near the pharmacy, 10% were tourist and 20 % people who went to buy at Central Market.

In our pharmacy, focusing on the third dimension FIP-OMS guidelines , we define pharma-care process as the patient experience of assuring the effectiveness, preventing harm from medicines and making responsible use of limited health care resources. This process involves 6 services:

1. Patient file in which all the medicines, bio measures and health issues are compiled.

2. Telephone message in prescription activations

3. Ready patient trade mark preference

4. 4 delivery services a day and information about medicines market provision

5. Special awareness in first prescription, complex medicines and pediatric doses

6. Security alerts on AGEMED notes and patient medicines interactions

We apply PDSA method to improve over the counter pharma-care process in order to accomplish patient needs and expectations in therapy management.

**Purpose**

By June 2018, 60% of the pharmacy clients have a patient file that provides effective medication therapy management by the pharmacist.

Actions taken

2017, First term

Define the system according with Eduard Deming Knowledge theory. (figure 1)

Define pharma-care aim statement and quality outcomes

Define over the counter work-flow including pharma-care services (figure 2)

Define pharma-care services with 13 words in order to facilitate the communication between technicians, pharmacist and patients.

2017 Second term

Improve managing patient medication therapy according with the origin of clients.

2018 First term

Ja. Define pharma-care services according FIP-OMS framework (figure 3)

Fe. Re-define drivers diagram, outcomes and improvements needed (figure 4,5)

March-May . Stablish weekly clinical pharma-care sessions with all the workforce to improve the information given to patients, both medicines and health status over the counter pharma-care services ( figure 6)

**Results**

By September 2017, 25% clients have patient file. This number increases to 50% in March 2018"

**Poster045**

## The impact of pharmacist recommendations on the health care team

**Livia R. ROCHA, Eliza M. MOURA, Maria G. LEOPARDI-GONÇALVES**

**Background**

The prior knowledge of this acceptance has been very lacunar at national and regional levels. In the ambience like a teaching hospital was an endpoint (outcome) of 4 years implantation of clinical pharmacy services by pharmacy residents.

**Purpose**

This work constitutes an effort aiming to an account of a real and effective knowledge of the impact of the clinical pharmacist recommendations on the attitudes and procedures of the health care team.

**Methods**

It was a retrospective and descriptive study. We study the clinical interventions performed by pharmacy residents in their professional routine during the period from Nov 2010 and Mar 2015 and registered on patient's pharmaceutical record. The studied variables were the following: (1) the intervention acceptance; (2) the intervention type; (3) the drug related problem (DRP) which pharmacist's intervention attempted to prevent or resolve; (4) to whom it was directed, whether physician, nurse, or another member of the health care team; and (5) the form of intervention, whether verbal and/or written.

The criteria adopted by us in order to consider a given procedure as accepted one was the modification and implantation of the pharmacist recommendation by the recipient professional in a period equal to or minor than 24 hours.

**Results**

The more relevant results were: (a) the interventions performed were 316, which 277 (88%) were accepted.

(b) It was found 248 patient's pharmaceutical records; among these 137 (55%) presented at least one pharmaceutical intervention.

(c) the most frequent performed intervention type was related to the therapy optimization (33%) followed by optimization of administration conditions (22%);

(d) 90% among the interventions were in verbal form.

**Conclusions**

These results show that the clinical pharmacist recommendations were successful and therefore have a strong impact on attitudes and procedures of the health care team.

**Poster047**

## Technology-enabled pharmacy: analysing the relationship between pharmacy practice and health technologies in community pharmacy

**Mohammad ALKANDERI, Darrin BAINES, Stephen TEE, Carol BOND**

**Background**

This work is important because changes in technology are creating new opportunities for pharmacy practice. It fills the gap because we currently have limited understanding of the relationship between pharmacy practice activities and technology. The context of the research is that new health technologies are creating new opportunities to improve pharmacy practice.

