ABSTRACT SET

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Oral presentations

Abstract number 459

Anticholinergic and sedative drug burden in elderly patients with cardiovascular diseases

Milena Kovačević[1], Sandra Vezmar Kovačević[1], Slavica Radovanović[2], Predrag Steavanović[2,3], Branislava Miljković[2]

[1]University of Belgrade-Faculty of Pharmacy, Belgrade, Serbia,
[2]University Hospital Center Dr Dragiša Mišović, Belgrade, Serbia,
[3]University of Belgrade-School of Medicine, Belgrade, Serbia. Email: milenak@pharmacy.bg.ac.rs

Background Exposure to anticholinergic and sedative drugs have been associated with adverse health outcomes in the elderly population, which can be measured in an individual patient using Drug Burden Index (DBI). Higher DBI values were associated with poorer cognitive and physical performance, which may negatively influence cardiovascular disease (CVD) therapy outcomes.
Purpose The aim was to assess the anticholinergic and sedative drug prevalence and burden in CVD patients.
Method A retrospective observational study was conducted on the Cardiology ward of University Hospital Medical Center. Data were collected from medical records. DBI was used to calculate the exposure, based on the therapy used before the hospital admission. Descriptive and statistical analysis was performed using IBM SPSS® Statistics ver. 22.
Findings A total of 254 patients aged ≥ 65 were included in the analysis. Patients were comorbid (Charlson Comorbidity Index, mean $\pm$ S.D., 3.18 ± 1.63), with the average number of drugs above 6 (6.21 ± 2.78). Anticholinergic or sedative drugs were used by 23 (9.1%) patients, with identified 19 different drugs. The highest frequency was observed for doxazosin (6; 2.4%), sertraline (6; 2.4%), memantine (4; 1.6%), clonazepam (3; 1.2%) and diazepam (3; 1.2%). The majority of patients had only one drug (15; 5.9%), 2 patients (0.8%) used 2, 4 patients (1.6%) used 3, and 2 patients (0.8%) used 4 different drugs with anticholinergic or sedative effects. Patients who were exposed to those drugs had longer length of hospital stay (15.74 vs 9.41 days, $p<0.05$), and higher total number of drugs (7.61 vs 6.07, $p<0.05$). The average DBI value equalled 1.11 ± 0.74 (total range 0.33-2.60). DBI <1 was present in 13 (5.1%) patients, and higher DBI≥ 1 in 10 (4%) patients.

Conclusion The study revealed lower than expected exposure to anticholinergic or sedative drugs. The results could be seen as beneficial, as the minimization of anticholinergic burden in CVD patients is highly recommended.

Abstract number 412

Fall prevention and deprescribing of fall risk-increasing drugs: the community pharmacists' perspective

Marle Gemmeke[1], Ellen S. Koster[1], Eline A. Rodjik[1], Katja Taxis[2], Marcel L. Bouvy[1]

[1]Division of Pharmacoepidemiology and Clinical Pharmacology, Utrecht University. The Netherlands, [2]Department of Pharmacotherapy, Pharmacoepidemiology and Pharmacoeconomics (PTEE), University of Groningen, The Netherlands. Email: m.gemmeke@uu.nl

Background Pharmacists' may contribute to fall prevention by identifying and adjusting the use of fall risk-increasing drugs (FRIDs) in patients with high fall risk. At the moment, pharmacists' contribution to fall prevention is poor. Presumably, pharmacists encounter several barriers during the implementation of such services.
Purpose To explore community pharmacists' barriers and facilitators regarding provision of fall prevention care, specifically towards deprescribing of FRIDs.
Method A mixed-method study was conducted, consisting of quantitative (ranking statements, survey) and qualitative data (semi-structured interviews) with Dutch pharmacists. Quantitative data were analysed using descriptive statistics. All interviews were audiotaped and transcribed verbatim. The capability opportunity motivation – behaviour (COM-B) system was applied to interpret the findings.
Findings In total, 313 Dutch pharmacists ranked statements during an interactive presentation, 205 of them completed a survey and 16 were interviewed. Pharmacists were motivated and confident about their potential in fall prevention care. Their capability to provide fall prevention care included mainly the deprescribing of FRIDs. However, their self-reported current contribution was poor. Major barriers with regard to opportunity were identified, including insufficient multidisciplinary collaboration and patient unwillingness to deprescribe FRIDs.
Conclusion Community pharmacists are motivated to provide fall prevention services, particularly deprescribing of FRIDs. They

believe in their own capability to provide fall prevention, but emphasize that the decision-making of FRID deprescribing is complex. Opportunities of pharmacists to provide fall prevention services should be enhanced, for example by definition of multidisciplinary agreements, regionally or nationally, to facilitate collaboration.

Abstract number 449

Clinical medication review using patient questionnaires and expert teams (Opti-Med) through Pharmacotherapeutic Audit Meeting facilitates implementation.

Jacqueline Hugtenburg[1], Sek Hung Chau[1], Jacintha Domic[1], Petra Elders[1], Francois Schellevis[1]

[1]Department of Clinical Pharmacology and Pharmacy, Amsterdam University Medical Centers, Loc. VUMC. Email: jg.hugtenburg@amsterdamumc.nl

Background Clinical medication reviews (CMRs) are time consuming for general practitioners (GPs) and community pharmacists (CPs). The Opti-Med method is a promising method to increase the efficiency of CMRs. To implement this method in clinical practice, CPs and GPs require training and tools.
Purpose To gain insight into the facilitators and barriers of the implementation of the Opti-Med method in Pharmacotherapeutic Audit Meeting (PTAM) groups and to assess its effect on the quantity and quality of CMRs.
Method The study had a one armed mixed-methods design. Eligible PTAM-groups were approached via care groups and regions. All included PTAM-groups were instructed to perform CMRs according to the Opti-Med method. Adaptive implementation was applied. The participants received the Opti-Med procedures, patient questionnaire and information sheet and attended three PTAM meetings, aiming to inform them about the study procedures and to evaluate the results. Primary outcome measures were the number of performed CMRs, the time to perform a CMR, and the decrease in time consumption over the study period. Quantitative data were analyzed using SPSS IBM Statistics (version 26). Qualitative results obtained using semi-structured interviews, were recorded, transcribed verbatim and coded using Atlas Ti. 8.
Findings One PTAM-group reported data regarding drug related problems and proposed and performed interventions. The other groups only reported the number of performed CMRs. On average the groups performed 28 ± 31 CMRs. In group 2, 72.7% of the proposed changes in medication were applied by the GP, from which 85.0% were accepted by the patient. The semi-structured interviews showed that Opti-Med increased the efficiency of the organization of CMRs. Especially the patient questionnaire and information sheet appeared to be helpful tools.
Conclusion The Opti-Med method provides structure in the organization of CMRs and leads to high quality CMRs. This method is recommended in PTAM-groups where the workability of implementing and executing CMRs is low.

Abstract number 426

Nurses' perspectives on resident and family carer involvement in the medicines' pathway and medication-related decision-making

Amber Damiaens[1], Ann Van Hecke[2], Jan De Lepeleire[1], Veerle Foulon[1]

[1]Department of Pharmaceutical and Pharmacological Sciences, Clinical Pharmacology and Pharmacotherapy, KU Leuven,
[2]University Center for Nursing and Midwifery, Department of Public Health and Primary Care, U Gent. Email: amber.damiaens@kuleuven.be

Background Performing a medication review has shown to be an effective solution to reduce inappropriate prescribing among nursing home residents. Although shared decision-making is a key to person-centered care, no research has been done on residents' and family carers' involvement in medication decision-making, nor in the medicines' pathway as a whole. The attitude of health care professionals, including nurses, can constitute an important barrier to their involvement. Hence, their perspective on this matter should be explored.
Purpose This study aimed to investigate nurses' experiences and perceived opportunities for involvement of residents and their carers in both medication-related decision-making and the medicines' pathway as a whole.
Method A qualitative research design was used. Semi-structured interviews with 7 nurses were performed in different nursing homes across Flanders, Belgium. Audio-recordings of these interviews were transcribed ad verbatim. Subsequently, these transcripts were analyzed by means of an inductive thematic framework.
Findings Nurses named several examples of how residents and carers deal with questions and issues related to the medication, indicating a desire for information and participation among both groups. However, nurses didn't seem to acknowledge these needs. When discussing responsibilities concerning decisions about medication (changes) and the involvement of residents in the medicines' pathway, including informing them about potential medication changes, nurses indicated to rely on the GP. Nevertheless, they seemed to be involving residents and carers in the medicines' pathway themselves, mostly based on ad hoc initiatives, which in turn were dependent on the situation, resident and family carer. Furthermore, nurses expressed divergent views on current initiatives and opportunities for resident and carer involvement in de medicines' pathway, which seemed to be related to their own attitude as well as to the organization of the nursing home.
Conclusion Although information and participation needs among residents and carers could be deduced from the interviews, these are not fully acknowledged by nurses. Additionally, nurses do not involve residents and carers in the medicines' pathway in a structured manner and have diversing views on this matter, pointing towards an obvious need for initiatives to create and improve awareness.

Abstract number 410

Pharmacy technicians contribute to counselling and handling drug-related problems at community pharmacies

Mira El-Souri[1], Rikke Nørgaard Hansen[1], Ann Moon Raagaard[2], Birthe Søndergaard[3], Charlotte Rossing[1]

[1]Pharmakon, Danish College of Pharmacy Practice, [2]Danish Association of Pharmacy Technicians, [3]Association of Danish Pharmacies. Email: mso@pharmakon.dk

Background Pharmacy technicians are the largest group of staff at Danish community pharmacies. They play a vital role in counselling patients on prescription medication, over-the-counter (OTC) medication and non-medical products. This is the first study carried out to specifically analyse how pharmacy technicians contribute to counselling.
Purpose The objective was to map the pharmacy technicians' counselling activities regarding prescription medication, OTC medication and personal care products at community pharmacies and to analyse how they handle drug-related problems (DRP).
Method 76 pharmacy technicians from 38 community pharmacies were included from all Danish regions. The participating pharmacy

technicians registered data on all their patient visits to the community pharmacies for five days over a four-week period between January and March 2019. At the beginning of the study period, the pharmacy technicians were introduced to the study in a webinar. They received training on registration consisting of an instruction and eight cases, that they had to solve before starting registration. During the study period the research group held two Q&A webinars and could further be contacted for support.

Findings Data on a total of 17,692 patients was registered. DRPs were identified for 17.8% (n=1,917) of patients requesting prescription medication, 57.8% of whom received counselling. 2.4% (n=262) got their medication after their prescription had been corrected; for 7.1% (n=761) the medication was not handed over due to DRPs. DRPs were identified for 12.7% (n=352) of patients requesting only OTC medication or presenting a symptom. 46.3% (n=163) requests were solved, 20.5% (n=72) were partly solved, 13.1% (n=46) were not solved and 20.2% (n=71) were registered as "don't know" or lacking. 25.2% of patients who received counselling saved a visit to their General Practitioner (GP). More results will be presented at the conference.

Conclusion Pharmacy technicians contribute to medication safety by counselling patients and handling DRPs. "Drug/product use" was the most frequent subject used in counselling the total population and in all subgroups.

Abstract number 442

Development and validation of the Respiratory Adherence Care Enhancement (RACE) questionnaire, facilitating personalised pharmaceutical care of asthma patients with inhaled corticosteroids (ICS)

Claire Visser[1], Jip Linthorst[2], Rahima Mesdar[2], Esther Kuipers[3], Jacob Sont[4], Joyca Lacroix[5], Henk-Jan Guchelaar[1], Martina Teichert[1]

[1]Department of Clinical Pharmacy and Toxicology, Leiden University Medical Centre, 2333 ZA Leiden, The Netherlands, [2]University of Leiden, Pharmacy, The Netherlands, [3]Apotheek Rosmalen, Berlicum & Empel, 's-Hertogenbosch, The Netherlands, [4]Department of Medical Decision Making, Leiden University Medical Center, Leiden, The Netherlands, [5]Philips Research, High Tech Campus 34, 5656 AE Eindhoven, The Netherlands. Email: c.d.visser@lumc.nl

Background Inhaled corticosteroids (ICS) are considered the cornerstone of maintenance therapy for asthma. In clinical practice adherence to ICS remains suboptimal in asthma patients. Driving factors for non-adherence are complex and consist of a range of barriers with a considerable inter-individual variability. The Theoretical Domains Framework (TDF) offers a set of behavioural determinants explaining these barriers. Identification of individual patient barriers to ICS use may enable personalised pharmaceutical care to improve adherence and treatment outcomes.

Purpose This study aims to develop and validate the RACE questionnaire to identify personalized barriers for ICS use in primary care asthma patients.

Method The development of the RACE-questionnaire was based upon a literature review and Delphi Rounds with expert panels. The prototype consisted of the following 6 TDF-domains: 'Knowledge', 'Beliefs about consequences,' 'Emotion', ´Skills´, 'Behavioural regulation' and 'Memory, attention and decision process'. Within these domains a total of 10 constructs were defined corresponding to potential barriers for ICS use with a total of 22 questions divided over the constructs. Answers to the questionnaire were collected from primary care asthma patients on a 5-point Likert scale. Internal consistency was conducted for the scores within each construct. Subsequently, semi-structured interviews were conducted as a golden standard for the identification of barriers. The interviews were transcribed and coded by two independent researchers with a predefined framework. Cut-off values and criterion validity were assessed by comparison of the barriers mentioned in the questionnaire with the interviews.

Findings Scores from 64 patients were available from the RACE-questionnaire. Cronbach's alpha for the internal consistency of the questions within the 10 constructs ranged from 0.6 to 0.9. Interviews from 61 patients were available for the criterion validity. Optimal cut-off values were determined at a sensitivity between 41% and 83% and a specificity between 67% and 92% for all 10 constructs. All constructs showed significant Areas Under the Receiver Operating Curves with values between 0.69 and 0.86 (p-value <0.05), with the exception of 'Knowledge of ICS medication' within the TDF-domain 'Knowledge' with a value of 0.53.

Conclusion The RACE-questionnaire yields adequate metric properties to identify individual barriers for optimal ICS use in primary care asthma patients. This tool is ready to be applied in consultations to facilitate personalised pharmaceutical care in these patients. The effectiveness of this personalized support to improve patient outcomes in clinical practice needs further evaluation.

Abstract number 418

Development of a Community Pharmacy Care Programme for People with Type 2 Diabetes in Lagos, Nigeria, using the Medical Research Council Framework

Fatima Salawu Abdulhakeem Ikolaba[1], Douglas Steinke[1], Ellen Schafheutle[1]

[1]Division of Pharmacy and Optometry, School of Health Sciences, the University of Manchester, Manchester, United Kingdom. Email: fatima.abdulhakeemikolaba@postgrad.manchester.ac.uk

Background Type 2 diabetes is an increasing health burden globally and in Nigeria. Optimised diabetes management is difficult to achieve through a single healthcare provider. Community pharmacists are accessible and have key roles in diabetes care.

Purpose To develop an evidence informed, community pharmacy based care plan to support people with type 2 diabetes, which is sensitive to the needs of patients with diabetes and culture in Nigeria.

Method The Medical Research Council (MRC) framework for the development of complex interventions was used. The development stage comprises 3 steps. At step 1, two reviews of the existing published literature were undertaken: 1) review of systematic reviews of pharmacists' interventions for people with long-term conditions; 2) review of community pharmacy-based diabetes care. These review findings served to identify effective intervention components for a diabetes care plan (step 2) involving patient-centred goal setting and motivational interviewing. Step 3 Involved co-design meetings with 3 physicians, 3 workshops with 71 Nigerian pharmacists, and 19 patients with diabetes, recruited by invitation through local associations. The workshops employed an adaptation of "thinking through co-design." Participants formed four groups to gather ideas, using flipcharts about: 1) pre-intervention strategy, 2) outcome measures, 3) facilitators and barriers, 4) delivery and follow-up. Flipcharts were rotated to each group. Discussion notes and information on flipcharts was collated and incorporated into an amended care plan.

Findings Co-design participants identified the importance of adequate training as the most important pre-intervention strategy. It was stressed that questionnaires and forms needed to be written in 'lay language'; Committed and trained pharmacists were identified as key enablers; Barriers – Space, time and patients' literacy. There was

great enthusiasm for this project, with most being positive that the patient-centred care will work in Nigeria. The stakeholders' feedback was used to fine tune the care plan intervention components by ensuring that: 1) training was undertaken by pharmacists before delivering the care plan, 2) questionnaires and forms were written in 'lay language', 3) only service-oriented community pharmacists were recruited. The amended care plan involves trained service-oriented pharmacists meeting with patients, once a month for six months, to support and motivate patients to achieve their self-set goals.

Conclusion The next stage in the MRC framework is to feasibility test the amended diabetes care plan in 20 community pharmacies with 120 patients in Nigeria. Due to the Covid-19 pandemic, it will be delivered remotely. Clinical and non-clinical measurements will be outcome measures.

Abstract number 467

Evaluation of the medication policy during and after a stay in Covid transitional care centers in Flanders.

Mare Claeys[1], Veerle Foulon[1]

[1]Clinical Pharmacology and Pharmacotherapy, Department of Pharmaceutical and Pharmacological Sciences, KU Leuven, Belgium. Email: mare.claeys@kuleuven.be

Background In Flanders (Belgium) Covid transitional care centers (C-TCC) were established to accelerate the hospital-outflow of patients, resulting in a greater capacity in the hospitals for the most critical patients. The Flemish government provided a guidance script for the C-TCC, including details on pharmaceutical care. A transitional center had to employ a community pharmacist as a 'coordinating pharmacist', next to 'the delivering pharmacist'. The coordinating pharmacist was responsible for the medication policy during and after the stay in the C-TCC. Patients returning home from the C-TCC received an envelope for the community pharmacist, containing the medication scheme and a questionnaire for the pharmacist.

Purpose The study aimed to evaluate 1) the medication policy in the C-TCC, 2) the role of the coordinating pharmacist in the C-TCC and 3) the pharmaceutical care services provided by the community pharmacist upon medication reconciliation after discharge from the C-TCC.

Method This study was a prospective observational study, including an analysis of the guidance scripts of each center. All coordinating pharmacists were asked to fill in a questionnaire on roles and responsibilities. Subsequently, a selection of coordinating pharmacists was invited for an in-depth, semi-structured interview. Other HCPs, involved in the C-TCC, were interviewed to investigate medication policy and role clarity. Questionnaires completed by community pharmacists were analysed for data on drug-related problems and interventions upon medication reconciliation after discharge from the transitional care center.

Findings Although very diverse, the guidance scripts contained agreements about medication policy during admission, stay and discharge from the C-TCC. The job content of the coordinating pharmacist slightly differed in the C-TCC, but the role in general was to maintain medication continuity during and after patient's stay. Although little attention had been paid on the integration of the coordinating pharmacist within the C-TCC at the start of the activities, the coordinating pharmacist was appreciated by the other HCP, and seen as an added value. The community pharmacists, who received an envelope, conducted a medication reconciliation to guard the patients' medication continuity. They also did home deliveries for the most vulnerable patients, and provided pharmaceutical care by telephone.

Conclusion The exclusive role of the coordinating pharmacist was positively evaluated, both by the HCPs and by the coordinating pharmacists. This research indicates that a coordinating pharmacist can have an added value in healthcare facilities, concerning the medication policy. Likewise, the community pharmacists proved that they are crucial for maintaining medication continuity and a seamless transition from care settings.

Poster abstracts

Abstract number 413

Creating the universal version of an specific medication adherence questionnaire: The MUAH-16u

Marli Oliveira [1], Ana C. Cabral[1], Marta Lavrador [1], Margarida Castel-Branco [1], Isabel V. Figueiredo [1], Fernando Fernandez-Llimos[2]

[1]University of Coimbra, [2]University of Porto. Email: fllimos@ff.up.pt

Background The short version of the Maastricht Utrecht Adherence in Hypertension (MUAH-16) showed a high performance in hypertensive patients, demonstrating its ability to measure medication adherence (through the overall score) but also four beliefs about mediation components (with the domain scores).

Purpose To create a universal medication adherence questionnaire by substituting the hypertension-specific questions of the MUAH-16 by questions applicable to any chronic condition.