**Purpose**

The purpose of this research is to use the WHO classification of Digital Health Interventions (v1.0) and to show the link between type of initiative services and technologies.

The hypothesis of this research is that different types of technologies could support different types of pharmacy practice activities.

**Methods**

We have created a conceptual framework using documentary analysis that links the WHO classification system with pharmacy practice activities and key health technologies.

**Results**

The proposed outcome is a usable framework that supports and promotes the linkages between pharmacy practice activities and new technologies.

**Poster048**

## Developing a leadership attributes development tool for pharmacists

**Nadia BUKHARI, Ian BATES**

**Background**

It is widely accepted how crucial it is to understand the development of leadership attributes of practitioners, alongside the essential infrastructure and support mechanisms for the development of leadership across all stages of the pharmacy workforce. The development of appropriate education and training strategies and plans targeted to developing these leadership attributes will then result in a workforce better able to deliver the evolving health service needs.

This aligns with the WHO statement "No health without a health workforce"",2013 (1) which acknowledges that the delivery of better health requires a workforce that constantly develops and grows.

FiP Workforce Development Goals:

FiP have built a sustainable near and longer term plan of action on the range and scope of pharmaceutical workforce development goals, which is a global vision for Pharmacy Education and the workforce.(3)

Leadership training and development can maximize productivity and shape a positive culture. WDG-6 focuses on strategies and programmes that need to be in place to support the development of professional leadership skills for all stages of career development, including pharmaceutical sciences and initial education and training.

To achieve this, we must understand leadership in more detail and therefore more research around leadership in pharmacy is needed.

**Purpose**

The aim of the study is to develop a leadership attributes development tool for pharmacists (LADT)

The objectives for the study are as follows:

1. To investigate how pharmacists, perceive their own leadership attributes

2. To conduct a review of the delivery of current leadership attribute development for pharmacists

3. To evaluate how leadership outcomes are recognised amongst the professional body

4. To evaluate the leadership attribute development tool for pharmacists

**Methods**

The design of the study is outlined in fig.1. Both quantitative (questionnaires) and qualitative (semi-structured interviews) methods will be used to investigate leadership concepts and perceptions within the pharmacy profession. The results from both the methods used will inform the development of the LADT.

**Conclusion**

Leadership and the development and impact of leadership is under researched in the UK; in particular pharmacy leadership. This trend has also been explored globally via the literature review.

Leadership has become a focus for healthcare provision in the UK post Francis. The Royal Pharmaceutical Society launched the pharmacy adaptation of the NHS Leadership Development Framework in 2015, reinforcing the fact that this is an optimum time to conduct this evaluation of leadership development within pharmacy.

**Poster050**

## INDICA+PRO: Study of a minor ailment service in community pharmacy in a Spanish province. Preliminary data, referral rates

**Noelia AMADOR-FERNÁNDEZ, Victoria GARCÍA-CÁRDENAS, O GARCÍA-AGUDO, Vicente J. BAIXAULI-FERNÁNDEZ, Vicente COLOMER-MOLINA, Maria T. CLIMENT-CATALÁ, Miguel A. GASTELURRUTIA, Shalom I. BENRIMOJ, Fernando MARTÍNEZ-MARTÍNEZ**

**Background**

Consultation of minor ailments and direct product request are frequent in Community Pharmacy in Spain although every pharmacy offers the service following their own criteria. Following Standard Operational Procedures (SOP) and referral criteria agreed between community pharmacists (CP) and general practitioners (GP) is needed to deliver a safer service in Community Pharmacy.

**Purpose**

The aim was to evaluate referral to other health professionals of a Minor Ailment Service (MAS, service offered in Community Pharmacy following the SOP) compared to usual care in the province of Valencia (Spain).

**Methods**

Randomized controlled study with 2different groups is been carried out for 6months, winter and spring.

The intervention has different components:

- SOP: Focus group consisting of 4GP and 4CP.

- Formulary and list of ailments (headache, sore throat, dysmenorrhea, cold, nasal congestion, cough, heartburn, diarrhea, vomit, gas, cold-sore and athlete foot).

- Standard procedure for the consultation.

- Educational training for pharmacists.

Preliminary data of the first 4months of the study (winter, 15/Nov/17-15/Mar/18) are presented.

**Results**

A total of 535patients were recruited in the participant pharmacies during the study period. Consultation of minor ailment had higher rate (70,7%) than direct product request(29,3%). The 2minor ailments causing higher number of consultations were cold (39,6%) and cough(23,6%), similarly in both groups. 2,8% (n=8) of the patients in the control group were referred to the GP, 2,1% following referral criteria included in the agreed SOP, only 2patients followed CP's intervention. 6,8% (n=17) of the patients in the intervention group were referred to the GP out of 9,1% of the patients in the same group having referral criteria due to refusal from the patient or pharmacist's decision, 8patients followed pharmacist's intervention.

**Conclusions**

The MAS has the potential to increase the security in the management of minor ailments and the acceptance of the pharmacists' intervention in Community Pharmacy. These preliminary results should be confirmed once the study is finished.

**Poster051**

## Attitudes of Croatian community pharmacists toward adverse drug reaction reporting

**Živka Juričić, Renata J. Grubešić, Jadranka V. Rodríguez**

**Background**

Adverse drug reactions (ADRs) are a major public health problem and must be reported in writing to the official authority. Very little is known about community pharmacist's knowledge, practice and attitudes toward ADRs reporting process in Croatia.

**Purpose**

This study aimed to provide a description of the attitude and behaviour of Croatian community pharmacists toward the reporting of ADRs.

**Methods**

A cross-sectional survey of 100 community pharmacists was conducted in Zagreb, Croatia, during two months. The structured, validated questionnaire comprised 15 questions to identify understanding, views, and attitudes of participant pharmacists

toward ADRs, including legal aspects and regulatory framework, as well as opinions on their professional obligations and motivation for further informing on ADRs.

**Results**

Community pharmacists understand the reporting of ADRs as an integral part of their professional duties and they did not report any major obstacles to ADRs reporting. Most pharmacists (74%) state that the lacking of feedback of the ADRs reports processing is a barrier to pharmacist's further ADRs reporting. About half of the pharmacists (54%) think that the reporting procedure is time-consuming and a reporting form is complex, while 37% of pharmacists are not satisfied with the existing rewarding system for their ADRs reporting. The pharmacists consider that collaboration with physicians before submitting a report is an important aspect in the reporting process. The results demonstrate that community pharmacists in Croatia have an important role in ADRs reporting system. Also, they are knowledgeable and highly motivated to do this task.

**Conclusions**

Although 3486 ADRs were reported to the Croatian national regulatory agency in 2016, of which 36.1% were reported by community pharmacists, our results highlight a need to improve technical and rewarding aspects of the ADRs reporting system in Croatia.

**Poster052**

## Mobile health intervention to support self-management: pharmacists' and patients' perceptions

**Richelle KOSSE, Marcel L. BOUVY, Tjalling DE VRIES, Ellen S. KOSTER**

**Background**

The Adolescent Adherence Patient Tool (ADAPT), an interactive mobile health (mHealth) intervention for asthma patients, has been shown to increase inhaled corticosteroid adherence in adolescents with suboptimal baseline adherence. However, the implementation and integration of mHealth interventions in clinical practice is a complex problem, and evaluations are therefore of utmost importance for further implementation.

**Purpose**

To explore experiences, barriers, and facilitators of both pharmacists and patients towards the use of the ADAPT intervention.

**Methods**

Pharmacists and patients had six months access to the ADAPT intervention. We conducted semi-structured interviews with 23 pharmacists, and 82 patients completed an online evaluation questionnaire about the ADAPT intervention. Descriptive statistics were calculated.