Method The six hypertension-specific questions of the Portuguese version of the MUAH-16 were modified to obtain six similar non-specific questions (e.g. blood pressure mentions or salt and fat intake control). A questionnaire comprising the 16 MUAH-16 questions plus the six new unspecific questions was created with all the questions shuffled. This 22-question instrument was applied to a purposive sample of hypertensive patients. Overall score and each four domain scores were calculated for the two 16-question instruments. Distance between the scores was calculated by the absolute difference between the scores of the two versions. Correlation (parametric) between the two overall scores and associations (non-parametric) between distances and patient characteristics were calculated.

Findings A first sample of 53 hypertensive patients completed the instruments, with mean of 68.6 years (SD 8.6) and 66% females. The two versions demonstrated a high correlation between both overall scores (Pearson's r=0.962; p<0.001), with also high correlation between the domain scores (r=0.831; 0.933; 1.0; 0.880, with p<0.001). The distance between the two overall scores (median 2.0%; IQR 0%-3.0%) showed no association with age (p=0.839), gender (p=0.254), years from hypertension diagnose (p=0.321), diabetes (p=0.180), or dyslipidemia (p=0.403).

Conclusion The modification of six questions to obtain the MUAH-16u, a universal version of the MUAH-16, produced an instrument with identical performance in hypertensive patients. Confirmatory Factorial analysis is required to confirm a similar structure [To be presented at the conference with a greater sample].

Abstract number 414

fokus°PDCA: Development of an implementation tool for professional pharmacy services

Pascal Claude Baumgartner[1], Elisabeth Scherer[1], Kurt.E Hersberger[1], Isabelle Arnet[1]

[1]Pharmaceutical Care Research Group, University of Basel. Email: pascal.baumgartner@unibas.ch

Background The importance of community pharmacists in the provision of primary health care is constantly growing and involves more than dispensing medications. Professional pharmacy services are to become a crucial new cornerstone of modern community pharmacies. In recent years, many professional pharmacy services have been developed, piloted, and implemented, but few were implemented sustainably.
Purpose To develop and pilot-test an implementation tool for professional pharmacy services based on the Deming Cycle (PDCA-Cycle) and the six stages of the Framework for the Implementation of Services in Pharmacy (FISpH).
Method We conducted a literature search to find variations of the Deming Cycle. They were evaluated according to four previously defined criteria to determine the variation most suitable to become the core structure of an implementation tool. The selected variation was adapted according to the six stages of the FISpH and compared with the activities of the FISpH for comprehensiveness. The resulting implementation tool was evaluated for usability and comprehensibility by Pharmacy Master Students in March 2020 in a theoretical scenario of vaccination. Answers were given with a four-point Likert scale, with a maximum of 4 denoting best attribute. The final version of the tool was evaluated for acceptability, feasibility, and appropriateness by community pharmacists with the same scenario.
Findings We found five variations of the Deming Cycle in literature. The most suitable variation was adapted and resulted in a two-steps implementation tool that we named fokus°PDCA. Our tool covers all 31 activities of the FISpH either explicitly (n = 14) or implicitly (n = 17) and is a four-page working sheet consisting of nine sections. The fokus part is filled in once at the start of the implementation. The PDCA part is filled in after each completed cycle. Usability and comprehensibility were rated with an overall score of 3.7 ($\pm$0.2; n = 14). Acceptability was graded with 3.6 ($\pm$0.4; n = 14), feasibility with 3.4 ($\pm$0.3; n = 14), and appropriateness with 3.6 ($\pm$0.3; n = 14).
Conclusion We successfully developed a two-steps implementation tool for professional pharmacy services, the fokus°PDCA. First evaluations indicate good usability, comprehensibility, acceptability, feasibility, and appropriateness. In the next step, the fokus°PDCA will be used to implement a professional pharmacy service targeting medication non-adherence in Switzerland.

Abstract number 416

Literature Review: Patients' and doctors' experiences with Medication Reviews in Community Pharmacies – an application of the Consolidated Framework for Implementation Research (CFIR)

Dorothee Michel[1], Anita Weidmann[1], Antonella Tonna[1], Dorothee Dartsch[2]

[1]Robert Gordon University, Aberdeen, [2]CaP Campus Pharmazie GmbH, Hamburg. Email: d.michel@rgu.ac.uk

Background Medication reviews (MRs) aim at optimizing medicines use and improving health outcomes. Despite encouraging literature reports their implementation differs between countries. Identifying patients' and doctors' experiences with and attitudes towards MRs can inform further implementation of MRs in community pharmacies.
Purpose To critically appraise, synthesize and present the evidence on patients' and doctors' experiences with and attitudes towards MRs in community pharmacies using the Consolidated Framework for Implementation Research (CFIR). To identify experiences with MRs and to determine barriers and facilitators for the implementation of MRs in community pharmacies.
Method This literature review is part of a larger systematic review of four databases (MEDLINE, Scopus, CINAHL, IPA), which was

conducted with key search terms related to [implementation, pharmacy, medication review, facilitator, barrier]. Included were primary research items published in English, Spanish or German from 2004 onward. Participants (reported here): patients, doctors; Setting: community pharmacy; Intervention: MR according to PCNE definition; Outcomes: experiences, views, beliefs, attitudes. All steps of screening, data extraction, mapping against the CFIR and quality assessment were carried out independently by two team members. Synthesis of findings was performed and presented according to the CFIR constructs.
Findings Out of 909 identified records 6 studies from 4 countries are included here. Apart from remuneration and policy issues valuable insights from the outer setting concerned the nature and degree of the collaboration between pharmacists and doctors, which was considered crucial for successful implementation by doctors and patients. Doctors predicted higher acceptance of MRs if they could select the patients or if patient eligibility criteria were agreed beforehand. The relative advantage of MRs compared to usual care was acknowledged by both stakeholder groups. However, doctors criticised overly complex documentation and patients preferred more flexible MR-delivery schemes. Patients who had experienced MRs were highly satisfied with the service and thought it was helpful. Yet, not knowing what to expect, some patient groups, especially deprived patients, were difficult to engage. Patients recommended national publicity campaigns to increase awareness for MRs in the general public.
Conclusion The CFIR provided a clear structure for experiences, barriers and facilitators to MR-implementation. Despite most patients' and some doctors' appreciation of MRs and perceived patient benefit, issues persist with engaging patients and doctors positively. Further research is needed to explore the reasons therefore and to develop strategies to overcome barriers.

Abstract number 417

Drug-related problems in the emergency department -important information or cumbersome time consumption

Lisbeth D. Nymoen[1,3], Malin Björk [2], Therese Tran[3], Ingrid K. Tunestveit[3], Erik Øie[4], Aasmund Godø [5], Merethe Nilsen[1], Trude E. Flatebø[1], Kirsten K. Viktil[1,3]

[1]Diakonhjemmet Hospital Pharmacy, Oslo, Norway, [2]Faculty of Pharmacy, Uppsala University, Uppsala, Sweden, [3]Department of Pharmacy, University of Oslo, Oslo, Norway, [4]Department of Internal Medicine, Diakonhjemmet Hospital, Oslo, Norway, [5]Department of Anesthesia and Intensive Care, Diakonhjemmet Hospital, Oslo, Norway. Email: lisbetd@student.matnat.uio.no

Background Conducting medication reconciliation (MR) and review (MRe) is validated, yet time demanding methods for identifying drug-related problems (DRPs) and also addressing drug-related hospital admission (DRHA). In the fast-paced workflow of the emergency department (ED) physicians are, however forced to distribute their time to ensure that all admitted patients receive appropriate emergency care and DRHA is often unrecognised.
Purpose Investigate the incidence of DRPs identified by pharmacists during patients ED-stay and these DRPs' association to DRHA.
Method Sub-study of a RCT; patients were included and randomized at arrival to the ED, Diakonhjemmet Hospital (DH), Oslo, Norway from April 2017 to May 2018. Average patient stay in the ED is 3.2 hours (2018). Only the intervention group was included in this sub-study. The intervention was MR and MRe conducted by a pharmacist immediately after admission to the ED. DRPs were identified, and results from both the MR and MRe were communicated to ED physicians. DRPs were investigated retrospectively by a multidisciplinary team (senior clinical pharmacists and senior physicians),

classifying the DRPs either as clinically relevant to identify during the ED-stay, clinically relevant later during the hospital stay, not relevant during the hospital stay, or not a DRP. The team also classified admissions as probably DRHA, possibly DRHA or not a DRHA.

Findings Of 402 patients, 4.5% of patients were classified to having a probable, and 15.2% a possible DRHA. A total of 748 DRPs were identified during the ED stay, of which 600 were acknowledged by the multidisciplinary team as a DRP. Further, 33.5% of the DRPs were considered clinically relevant to identify during the short ED-stay, 61.3% was considered clinically relevant during the hospital stay and 5.3% was considered not relevant during the hospital stay. The 19.8% of the DRPs not considered to be a DRP was typically registered as a potential DRP. When evaluated in retrospective with additional information they were classified as not a DRP. In 85% of the patients classified to have a DRHA (both probably and possibly), the pharmacists in the ED identified one or more DRPs regarding the drugs involved in the DRHA.

Conclusion The incidence of clinically relevant DRPs in the ED is noteworthy. We found that a multidisciplinary team classified approximately one third of the identified DRPs as important to identify in the initial phase of the hospital admission. Our findings emphasize that pharmacists in the ED can play an essential role in addressing DRHA.

Abstract number 419

Clinical decision support systems in community pharmacies: an evaluation of the effectiveness in Belgian practice

Laure Sillis[1], Carolien Bogaerts[2], Veerle Foulon[1]

[1]Department of Pharmaceutical and Pharmacological Sciences, Clinical Pharmacology and Pharmacotherapy, KU Leuven, [2]KOVAG. Email: laure.sillis@kuleuven.be

Background Clinical decision support systems (CDSS) are health information technology systems designed to support healthcare providers. Two clinical decision rules have recently been implemented in a subset of Belgian community pharmacies: a clinical rule providing support in the dispensing of osteoporosis medication and a clinical rule aiding in the management of QT interactions.

Purpose The implementation and impact of these two CDSS in daily practice was investigated. We investigated whether the implementation of the CDSS 'osteoporosis' resulted in an increase in the use of Calcium/VitD. For the CDSS 'QT prolongation' we analyzed the impact on the delivery of QT-prolonging antibiotics in combination with other high-risk QT-prolonging medicines.

Method Retrospective descriptive research was conducted on dispensing data from pharmacies in the Officinall (KOVAG) network. Data were analyzed for 3 periods: before, immediately after and one year after the launch of the CDSS. For the CDSS 'osteoporosis', the primary endpoint was the proportion of all osteoporosis patients who were delivered calcium and vitamin D supplements in addition to their osteoporosis medication. For the CDSS 'QT interactions', the primary endpoint was the number of at-risk antibiotic dispenses compared to the total number of antibiotics dispenses. Only the three most frequently dispensed QT-prolonging antibiotics were included.

Findings Dispensing data from 60 pharmacies were included in the analysis of the CDSS 'osteoporosis'. Prior to the launch of the CDSS, a correct dispense of Calcium/VitD was registered for 40.70% of the patients with osteoporosis. After the launch, this increased to 42.01%; one year later, the proportion dropped to 41.60%. For the analysis of the CDSS 'QT-interactions', data from 14 pharmacies were analyzed. On average, 9.91% of dispenses were initially at risk. Immediately after the launch, the mean proportion increased to 10.40%. One year later, the proportion dropped to 8.71%. The CDSS 'osteoporosis' scored better than the CDSS 'QT interactions', which might be due to the complexity of handling QT interactions. In addition, the analysis of the CDSS 'QT interactions' only examined the effect of the CDSS on the delivery itself. The limited improvements measured may be due to alert fatigue; a lack of patient information may also have been a potential obstacle.

Conclusion The results for the CDSS 'osteoporosis' and 'QT interactions' show that these CDSS did not have a positive effect on the number of correct dispenses. These results initiated further research to understand the barriers of these systems; optimization is essential before new systems can be rolled out.

Abstract number 420

Patient preferences for treatment decisions in relapsed/refractory multiple myeloma (RRMM) treatment: results of the PARTNER-project

Laure Sillis[1], Laura Int Panis[1], Ann Van Hecke[2], Veerle Foulon[1]

[1]Department of Pharmaceutical and Pharmacological Sciences, Clinical Pharmacology and Pharmacotherapy, KU Leuven, [2]University Center for Nursing and Midwifery, Department of Public Health and Primary Care, U Gent. Email: laure.sillis@kuleuven.be

Background Over the past decade, treatment options for multiple myeloma have increased substantially. To find the best therapy for each individual patient, patient preferences should be taken into account whenever a decision regarding relapsed/refractory multiple myeloma (RRMM) treatment has to be made. Shared decision making is one of the keys to person-centered care. However, it is unclear how this is currently performed in practice, and how patients with RRMM experience decisions regarding their treatment.

Purpose The aim of this study is to investigate how RRMM patients and their carers can be involved in decisions related to medication, and to design tools to support shared decision making as well as training for HCPs. The ultimate goal is to contribute to a person-centered approach in RRMM care.

Method To get insight into patients' experiences and expected level of involvement, semi-structured interviews with RRMM patients and their carers were conducted. Besides, interviews with HCPs (hematologists, nurses, onco-coaches and pharmacists) have been performed to get insight into HCPs' experiences and perceived opportunities for patient and carer involvement. A convenience sampling technique was used to recruit participant from five different hospitals. Interview guides were based on a thorough review of the literature. Interviews were audio-taped and transcribed verbatim. An iterative inductive approach was used to analyze the findings. Interviews were conducted until data saturation. The protocol was approved by the ethical commission EC Research UZ/KU Leuven and the local committees in the participating hospitals.

Findings By mid-November, 43 interviews had been conducted, 17 with HCPs and 26 with patients / carers. Oncologists mentioned that, when different treatment options are available, the decision is based on preferences of patients and patient specific factors. For patients, however, it was unclear that they could participate in the decision regarding their treatment. Patients and carers felt their needs were insufficiently explored and asked for more in-depth conversations about their expectations and hesitations regarding the treatment. Although HCPs confirmed they were available for answering questions of patients, most patients experienced a threshold to contact HCPs for information. HCP's defined patient involvement as valuable and acknowledge it will contribute to an improved care for RRMM patients.

Conclusion HCPs claim that treatment decisions are based on specific factors, but this is not openly discussed with patients. Patients and

carers will benefit of an open conversation with active listening and an in-depth exploration of the need for involvement. In a next phase of this project, tools to support HCPs and patients in shared decision making (e.g. question prompt list) will be developed using experience-based co-design, with the aim to contribute to a higher level of patient participation.

Abstract number 421

Complementary and Alternative Medicine use in patients with breast cancer: Communication with healthcare professionals

Ilyse Kenis[1], Lise-Marie Kinnaer[1], Sylvie Broothaerts[2], Ann Van Hecke[3], Veerle Foulon[1]

[1]Department of Pharmaceutical and Pharmacological Sciences, Clinical Pharmacology and Pharmacotherapy, KU Leuven, [2]Faculty of Pharmaceutical Sciences, KU Leuven, [3]University Center for Nursing and Midwifery, Department of Public Health and Primary Care, U Gent. Email: ilyse.kenis@kuleuven.be

Background The use of complementary and alternative medicine (CAM) among patients with breast cancer is popular, in particular for treating adverse effects of adjuvant endocrine therapy. However, the use of CAM is rarely discussed during patient consultations.
Purpose The aim of this study was (1) to gain insight in current patterns in the communication about CAM use between patients and their healthcare professionals (HCPs), (2) to identify barriers for HCPs to adequate communication and counselling about CAM use, and (3) to explore patients' experiences in communication about CAM.
Method An inductive, qualitative approach was used. Semi-structured interviews with 9 patients and 36 HCPs from primary and secondary care (oncologists, oncological nurses, hospital pharmacists, general practitioners and community pharmacists) were conducted. Questions related to patients' and professionals' views, experiences and needs with regard to communication on CAM use. All interviews were thematically analyzed.
Findings Except from some oncologists, all HCPs indicated that they never ask their patients about CAM use. Most HCPs expect patients to spontaneously report the use of CAM. Other HCPs mentioned lack of time or focus on the conventional therapy as reasons for not discussing CAM. Therefore, communication about CAM is rare and mostly initiated by the patient. When patients disclose CAM use to their HCP, HCPs will take their time to openly communicate about it. Nevertheless, HCPs discourage CAM use in most cases, due to concerns about harmful interactions. HCPs from primary care usually refer the patient to the oncologist as they fear doing something wrong. However, all HCPs, including oncologists, experience a lack of knowledge about CAM and feel uncomfortable in discussing CAM with their patients. Patients seem to notice this uncertainty among HCPs and express their need for reliable advice about CAM.
Conclusion Communication about CAM between HCPs and patients with breast cancer seems non-existent or insufficient. Lack of knowledge among HCPs is mentioned as an important barrier. This implies a need for access to evidence-based information sources and integration of CAM in the education and training of HCPs.

Abstract number 422

Evaluation of information leaflets on oral anticancer drugs: meeting the needs of patients across the health literacy spectrum?

Ilyse Kenis[1], Lise-Marie Kinnaer[1], Tine Van Nieuwenhuyse[2], Marijse Matheve[3], Veerle Foulon[1]

[1]Department of Pharmaceutical and Pharmacological Sciences, Clinical Pharmacology and Pharmacotherapy, KU Leuven, [2]Pharmacy Department, University Hospitals Leuven, [3]Faculty of Pharmaceutical Sciences, KU Leuven. Email: ilyse.kenis@kuleuven.be

Background Oral anticancer drugs (OACD) cause a shift in responsibilities from the oncology team to the patient. Therefore, patient education, combining verbal and written information, is key to a successful treatment. However, standardized and clear written information for patients is lacking. Therefore, the EDU-CONTACT-initiative (EDUcation to support COllaborative Networks to Take responsibility for oral AntiCancer Therapy) has been set up to develop uniform pictogram-based leaflets per OACD.
Purpose The aim of this study was to investigate the readability of the information leaflets and to gain insight in patients' perspectives on comprehensibility, utility, and design quality. To guarantee the usability of the leaflets for patients across the health literacy spectrum, we also investigated whether the results differ according to the level of patient health literacy.
Method An observational cross-sectional study was conducted to evaluate a set of 3 test-leaflets. Test panels consisted of patients with cancer, patients with other chronic conditions and healthy volunteers with different levels of health literacy. Three assessments were performed: 1) general assessment of patient characteristics and health literacy using the Health Literacy Survey Questionnaire (HLS-EUQ16), 2) readability test according to the guideline from the European Commission (EC) to test patient leaflets prior to market authorization of medicines, and 3) Consumer Information Rating Form (CIRF), a direct method for measuring patients' perceptions of the comprehensibility, utility, and design quality of written medicine information.
Findings Each test-leaflet was evaluated by 20 participants, including 2-6 participants with inadequate health literacy, to ensure a balanced sample (according to the distribution of health literacy in Belgium) of potential users. For none of the three leaflets the readability requirements, as detailed in the EC guideline, were met. Participants mostly struggled with questions about the posology and method of administration. No relationship was found between participants' health literacy and their results on the readability test. The overall score on the CIRF was favourable. However, there was some disagreement on the topic of side effects. Some participants indicated that the list of side effects is too extensive, as opposed to others who prefer more information on this topic.
Conclusion In contrast to our expectations, health literacy seemed not a valid predictor for readability of the leaflets. Further optimization of the leaflets is needed to ensure their readability for patients treated with OACD and their optimal use during face-to-face education and counseling by HCPs.

Abstract number 423

Organization's barriers and needs to successfully implement an effective pharmacy-led adherence-enhancing program at the initiation of therapy.

Rik Ensing[1], Danielle van der Duin[1], Ellen Koster[2]

[1]Zorggroep Almere, [2]Utrecht University. Email: rensing@zorggroep-almere.nl

Background Up to 28% of the patients stop taking a cardiovascular drug intended for long-term use after a single administration. Adherence support at the initiation of therapy is therefore crucial. However, the implementation of effective patient adherence counseling programs in everyday pharmacy practice remains difficult.

Purpose A previously proven effective adherence-enhancing intervention (TelCIP: TELephone Counselling Intervention by Pharmacist) will be implemented in the high-risk setting where community-dwelling patients migrate from secondary to primary care. This preparatory study aims to clarify the barriers and needs of the intended organization to improve the feasibility for successful implementation.
Method The intervention will focus on proactive adherence counseling for patients as soon as they enter primary care and needs to be both effective and feasible in everyday pharmacy practice. Therefore, Zorggroep Almere (a multidisciplinary primary healthcare organization) formed a living lab for an in-depth implementation study. In this preparation phase, the working group identified strengths, weaknesses, opportunities, and threats (SWOT-analysis) of the living lab to map the barriers and needs for implementation. The working group includes all levels within the pharmacy section, namely: a post-doc pharmacist-researcher (project leader with experience on implementation studies), a member of the pharmacy management team of Zorggroep Almere, an outpatient pharmacist, a community pharmacist and a pharmacy consultant.
Findings Main strengths of the living lab that facilitate implementation of the intervention are: (1) the intervention fits in with the existing pharmacy routine and patient journey, (2) all involved healthcare providers are employed by the same organization and (3) the pharmacy staff is willing to learn, innovate and change. Important weaknesses that could hamper implementation are: (1) the unsustainable financial situation of the organization, (2) pharmacists need to deploy a pharmaceutical care activity that is not reimbursed by health insurers and (3) lack of a digital protocol for patient transfer and communication between care settings. The working group identified the (1) possibility of serving as an example to other Dutch regions in providing integrated pharmaceutical care and (2) contributing to patients' health as opportunities. Finally, the sustained pressure on pharmacy fees and revenues by health insurance companies and policy makers and the lack of qualified pharmacy staff were identified as threats.
Conclusion The performed SWOT analysis provides important baseline information and valuable insight on key components of the organization. Identifying these factors in an early stage creates awareness that enhances the feasibility for successful implementation of the proposed intervention within the living lab.

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Exploring the feasibility and acceptance of mystery visits followed by personalized feedback as educational intervention for community pharmacists

Michael Ceulemans[1], Els Geysen[1], Elena Goovaerts[1], Annelies Truyers[1], Veerle Foulon[1]

[1]Department of Pharmaceutical and Pharmacological Sciences, Clinical Pharmacology and Pharmacotherapy, KU Leuven. Email: michael.ceulemans@kuleuven.be

Background A blended learning program for community pharmacists with regard to preconception, pregnancy and lactation was shown to be insufficient to implement high-quality counselling of women in Belgian pharmacies (Ceulemans et al, RSAP 2020). Academia and organizations involved in continuous education (CE) and professional development of community pharmacists are therefore looking for more effective strategies. Mystery visits, followed by personalized feedback to pharmacy staff, might be a potential strategy.
Purpose To explore the feasibility and acceptance of personalized feedback provided during online sessions shortly after mystery shopping visits.

Method A feasibility study consisting of two mystery shopping visits followed by online feedback sessions (±30 minutes) with community pharmacists was performed in Belgium between October-December 2020. All pharmacists (n=±800) who followed an accredited CE course on preconception, pregnancy and lactation in 2019-2020 could register their pharmacy for study participation. The feedback sessions were open to all pharmacy staff members, were moderated by two academic pharmacists (VF and MC) and the mystery shoppers, and were organized via Skype for Business 1-2 weeks after the visits. The mystery shoppers were female pharmacy students who were trained by the researchers and who requested a pregnancy test. Pharmacy staff did not receive the transcripts of the pharmacy conversations prior to the first round of feedback sessions. The feedback conversations were qualitatively assessed.
Findings Initially, 15 community pharmacies showed interest to participate, of which ultimately only 10 geographically distributed pharmacies participated (n=41 pharmacists). The feedback sessions after the first round of mystery visits were organized at lunch time or after the closure of the pharmacy and were attended by 26 pharmacists (63%). Eight of the 10 pharmacists who counseled the mystery shoppers attended the online meeting (80%). Pharmacists were open for feedback, listened carefully and interacted professionally and extensively during the sessions. Pharmacists generally expressed their appreciation for this more personal training format and showed their willingness to sharing the findings within their team and to applying the feedback into practice.
Conclusion Although sometimes confronting, the feedback sessions were well perceived by this very small but highly motivated group of pharmacists. The time-consuming nature of this individualized teaching approach should be emphasized, as well as the fear for mystery visits among pharmacists. In the future, the effectiveness of personalized feedback on the quality of counselling should be assessed, as well as how the acceptance of mystery visits among pharmacists can be improved.

Abstract number 425

Patients' barriers, facilitators and needs on implementing a newly prescribed cardiovascular drug in their daily routine.

Rik Ensing[1], Ellen Koster[2]

[1]Zorggroep Almere, [2]Utrecht University. Email: rensing@zorggroep-almere.nl

Background Up to 28% of the patients stop taking a cardiovascular drug intended for long-term use after a single administration. Insight in which barriers and facilitators patients experience to implement new drugs in their daily routine is crucial to tailor adherence support.
Purpose To identify the nature of adherence barriers and the accompanying success factors and needs for adherence counselling in patients who have recently started a cardiovascular drug intended for long-term use.
Method A qualitative study was performed within the outpatient pharmacy. Adult patients who were prescribed a new cardiovascular drug either at hospitals discharge or after an outpatient clinic visit were eligible to participate. Purposive sampling was applied to achieve a representative distribution in age, multiple vs. single new drug(s) prescribed and experience vs. unfamiliarity with drug use. Included patients were interviewed by telephone and inclusion continued until data saturation was reached. Interviews were recorded and transcribed. Patients' implementation barriers, facilitators and needs were coded using the Greenhalgh framework for implementation research and analyzed quantitatively.
Findings Data saturation was reached at 44 patients; 24 patients were discharged and 20 after an outpatient clinic visit. Average age was

43,4 years (n=21, younger group) and 64,7 years (n=23, older group). Multiple new drugs users received 3,2 new drugs on average and experienced users already took 3,8 drugs on average. In general, patients (Adopters in Greenhalgh) who visited an outpatient clinic needed less information and were less convinced of the medication's necessity, as compared to recently discharged patients. Younger patients more often were in need of additional medication information, while older patients often relied on the information provided (Communication and Influence in Greenhalgh). A large part of the patients use a weekly pill organizer as a reminder and scheduling aid to overcome practical barriers (Implementation process in Greenhalgh). They appreciate pharmacists' advise on these aids and would also like the provision of a structured medication overview, including instructions for use. An important perceptual barrier is patients' concerns for side effects, sometimes fuelled by the information leaflet. Finally, many patients indicate that they feel overwhelmed at time of first dispensing and like to be reinforced with important information at a later moment (System readiness in Greenhalgh).

Conclusion Individual adherence barriers affect a substantial proportion of new drug users. Elucidating these barriers accompanied by success factors to overcome them, this study provides pharmacists with the opportunity to tailor an adherence support program to patients' needs.

Abstract number 427

Person-centered care in nursing homes: resident and family carer involvement in the medicines pathway and medication-related decision-making

Amber Damiaens[1], Ann Van Hecke[2], Jan De Lepeleire[1], Veerle Foulon[1]

[1]Department of Pharmaceutical and Pharmacological Sciences, Clinical Pharmacology and Pharmacotherapy, KU Leuven, [2]University Center for Nursing and Midwifery, Department of Public Health and Primary Care, U Gent. Email: amber.damiaens@kuleuven.be

Background Performing a medication review has shown to be an effective solution to reduce inappropriate prescribing among nursing home residents. Although shared decision-making is a key to person-centered care, no research has been done on residents' and family carers' (referred to as "carers" hereafter) involvement in medication decision-making, nor in the medicines' pathway as a whole.

Purpose This study aimed to investigate residents' and carers' experiences as well as their expected level of involvement regarding medication decision-making and the medicines' pathway as a whole.

Method A qualitative research design was applied. Semi-structured interviews were performed with 12 residents and 8 carers in different nursing homes across Flanders, Belgium. Audio-recordings of these interviews were transcribed ad verbatim. Subsequently, an inductive thematic framework was used to analyze these transcripts.

Findings Residents and carers expressed unconditional trust in the GP, resulting in a kind of resigned attitude towards participation in medication decision-making. However, residents seemed to have some frustrations towards GPs, and carers indicated to regularly ask questions about the resident's medication. Additionally, both groups gave examples of negative experiences concerning the resident's medication and changes therein. Carers also expressed concerns about staff's competences, e.g. a lack of knowledge about medication. The concept of medication review was not known among residents and carers. Nonetheless, it seemed as if they implicitly expected this to be part of daily practice and assumed that only appropriate medication is being prescribed and continued. When asked about their own responsibilities in the medicines' pathway, residents only pointed

towards the self-administration of oral preparations and showed feelings of resignation towards the limited involvement in other parts of the pathway. Similarly, most carers experienced it as reassuring that the medicines' pathway is the staff's responsibility and not theirs. Two situations, however, were identified that made residents and carers take initiative: 1) the resident experiencing discomfort and 2) a potential lack of continuity of their medication use.

Conclusion Residents and carers seem to underestimate their role in the medicines' pathway. Additionally, they seem to have paternalistic views on medication decision-making. Nevertheless, information needs on the medication were established, indicating a need for awareness and empowering initiatives in both populations.

Abstract number 428

Understanding the patient perspective on medicines use for better healthcare – online courses for healthcare professionals

Anna Birna Almarsdóttir[1], Lourdes Catarero-Arevalo[1], Anne Gerd Grånas[2], Johanne M. Hansen[1], Martin Henman[3], Ramune Jacobsen[6], Solveig N. Jacobsen[1], Susanne Kaae[1], Lotte S. Nørgaard[1], Sofia K. Sporrong[1], Katja Taxis[4]

[1]University of Copenhagen, [2]University of Oslo, [3]Trinity College Dublin, [4]University of Groningen. Email: ramune.jacobsen@sund.ku.dk

Background When patients and healthcare professionals engage together in the use of medicines, medicines are used more appropriately. It is therefore important that healthcare professionals understand the patient perspective on medicines use and know how to integrate it into practice.

Purpose This project aimed to develop, deliver and evaluate innovative online courses, targeted for healthcare professionals dealing with the challenges of medicines use in patients, on how to understand the patient perspective on medicines use and how to integrate it into practice.

Method Researchers from the Universities of Copenhagen, Groningen, and Oslo, as well as Trinity College Dublin, and selected patients and healthcare professionals gathered into a kick-of meeting in January 2020. The ideas for the courses were developed in an Arena Blended Connected (ABC) workshop using Massive Open Online Course (MOOC) guidelines provided by Coursera. This workshop was facilitated by a professional from the Centre of Online and Blended learning (COBL) at the University of Copenhagen. The developed courses are delivered online, and will be evaluated using an evaluation survey developed specifically for the courses, and in focus group interviews with the course participants.

Findings Two online courses were developed. The first one, concerning the fundamentals of the patient perspective on medicines use, was launched on Coursera in September 2020. It lasts 4 weeks and consists of 4 modules dealing with: 1) societal challenges related to patients' medicines use, 2) patients' medicines use through professionals' eyes, 3) patients' stories on medicines use, and 4) introduction to the methods of how to explore and apply patients' perspectives on medicines use. So far more than 500 participants have enrolled into this course, of which 30 have completed, and provided positive feedback. The second one, concerning the fundamentals of the use of interview methods to explore patients' perspectives on medicines use, is a continuation of the first course, where participants conduct a small interview study. This course includes additional 4 weeks online with direct student-teacher interactions, and 3 days with face-to-face webinars in November 2020; 19 participants are enrolled into this course. The detailed evaluation the courses will be reported at the conference.

Conclusion Medicines are given to patients by healthcare professionals to take as instructed. In our courses healthcare professionals learn to appreciate patients' perspective on medicines use, so the use of medicines can be tailored to each patients' needs, leading to improvements in health outcomes. So far we have a great interest for our courses.

Abstract number 429

Drug-related problems associated with the use of analgesics among the Polish elderly – a preliminary study

Czepielewska Edyta[1], Klimowska Katarzyna[1], Makarewicz-Wujec Magdalena[1], Dworakowska Anna[1], Lisowska Agnieszka[1], Kozłowska-Wojciechowska Małgorzata[1]

[1]Medical University of Warsaw. Email:
edyta.czepielewska@wum.edu.pl

Background The proportion of the Polish population aged 65 and over has been increasing recently. Ageing often associates with polypharmacy. In addition to prescription drugs patients also use OTC medications, especially analgesics, increasing the risk of drug-related problems (DRPs).
Purpose This study aimed to identify and categorise DRPs associated with the use of analgesics in the elderly, as well as based on the conducted analysis, to develop recommendations increasing the safety of analgesic therapy.
Method The study was performed in 2018 and 2019 among Polish senior daycare centre participants aged 65 and over, who have agreed to be included in the survey. For identification of DRPs pharmacist-led medication use reviews were conducted. Outcomes were the number and type of DRPs associated with the use of analgesics according to the PCNE Classification, version 8.03.
Findings The study revealed the problem with extensive use of analgesic drugs among the Polish elderly, which may result in DRPs. Among 90 elderly that completed the study, there were 54 patients (60%) taking analgesics. Seventeen patients (19%) took more than one such medicine (2-5). Analgesics accounted for almost half (47%) of all OTC drugs used in the study group. A total of 61 DRPs associated with the use of analgesics were identified in 29 (32%) patients. The most common DRPs were related to the use of non-steroidal anti-inflammatory drugs (NSAIDs) and were associated with treatment safety. Sixteen patients (18%) used an inappropriate combination of drugs, mostly NSAIDs with angiotensin-converting-enzyme inhibitors or angiotensin receptor blockers. In 11 patients (12%), there was an inappropriate duplication of the therapeutic group within NSAIDs.
Conclusion The prevalence of analgesics, as well as DRPs associated with their usage among the studied elderly in Poland, was high. Appropriate pharmaceutical care could significantly improve the efficacy and safety of analgesic therapy in geriatric patients.

Abstract number 430

On mastering over-the-counter medications: A structured counseling approach for educating pharmacy experiential students while empowering lay consumers

Yen-Ming Huang[1], Yunn-Fang Ho[2], Ling-Ling Hsieh[3], Ling-Jie Chen[4], Mon-Chiao Chen[5], Yao-Hsing Wang[6], Chien Chiang Chiu[7], Liu Chiung-Sheue Chen[3]

[1]Department of Allied and Population Health, College of Pharmacy and Allied Health Professions, South Dakota State University, Brookings, SD, USA, [2]Graduate Institute of Clinical Pharmacy, College of Medicine, National Taiwan University, Taipei City, Taiwan, [3]School of Pharmacy, College of Medicine, National Taiwan University, Taipei City, Taiwan, [4]Chen-Fang Pharmacy, Yilan County, Taiwan, [5]Adam Drug Store, Taipei City, Taiwan, [6]Profession and Quality Pharmacy, Taipei City, Taiwan, [7]Jiu Yu Drugstore and Company, Taichung City, Taiwan. Email:
YenMing.Huang@sdstate.edu

Background Quality pharmaceutical care would be ensured through nurturing competent pharmacists and improving patients' knowledge of drug use. We engaged pharmacy students in applying a structured approach of over-the-counter (OTC) medication counseling to facilitate consumers' understanding of appropriate drug use while on the Advanced Community Pharmacy Practice Experiences (ACPPEs) rotation. The structured counseling approach (SAIDS) has been developed and included (1) Surfacing Symptoms and medication history, (2) inquiring Allergy, (3) providing medication Indication, (4) Directing correct medication use, and (5) Supporting Self-care.
Purpose By engaging senior pharmacy students in exercising the SAIDS counseling approach, the study aims to investigate possible impacts on students' professional growth and customers' understanding of the correct use of OTCs.
Method Each six-week ACPPEs rotation was evenly divided as control (conventional consultation) and experimental (SAIDS consultation) stages. In this cross-sectional study, consumer participants were recruited at three community pharmacies in Taiwan from March to May 2020. Convenient sampling was used, and eligible participants were at least 20 years of age, understood Mandarin, and purchased an OTC. A 12-item paper-and-pencil self-administered questionnaire was used to assess participants' understanding of the correct use of OTCs. Pre- and post-ACPPEs questionnaires, 5-item and 7-item respectively, were employed to evaluate students' professional growth. Descriptive analysis and chi-square test were used for analyses.
Findings Five pharmacy students partook in the study and reported gaining more confidence in providing OTC consultation services. Thirty-nine customer participants received conventional counseling while sixty individuals got SAIDS counseling services. No significant differences were found in demographic backgrounds of the participants receiving either counseling approaches. On average, the participants were 48 years of age. The majority of the participants were female, and more than 75% of them had a college degree or higher. Most participants (60%) always read instruction labels before purchasing or using OTCs. The information that participants mostly read included indications, dosage and administration, drug names, and cautions. In either group, the majority (72-87%) of the participants understood the indications of the acquired OTCs; however, less than half of the participants were fully aware of the correct administration. While consumers who received the SAIDS medication counseling showed a significant understanding of how to use OTCs correctly (p = 0.016). No matter what type of counseling that consumers were provided, less than one-third of the participants were able to identify the cautions that they needed to pay attention to the OTCs they purchased.
Conclusion Students' professional growth in OTC consultation proficiency was reported, although more learners' feedback is still awaited. Pharmacy students impact consumers' awareness of how to use OTCs correctly via facilitating consumers' understanding of the OTC label information. The structured medication counseling approach may help foster communication skills of OTC counseling of pharmacy students to engage the conversation between consumers and healthcare professionals regarding the use of OTCs.

Abstract number 431

Development of a remote pharmaceutical care model for cancer medicines optimisation

Joana Ribeiro[1], Ilyse Kenis[2], Veerle Foulon[2], Hélder Mota-Filipe[3], Filipa Alves da Costa[1,3]

[1]Portuguese Institute of Oncology, Lisbon, [2]KU Leuven, [3]Faculty of Pharmacy, University of Lisbon. Email: jrribeiro@ipolisboa.min-saude.pt

Background Oral oncolytics have become increasingly important in cancer treatment, adding challenges to outpatients' monitoring, including higher risk of medication-related problems among polypharmacy individuals.
Purpose The purpose of this study is to develop, implement and evaluate a pharmaceutical care model to remotely monitor medication use in polypharmacy elderly people using oral oncolytics.
Method A three-phase exploratory study will be performed. Phase 1 will consist of a qualitative study using three focus groups (with patients, clinicians and pharmacists) to assess patients' needs for support of medication use, views of healthcare professionals on interdisciplinary collaboration, and pharmacists' requirements for supportive tools. Internal factors (strengths & weaknesses) and external factors (opportunities & threats) will be thematically analysed. During phase 2, a single-centre proof-of-concept adaptive trial will be set up. The initial protocol will aim to include subjects initiating oral therapy for solid tumours, aged 65 or older, taking 5 or more medicines, assigned to control (CG) or intervention group (IG), matched by disease stage and other confounders. CG will receive usual care and IG will additionally receive a remote pharmaceutical consultation and follow-up, focusing on education (indication, frequency of intake, precautions and undesirable effects), medication adherence and medication review. In phase 3, the trial will be expanded to multiple centres. Main outcomes will include medication adherence (assessed through pill count and Medication Adherence Report Scale) and medication wastage associated with early therapy discontinuation (assessed through hospital pharmacy records and clinical diary). Pharmacist's intervention will be considered as a process measure and will be assessed by pharmacist recommendations' acceptance rate and identified drug-related problems (number and nature).
Findings The results will show whether a remote pharmaceutical care model is effective in optimising medication utilization among polypharmacy elderly patients undergoing oral oncolytics. As previously evidenced by The COllaborative Network to Take responsibility for oral AntiCancer Therapy (CONTACT) study, clinical pharmacists' input is valued in the oncology team. Results from the CONTACT study suggest that clinical pharmacists improve the quality of pharmacotherapy. Extending the study to another country may further enhance the evidence of the added-value of clinical pharmacy and pharmaceutical care.
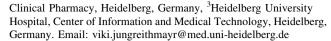**Conclusion** This work emerges as a result of the perceived need to standardise outpatient counselling and enhance monitoring of medication adherence in the hospital. The insight gained from this data may be used as a basis to extend the developed model to monitor patients with other diseases.