**Results**

The majority of patients (66%; n=54) did not use the ADAPT intervention for the complete six months, with forgetfulness as the main reason. Most patients (78%; n=64) would recommend the ADAPT intervention to others, and thought the pharmacy was the right place for mHealth aiming at improving appropriate use of medicines (63%; n=52). The possibility to monitor asthma symptoms was the most frequently used functionality of the intervention, and highly appreciated by both patients and pharmacists. Almost all pharmacists (96%; n=22) were satisfied with ADAPT, and the use of the intervention was not time consuming for most (91%; n=21). Pharmacists thought that the ADAPT intervention promoted contact with patients (74%; n=17) and that it facilitated their role as a healthcare provider (83%; n=19). Technical problems were experienced by 30% of the pharmacists (n=7) and by 28% of the patients (n=23).

**Conclusions**

Pharmacists and patients perceive many beneficial effects, and were generally positive about the interactive mHealth intervention. Attention should be paid to prevent technical issues. These findings should be taken into account, and mHealth opportunities may be emphasized among pharmacists.

**Poster053**

## Management of drug-drug interaction alerts in German community pharmacies

**Ronja WOLTERSDORF, Christina A. BRAUN, Sven SIMONS, Ulrich JAEHDE**

**Background**

Potential drug-drug interactions (DDI) are described as the drug-related problem most frequently detected in German community pharmacies. However, little is known about the actions taken by pharmacists following DDI alerts.

**Purpose**

Our aim is to evaluate the DDI management in community pharmacies in order to generate strategies to improve its quality and to facilitate assessing the relevance of individual DDI alerts.

**Methods**

In cooperation with the "LINDA-Apotheken" network of 1.100 German community pharmacies we developed a recording system to automatically generate datasets of all detected DDI alerts by the pharmacy software. Beside statistical analysis of the frequency of specific alerts these datasets formed the basis for the development of a standardized electronic documentation form that allows for collection and evaluation of actions performed in community pharmacies in daily routine.

**Results**

Preliminary results highlighted the high and variable frequency of more than 194.500 DDI alerts (1.532 (218 – 4.656) per pharmacy) detected in a pilot study in 127 participating pharmacies within one month. 10 specific combinations reflected 57% of DDI alerts classified as potentially severe (2.9% of all DDI alerts) with potential outcomes including prolongation of the QT interval, hyperkalaemia, hypertensive crisis, agranulocytosis, serotonin syndrome and bleeding. In future, additional information on required actions following DDI alerts will be obtained by rollout of the documentation form and implementation in routine processes. Moreover, changes in DDI management after providing additional teaching material and increasing the awareness of frequent DDI alerts by informing the individual pharmacies on their own performance statistics will be evaluated.

**Conclusions**

In conclusion, the generated dataset on DDI management will provide a broad basis for documentation of the performance of German community pharmacies in managing DDI alerts in general as well as for assuring and improving its quality at the individual pharmacy level.

**Poster055**

## Bringing health promotion and education to schools – impact and evaluation of the healthy generation project

**Ema PAULINO, Sara TORGAL, Teresa COUTO, Diana COSTA**

**Background**

Geração Saudável (Healthy Generation) is a public health promotion and health education project led by the Portuguese Pharmaceutical Society, targeted to school age children.

**Purpose**

Evaluate the project's general impact, through direct assessment of students' knowledge on the addressed topics and the number of students and schools covered.

**Methods**

The Project promoted training on diabetes, responsible use of medicines and drug abuse to children with an average age of 11.61 old. Trainings were held in an especially adapted bus, addressing also the promotion of the pharmacists' role in society.

(1) To evaluate the training, students were randomly selected to answer a questionnaire on the topics covered, composed of 9 multiple choice questions, with only one correct answer out of four. By the end of the school year, a descriptive analysis was conducted to characterise the different variables, according to the main variable: with/without training.

(2) The number of schools and students' covered was also analysed, by comparison with the previous school year.