Abstract number 432

Methods to evaluate the implementation of a computerized physician order entry (CPOE) system

Viktoria Jungreithmayr[1,2], Implementation Team[3], Walter E. Haefeli[1,2], Hanna M. Seidling[1,2]

[1]Heidelberg University Hospital, Department of Clinical Pharmacology and Pharmacoepidemiology, [2]Cooperation Unit Clinical Pharmacy, Heidelberg, Germany, [3]Heidelberg University Hospital, Center of Information and Medical Technology, Heidelberg, Germany. Email: viki.jungreithmayr@med.uni-heidelberg.de

Background Whenever strategies to improve medication safety are implemented in routine care, a thorough evaluation of the impact on processes and clinical outcomes is suggested. The more complex these strategies are and the more they change the existing processes, the broader the evaluation must be. One of such key interventions is the introduction of electronic prescribing systems in hospital care, which is currently taking place in our tertiary care university hospital on all normal wards.
Purpose The goal of this work is to identify and assess existing methods or methods sets for evaluation of the impact of electronic prescribing in all potential relevant dimensions and thereupon deduce a final strategy that is robust, easy-to-apply and transferable to different settings.
Method An extensive, non-systematic literature search on methods for CPOE evaluation was conducted. This included the review of key literature from the NHS e-prescribing toolkit, the Institute for Healthcare Improvement resource site, the AHRQ Health IT Evaluation Toolkit, and MEDLINE. Methods were collected and those that both had high information value and could be carried out with low threshold were selected for pilot trials on practicability, suitability to assess the desired object of measurement, and transferability to different hospital wards.
Findings There were eight refined methods selected for the evaluation, which aim to measure ten different outcomes. The outcomes were grouped in four dimensions, i.e. time and resource efficiency, quality of care, patient safety, and user opinion. Within the dimension efficiency, the chosen outcomes were the time to complete certain tasks (evaluated by time-and-motion study), process changes (evaluated by focus group interviews and spaghetti diagram) and the utilization of clinical documentation systems (evaluated by focus group interviews). Within the dimension quality of care, the defined outcomes were medication documentation quality (evaluated by qualitative chart analysis) and documentation comprehensiveness (evaluated by quantitative chart analysis). The dimension patient safety was covered by the outcome patient safety culture (evaluated by a qualitative written questionnaire). Finally, the dimension user opinion summarized the outcomes organizational readiness for implementing change, interprofessional collaboration, workplace satisfaction and expectations and opinions of staff regarding the implemented CPOE system, all evaluated by a qualitative written questionnaire.
Conclusion We herewith suggest a methodology that (i) is supposed to be able to comprehensively and precisely evaluate the impact of a CPOE implementation and (ii) might establish standards on how to collect data during such an evaluation for future projects.

Abstract number 433

Perception of the benefits of an automated and personalized complexity analysis by general practitioners and patients

Viktoria S. Wurmbach[1,2], Steffen S. Schmidt[3], Anette Lampert[1,2], Simone Bernard[3], Andreas D. Meid[1], Eduard Frick[1], Michael Metzner[1], Stefan Wilm[4], Achim Mortsiefer[3,5], Bettina Bücker[3], Attila Altiner[6], Lisa Sparenberg[6], Joachim Szecsenyi[7], Frank Peters-Klimm [7], Petra Kaufmann-Kolle [9], Petra A. Thürmann[3,8], Hanna M. Seidling[1,2], Walter E. Haefeli[1,2]

[1]Department of Clinical Pharmacology and Pharmacoepidemiology, Heidelberg University Hospital, Heidelberg, Germany; [2]Cooperation Unit Clinical Pharmacy, Heidelberg University Hospital, Heidelberg, Germany, [3]Department of Clinical Pharmacology, School of

Medicine, Faculty of Health, Witten/Herdecke University, Witten, Germany,, [4]Institute of General Practice (ifam), Centre for Health and Society (chs),Medical Faculty,Heinrich Heine University Düsseldorf, Düsseldorf, Germany, [5]Professorship of Primary Care, Faculty of Health, Witten/Herdecke University, Witten, Germany (current affiliation), [6]Institute of General Practice, Rostock University Medical Center, Rostock, Germany,, [7]Department of General Practice and Health Services Research, Heidelberg University Hospital, Heidelberg, Germany, [8]Philipp Klee-Institute for Clinical Pharmacology, HELIOS Clinic Wuppertal, Wuppertal, Germany, [9]AQUA-Institute for Applied Quality Improvement and Research in Health Care, Göttingen, Germany. Email: viktoria.wurmbach@med.uni-heidelberg.de

Background An electronic tool analyzing and optimizing the complexity of drug treatment was prospectively evaluated in a pilot study (HIOPP-6; funded by the Innovation Fund of the Federal Joint Committee, Grant number: 01VSF16019) with general practitioners (GPs). Thereby the full tool (consisting of an automated analysis of complexity factors amended by an appraisal of each identified factor by the patient; Group 1 (G1)) was tested against a version of the tool that was restricted to the automated analysis and, thus, did not consider the patient's perspective (Group 2 (G2)).

Purpose To evaluate the perception of GPs and patients concerning the benefits of an electronic tool in analyzing and reducing complexity of drug treatment.

Method GPs were asked to evaluate each optimization measure (consisting of 1 to 4 single recommendations) proposed by the electronic tool based on the analysis on whether it was helpful or not as well as every analysis with the tool on whether it mitigated complexity of drug treatment for their patients or not. All answers were stored electronically in the tool. Additionally, all patients were asked to fill in a paper-based questionnaire to assess their perception of the benefits of this study.

Findings In G1, a total of 111 optimization measures were proposed by the tool after the personalization of the automated analysis and, thus, evaluated by the GPs, whereas 628 optimization measures were proposed and evaluated in G2 as a result of the exclusively automated analysis. In G1, 90.1 % of the optimization measures proposed were rated helpful, compared to 17.8 % of the optimization measures in G2 (p<0.001). Furthermore, GPs expected that 85.4 % (41/48) of the analysis performed in G1 indeed mitigated complexity of drug treatment for patients, but only 34.9 % (15/43) of the analysis in G2 (p<0.001). In total, 85 patients (G1: 45, G2: 40) returned the feedback questionnaire (return rate=93.4 %). More than two thirds of patients stated that they wished that complexity of their drug treatment would be analyzed again in the future, however, there was no statistically significant difference between the groups (G1: 66.7 %, G2: 70.0 %, p=0.696).

Conclusion GPs rated the optimization measures proposed as well as the overall analysis more often as helpful when the patients' perspective was considered. In contrast, the way complexity of drug treatment was assessed did not influence patients' perception of the benefits, who rated the analysis of complexity in both study groups equally positively.

Abstract number 434

Clinical decision support systems: a systematic review of implementation in community pharmacies

Laure Sillis[1], Veerle Foulon[1], Mitja Kos[3]

[1]KU Leuven, Department of Pharmaceutical and Pharmacological Sciences, [3]University of Ljubljana, Faculty of pharmacy. Email: laure.sillis@kuleuven.be

Background A clinical decision support system (CDSS) is a health information technology (IT) system that is designed to enhance physicians' and other health professionals' decisions and actions. CDSS can assist in the safe use of medicines and optimization of medication management, key tasks of community pharmacists in preventing and solving drug-related problems.

Purpose The aim of the study was to investigate the development, implementation, use and optimisation of CDSS in community pharmacies.

Method A systematic search through PubMed was conducted from inception up to April 2019. Articles were included if they researched the development, implementation, use and optimisation of IT systems that provided clinical decision support. MeSH terms used were: "decision support systems, management", "decision support techniques", "decision support systems, clinical", "clinical pharmacy information systems" and "decision making, computer-assisted". The database was further searched with the terms "decision support" and "community pharmacy". Only original articles written in English were included. Studies were only included if the research was conducted in a community pharmacy setting. The overall quality of this review was determined with the PRISMA statement.

Findings Twenty-three articles met the inclusion criteria, including one systematic review. Fourteen articles presented a specific example of the use of CDSS in community pharmacies: some CDSS assist pharmacists in self medication counselling; others are used to prevent and resolve drug related problems or to assist in the observance of adherence. The CDSS that were researched covered a wide variety of therapeutic areas, including anticoagulation therapy, antibiotics and diabetes management. Evaluation of effectiveness of CDSS was the aim in three articles; five articles aimed to optimize the current use of the CDSS. CDSS seemed to be low in specificity: many alerts are generated but little are useful in the patients' specific situation, mainly due to the narrow set of patient information available to provide patient specific advice. For only a few articles, there was a specification of guidelines used in the CDSS. Concerning the stage of development, four systems were only in the development phase; ten were tested in a small test group or in a pilot study. None of the systems was yet implemented on a large scale.

Conclusion CDSS could become important health IT systems in community pharmacy practice, but there are obstacles that need to be overcome before a wide adoption is possible. CDSS implementation leads to higher alert generation but the resolution rate is lower. Various strategies that have been developed to optimize the specificity of the alerts, need further research.

Abstract number 435

Development of clinical pharmacy services in Denmark from 2008 to 2019

Christine Flagstad Bech[1], Lene Juel Kjeldsen[2], Trine Kart[2], Marianne Brøndum Jensen[2], Trine Rune Høgh Andersen[1]

[1]Region Zealand Hospital Pharmacy and Roskilde University, Denmark, [2]Amgros, Denmark. Email: chbec@regionsjaelland.dk

Background Since American hospital pharmacists published the concept of Pharmaceutical Care the '90s, clinical pharmacy has gone through a rapid development in Denmark. Especially within hospital pharmacy, the growth in tasks and personnel has been significant.

Purpose The purpose was to give an overview of clinical pharmacy in Denmark and to evaluate the development of clinical pharmacy services in Danish hospitals during the past few decades.

Method National surveys conducted at all hospital pharmacies in Denmark every five years were used to evaluate the development of clinical pharmacy services in Danish hospitals. Separate surveys on

the structural organization and the available human resources, and on patient-related activities were distributed in 2008, 2013 and 2019. The questionnaires were sent to all hospital pharmacies in Denmark. Semi-structured interviews were used to provide supplementary data for analysis.

Findings All (N=8) hospital pharmacies participated in the survey. From 2008 to 2013 the number of pharmacists employed within clinical pharmacy increased by 43 % and from 2013 to 2019 that number increased by another 24 % to a total of 169 employed pharmacists in total. During this period, the amount of hours spent on patient-related services increased from 435 in 2008 to 772 in 2013 to 1720 in 2019. This corresponds to a weekly increase per pharmacist from 4.6 to 10.2 hours meaning that a pharmacist spent 28 % of their time working on patient related services in 2019. This development gives an increase of 123 % from 2013 to 2019 and a total increase of 295 % from 2008 to 2019. The most common of the patient-related services carried out are medication review (39 %) and medication reconciliation (15 %). Most commonly, these services take place during admission at hospital (54 %).

Conclusion The field of clinical pharmacy services has grown tremendously in Denmark with a large increase in the number of pharmacists employed. Furthermore, the services are shifting from logistical tasks to patient-related services. This overview of the evolution of clinical pharmacy in Denmark is valuable in order to exploit the potential for future development.

Abstract number 436

How to communicate patient electronic adherence data to physicians? – Development of a one-page reporting form through experts' consensus

Fine Dietrich[1], Kurt E. Hersberger[1], Andreas Zeller[2], Isabelle Arnet[1]

[1]Pharmaceutical Care Research Group, Department of Pharmaceutical Sciences, University of Basel, Basel, Switzerland, [2]Medical Outpatient Department, University Hospital Basel, Basel, Switzerland. Email: fine.dietrich@unibas.ch

Background The integration of patients' self-measured data into physicians' electronic health record (EHR) systems is promising to improve patient care and interprofessional cooperation. Electronic monitoring, the current gold standard to measure medication adherence, gives precise medication intake patterns over time.

Purpose To develop a compact adherence reporting form (one-page). It should combine suitable metrics and graphical representations to facilitate physicians' interpretation of (non-)adherence to polypharmacy. Additionally, integration into physicians' EHR should be technically easy to perform.

Method Pharmacists with expertise in adherence monitoring were invited to debate and agree on items needed to calculate and illustrate electronic adherence data. During a second group discussion, physicians were invited to select the items they would need for an adherence report. New items were included in the discussion. Preference was indicated by raising a green or red card. Voting was repeated until consensus was obtained. Intake data from stroke patients were recorded with a small electronic device (Time4Med[TM]) and used to create a first draft of the reporting form. The final version integrated physicians' feedbacks.

Findings During four hours on September 16, 2019, seven pharmacists agreed on four metrics to express non-optimal adherence patterns (taking adherence, timing adherence, correct dosing days and drug holidays) and three graphical representations. On January 17, 2020, five physicians participated in a one-hour panel discussion. They approved the four metrics as able to describe (non-)adherence

and rated the dot chart as the most useful illustration for judging individual adherence patterns. Further, they required a medication list, which should contain the current and complete medication of the patient. First one-page adherence reporting forms were created with the electronic monitoring data from two exemplary stroke patients (aged 68 and 75 years, 3 medicines each, twice daily regimen, 4 weeks monitoring period). The physicians appreciated the clarity of the report and suggested small improvements to the illustration.

Conclusion To our knowledge, we developed the first compact adherence reporting form based on recommendations of adherence experts and considering preferences of physicians. A study is running among patients with chronic heart failure to test the electronic transmission of the report from pharmacy software into physicians' EHR.

Abstract number 437

A qualitative study on consultations for non-prescription sildenafil in Northern Ireland

Rineke Gordijn[1], Martina Teichert[1], Melianthe Nicolai[2], Henk Elzevier[3], Henk-Jan Guchelaar[1], Carmel Hughes[4]

[1]Department of Clinical Pharmacy & Toxicology, Leiden University Medical Center, Leiden, The Netherlands, [2]Department of Urology, Diakonessenhuis Utrecht, Utrecht, NL, [3]Department of Urology and Department of Medical Decision Making, Leiden University Medical Center, Leiden, The Netherlands, [4]Primary Care Research Group, School of Pharmacy, Queen's University Belfast, Northern Ireland. Email: c.m.gordijn@lumc.nl

Background Many diseases and treatments can lower sexual function, an important but often ignored factor for quality of life. A pharmacy service providing non-prescription sildenafil was introduced to the United Kingdom in 2018 and may offer an opportunity to discuss sexual adverse drug reactions (sADRs).

Purpose This qualitative study, using a theory-based approach, aimed to evaluate the views of community pharmacists on providing non-prescription sildenafil, and their perception of the barriers and facilitators to provide this service and to discuss sADRs.

Method Face-to-face interviews were conducted between October 2019 and January 2020. Community pharmacists were purposefully sampled in Belfast, Northern Ireland, followed by snowball sampling. Written informed consent was obtained prior to commencing data collection. The semi-structured interviews used a piloted topic guide based on the 14-domain Theoretical Domains Framework (TDF), informed by a literature review on sexual health services in community pharmacies. The TDF is widely used to understand pharmacists' behaviour. All interviews were audio-recorded, transcribed verbatim and anonymised. Data was analysed using NVivo® 13. Transcripts were analysed deductively, utilising the TDF domains as coding categories. Within each theoretical domain, content analysis was utilised to identify barriers and facilitators.

Findings Ten pharmacists were interviewed to reach data saturation. Interviews lasted on average 48 minutes. Eight pharmacists had experience with dispensing OTC sildenafil, receiving approximately 1-2 requests per week. They considered non-prescription sildenafil an additional valued service ('Social/professional role and identity'). Training, concise product guidelines and private consultation areas were important facilitators ('Environmental context and resources'). The anonymous service required trust ('Optimism'), with concerns about abuse and men not visiting their GP. With experience, pharmacists had developed their communication skills and had become more confident dealing with difficult situations such as patients being vague about their medical history or having other causes for erectile disfunction (alcoholism, mental problems) ('Skills' and 'Beliefs about

capabilities'). In general, pharmacists were satisfied with the professional recognition, using their clinical knowledge or helping patients resume sexual relationships ('Beliefs about consequences'). They hoped it would lead to more services ('Goals'). Pharmacists considered awareness of sADRs and lifestyle causes of erectile dysfunction important, but would not discuss sADRs during routine encounters outside the consultation area.

Conclusion Several barriers and facilitators to provide non-prescription sildenafil were identified. Although the awareness of sADRs had increased, outside this service, the influence of medication on sexual function remained undiscussed. These findings may guide the development of interventions to discuss sADRs in community pharmacy.

Abstract number 438

Individual oral vitamin D loading regimen for optimal serum values

Jean-Pierre Rothen[1], Jonas Rutishauser[2], Philipp Walter[3], Kurt E. Hersberger[1], Isabelle Arnet[1]

[1]Pharmaceutical Care Research Group, Department of Pharmaceutical Sciences, University of Basel, [2]University Hospital, Division of Endocrinology, Diabetes, and Metabolism, Basel, Switzerland, [3]Solothurn Hospitals, Institute for Laboratory Medicine, Olten, Switzerland. Email: jp.rothen@unibas.ch

Background An adequate supply of vitamin D is difficult to achieve during winter period in temperate latitudes. Serum values <25 nmol/l indicate deficiency, 25-50 nmol/l insufficiency, >50 nmol/l sufficiency, and >75 nmol/l optimal values. Supplementation can be administered daily or weekly or monthly with cumulative doses.

Purpose To investigate the pertinence of an individually calculated loading regimen of vitamin D for the achievement of optimal serum values >75 nmol/l.

Method Interventional, randomized, 3-arm study in ambulatory patients with vitamin D insufficiency who received 24,000 IU vitamin D monthly during three months, as drinking solution or as newly developed capsule, or as weekly loading regimen. The loading regimen consists of an individual number of weeks with the intake of a 24,000 IU vitamin D capsule weekly, calculated with a formula including baseline vitamin D serum value and body weight. Main inclusion criteria were age ≥18 years and vitamin D serum value <50 nmol/l. Primary outcome was increase of vitamin D serum level, secondary outcomes were patient's preferences and adverse events.

Findings A total of 58 outpatients were recruited, six dropped out. Patients' characteristics did not differ between the three groups. Sufficient vitamin D serum values >50 nmol/l were reached in both groups taking 24,000 IU cholecalciferol monthly during 3 months by 94% patients taking the drinking solution by 65% patients taking the capsules, and in all patients taking the loading regimen. Optimal serum vitamin D values >75 nmol/l were observed in two patients from both monthly regimen groups, and in 58% patients taking the loading regimen. No patient achieved a serum value in the toxic range, and no vitamin D related adverse effect occurred. Capsules were preferred by 88.5% of the patients.

Conclusion The results show the benefit of an individual loading regimen of 24,000 IU weekly to achieve optimal serum levels compared to the monthly administration of the same dose. General practitioners should take into account patient's preference for medication formulation when prescribing a vitamin D medication.

Abstract number 439

Systematic review and categorisation of outcomes for the development of a core outcome set for intervention studies aiming to optimise the medication use of patients after hospital discharge

Fabienne Boeni[1], Hannah Michimura[1], Mare Claeys[2], Antonia Zuend[1], Jeremy Dehez[2], Joke Wuyts[2], Kurt E. Hersberger[1], Markus L. Lampert[1], Veerle Foulon[2]

[1]Pharmaceutical Care Research Group, University of Basel, Switzerland, [2]5Clinical Pharmacology & Pharmacotherapy, KU Leuven. Email: fabienne.boeni@unibas.ch

Background Transitions of care entail an increased risk of reduced medication effectiveness and safety. Despite interventions have shown efficacy in reducing adverse outcomes, heterogeneity in outcome measures impede the comparison and combination of data for the identification of effective interventions. This is hindering their implementation in practice.

Purpose To perform a systematic review of outcomes reported in intervention studies aiming to optimise medication use of patients after hospital discharge, and to congregate the outcomes in a classification system, for the development of a core outcome set (COS).

Method The scope of the COS and systematic review were determined in previous PCNE workshops. The systematic review was conducted in Embase, PubMed, CINAHL, and the EU Clinical Trials Register. Studies were eligible if the target population consisted of patients older than 65 years, multimorbid patients or patients with poly-pharmacy. All articles published between 2010 and April 2020 studying interventions to improve medication use after hospital discharge were included. Systematic reviews were excluded from the analysis. No restrictions were made in terms of type of intervention, type of healthcare professional involved in the intervention or destination of the patient post-discharge (patient's own home, nursing home, rehabilitation center, etc.). Research students screened titles, abstracts, and full texts and results were collated. Data were extracted according to an extraction sheet. The identified outcomes were independently summarised into unique outcome terms by two researchers and discrepancies were discussed. A consensus meeting was performed with two senior clinical pharmacist researchers to confirm the wording and to arrange the terms into a classification system.

Findings Seventy-five articles were included in the systematic review, with interventions conducted pre-discharge (34.7%), post-discharge (33.3%), as a bridging intervention (2.7%), or combined (29.3%). A median of 5 and a range of 1-17 outcomes per study were reported. They were defined, measured and reported in a vast variety. The consensus meeting for classification of outcomes resulted in a total of 80 summarised outcomes. The top-5 most frequently measured outcomes were number of readmission (72% of studies), mortality (40%), number of emergency department visits (35%), number of outpatient physician visit (16%), and medication adherence (16%). As a classification system, the OMERACT filter 2.0 was adapted with the domains Resource use, Economical impact, Life Impact, Pathophysiological manifestations, Death and Medication.

Conclusion The systematic review showed the need for a core outcome set in the defined area and builds the groundwork for a consensus procedure to define a core outcome set.

Abstract number 440

Beliefs about medicines and medication adherence in patients with hypertension

Ana Kodrič[1], Mitja Kos[1]

[1]University of Ljubljana, Faculty of pharmacy, Department for social pharmacy. Email: ana.kodric@ffa.uni-lj.si

Background The most important reason for poor blood pressure control in patients with hypertension is inadequate medication adherence. Medication nonadherence may be unintentional due to forgetfulness, or intentional when it occurs due to the patient's conscious decision, which is often related to beliefs about medicines.
Purpose The aim of the study was to evaluate the hypertensive patients' medication beliefs and their impact on medication adherence and blood pressure control.
Method We conducted a cohort study in 11 community pharmacies in Slovenia. We enrolled patients with hypertension, who were prescribed Angiotensin-converting enzyme inhibitor (ACEI) or Angiotensin II Receptor Blocker (ARB) for at least 3 months. To evaluate medication beliefs patients self-completed Beliefs about Medicines Questionnaire. At follow-up visit 8 weeks later, we performed pill count for all antihypertensive medicines to evaluate medication adherence. Blood pressure was measured at both visits using automatic blood pressure monitor Omron M6 based on a predefined protocol.
Findings In total, we enrolled 117 patients with average age of 66 years, 65% were female. 30.2% of patients didn't recognize the need to take antihypertensive medicines and in 12.9% of patients concerns about taking them outweighed the perception of benefits. 3.4% of patients were skeptical, 11.2% ambivalent, 26.7% indifferent and 58.6% were accepting regarding their antihypertensive therapy. The proportions of doses taken were 79.1%, 95.6% and 97.8% in ambivalent, accepting and indifferent group, respectively. The linear regression model (R2=0.102; p=0.009) showed that medication adherence was 16.5% higher in accepting patients (p=0.005) and 18.7% higher in indifferent patients (p=0.003) compared to ambivalent patients. Mean systolic and diastolic blood pressure were 149.1 and 95.3 mmHg in the skeptical group, 147.6 and 87.1 mmHg in the ambivalent group, 143.4 and 87.6 mmHg in the indifferent group, and 138.9 and 84.9 mmHg in the group of accepting patients. Blood pressure was therefore the highest in the skeptical group and the lowest in the accepting group; however, patients' attitudes did not show a significant effect on blood pressure control.
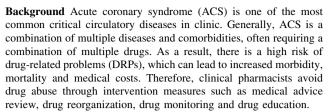**Conclusion** Approximately a third of patients didn't recognize the need to take antihypertensive therapy. Medication beliefs were found to have an impact on medication adherence, since patients who are concerned about taking antihypertensive medications are less likely to take them regularly. The results also suggest the impact of medication beliefs on blood pressure control in patients with hypertension.

Abstract number 441

Evaluation and pharmacoeconomic study of the pharmaceutical Care Network Europe (PCNE) classification system in drug-related problems in patients with acute coronary syndrome without stent implantatio

Ye GAO[1], Hao WU[2], Rong GUO[1], Bei LIU[1], Yu ZHANG[1], Wang MENG[1]

[1]Pharmacy Department, Inner Mongolia Bayannaoer City Hospital, [2]Department of Clinical Medicine, Inner Mongolia Bayannaoer City Hospital. Email: gaoye98@163.com

Background Acute coronary syndrome (ACS) is one of the most common critical circulatory diseases in clinic. Generally, ACS is a combination of multiple diseases and comorbidities, often requiring a combination of multiple drugs. As a result, there is a high risk of drug-related problems (DRPs), which can lead to increased morbidity, mortality and medical costs. Therefore, clinical pharmacists avoid drug abuse through intervention measures such as medical advice review, drug reorganization, drug monitoring and drug education.
Purpose Classification of drug-related problems in patients without stents after coronary angiography and evaluation of pharmacist-provided interventions; Identify factors associated with drug-related problems; To improve patients' medication compliance and reduce the economic burden of patients seeking medical treatment; To explore the economic value of drugs in the study of drug-related problems in patients with acute coronary syndrome (ACS) by using the PCNE classification system.
Method This topic mainly use PCNE - DRP V9.0 classification system research based on coronary angiography after implant stents in patients with drug related problems, under the senior clinical pharmacists intervention, to produce the type of DRPs, cause, interventional plan, project acceptance and DRPs state analysis, found that drug treatment related problems and optimize the drug treatment.
Findings This project is under study and no results have yet been obtained. If any results are available, they will be provided to the meeting in time.
Conclusion In this study, a prospective cohort study was used to evaluate the information-based drug intervention led by pharmacists and based on the PCNE classification system, so as to improve the medical order DRPs of ACS in hospitals, reduce adverse drug reactions, and ensure the drug safety of patients, thus providing data support for the application of the "PCNE classification system" in China.

Abstract number 443

Thromboprophylaxis for patients with atrial fibrillation: A systematic review of strategies to improve guideline adherence in primary care

Eyob Alemayehu Gebreyohannes[1], Deanna Mill[1], Sandra Salter[1], Leanne Chalmers[2], Luke Bereznicki[3], Kenneth Lee[1]

[1]University of Western Australia, [2]Curtin University, [3]University of Tasmania. Email: eyob.gebreyohannes@research.uwa.edu.au

Background Atrial fibrillation (AF) increases the risk of thromboembolic events such as stroke and systemic embolism. Oral anticoagulants (OACs) reduce thromboembolic events in patients with AF. Clinical guidelines on AF management help optimize OAC use and guideline-adherent thromboprophylaxis management is associated with improved patient outcomes. However, guideline non-adherence is common, particularly in the primary care setting.
Purpose Efforts to improve guideline adherence may minimize the risk of thromboembolic and bleeding events. Therefore, the primary aim of this systematic review was to identify effective strategies for improving the prescribing of thromboprophylaxis to patients with AF in primary care setting.
Method The Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) statement was followed to conduct a search of 6 electronic databases (Medline, Embase, ScienceDirect, Scopus, the Cumulative Indexing of Nursing and Allied Health Literature, and Web of Science) supplemented by a Google advanced search. Studies aimed at improving oral thromboprophylaxis guideline adherence in patients with AF in the primary care setting were included in the study. The main outcome measure was the proportion of patients with AF who were prescribed guideline-adherent thromboprophylaxis. The

secondary outcome measure was the proportion of patients who experienced thromboembolism and/or bleeding.

Findings A total of 33 studies were included in this review. Seventeen and sixteen studies had multifaceted and single-faceted interventions, respectively. Nine studies employed electronic decision support (EDS), of which 4 reported only modest improvements in guideline adherence. Five of 6 studies that utilized local guidelines as quality improvement measures reported improvement in prescribing. In all of these studies, guideline implementation was complemented by other interventions. All 5 studies that employed coordinated care and the use of specialist support and 4 of the 5 studies that involved pharmacist-led interventions reported improvements in guideline adherence. The pharmacist-led studies involved a decision support-assisted clinical pharmacist consultation, GP education and training, multidisciplinary team video conferences, reviewing patients' medical records, and/or making recommendations to GPs. Interventions based mainly on feedback from audits were less effective. With the exception of one study that reported a lower incidence of significant bleeding (p=0.004), four single-faceted studies that employed EDS failed to show significant improvements on thromboembolic events and bleeding.

Conclusion Multifaceted interventions, especially those incorporating coordinated care and specialist support, pharmacists, or local adaptations to and implementation of national and/or international guidelines appear to be more consistently effective in improving guideline adherence in the primary care setting than interventions based mainly on EDS and feedback from audits.

Abstract number 444

Non-adherence to thromboprophylaxis guidelines in atrial fibrillation: A narrative review of the extent and factors for guideline non-adherence

Eyob Alemayehu Gebreyohannes[1], **Sandra Salter**[1], **Leanne Chalmers**[2], **Luke Bereznicki**[3], **Kenneth Lee**[1]

[1]University of Western Australia,, [2]Curtin University, [3]University of Tasmania. Email: eyob.gebreyohannes@research.uwa.edu.au

Background Atrial fibrillation increases the risk of thromboembolism by up to fivefold. Guidelines provide evidence-based recommendations to effectively mitigate thromboembolic events using oral anticoagulants (OACs) while minimizing the risk of bleeding.

Purpose This review seeks to determine the extent of non-adherence to thromboprophylaxis guidelines in AF and factors associated with guideline non-adherence. To ensure that this review is applicable to contemporary clinical practice, we focused on studies published in the past 5 years.

Method This narrative review is based on a keyword search conducted in the PubMed and Cumulative Index of Nursing and Allied Health Literature Plus databases. Studies that assessed non-adherence to one or more thromboprophylaxis guidelines, and studies that reported factors associated with guideline non-adherence, were included. Both qualitative and quantitative studies published in English since 2015 were included.

Findings Non-adherence to guideline recommendations was highly variable in different geographic locations and healthcare settings and was observed in 4.4% to 95.2% of patients in the studies included in this review. The proportion of patients undertreated ranged from 2.5% to 76.3%. Undertreatment in high-risk patients ranged from as low as 19.7% to as high as 95.2%, with the majority of the studies reporting undertreatment between 40% and 50%. Multiple factors have been associated with non-adherence to guideline recommendations and prescription of OACs. The most common factors can be categorized as patient-related or physician-related. Patient-related factors include patient or family refusal to take anticoagulant therapy, older age, stroke and bleeding risk or history, female sex, presence of different comorbidities, prescription of antiplatelet agents or non-steroidal anti-inflammatory drugs, recurrent falls or history of falls, and others. Physician preferences make a significant contribution to guideline non-adherence, particularly those related to their beliefs and practice patterns. More focus on the risk of bleeding associated with OACs, use of formal bleeding assessment tools by only few physicians are among the reasons for guideline non-adherent anticoagulation treatment.

Conclusion The extent of guideline non-adherence differs according to geographic region, healthcare setting, and risk stratification tools used. Guideline adherence has gradually improved over recent years, but a significant proportion of patients are still not receiving guideline-recommended therapy. Physician-related and patient-related factors (such as patient refusals, bleeding risk, older age, and recurrent falls) also contribute to guideline non-adherence, especially to undertreatment. Quality improvement initiatives that focus on undertreatment, especially in the primary healthcare setting, may help to improve guideline adherence.

Abstract number 445

Pharmacists approach to demonstrating inhalation technique to patients in Poland

Anna Dworakowska[1], **Joanna Marciniuk**[1], **Agnieszka Moszczynski**[1], **Edyta Czepielewska**[1], **Małgorzata Kozłowska-Wojciechowska**[1]

[1]Medical University of Warsaw. Email: agnieszka.moszczynski@wum.edu.pl

Background Patients with chronic respiratory diseases (most common include asthma and COPD) very often need support to manage the disease and motivation to adhere to the treatment. Reducing symptoms of the disease may not be effective enough due to an incorrect use of an inhaler. Pharmacists can help patients to optimize their inhaler technique.

Purpose The study aims to: • gain knowledge of the current habits of educating patients on correct inhaler technique by community pharmacists in Poland. • determine factors affecting pharmacists' practice of inhaler counselling, • assess pharmacists' approach to educate patients on inhaler techniques.

Method This was an online survey carried out among registered pharmacists in Poland (pharmacists were contacted by Regional Pharmaceutical Chamber). Data were collected between June and September 2020. The study was approved by the Ethics Committees at the Medical University of Warsaw. The study questionnaire consisted of two parts and demographic characteristics. The first part contained 10 questions on pharmacist's habits on educating patients on inhaler technique and the factors that might have impact on that practice. The second part (31 questions) related to pharmacist's approach to educate patients on inhaler technique, it was guided by the Reasoned Action Approach.

Findings The study included 232 pharmacists. Majority of the study participants (71.6%) never ask patients to demonstrate inhaler technique, 22.4% sometimes educate patients and 32.8% want to educate patients on inhaler technique at the earliest opportunity. The model of pharmacist's willingness to educate patients on inhaler technique is currently statistically analyzed.

Conclusion The role of the studied pharmacists in providing effective use of inhaled medications in respiratory disease treatment is insufficient.

Abstract number 447

Community Pharmacy Intervention in Health Promotion: Glycemia Assessment in an Open Screening for the Population

Sara Caetano[1]

[1]Farmácia de Carcavelos, Portugal. Email: sara@sarareis.com

Background Show the importance of the Community Pharmacy in healthcare for diabetics, by making available a multidisciplinary team of health professionals and by conducting screenings to the general population.

Purpose Screening objectives are: • Identify possible users at risk of illness • To better characterize the diabetic population of patients in the pharmacy • Clarify diabetic patients and users in general about the disease

Method A campaign is carried out in nine pharmacies to assess blood glucose, for the celebration of International Diabetes Day, open to the general population. A questionnaire is applied and blood glucose is measured. There is personalized advice and referral to pharmacy services or referral to the physician of users in need.

Findings 720 users participated in the screening, with an average age of 52 years. 60.69% (n = 437) female users and 39.31% (n = 283) male users. 87.2% (n = 628) of blood glucose measurements were postprandial. 85% (n = 612) of the participants report having a diagnosis of diabetes, and of these, 47.4% (n = 100) are medicated. Of the participants diagnosed with diabetes, 63.2% (n = 72) are followed up in General and Family Medicine appointments, 24.6% (n = 28) in Specialty appointments and 12.3% (n = 14) refer not having medical follow-up.

Conclusion Subsequent studies should infer about the large percentage of patients screened with a diagnosis of diabetes, and the small percentage of those followed in a Specialist appointment. The percentage of diabetics screened without medical follow-up shows the long way in helping diabetics. The pharmacy, easily accessible by patients, can take an active role in encouraging the prevention of diabetes and its complications, by conducting blood glucose measurement screenings, by providing pharmaceutical care services, management of therapy and by clarifying diabetics and their caregivers about the disease.
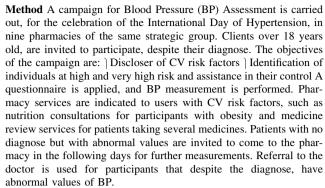
Abstract number 448

Community Pharmacy Intervention in the Evaluation and Prevention of Hypertension and in the Identification of Hypertensive Patients

Sara Caetano[1], **Inês Reis**[2], **Cristiana Galego**[3], **Lucie Conceição**[4]

[1]Farmácia de Carcavelos, [2]Farmácia Remédios, [3]Farmácia de Belas, [4]Farmácia Vitória. Email: sara@sarareis.com

Background Despite the increasing improvement in cardiovascular disease (CVD) indicators in Portugal, these remain at the top of the causes of death in Portugal and Europe. Cardiovascular risk factors (CV) can be non-modifiable, such as gender and age, or modifiable, such as arterial hypertension, dyslipidemia, diabetes mellitus, smoking, overweight, physical inactivity and psychosocial factors. Prevention is therefore challenging and must cover all health professionals and the general population.

Purpose To evaluate the importance of the Community Pharmacy in the identification of patients with hypertension and in the intervention for disease prevention and improvement.

Method A campaign for Blood Pressure (BP) Assessment is carried out, for the celebration of the International Day of Hypertension, in nine pharmacies of the same strategic group. Clients over 18 years old, are invited to participate, despite their diagnose. The objectives of the campaign are: ⌉ Discloser of CV risk factors ⌉ Identification of individuals at high and very high risk and assistance in their control A questionnaire is applied, and BP measurement is performed. Pharmacy services are indicated to users with CV risk factors, such as nutrition consultations for participants with obesity and medicine review services for patients taking several medicines. Patients with no diagnose but with abnormal values are invited to come to the pharmacy in the following days for further measurements. Referral to the doctor is used for participants that despite the diagnose, have abnormal values of BP.

Findings The screening has 792 participants, with an average age of 60 years. The average systolic BP is 132mmHg and average diastolic BP 77.7mmHg. Of the total participants, 239 have systolic BP> 140 mmHg and 122 diastolic BP> 89 mmHg. Participants with both systolic BP> 140 and diastolic > 89mmHg are 99. Participants diagnosed with hypertension are 374 and 60 of them have BP> 140 / 89mmHg. Of these, 364 are medicated and have medical follow up. Participants followed in General Medicine are 414 and in Specialty Medicine are 154. Of the 792 participants surveyed, 39 have no diagnosis of hypertension but have BP> 140 / 89mmHg.

Conclusion The CV Risk assessment allowed the identification of patients at CV Risk and their referral to control risk factors. The community pharmacy is therefore a strategic health place for carrying out this type of campaigns, due to the easy access of the population, and it is also a link to the other health services, in monitoring the patient.

Abstract number 450

The PCNE drug-related problem classification V 9.0: translation and validation by Serbian pharmacists

Marina Odalović[1], **Branislava Miljković**[1], **Sandra Vezmar Kovačević**[1], **Jelena Stefanović Vojinović**[2], **Mika Simišić**[3], **Nenad Miljković**[4]

[1]University of Belgrade - Faculty of Pharmacy, [2]Pharmacy Chain "Lilly Drogerie", [3]Pharmacy Chain "Subotica", [4]Institute of Orthopedics "Banjica", hospital pharmacy. Email: modalovic@pharmacy.bg.ac.rs

Background Drug-related problems (DRP) include numerous undesirable circumstances. One of the widely used DRP classifications in pharmacy practice is proposed by Pharmaceutical Care Network Europe (PCNE). The idea of PCNE DRP classification is the coding of observed/potential problems, causes, planned interventions, intervention acceptance and status of DRP by health professionals.

Purpose To translate and validate DRP version (V) 9.00 for use in Serbian pharmacies.

Method Forward-backward translation procedure performed by three pharmacists working at the academia was applied in the PCNE DRP classification V 9.0 translation from English to Serbian language. An expert panel, consisted of two community, one hospital and three pharmacists working at the academia, performed the content validation of the translated version. Twenty-two community and four hospital pharmacists participated in the validation of translated version. They coded problems, risk factors, and interventions by using the PCNE set of 20 patient cases. Coding was performed during the period December 2019-January 2020. The main outcome measure was coding consistency between pharmacists.

Findings Findings The average coding consistencies in the validation study were as follows: 83.3±1.85% for problems, 97.28±3.90% for interventions, and 86.04±1.66% for causes. There were no pharmacists' suggestions for changes in the proposed DRP classification. The comments referred mainly to insufficient data within some cases that constrained cases' analysis by participants.

Conclusion Since the validation study demonstrated high coding consistencies, an expert panel proposed a validated version of PCNE DRP classification to the Pharmaceutical Chamber of Serbia to be accepted as the national one. Revision of the cases proposed for the validation studies would be useful.

Abstract number 451, Accepted as poster

Pharmacists' and physicians' attitudes about collaborative practice: challenges and opportunities for improving health outcomes in patients

Nenad Radović[1], Ivana Tadić[2], Valentina Marinković[2], Marina Odalović[2]

[1]Pharmacy Chain "Melisa", [2]University of Belgrade - Faculty of Pharmacy. Email: modalovic@pharmacy.bg.ac.rs

Background Patient care is rarely achievable by a single clinician and more often it needs collaboration of several experts. Generally, collaborative cooperation can be explained as joint work to achieve the same goal defined as „information sharing and mutual cooperation in order to improve the delivery of health care to each individual patient."

Purpose The main aim of the study was to reveal and analyze pharmacists' and physicians' experiences and attitudes related to its' collaborative practice, including professional roles and barriers.

Method On-line questionnaire developed in line with the purpose of the study served as a data source. Questionnaire included multiple-choice and open-ended short answer questions created to gather socio-demographic data and experiences of healthcare providers. Five level Likert scale (from 1 (completely disagree) to 5 (completely agree)) was used in data collection about attitudes related to interprofessional collaboration and barriers. The questionnaire was prepared in Google Forms and distributed to physicians and pharmacists. Data were gathered during the period February-March, 2020.

Findings A study population consisted of 53 participants, pharmacists (54.7%) and physicians (45.3%). The most respondents stated that have interprofessional collaboration 1-2 times a month. The vast majority of them rated interprofessional cooperation as good (49.1%) or excellent (32.1%). Improvements of therapeutic outcomes were stated as the most common reason for cooperation. Most of participants agree that it is necessary to collaborate about patient therapy issues, particularly those related to drug interactions. Surprisingly, significantly more physicians than pharmacists, 72.2 vs. 31.0%, respectively, stated that it is necessary for pharmacists to provide physicians with up-to-date information on medicines and help them in decision making related to appropriate drug and dose selection. Moreover, only 56.6% of pharmacists and 58.6% of physicians thought that pharmacists should participate in drug dose optimization. All off them pointed out that a lack of time and the absence of institutionally organized common activities are the most significant obstacles to establish more intensive collaboration within everyday practice.