**Results**

1136 students participated, from which 52.4% (n=594) had already received training. The average number of correct answers was higher in the group that had already received training (7.73 in 9) in comparison to the other group (5.25 in 9). By the end of the school year 2016/2017, the Project had visited 68 schools, covering 12,183 students (+523 [4.49%] when compared with 2014/2015) and 648 teachers (+34 [5.54%]).

**Conclusions**

Training sessions had a positive impact on students' answers, who showed a better knowledge on the topics. In addition, comparing with the school year 2014/2015, the number of schools, students and teachers increased significantly.

**Poster056**

## Needs of advanced and specialist practice from Indonesian pharmacists' perspectives: an implementation of FIP Workforce Development goal number 4

**Sherly MEILIANTI, Ian BATES**

**Background**

Many countries are developing a focus on the advancement of pharmacy practice in order to provide impactful services to face worldwide health challenges. Taking care of more complex diseases resulting from ageing population is one of major challenges for Indonesia's health system. Pharmacists as medicines expert need to have skills which are more advanced to deal with more complex medicines to provide better care and improve society's health.

**Purpose**

This study aims to explore pharmacists' perceptions related to the need of advanced practice development in Indonesia.

**Methods**

This study was conducted by interviewing 43 practising pharmacists from September to October 2017. A mixed method of data collection including focus group discussions and one-to-one interview was conducted based on the availability of participants. The interviews were transcribed and analysed thematically using the pre-coding frame which was then revised and expanded to include new codes emerging from data.

**Results**

An increase of medicines complexity in patients was the reason why pharmacists need to be advanced. From the pharmacists' perspectives, the need for a clearer developmental career pathway was emphasised by those having less than 5 years' experience and working in patient care settings. As the pharmacists become more advanced, they can be an equivalent collaborative partner and a reliable source of medicines expertise within healthcare teams. Pharmacists across the country perceived that defined advanced practice would have positive impact on the society and National Health Service delivery; therefore, developing advanced practice was aligned with the aim of the professional body and the regulator in Indonesia.

**Conclusions**

This study shows there was a need to develop advanced practice from Indonesian pharmacists' perspectives. Further research on defining criteria for advanced practice would be the next step. These criteria which show clear career pathway can be used as a tool for subsequent professional recognition as markers for practice advancement.

**Poster057**

## A qualitative study of Indonesian pharmacist perception on their challenges of practice: Mapping to the Pharmaceutical Workforce Development Goals

**Sherly MEILIANTI, Ian BATES**

**Background**

Recently, pharmacists face many challenges due to an increase in ageing population. Little is known of pharmacist's perception of difficulties that they encounter in the workplace specifically in Indonesia. This study aims to explore opinions of pharmacists regarding challenges that they face in the workplace in the context of professional development.

**Purpose**

This study is part of a bigger project on developing advanced practice in Indonesia. A semi-structured interview of purposively sampled 24 Indonesian pharmacists was conducted from September to October 2017. The interviews were transcribed and analysed iteratively using a pre-coding frame which was obtained from the 13 Pharmaceutical Workforce Development Goals (PWDGs) established by the FIP. The cluster of PWDGs sets as a theme and the goals sets as sub-theme.

**Methods**

The professional development cluster was the most frequent cluster mapped. Pharmacists with less than 3 years experiences, and working in patient care setting, expressed a need for competency development in their workplace. Hospital and community pharmacists perceived that crossover between sector and "working with others" were barriers in providing services. Academy cluster: most pharmacists who practice in community setting or university stated that interprofessional education in university and early foundation training is essential to prepare pharmacists for the workplace. System cluster: workforce impact has not been recognized in Indonesia, there are a limited number of pharmacists in patient care setting and need for better regulation enforcement. Three new themes emerged: challenges to pharmacists themselves, in pharmacy organizations and in conducting evidenced-based research. Minimum initiative of pharmacists became barriers to developing the profession. Optimization of pharmacy organization role and evidence-based research to support regulation are important for pharmacists to support their career.