Conclusion Improvement of the future interporfessional collaboration between pharmacists and physicians in Serbia has to be systematically organized, and responsibilities of patients care should be shared, taken and respected by both professional sides.

Abstract number 455

Interdisciplinary team's perceptions towards the adoption of a care pathway for patients treated with oral anticancer drugs

Lise-Marie Kinnaer[1], Ilyse Kenis[1], Ann Van Hecke[2], Veerle Foulon[1]

[1]Department of Pharmaceutical and Pharmacological Sciences, Clinical Pharmacology and Pharmacotherapy, KU Leuven, [2]University Center for Nursing and Midwifery, Department of Public Health and Primary Care, U Gent. Email: lisemarie.kinnaer@kuleuven.be

Background Developing and implementing tailored interdisciplinary care pathways can be a strategy to respond to the required reorganisation of care processes for oral anticancer treatments. Implementation of such care pathways result in changed care processes and roles and responsibilities of healthcare professionals (HCPs) such as (specialized) oncology nurses and (clinical) pharmacists.

Purpose This study aimed to explore how HCPs experienced factors that influenced adoption and stable integration of the care pathway for patients treated with oral anticancer drugs (OACD) in clinical practice.

Method Semi-structured interviews and focus groups were conducted in HCPs (specialists, nursing staff and pharmacists) with a role in the care pathway for patients treated with OACD, developed and implemented in four non-academic hospitals in Belgium. In total, 34 HCPs were interviewed in 7 focus groups and 10 semi-structured interviews. Interviews were performed about one year after the implementation of the care pathway. Data were inductively analysed using a thematic framework and the conclusions were situated within the Normalization Process Theory as theoretical framework.

Findings Healthcare professionals experienced a shifted mind-set towards oral anticancer treatment due to care pathway implementation. Different factors were pointed to when care pathways were perceived as internalized in routine clinical practice. These factors included 1) perceiving the care process as more structured, 2) role clarity and meaningful roles for HCPs, 3) better teamwork and efficiency, and 4) a perceived enhanced provision of pharmacotherapeutic and psychosocial support to patients. Care pathways that were perceived as implying additional administrative work could not easily be integrated and meant tasks described in the care pathways were no longer performed. In one hospital, modifications to the initial pathway were made during implementation and implicated that the roles of nursing staff became unclear and less meaningful and could not be integrated in existing work.

Conclusion Care pathways for patients on OACD may, depending on how they are co-designed by oncology teams, lead to structured and uniform care, better teamwork and increased job satisfaction in HCPs. Stably integrated care pathways may improve the provision of self-management support. For a successful implementation, during the co-design phase, developers need to be mindful that the described processes and aligned tasks are feasible and meaningful for HCPs adopting the care pathway in routine clinical practice.

Abstract number 456

Multidisciplinary coordination and home pharmaceutical care for homeless users during a state of Covid 19 alarm.

M Dolores Murillo Fernández[1], Ingrid Ferrer López[2], Elena Catalán Cansinos[3], Beattriz Murillo Fernández[1], Adrián Moreno Vázquez[4], Alfonsa Jiménez Arroyo[5], Sierra Diez Leña[6], Estrella Belkis Vives[7], Antonio Torné Péres[8]

[1]Community Parmacist Farmacia Fernández Vega, [2]Primary PharmacistUGC Farmacia Atención Primaria Sevilla, [3]Nurse SAMU, [4]Social Worker SAMU, [5]General Practitioner Primaria Centro de Salud Amate, [6]Nuese Centro de Salud Amate, [7]Pedadogue SAMU, [9]Head of Business for social and labor incorporation in 8ddictions of the Seville City Council. Email: mdoloresmurillo@sefac.org

Background The entry of the State of Alarm decreed on March 14th 2020, limited the free movement of citizens throughout the national territory. This situation prompts the Seville City Council in collaboration with the Emergency Medical Assistance Services) to set up a several number of sports centres in Seville to accommodate homeless people, who in addition need of health care.

Purpose The main goal was to provide a safe place for the homeless with social and health care After work done in an extreme situation, we value the pharmaceutical care carried out and the need for coordination and the joint work of an entire multidisciplinary team

Method This project is carried out by the Rochelambert Sports Centre in Seville. From March 31st to May 25th 2020. Coordinated by the SAMU and the Seville City Council in collaboration between the Amate Primary Health Care Center, the Fernández Vega Pharmacy, being necessary the intervention of the Primary Care Pharmacy Service, and the punctual intervention of Hospital Pharmacy. A first, multidisciplinary meetings was held to stablish for the entry of each user. The establishment of pharmacological treatments by the general practitioner who also determines which of those patients need the preparation of Dose Administration Aids, which ones could manage their medication and which ones were administered by the centre nurse. In parallel, a protocol is also established for the administration of methadone with the collaboration of the local police for its custody and its daily delivery. Daily home delivery of medicines is made to users.

Findings The centre has 60 places and a total of 154 users are served. 122 men and 32 women. 640 dispensations are made and there are 3 cases of antiretroviral therapy drug dispensing that are dispensed from the community pharmacy. A total of 116 Dose Administration Aids were dispensed Professionals Involved: 1 general practitioner and 1 nurse from the primary health centre, 1 social worker, 1 nurse from the centre, 2 community pharmacists, 1 primary pharmacist, 2 hospital pharmacist, 22 volunteers, city council and local police. There are no positive cases of COVID neither among users nor in sanitary.

Conclusion The inclusion of users in a social health centre has prevented infections by Covid 19. 2- Coordination has improved the health care of patients and the proper use of treatments. 3- Dose Administration Aids are the best tools for help therapeutic adherence and the correct use of treatments.
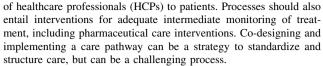
Abstract number 457

The complexity of co-designing and implementing a transmural care pathway for patients treated with oral anticancer drugs: a qualitative investigation of influencing factors in hospital staff

Lise-Marie Kinnaer[1], Ilyse Kenis[1], Marlies Van De Vyver[2], Marijke Moerman-Janssens[2], Elsie Decoene[2], Ann Van Hecke[2], Veerle Foulon[1]

[1]Department of Pharmaceutical and Pharmacological Sciences, Clinical Pharmacology and Pharmacotherapy, KU Leuven, [2]University Center for Nursing and Midwifery, Department of Public Health and Primary Care, U Gent. Email: lisemarie.kinnaer@kuleuven.be

Background Oncology centers are struggling to organize transmural care for patients treated with oral anticancer drugs (OACD) focusing on self-management support. In order to support patients' self-management, care processes should stimulate the shift in responsibilities of healthcare professionals (HCPs) to patients. Processes should also entail interventions for adequate intermediate monitoring of treatment, including pharmaceutical care interventions. Co-designing and implementing a care pathway can be a strategy to standardize and structure care, but can be a challenging process.

Purpose This study aimed to investigate influencing factors in the co-design and implementation of a care pathway for patients treated with OACD involving multiple HCPs in the hospital and in primary care.

Method A qualitative process-evaluation was set up in four non-academic Belgian hospitals who co-designed and implemented a transmural care pathway for patients on OACD. Semi-structured interviews and focus groups were performed in 1) local coordinators who guided the interdisciplinary project team during co-design and implementation, 2) external implementation coaches, and 3) HCPs with a role in the implemented care pathway. In total, 47 stakeholders were interviewed (19 interviews, 8 focus groups) by researchers with no or limited involvement in the co-design of the care pathway. Interviews were audio-taped and transcribed verbatim. A thematic framework analysis was applied.

Findings Different factors influencing the co-design and implementation of the care pathway for patients treated with OACD were found. Building an adequate supporting context through a motivated interdisciplinary project team of clinical and management staff, guided by a competent coordinator, was an important facilitator. Leadership of local coordinators, and of physicians, was crucial for the progress of the co-design. Impediments included the complexity of the intervention related to OACD, to the interdisciplinary and transmural character, and to the hospital as context. Tailoring of the care pathway and receiving external coaching was a large facilitator. Financial triggers were available but however not always mandated for from the hospital management.

Conclusion Prior investigation of the willingness and motivation for change of clinical and management staff, project-managing competencies of coordinators and leadership of physicians seem essential to obtain change in the self-management support of patients treated with OACD, including pharmaceutical care interventions.

Abstract number 458

Pharmaceutical Care: Response of the Spanish Society of Family and Community Pharmacy to the state of alarm due to the health crisis due to COVID-19

Mª Dolores Murillo Fernández[1], Vicente Javier Baixauli Fernández[2], Jesús Carlos Gómez Martínez[3], Ana Molinero Crespo[4], Leire Andraca Iturbe[5], Mercedes Fraga Sanpedro[6], Jose Luis Allué Blasco[7], Mariam Aparicio Cercos[8], Adela Martín Oliveros[9], Ana Mateos Lardiés[10], Fernando Mud Castelló[11], Francisco Javier Plaza Zamora [12], Mª José Sanz Orejas[13], Rosa Prats Mas[14], Laia Matarraz Torres[15]

[1]Spanish Society of Community Pharmacy (SEFAC). Email: mdoloresmurillo@sefac.org

Background The COVID-19 pandemic has caused a state of alarm, considering the pharmacy an essential service for the population. Accurate information and training of the Community Pharmacist (CP) was necessary, in a very fast way for the care of patients during this pandemic.

Purpose 1- Train and inform to the CP on different aspects of routine pharmaceutical care practice related to COVID-19; 2- Facilitate pharmaceutical practice; 3- Support and defend CP as a healthcare professional.

Method For the planning of the different actions, the methodology of online expert meetings was followed. coordination of the working

groups of the society for the preparation of the documentation contact with medical societies for the elaboration of consensus documents

Findings Objective 1: -20 webinars were designed on aspects of the usual pharmaceutical practice and related to COVID-19.- Preparation of documents to help against the contagion by COVID-19: Document of frequent questions and answers against COVID-19, Evaluation of the risk of contagion of coronavirus SARS-CoV-2 and Recommended preventive measures in the provision of professional pharmaceutical care services (SPFA), and Proposal for the dispensing and delivery of medicines and health products at the patient's home from the community pharmacy during the state alarm for COVID-19. Course on rapid serological tests of COVID-19. Objective 2: -Registration of home delivery actions.- Patient assistance materials against COVID-19: practical infographics and brochures with Spanish Society of Primary and Community Care Practitioner (semFYC) aimed at patients (asthma, COPD, CVR) .- Transformation of the national congress of CP to a virtual edition. Objective 3: - Offer of collaboration with the Health Administration: letters to the Ministry of Health and communications - Request to the Ministry for rectification in its occupational risk guide linked to COVID-19 (inclusion of community pharmacies in the health sector) .- Promotion of rapid serological tests for COVID-19 in community pharmacies: survey to find out the number of CFs willing to perform them.- Document COVID-19: problems and solutions in primary care and community pharmacy, together with Spanish Society of Primary Care Practitioners (SEMERGEN) and Spanish society of general practitioners (SEMG)

Conclusion To respond to the objectives set and comply with them, the Spanish society of family and community pharmacy (SEFAC) has planned its actions and developed an intense activity during the months of the state of alarm in order to improve the professional practice of the CP facing the challenge posed by the pandemic.

Abstract number 460

Pharmaceutical Home Delivery During COVID-19

Mª Dolores Murillo Fernández[1], Jesús Carlos Gómez Martínez[2], Vicente Javier Baixauli Fernández[3], Ana Molinero[4], Eduardo Satué de Velasco[5], Fernando Mud Castelló[6], Cristina Diaz Jiménez[7], Tomás Codesal Jervas[8], Francisco Javier Plaza Zamora[9], Silvia López Aláis[10]

[1]Spanish Society of Community Pharmacy (SEFAC). Email: mdoloresmurillo@sefac.org

Background During the COVID19 pandemic, the Spanish community pharmacy (CP) has provided pharmaceutical home delivery (PHD) services to vulnerable patients. In fact, some regional health administrations have expressly regulated the home delivery of drugs dispensed in pharmacies, that was not allowed until that moment. Spanish Community Pharmacy Society (SEFAC) has provided a PHD protocol and a digital platform to register (SEFAC eXPERT) which has guided CP in their approach to this new way to work with patients.

Purpose 1- Describe the actions related to the pharmaceutical home delivery during the state of alarm and confinement. 2- Know the care needs of patients during confinement. 3- Identify the profile of the vulnerable patients treated

Method Observational, descriptive, cross-sectional, retrospective and multicenter study of the records made by CP of the activities related to (PHD) to the vulnerable population. Within the SEFAC expert service platform, an area was set up to record the services demanded by the patient, the vulnerability and status of the patient making the request, as well as the interventions carried out by the pharmacist.

Findings Fifty-six CP participated and received 1307 patient's requets.: Women (59.9%) mean age 69.5 years (SD = 17.24). 36.8% had never made requests before. 2.8% were covid +, 55.1% were not in isolation, 2.5% had symptoms compatible with COVID + and 39.6% neither had symptoms, nor was COVID +, nor was isolated. 88.5% were patients vulnerable to COVID + and 33.5% lived alone and without a caregiver. 26.8% did not know the process of using the medications. The requests were in most cases by telephone (79%,) and in person in CP (7.4%). The services provided: dispensing with home delivery (52.5%,), dose administration aids with home delivery (11.1%), consultations (8.9%), dose administration aids (8,4%), Minor Ailment Service (4.8%) and others (14.3%). 5.1% of the drugs were Hospital Drugs (HD). The interventions were: Personalized Drug Information (PDI) (17.5%), health education (15.8%), health education + dose administration aids (14.9%), pharmacovigilance + dose administration aids (8, 6%), dose administration aids (8.4), others (14.5%), 20.3% were not recorded.

Conclusion The confinement has allowed PHD to be carried out by those vulnerable patients, who have sued the CP mainly for the dispensing service with drug delivery, with a direct relationship between the vulnerability of suffering from COVID-19 with the number of requests. In the other hand, the PHD registration tool within the SEFAC e_XPERT® program has shown its usefulness in registering patients during the COVID19.

Abstract number 461

Appropriateness of proton pump inhibitors use at hospital admission and discharge: an observational study from a teaching hospital in Slovenia

Lea Knez[1], Eva Šubic[2], Maja Jošt[1], Mojca Kerec Kos[2]

[1]University Clinic Golnik, Slovenia; University of Ljubljana, Faculty of Pharmacy, Slovenia, [2]University of Ljubljana, Faculty of Pharmacy, Slovenia. Email: lea.knez@ffa.uni-lj.si

Background Proton pump inhibitors (PPIs) are among the most prescribed drugs, having widespread indications and a favourable safety profile. However, their use often expands to higher doses, longer periods and indications other than those recommended in treatment guidelines.

Purpose The aim of this study was to analyse PPIs' use at hospital admission and discharge and evaluate their appropriateness according to treatment guidelines in medical patients from a single teaching hospital in Slovenia.

Method We performed an observational study of randomly selected medical patients, hospitalised at the University Clinic Golnik between September 2019 and February 2020. Data on PPIs' use before admission were prospectively collected through patients' interviews, performed by pharmacists, while other medical data and data on PPIs' use at discharge were collected from medical documentation. Patients were offered routine clinical pharmacy services, with no specific intervention targeting PPIs deprescribing. PPIs' use was assessed as appropriate if the indication, dose and duration of treatment were all concordant with the relevant national treatment guidelines.

Findings Among the 382 interviewed patients (53 % male, median age 71 years), nearly half (47 %; 181/382) were using PPIs prior to hospital admission. Most were using a PPI due to chronic NSAID use (41 %; 74/181) and GERD (35 %; 63/181). The most common prescribed PPI was pantoprazole (72 %; 130/181), usually in high doses (e.g. pantoprazole ≥ 40 mg; 59 %; 107/181) and for over one year (65 %; 117/181). Use of PPIs prior to admission was concordant with treatment guidelines in only a third of patients (32 %; 57/181), with discrepancies due to prolonged treatment (44 %; 80/181), typically in GERD patients, too high PPIs' doses (43 %; 78/181), typically in

chronic NSAID users, and the lack of a valid indication (19 %; 35/181). At hospital discharge, changes in PPIs' treatment were undertaken in approximately 20% of all included patients (77/382), with initiation of PPIs being the commonest (12 %; 46/382). At discharge, the rate of appropriate PPIs' treatment according to guidelines raised to 40 % of PPIs' users (86/216), however with a third of users lacking a valid indication (72/216).

Conclusion Nearly half of hospitalised medical patients used PPIs prior to hospital admission and two thirds of PPIs' treatments were not concordant with guidelines. The share of appropriate PPIs' use improved at hospital discharge, but only modestly. These findings mandate vigorous reassessment of PPIs use to identify possibilities for PPI deprescribing.

Abstract number 462

Are pharmacists from community pharmacies ready to tele-counselling the patient with vulvovaginal infection?

Anna Golda[1], Martyna Rabus[1], Agnieszka Skowron[1], Justyna Dymek[1], Elzbieta Zmudzka[1]

[1]Department of Social Pharmacy, Faculty of Pharmacy, Jagiellonian University Medical College, Krakow, Poland. Email: ela.zmudzka@uj.edu.pl

Background It is proven that the proper support from pharmacists contributes to the improvement of appropriate and safe use of OTC medications. The quality of provided support is essential with ailments that are difficult to self-diagnose or embarrassing, like for example vulvovaginal infections. During counselling, pharmacy staff needs to be adherent to guidelines and to provide their patients with evidence-based treatment and advice. The quality of advice-giving seems to be crucial in a situation of difficult access to a doctor.

Purpose To determine whether the community pharmacists are ready (have skills, willingness and knowledge) to provide the proper tele-counselling in the field of vulvovaginal infections.

Method The tele-pharmacy "Mystery Patient" study, which was chosen because of Covid-19 pandemic. Setting: 238 non-recorded calls to randomly selected pharmacies from sixteen voivodeships in Poland. Materials: A scenario and a check-list. The check-list consists of three parts. The first part was to evaluate, if the pharmacy staff asked "basic" questions (for whom, the purpose of the purchase, chronic diseases, used medications) during phone-conversation. The second one was to determine if pharmacists checked, whether self-treatment would be sufficient and safe for the patient, and the last part consisted of a hidden test of knowledge about gynaecological probiotics. Additionally, the pharmacist's involvement in the conversation was rated by a subjective opinion of the researcher due to a Likert scale (1-5).

Findings 100 phone consultations were analyzed, because the actual conversation with pharmacist was possible only in case of 100 pharmacies (which was establish as a minimum). None of all pharmacist asked all four "basic" questions spontaneously. Only one out of four questions was asked during one tele-conversation, on average. The number of questions regarding the symptoms (the second part of the check-list) was not enough to distinguish whether the patient classifies to use self- medication. For example, less than 30% of all pharmacists asked about the vaginal discharge and only 16% asked about the frequency of the vulvovaginal infections. In the part connected with the knowledge about probiotics, the mysterious patient asked a total of 813 questions. Only 50% of the obtained answers were correct. Surprisingly the average score for pharmacist's involvement was rated three or more on a Likert scale.

Conclusion Pharmacists have the willingness, but they are not ready to conduct the proper pharmaceutical counselling accompanying

vulvovaginal infections. It is necessary to implement training in the field of tele-counselling for pharmacists and to create algorithms facilitate the proper counselling.

Abstract number 463

Anxiolytics, antidepressants, sedatives and hypnotics prescription during the Covid-19 pandemic: the Portuguese case

Marta Estrela[1], Tânia Magalhães Silva[1], Adolfo Figueiras[2,3,4,5], Fátima Roque[4], Teresa Herdeiro[1]

[1]iBiMED – Institute of Biomedicine, Department of Medical Sciences, University of Aveiro, Aveiro, Portugal, [2]Department of Preventive Medicine and Public Health, University of Santiago de Compostela, Santiago de Compostela, Spain, [3]Consortium for Biomedical Research in Epidemiology and Public Health (CIBER Epidemiology and Public Health - CIBERESP), Santiago de Compostela, Spain, [4]Health Research Institute of Santiago de Compostela (IDIS), Santiago de Compostela, Spain, [4]Research Unit for Inland Development, Guarda Polytechnic Institute (UDI-IPG), Guarda, Portugal, [5]Health Sciences Research Centre, University of Beira Interior (CICS-UBI), Covilhã, Portugal. Email: martaestrela03@gmail.com

Background The prevalence of diagnosed mental disorders in Portugal is the highest in Europe, being related to an excessive consumption of anxiolytics and antidepressants. The COVID-19 pandemic has had a significant impact on mental health, considering the unprecedented mass home-confinement directives and the pandemic context itself.