**Conclusions**

This study shows that establishment of career pathway and unpreparedness of pharmacists after graduate challenge Indonesian pharmacist the most. Further research on actions to deal with these challenges needs to be done.

**Poster059**

## An overview of systematic reviews of economic evaluations of pharmacy-based public health interventions: addressing methodological challenges

**Suzete COSTA, João PEREIRA, Dennis K. HELLING, Céu MATEUS**

**Background**

The economic evaluation of pharmacy services requires certain considerations which differ from the evaluation of medicines. Some do not seem to be exclusive to pharmacy, they exist in public health interventions. It may also be useful to explore recommendations for conducting economic evaluations alongside trials.

**Purpose**

To perform an overview of systematic reviews of economic evaluations of pharmacy services and triangulate results with recommendations for economic evaluations of both public health interventions and alongside trials to assist in improving research methods.

**Methods**

1) Exploratory review of recommendations on the economic evaluation of public health interventions; 2) Exploratory review of recommendations for conducting economic evaluations alongside clinical or pragmatic trials; 3) Overview of systematic reviews of economic evaluations of pharmacy interventions (protocol registered, reference no. PROSPERO 2016: CRD42016032768 (http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42016032768).

**Results**

Fourteen systematic reviews were included containing 118 publications corresponding to 75 index publications. Only two reviews addressed economic evaluation in community pharmacy exclusively. Reviews reported favorable economic findings for 71% studies with full economic evaluations or CCA or CMA. Types of economic analysis are diverse. The two critical quality domains of AMSTAR-2 absent from most reviews are 1) protocol prior to review and 2) list of excluded studies. Key methodological findings include: certain types of risk of biases; study designs not restricted to RCTs; most economic quality criteria met but some issues unresolved or unclear: population, comparator, costs, analytical methods, incremental costs and outcomes, uncertainty, heterogeneity, equity, process and external validity. Triangulation revealed additional gaps.

**Conclusions**

A methodological approach for economic evaluation of pharmacy-based public health interventions was proposed. These findings may assist in improving the design of pilot trials of economic evaluations in pharmacy, as well as providing evidence for payers.

**Poster061**

## Pharmacist prescribing and care improves cardiovascular risk, but what do patients think? A sub-study of the RxEACH study

**Yazid N. AL HAMARNEH, Sarah LAMB, Maoliosa DONALD, Brenda HEMMELGARN, Kathryn KING-SHIER, Charlotte JONES, Cliff MITCHELL, Ross T. TSUYUKI**

**Background**

The Alberta Vascular Risk Reduction Community Pharmacy Project: RxEACH, was a randomized trial which demonstrated that a community pharmacy-based case finding and intervention program (including prescribing, laboratory testing, and follow-up) reduced the risk for cardiovascular (CV) events by 21% when compared to usual care.

**Purpose**

To evaluate patient perceptions regarding pharmacist prescribing and care in patients at high risk for CV events.

**Methods**

All participants who took part in RxEACH received an invitation letter. Those who took part in the interviews provided verbal consent. Participants were asked to provide their opinions about:

- The care they received from pharmacists
- Communication between patients, pharmacists and family physicians
- Suggestions for sustainability

Interviews were recorded and transcribed verbatim. Three reviewers (including one patient who did not participate in RxEACH) analyzed and coded the data independently.

**Results**

Data saturation was achieved after interviewing 14 participants. Half of whom were male and approximately two-thirds were older than 60. The following themes were identified:

(i) Patient-pharmacist relationship: Participants highlighted the importance of having a strong relationship with the pharmacist, indicating that could enhance their level of comfort with the pharmacist. They also felt that pharmacists truly cared about them as people.

(ii) Healthcare system characteristics: The majority of the participants supported expanded scope of practice and identified it as an opportunity to fill healthcare gaps highlighting easy accessibility, high quality and timeliness of pharmacist services.

(iii) Patient reaction: Participants were extremely satisfied with the care they received and reported that they felt empowered when pharmacists encouraged them to take responsibility for their own health.