Purpose The main purposes of this study are to evaluate the prescription trends of anxiolytics, sedatives, hypnotics and antidepressants in Portugal, considering the number of doctor visits in hospital and primary care settings, and to analyse whether the declaration of the State of Emergency, and the resulting restrictive governmental measures adopted due to Covid-19 pandemic, had an impact on the aforementioned prescription trends.

Method The data concerning drug prescription were obtained from the System of Information and Monitoring of the Portuguese National Health System (SIM@SNS) public-access platform, between January 2018 and July 2020. It comprised the Defined Daily Dose of anxiolytics, sedatives and hypnotics and antidepressants prescribed by physicians of the public health sector per month, across the period January 2018 – July 2020. Data on doctor visits have been retrieved from the Transparência - SNS database. An interrupted time series (ITS) analysis model based on a segmented regression approach was designed to analyse the trends of the monthly prescribed DDDs of these drugs per doctor visit.

Findings Concerning the ratio of DDDs prescribed by doctor appointment, it can be observed some stability on throughout 2018 and 2019 on anxiolytics, sedatives, hypnotics, and antidepressants, both in hospital and primary care settings. In March 2020 a peak on the ratio of DDDs prescribed by doctor visit is observed both settings, as well as on the antidepressants' group and the anxiolytics, sedatives and hypnotics' group. It can be observed that the COVID-19 pandemic has promoted an increase of the prescription of the aforementioned drugs per doctor visit, ranging from a 1.3-point increase (p<0.001) of DDDs prescribed per doctor visit in terms of anxiolytics, sedatives and hypnotics in the hospital context, to a 4.4-point (p<0.001) increase of antidepressant DDDs prescribed per hospital consultation.

Conclusion The results show an important impact of the COVID-19 pandemic on the prescription of drugs used to treat mental illness, associating it with the decrease in doctor appointments after the declaration of the State of Emergency. Considering the impact of the

pandemic context on mental health, it is crucial to consider this increase on prescriptions as an indicator of the mental health state of the Portuguese population.

Abstract number 464

Medication Adherence among Adolescents and Young Adults living with Affective Disorder: a Qualitative Study in Russia and Denmark

Lourdes Cantarero-Arévalo[1], Sarah Fejfer Olsen[1], Maria Maria Bakshinskayte[1], Zarah Hasoon[1], Nanna Nikoline Hvam Mortensen[1]

[1]University of Copenhagen. Email: lou.cantarero@sund.ku.dk

Background Diagnoses for mental disorders among adolescents and young people are increasing worldwide, especially affective disorders such as anxiety, depression and bipolar conditions. In those cases where pharmacology treatment is recommended, drug-use studies have shown a suboptimal level of adherence to these treatments.
Purpose To understand the reasons behind non-adherence to medicinal treatment for affective disorders (anxiety, depression and bipolar disorders) among adolescents and young adults residing in Denmark and Russia and of different ethnic backgrounds. Diverse qualitative approaches were used; semi-structured interviews, conversational research and photo-elicitation among 31 participants Thematic data analysis was applied, combining software and non-software procedures. Qualitative research does not necessitate ethical approval in Denmark however the studies were registered.
Method Participants were recruited through social media groups in both countries. An invitation to participate and information about the aim of the research project was included in the online announcement. The inclusion criteria were: young people (15-26), living and diagnosed with an affective disorder (anxiety, depression and bipolar conditions) residing in Russia or Denmark and with different ethnic backgrounds. Three qualitative approaches were applied to facilitate a deep understanding of the reasons for non-adherence to pharmacological treatment. Ethical approval was given for all interactions between interviewers and interviewees. Participants were informed of their rights prior to the project start.
Findings Fifteen interviews were conducted among young Russian and 16 among young Danes. 20 women and 10 men. Mistrust to pharmacological treatments was observed in both countries and across different ethnic groups. Participants had tried to cope with their conditions without medicinal treatment in both countries and by trying alternative treatments and approaches such as physical activity, relaxation, yoga and meditation techniques, and for those with a religious belief, through prayer. The severity of the conditions meant that some of the participants started to try medication, testing different treatments until they found what "worked for them". The need to take medication was perceived as a sign of the seriousness of their conditions and was often self-stigmatized "I am a psycho if I have to take pills". Participants shared their worries about the effect of the treatments in their brains. Who am I with medicines? Who am I without medicines?. Patients living with bipolar disorders experienced a higher level of self-stigma.
Conclusion Listening to the worries and misconceptions about psychotropic medication among young people living with affective conditions should be the first step when proposing to pharmacological treatments.

Abstract number 465

Utilising community pharmacists for optimising opioid therapy in people with chronic pain; challenges and opportunities using the Social Ecological Model

Ayesha Iqbal[1], Claire Anderson[1], Roger David Knaggs[1], Li Shean Toh[1]

[1]Division of Pharmacy Practice and Policy, School of Pharmacy, University of Nottingham. Email: ayesha.iqbal@nottingham.ac.uk

Background Opioid optimisation is a global issue in Chronic Non-malignant Pain (CNMP) management. The role of community pharmacists (CPs) is essential in ensuring opioid safety. Currently, CPs are an underutilised health resource in Lower- and Middle-Income Countries (LMICs). The development of CP services, for optimisation of opioid therapy in Pakistan has not been explored.
Purpose To assess current CP services for optimising opioid therapy in Pakistan and to explore perceptions of stakeholders about the feasibility of developing roles for CPs.
Method This study was designed using qualitative methodology. The data collection involved, 6 weeks of non-participant observational case studies in 5 community pharmacies as well as a semi-structured interview guide was used to explore stakeholders perception using 5 focus groups with CP (n=38) and 5 focus groups with doctors (n=30). Additionally, interviews were conducted with relevant policy makers (n=10) and people suffering from CNMP (n=12). The study was conducted between December 2019 and November 2020. Data was analysed using NVivo 12, using inductive thematic analysis (TA). The findings of TA were mapped to the Social Ecological Model (SEM). Ethical approval and individual informed consents were obtained.
Findings The stakeholders provided a positive perception about improved patient outcomes, socio-economic benefits and a current need to develop CP services in optimising opioid therapy. However, mapping the SEM model on the findings of TA and case study reports shows many levels of influences, which might affect the CP services. SEM shows, that individual factors (lack of; motivation, confidence, training, education, legal protection, individual attitudes, time, payment, appreciation), interpersonal relationships (workload, unity, relationship with pharmacy technicians), community factors (visibility, public awareness, cultural influence and context, sources of medicine information, self-medication practices, poverty, availability of medicine, willingness and trust of public) as well as organisational barriers (lack of: job description, remuneration, privately owned business, pharmacist availability, infrastructure, support, pharmacovigilance systems, unrestricted sale) might affect the pharmacists in delivering services. Additionally, system barriers (lack of: National guidelines, policies, funds, regulation, inadequate implementation, expanded scope of pharmacy practice, representation of pharmacist voice, integrated E-Systems, health care team communication, patient records and medicine incentivization) might influence the service quality as well.
Conclusion The study identifies a multi-layer complexity for developing CP services for achieving optimised opioid therapy in CNMP management in Pakistan. The study findings imply that policy makers need to tackle the multidimensional barriers with a broad integrated approach for developing future CP services in order to improve patient outcomes.

Abstract number 466

Coordination - a key issue in reorienting the role of the pharmacist in health care.

Ana Dago[1], Francisco José Farfán[1], Alberto Virues[1], Jaime Román[1], Carlos Treceño[1], Concha Vicedo[1], Ana Santamaría[1], Juan Del Arco[1]

[1]Fundación Pharmaceutical Care España

Background Our priority as a Foundation is that healthcare pharmacists work together on specific projects, with tools well adapted to practice that allow obtaining relevant results in health. We believe that it is necessary to agree on a shared work methodology to ensure continuity of care.
Purpose The global objective is to deepen the role of hospital, community and primary pharmacists and promote the necessary changes to respond to the development of the Healthcare Pharmacy and generate official channels of communication and collaboration, providing answers to the situations raised by the patients who use medicines.
Method A first conference was held online with the presidents of the Scientific Societies of Hospital Pharmacy, Community and Primary Care. An analysis of the current situation and presentation of concerns, needs, expectations regarding their professional group and later a discussion was carried out. The second Conference was held in online rooms. 5 working groups met, made up of active professionals from each of the areas of care development, a moderator and a rapporteur. Each group tried to give answers to: • How we see Pharmaceutical Assistance and the role of the pharmacist. Discussion. • Needs, challenges, opportunities. Discussion between professional groups and rationalization. • Unification of criteria between the different health professionals and levels of care.
Findings The conclusions of the 2nd Seminar are pending drafting There is not enough knowledge between the different health groups or appropriate channels for communication between the pharmacists themselves and the rest of the health workers. He is a true health sentinel perfectly trained to detect problems, but he needs a system to communicate with other health workers. We must fight for community pharmacists to have access to the medical records of their patients in order to be able to carry out pharmacotherapeutic follow-up. The COVID-19 pandemic has opened the possibility of dispensing and monitoring not in person from the hospital pharmacy. With a good communication channel, you could collaborate to carry out this control of patients. During the pandemic, the community pharmacy has become a first-line health service, and it should take advantage of this circumstance to position itself as a reference for care.
Conclusion We hope to begin working with all agents in the development of the necessary strategies to identify opportunities to collaborate with the National Health System and solve the problems that arise in the environment of the patient who uses drugs.

Abstract number 468

Exploring the possibilities of implementing the Medication Use Review service in Eastern Europe and Iran

Anita Tuula[1], Daisy Volmer[1], Liisa Jõhvik[1], Ieva Rutkovska[2], Elita Poplavska[2], Indre Trečiokienė[3], Piotr Merks[4], Alena Tatarević[5], Maja Radovanlija[6], Carmen Pacadi[7], Arijana Meštrović[8], Réka Viola[9], Gyöngyvér Soós[9], Cristina Rais[10], Adriana-Elena Táerel[10], Galina Petrova[11], Evgeni Grigorov[11], Magdalena Kuželová[12], Marziyeh Zare[13], Payam Peymani[13]

[1]University of Tartu, [2]Riga Stradins University, [3]Vilnius University, [4]Cardinal Stefan Wyszyński University in Warsaw, [5]Istrian Pharmacies, [6]Pharmacy Rajić, [7]Mandis Pharm Community

Pharmacies, [8]PharmaExpert, [9]University of Szeged, [10]Carol Davila University of Medicine and Pharmacy, [11]Medical University Varna, [12]Comenius University in Bratislava, [13]Shiraz University of Medical Sciences. Email: anita.tuula@gmail.com

Background Polypharmacy and drug-related problems are common in both the elderly and patients with chronic diseases. Medication Use Review (MUR) is a structured evaluation of a patient's medicines in order to optimize medicines use and improve health outcomes. In the on-going international project (January 2019 - March 2021), the MUR standard adapted from Pharmaceutical Care Network Europe 2013 statement (1) and amended in Estonia is piloted in community pharmacies in Estonia, Latvia, Lithuania, Poland, Croatia, Bosnia and Herzegovina, Hungary, Romania, Bulgaria, Slovakia and Iran (MUR network).
Purpose The aim of this study was to gain insights into developments of the community pharmacy sector and map factors encouraging and hindering MUR service in Eastern European countries and Iran.
Method In September 2019 the MUR network countries performed document analysis and qualitative interviews to identify community pharmacy sector indicators, current and future competencies and roles of community pharmacists, and factors encouraging and hindering MUR service in a particular country. The collected information together with the results of the piloting of MUR service allows to evaluate the possibilities of implementing the MUR service in the future.
Findings Current community pharmacist competencies in MUR network countries were more related to traditional services such as dispensing and counselling of prescription and OTC medicines and compounding of extemporaneous medicines. In most network countries reporting of adverse drug reactions, patient education on disease prevention and health promotion, and some point-of-care testing were available. Most often named future competencies included provision of different extended services (e.g. medication review, immunization, diabetes screening, smoking cessation, INR measurements, and new medicines service). Main factors encouraging MUR were increase in polypharmacotherapy and pharmaceutical waste and access to patients' health data by pharmacists. Most often named hindering factors were MUR being unfamiliar among physicians, pharmacists and patients, financing of MUR and lack of private consultation possibilities at some community pharmacies.
Conclusion Key stakeholders in Eastern Europe and Iran are exploring possibilities to apply extended pharmacy services into practice. As polypharmacotherapy is an increasing concern in MUR network countries, it is important to routinely assess patients' medication use. Pharmacists are well placed to provide MUR, however more health professionals and patients need to be introduced to MUR and it is necessary to find an opportunity for financing the service in Eastern Europe and Iran.

Abstract number 469

Use of PCNE classification of drug-related problems for documentation and analysis of Medication Use Review service in Estonia

Elisabet Šorina[1], Daisy Volmer[1], Liisa Jõhvik[1], Anita Tuula[1]

[1]University of Tartu. Email: anita.tuula@gmail.com

Background Patients using multiple medications experience more drug-related problems (DRPs), thus it is necessary to regularly assess their medication use. Medication Use Review (MUR) is a structured service for evaluating patient's medications in order to optimize medicines use and improve health outcomes. Applying Pharmaceutical Care Network Europe (PCNE) classification of DRPs (1) in the documentation forms of MUR could benefit the service.

Purpose The aim of this study was to explore PCNE classification of drug-related problems as a tool for documentation and analysis of DRPs detected during MUR service in Estonia.
Method This study is conducted on data collected from 67 patients who received MUR service in Estonian community pharmacies from January 2019 until March 2020. From initial results it was concluded that current documentation forms did not allow to properly classify DRPs, planned interventions and statuses of DRPs, which further complicated evaluation of the service. Therefore, a retrospective classification of MUR patients' DRPs using PCNE classification of DRPs V9.00 was conducted.
Findings Out of 67 patients attending the first MUR interview, 57 (85%) had a DRP. All together, 140 DRPs were documented on the first MUR interview, which makes 2,1 DRPs per participant. The maximum number of DRPs detected per patient on the first interview was eight. 18 patients attended the second MUR interview on which 24 DRPs were detected. Six of the DRPs identified on the second interview were new. The most common DRPs identified were possible adverse drug events (P2.1) and effect of drug treatment not being optimal (P1.2). DRPs were most often caused by patient related factors (C7) and drug selection (C1). Most recommended interventions were both on patient and prescriber level (I1+I2). The acceptance of interventions and status of DRP was mostly unknown as few patients attended the second interview and documenting of counselling details and results was not mandatory in current documentation forms.
Conclusion PCNE classification of DRPs is a convenient tool for documenting and analyzing the results of MUR service. However, the classification can only be fully implemented if the patient receives the service on at least two separate occasions.

Abstract number 470

The profession of pharmacists and 3D-printing of medicine in pharmacies

Isabella Thorning[1], Netta Beer[1], Sofia Kälvemark Sporrong[1,2], Susanne Kaae[1]

[1]Department of Pharmacy, University of Copenhagen, [2]Department of Pharmacy, Uppsala University. Email: sofia.sporrong@sund.ku.dk

Background Historically, the pharmacy profession has been closely linked with manufacturing of medicine at the pharmacy. Today, however, most manufacturing takes place within the pharmaceutical industry. A new manufacturing technique, 3D-printing, can return the pharmacy profession as manufacturers of medicine in the pharmacy.
Purpose The aim of this study was to explore how future pharmacists view the possibility of 3D printing of drugs in community and hospital pharmacies. As 3D printing is closely linked to personalized medicine, their views on personalized medicine were also explored.
Method An online questionnaire survey was carried out. The respondents were pharmacy students taking their pharmacy internship at the University of Copenhagen, Denmark. The questionnaire included questions on 1) personalized medicines, including pharmacists' potential role, 2) the possibility of 3D printing in pharmacies, including pharmacists' role, 3) who should take part in designing the medicine (patient, pharmacist, prescriber). The participants were recruited through a university course site, specific for the pharmacy internship. The questionnaire was developed in English by a Danish and a Dutch pharmacy student and translated into Danish.
Findings The questionnaire had 51 respondents with a response rate of 38.5 %. The main results were that far the majority of respondents (n=43) thought that 3D printing of medicine can have a role in the development of personalized medicine. Also, 31 students thought implementation of 3D printing of drugs would directly affect the pharmacist serviceswhere the majority of students (n=35) saw "the pharmacists' ability to offer the best personalised treatment to the patient" as the biggest advantage, thereby advocating a patient rather than a professional perspective. Out of the respondents, 34 thought that the responsibility of designing the 3D tablets should be a "joint collaboration with physician, pharmacist and patient".
Conclusion A majority of the responding Danish pharmacy students believed that the pharmacist profession will evolve with the introduction of personalized medicine and 3D printed medicine. As students are the persons who are going to work as pharmacists in the future, this should be taken into consideration when looking ahead.

Abstract number 471

Effectiveness of clinical decision support systems for managing drug therapy: a systematic review within the scope of a clinical evaluation of a medical device

Stefan Maierhöfer[1], Isabel Waltering[1], Stefan Riebel[2], Georg Hempel[1]

[1]Department of Pharmaceutical and Medicinal Chemistry – Clinical Pharmacy, Westfälische Wilhelms-University Münster, Münster, Germany, [2]Doc-Cirrus GmbH, Berlin. Email: smaierho@wwu.de

Background Clinical decision support systems (CDSS) are used to assist healthcare professionals in choosing the optimal therapy for their patients. Manufacturers of CDSS classified as medical devices need to subject their products to a clinical evaluation to comply with the Essential Requirements (ER) demanded by national and EU-standards.
Purpose To perform a systematic review of studies evaluating the effectiveness and safety of CDSS used by pharmacists and physicians to optimize the medication of their patients. As the review was part of a clinical evaluation, the overarching purpose was to evaluate the compliance of a specific CDSS device with the ER pertaining to safety and performance.
Method We searched PubMed and Cochrane Central Database of Controlled Trials databases for articles published in English or German between 2010 and February 2020. Studies were included if they (1) were randomized controlled trials, (2) reported quantitative effects of CDSS used by physicians and pharmacists on process of care or patient outcomes, (3) compared CDSS usage with "usual care". The study quality and relevance to the specific device was independently appraised by two authors using a substantially enhanced modification of the Cochrane Risk of Bias Tool and a self-developed scoring system. Interrater reliability was established using Cohen's Kappa. The structure and content of the review met the particular demands of the MEDDEV 2.7/1 guideline.
Findings Sixteen of 3876 identified RCTs met our inclusion criteria (> 63.641 patients). Most trials were performed in an ambulatory setting with physicians being more frequently involved as CDSS users than pharmacists. In nine (69.2%) of thirteen trials a significant positive impact was reported in the CDSS group on process of care outcomes pertaining to a reduction in medication errors and an improvement in prescribing quality. CDSS usage was associated with a significant positive effect on patient outcomes in one of three trials. No risks related to CDSS usage were reported either in terms of quantitative or qualitative data. The study quality and relevance to the device varied substantially. Interrater reliability of the appraisal was substantial (κ=0,73).
Conclusion Usage of CDSS appears to be effective in reducing medication errors and improving quality of prescriptions. Further studies are needed to generate more evidence of the effects on patient outcomes. As CDSS and their context of use differed from the particular device, limitations in transferability of the results had to be

accepted. Based on the results and further criteria, compliance of the device with the ER was certified.