**Conclusion**

Patients are highly supportive of an advanced scope of pharmacy practice which includes prescribing, follow-up, and remunerated care. Our inclusion of a patient in the analyses provided a unique perspective.

**Poster062**

## Cost-effectiveness of pharmacist care for managing patients at high risk for cardiovascular disease in Canada

**Yazid N. AL HAMARNEH, Karissa JOHNSTON, Carlo MARRA, Ross T. TSUYUKI**

**Background**

The RxEACH randomized trial demonstrated that community pharmacist prescribing and care reduced the risk for cardiovascular (CV) events by 21%, compared to usual care.

**Purpose**

To evaluate the economic impact of pharmacist prescribing and care for CV risk reduction in a Canadian setting.

**Methods**

A Markov cost-effectiveness model was developed to extrapolate potential differences in long-term CV outcomes, using different risk assessment equations. The mean change in CV risk for the two groups of RxEACH was extrapolated over 30 years, with costs and health outcomes discounted at 1.5% per year. The model incorporated health outcomes, costs and quality of life to estimate overall cost-effectiveness. It was assumed that the intervention would be 50% effective after ten years. Individual-level results were scaled up to population level based on published statistics (29.2% of Canadian adults are at high risk for CV events). Costs considered included direct medical costs as well as the costs associated with implementing the pharmacist intervention. Uncertainty was explored via probabilistic sensitivity analysis.

**Results**

It is estimated that the Canadian healthcare system will save $4.6 billion over 30 years, if the pharmacist intervention was delivered to 15% of the eligible population. Pharmacist care would be associated with a gain of 592,049 Quality Adjusted Life Years and avoid more than 9 million CV events. The intervention is economically dominant, i.e. it is both more effective and reduces costs when compared to usual care.

**Conclusions**

Across a range of one-way and probabilistic sensitivity analyses of key parameters and assumptions, pharmacist prescribing and care is both more effective and cost-saving compared to usual care. Canadians need, and deserve such care.

**Poster063**

## A survey exploring attitudes, opinions and knowledge of emergency contraception among pharmacists and pharmacy students

**Jadranka V. RODRÍGUEZ, Živka JURIČIĆ, Renata J. GRUBEŠIĆ, Mateja BAINAC, Ana BREZOVIĆ**

**Background**

Over-the-counter dispensing (OTC) of emergency hormonal contraception (EHC) involves several ethical dilemmas, which are difficult to address because they involve scientific knowledge but also moral and religious dimensions as well as the pharmacist's worldview.

**Purpose**

Because of the complexity and specificity of this issue, this study aimed to provide the description of the knowledge, attitudes, and practices of Croatian community pharmacists toward emergency contraception.

**Methods**

A cross-sectional study was conducted among 209 community pharmacists in Zagreb area, Croatia. A structured questionnaire consisted of sociodemographic characteristics, multiple-choice specific questions about EHC, and true/false statements to assess knowledge in addition to Likert-type scale questions regarding attitudes and opinions. Frequency and descriptive statistics were calculated for all variables. Quantitative data analysis was performed using univariate and bivariate statistics.

**Results**

The results of the descriptive analysis show that the average knowledge about EHC among pharmacists is very good (78.9% correctly answered questions). More than 90% of pharmacists showed the knowledge regarding regulations involved in the EHC dispensing. A higher frequency of incorrect answers (25-46%) is obtained for questions about indications, contraindications and justification of EHC use. Pharmacists' views on whether the non-prescription status of EHC and its benefits is medically justified are divided. About 15% of the participants believe that they are not adequately educated and trained for dispensing of EHC. Bivariate analysis showed that there is a statistically significant difference in attitudes, opinions and knowledge about EHC depending on participants' sociodemographic characteristics.

**Conclusion**

Our results highlight the need to provide more continuous education opportunities for licensed pharmacists to be able to provide informed pharmaceutical care in the area of EHC.