Abstract number 472

Comparing EU (7) -PIM list, Beers criteria and STOPP criteria for identification of PIM in a hospitalized older adults sample

Carla Perpétuo[1], Ana Isabel Placido[2], Daniela Rodrigues[2], Jorge Aperta[1], María Piñeiro-Lamas[3], Adolfo Figueiras[3], Maria Teresa Herdeiro[4], Fátima Roque[5]

[1]Local Health Unit of Guarda, [2]Research Unit For Inland Development, Polytechnic of Guarda (UDI-IPG), [3]Consortium for Biomedical Research in Epidemiology and Public Health (CIBER en Epidemiología y Salud Pública-CIBERESP), [4]Institute of Biomedicine, University of Aveiro (iBIMED-UBI), [5]Research Unit For Inland Development, Polytechnic of Guarda (UDI-IPG) and Health Sciences Center, University Beira Interior (CICS/UBI). Email: froque@ipg.pt

Background Given the fragility associated with ageing, as well as possible comorbidities and the consequent polymedication, older patients are more prone to drug-related problems (DRP). Several tools have been used to identify potentially inappropriate medications (PIM) in older adults, with different criteria among them.
Purpose Analyze the medication of hospitalized older patients, using tools to detect PIM, namely the EU (7) -PIM list, Beers criteria and STOPP criteria.
Method A retrospective study was carried out, in which all patients over 65 years old, hospitalized in one medical ward from one hospital in the centre region of Portugal were included if hospital stay was longer than 4 days, during the 2019 year. The data were collected from the electronic records of the hospital and all data were coded. All prescribed drugs were analyzed and the PIM were identified using the the EU (7) -PIM list, the Beers 2019 criteria, and version 2 of the Screening Tool of Older Person's Prescriptions (STOPP) criteria.
Findings The study included 616 older patients, who have prescribed a total of 11159 medications during their hospital stay, corresponding to 285 different drugs. It was also prescribed 137 dietary supplements. Through the application of the EU (7) -PIM list, the Beers criteria, and the STOPP criteria it was observed that 79.7%, 92% and 76.5% of older patients had been prescribed, respectively, at least one PIM. Of the 285 drugs taken by older patients during their hospital stay, the EU (7) -PIM list identified 63 PIM, the Beers criteria identified 77 PIM and the STOPP criteria identified 95 PIM. When comparing the 3 lists, we find that the EU (7) -PIM list identified 42 PIM in common with the Beers criteria and 40 PIM in common with STOPP criteria, while the Beers criteria have identified 59 PIM in common with STOPP criteria. Thirty-four PIM were common to all the free criteria.
Conclusion It was observed a poor agreement between the different criteria applied to identify PIM, demonstrating the importance of studies in this area and the need of adapting the criteria to the hospital reality, more specifically in the medical services, where there is a frequent need of medication changes. This work was financially supported by the APIMedOlder project [PTDC/MED-FAR/31598/2017], funded by the operational programme of competitiveness and internationalization (POCI), in its FEDER/FNR component POCI-01-0145-FEDER-031598, and the Foundation for Science and Technology (Fundação Para a Ciência e Tecnologia - FCT).

Abstract number 473

The role of community pharmacies in disease prevention with focus on flu and COVID-19 vaccination from the patient's perspective

Kristiina Sepp[1], Daisy Volmer[1]

[1]University of Tartu. Email: kristiina.sepp@ut.ee

Background In Estonia, the number of vaccinated people against flu has been low for several years. Involvement of new professionals in disease prevention has been considered effective to reach patient groups at risk. Influenza vaccination took place in community pharmacies for the first time in 2018 and has been successfully continued in the following years.
Purpose The aim of this study was to evaluate and compare patient feedback towards flu vaccination at community pharmacies in 2018 and in 2020 during COVID-19 pandemic.
Method In Estonia, the total number of people received flu vaccination at community pharmacy was about 9100 in 2018 and 14000 in 2020. Setting: Community pharmacies (n=16) participated in the flu vaccination project in October-November 2020. Study method: cross-sectional survey evaluating feedback about accessibility and quality of vaccination service and willingness to vaccinate against COVID-19 at community pharmacy. Study sample: people who received a flu vaccination at community pharmacy. An Ethics Committee approval (No 327T-29) was received for this study.
Findings Of the study participants in 2018 (n=257) and 2020 (n=365) about half received flu vaccination first time. In 2020 there were 1/5 of the respondents whose immunization had previously taken place in a community pharmacy. In 2020, the number of people who were afraid of falling ill was half as high as in 2018 (70% versus 48%). About 1/3 of the respondents named the spread of COVID-19 as the main cause of fear of infection. Participants would receive other vaccinations at community pharmacies, including the national vaccination program vaccines (Tetanus, HPV, Measels etc). The vast majority of respondents believed that vaccination against COVID-19 would help stop the spread of the virus, 79% would vaccinate themselves in the future and 92% would like to receive this service at a community pharmacy.
Conclusion Based on the example of influenza vaccination, community pharmacies are well positioned to participate in disease prevention in Estonia. In the period of COVID-19 pandemic it is important to employ different settings and specialists in healthcare to deal with several health threats.

Abstract number 474

Towards safe medication use of geriatric patients: a novel combined tool for identification of potential drug related problems

Veera Bobrova[1], Daniela Fialová[2], Jyrki Heinämäki[1], Shane Desselle[3], Daisy Volmer[1]

[1]University of Tartu, [2]Charles University in Prague, [3]Touro University. Email: veera.bobrova@ut.ee

Background Medication review is an essential element of pharmaceutical care, assessing patients' medications to identify drug related problems (DRPs). There is a growing amount of evidence-based

research suggesting older people are at risk of potentially inappropriate medications (PIMs) due to multi-morbidity and polypharmacy.
Purpose The aim of the study was to develop a novel combined tool for identification of DRPs in geriatric multi-morbid patients, using the European PIM tools, namely the EU(7)-PIM and EURO-FORTA lists, and to categorise PIMs stated on both lists to be applicable for integrated e-health prescribing systems in Estonia.
Method The novel combined PIM tool was structured relying on clinical significance of the active substances from the EU(7)-PIM and EURO-FORTA lists, and the red-yellow-green-grey color coding was used to support the interpretation of the information, and to enable the adjustment of the tool to the local electronic interaction and counter indication INXBASE/RISKBASE system. Based on the risk and severity of DRPs, the PIMs were classified into four groups: very significant PIMs (should be avoided) as red, significant PIMs (require dose and/or treatment duration adjustment) as yellow, non-significant PIMs/non-PIMs (low DRP risk) as green, and questionable PIMs (incomplete/missing information) as grey color.
Findings The list of the red PIMs contains 34 active substances, including one combination of two drugs and one drug class. Most of the red PIMs belong to the A (29.4%) and C (29.4%) medication groups according to the ATC classification, and only 41.2% the red PIMs are registered and approved in Estonia on country-specific pharmaceutical market. The top 4 most frequently used red PIMs in Estonia in 2019/2020 according to the present research were sodium picosulfate (DDD=4.3637), propafenone (DDD=3.5699), ginkgo biloba (DDD=2.3355), and magnesium hydroxide in combination with other antacids (DDD=1.187). As the identification of the yellow and green PIMs depends directly on an individual patient clinical characteristics, it was not possible to present the total list of the yellow/green color PIM in general at the moment (preliminary data expects around 248 yellow+greed PIMs), and it needs closer investigation in the future. The complete list of the grey PIMs will be also reached in the future.
Conclusion The combined PIM tool was developed with a focus on the high risk medications for older adults and taking into consideration the availability of the PIMs in the Estonian pharmaceutical market. In the future, it can be applied as a screening e-tool to identify DRPs in different health care settings.

Abstract number 475

Patients' perception of an interdisciplinary medication management service

Christiane Eickhoff[1], Uta Mueller[1], Ann Kathrin Strunz[1], Maike Petersen[1], Martin Schulz[1]

[1]ABDA - Federal Union of German Associations of Pharmacists.
Email: c.eickhoff@abda.de

Background Within the project ARMIN, an interdisciplinary medication management was implemented in Germany. The initial intervention consists of a type 3 medication review. During every patient visit in a participating pharmacy or general practice, new medication is checked for potential risks and the medication plan is updated, if needed. Until now, there are no reimbursed cognitive pharmaceutical services implemented nationwide in Germany. Therefore, little is known on the patients' acceptance of such services and their perception of a personal benefit.
Purpose To assess the medication management service in the project ARMIN with a focus on the patients' perception.
Method We conducted an intervention study with an observational period of six months. We aimed to recruit a convenience sample of n=60 patients. Two self-administered patient questionnaires, filled-in by the patient at baseline (36 items) and after 6 months (41 items),

were developed to assess patients' characteristics, perceived benefit, and changes as well as satisfaction with the service. Additionally, pharmacists documented the medication and drug-related problems (DRPs). Complexity of the medication was assessed with medication regimen complexity index (MRCI).
Findings Altogether, 79 patients (54% female) were recruited by 17 community pharmacies. Age distribution: <65 years: 30 (37%), 66-75 years: 25 (32%), and >75 years: 23 (28%) patients, respectively. Mean number of 10.1 medications at baseline (median: 9; range: 5–26) with a slight increased during the six months (mean: 10.9). The MRCI did not change significantily over the intervention period (22.1 at baseline versus 23.4 after 6 months). Overall, pharmacists documented 310 DRP (mean: 3.9 per patient), of which 65.8% (n=204) were solved. Only 24.1% (n=19) of the patients reported that DRPs were identified and solved; these patients received more medications (11.7 versus 9.8) with a higher MRCI (23.7 vs. 21.6, both n.s.). Patients assessed the changes after 6 months overall positively and (strongly) agreed to: An increase in knowledge on drug dosing (n=48; 60.7%); more willingness to take responsibility in health issues (n=48; 60.7%); feeling more secure in handling their medication (n=54; 68.4%); better relationship with their pharmacist and physician (n=63; 79.8% and n=57; 72.1%, respectively); feeling safer because somebody is taking care of the medication (n=63; 79.7%). The majority of the patients was (very) satisfied with the service (n=74; 93.7%).
Conclusion The patients rated the perceived changes and benefits overall positively, most often reporting an increased feeling of safety and a better relationship with the healthcare professionals. In contrast, only approx. 24% realized that DRPs were identified and solved although this was reported for almost all patients by the pharmacists. This indicates that patients might focus on other factors than healthcare professionals. Therefore, more research is needed to understand patients' assumptions of and expectations on pharmacist and interdisciplinary care.

Abstract number 476

Does Medicines Use Review influences medicine- associated burden?

Urska Nabergoj Makovec[1], Mitja Kos[1]

[1]University of Ljubljana, Faculty of Pharmacy, Ljubljana, Slovenia.
Email: urska.nabergoj.makovec@ffa.uni-lj.si

Background Chronic medicines use can present a burden in patients' everyday life and consists of several elements - from practical issues, side effects to attitudes, beliefs and concerns about medicines.
Purpose We aimed to evaluate how Medicines Use Review (MUR) service influences patient medicine- associated burden.
Method A randomised controlled trial, consisting of two visits (V1 and V2), was performed in community pharmacies to compare MUR (test group (T); received MUR at V1) with standard care (control (C)). Patients recognized as suitable for MUR by certified pharmacists and taking at least one Rx chronic medication were eligible for enrolment. The medicine-related burden was a secondary outcome, assessed with The Living with Medicines Questionnaire (©LMQ). Patients fulfilled the ©LMQ questionnaire at both visits and MUR impact on medicine-associated burden was defined as the mean relative difference in ©LMQ, visual analogue scale (VAS) and each questionnaire domain score between test and control group after 12 weeks (V1-V2). Independent t-test or ANOVA was used for normally distributed variables, and the Mann-Whitney U test or Kruskal-Wallis test for other distribution types, at $\alpha=0.05$.
Findings Data of 140 patients (T=72; C=68) were analysed, inter-group comparison showed no statistically significant differences at

V1. The average ©LMQ scores at V1 were 97.75 (SD=20.31) and 92.88 (SD=19.7) points for the test and control group, respectively. The medicine-associated burden was non-existent for 15%, minimal for 56%, moderate for 28%, and high for 1% of patients, which is similar to the findings in the literature (Krska 2018, Tordoff 2019). At V2, the average ©LMQ scores decreased to 93.56 (SD=18.55) and 91.16 (SD=21.33) points for the test and control group, respectively. The average VAS scores were 2.81 (SD=2.34) and 2.66 (SD=2.13) points at V1, and 2.53 (SD=2.40) and 2.68 (SD=2.25) points at V2, for the test and control group, respectively. The overall medicine-associated burden did not decrease as a result of receiving MUR (©LMQ p=0.618; VAS p=0.911). The reasons could be in the general low levels of perceived burden as well as in the level of sensitivity of the used instrument. Nevertheless, patient concerns regarding their daily use of medicines decreased after they received MUR (domain 6 of the ©LMQ), with a statistically significant difference in domain score (V1-V2) between groups (p=0.029).

Conclusion MUR did not significantly influence the overall medicine-associated burden; however, the results show patients feel empowered and less worried about chronic medicines use after receiving the service.

Abstract number 477

Describing clinical pharmacy education and practice in Europe

Laura Moura[1], Stephane Steurbaut[2], Brian Addison[3], Hege Blix[4], Sule Apikoglu-Rabus[5], Vera Gunten[6], Helder Mota-Filipe[1], Filipa Alves da Costa[1]

[1]Faculty of Pharmacy, University of Lisbon, [2]Faculty of Medicine & Pharmacy, University of Brussels, [3]School of Pharmacy & Life Sciences, Aberdeen. United Kingdom, [4]School of Pharmacy, University of Oslo, [5]Faculty of Pharmacy, Marmara University, Istanbul; Turkey, [6]Hopital du Valais, Pharmacy, Sion, Switzerland. Email: lauraamoura0@gmail.com

Background Clinical pharmacy (CP) is a discipline of pharmacy practice focusing on optimising rational use of medicines. As clinical activities developed by pharmacists are emerging and increasing, a detailed framework of CP education and practice in European countries is lacking.

Purpose To explore and map Clinical Pharmacy education and practice (at undergraduate and postgraduate levels) in Europe, by assessing the current situation using a survey directed at European Society of Clinical Pharmacy (ESCP) members and by exploring publicly available information.

Method An online survey was conducted and disseminated among academic and research-oriented ESCP members in November 2018. The survey collected information on the quantity of academic content of CP education offered during undergraduate and postgraduate courses, including continuous professional development (CPD) programs and official recognition of a specialisation in this area. The collected information was validated by independent respondents (August-September 2019) and subsequently made publicly available for consultation through ESCP's website (June-August 2020). Additional information was obtained by searching faculties' websites. Data triangulation was used to achieve consensus. Levels of evidence according to the number of sources used were established.

Findings This study includes information of 95% (n=40 in 42) of the European countries delivering education in pharmaceutical sciences. In 95% of the countries (n=37 in 39), CP was part of undergraduate education. There was a wide variability in the number of semesters, hours, European Credit Transfer System (ECTS) and percentage of practical teaching dedicated to clinical course units. Most countries reported to have specific CP postgraduate education: 65% (n=26 in

40) MSc degrees and 93% (n=37 in 40) PhD programs. CPD programs in CP or courses not leading to a degree were reported by 64% of the countries (n=23 in 36). More than half (51%; n=21 in 40) of the European countries recognize CP as an area of specialization, and among these, in 47% (n=9 in 19) the specialization goes along with specific job specifications and/or professional rights.

Conclusion Major differences have been identified between European countries in terms of CP education and practice. The final report will include examples of good practices in CP that may contribute to influence further expansion in Europe. Future work will expand the research beyond Europe by liaising with the International Pharmaceutical Federation (FIP).

Abstract number 479

Improving quality of care in Belgium: exploration of opportunities and bariers

Vanhacht Pieter[1], Crespinet Chloë[1], De Wulf Isabelle[2], Van Heuverswyn Karlien[1], Sarre Sophie[2], Foulon Veerle[1]

[1]Department of Pharmaceutical and Pharmacological Sciences, Clinical Pharmacology and Pharmacotherapy, KU Leuven, [2]Algemene Pharmaceutische Bond. Email: Pieter.Vanhacht@kuleuven.be

Background In Belgium, there is not much known about the level of quality delivered in the community pharmacies. This has created a situation in which the value of a pharmacy is unknown to patients, healthcare professionals and government.

Purpose The PHARCQADIS study has a dual-purpose design. First we want to gather information concerning the ideas and beliefs of Belgian pharmacists surrounding quality in pharmaceutical care. Second we wanted to create a measuring instrument to visualize the quality of pharmaceutical care in a number of situations known to cause drug-related problems. In this first phase we focus on the ideas and beliefs surrounding quality.

Method The set-up consisted of an interview with Belgian community pharmacists. These interviews were set up in a semi-structured form focusing on three aspects of quality of care in local pharmacies, namely: 1. "What is quality of care?" 2. "How can quality of care be observed?" 3. "How can quality of care be improved?". For these interviews, participants were selected by convenience sampling.

Findings We conducted 20 interviews with Flemish community pharmacists. Participating pharmacists had a mean age of 42 years and were mostly employed as the managing pharmacist of a local community pharmacy with regular patients (i.e. the most common type of pharmacy in Belgium). When asked what quality is to them, the participants defined four overarching categories in which they wanted to excel: medication schedules, dispensing of medication, follow-up of chronic patients and multidisciplinary communication. In each of these categories they saw opportunities for improvement, but three important barriers kept returning: lack of time, lack of consultation structures and limited IT-support. Pharmacists perceived time constraints as the most important reason why they couldn't deliver the quality they wanted. Further in the interviews it became clear that there is a great need for official structures to improve quality of care, both with regard to measurement as to peer consultation. Most pharmacists understood the need for benchmarking in order to improve quality, but resistance could be felt when talking about sharing and publishing data non-anonymously.

Conclusion Although quality is very important for Belgian pharmacists, they can't deliver the level of quality they would want to. Due to lack of time, consultation structures and IT-support it's very hard for them to accompany their patients in the full trajectory of the treatment. This creates a situation in which the pharmacist is possibly

undervalued by the patient, other healthcare professionals and the government.

Abstract number 480

A countrywide study in Portugal addressing antibiotic prescription during the COVID-19 pandemic

Tânia Magalhães Silva[1], Marta Estrela[1], Adolfo Figueiras[2,3], Fátima Roque[3,4], Maria Teresa Herdeiro[1]

[1]iBiMED - Institute of Biomedicine, Department of Medical Sciences, University of Aveiro, Aveiro, Portugal, [2]Consortium for Biomedical Research in Epidemiology and Public Health (CIBER Epidemiology and Public Health - CIBERESP), Santiago de Compostela, Spain, [3]Health Research Institute of Santiago de Compostela (Instituto de Investigación Sanitaria de Santiago de Compostela - IDIS), Santiago de Compostela, Spain, [4]Research Unit for Inland Development, Guarda Polytechnic Institute (UDI-IPG), Guarda, Portugal, and Health Sciences Research Centre, University of Beira Interior (CICS-UBI), Covilhã, Portugal. Email: tania.m.silva@ua.pt

Background Antibiotics are among the most commonly prescribed drugs worldwide. However, when improperly or unnecessarily used, these medicines frequently give rise to antibiotic resistance, one of the major global Public Health threats. The mandatory home confinement implemented during the Covid-19 pandemic has caused a suspension on healthcare-associated procedures, such as doctor appointments and non-urgent surgeries.

Purpose The major purposes of this study are to: 1) evaluate the antibiotic prescription trends in Portugal considering the number of doctor appointments in both primary and hospital care sectors, and 2) assess the impact of the State of Emergency declaration and resulting stringent governmental measures implemented during the Covid-19 pandemic on the above-mentioned prescription tendencies.

Method Antibiotic prescription data, as monthly Defined Daily Doses prescribed by public health sector physicians, were acquired from the System of Information and Monitoring of the Portuguese National Health System (SIM@SNS) public-access platform, between January 2018 and July 2020. The number of doctor appointments within the public health sector was obtained from the Transparência - SNS database. An interrupted time series analysis model based on a segmented regression approach assessed the differences between antibiotic monthly prescribed DDDs per se and per doctor appointment in primary and hospital care.

Findings Antibiotic prescription tendency analysis revealed a similar trend throughout 2018 and 2019, with January being the month with the highest level of DDDs prescribed, followed by a decrease until August, and a rise till December. However, in 2020 a significant ($p<0.05$) fall was observed in antibiotic prescription following Covid-19 emergence in primary (B=-420054,797) and hospital (B=-627719,984) care settings. Moreover, antibiotic prescriptions by doctor appointment demonstrated a sudden decline between March and June 2020 for primary care and between February and May 2020 for hospital care.The immediate impact prompted by the Covid-19 pandemic also led to a reduction in antibiotic prescription ratios in both settings, although it was only significant in primary care (B=-0.127).

Conclusion In accordance with several publicized reports, the outcomes obtained within this study confirmed the great impact of the unprecedent Covid-19 pandemic on antibiotic prescription levels among the Portuguese population after the State of Emergency declaration. The decrease in antibiotic prescriptions uncovered during the referred time may be explained by the home confinement and preventive measures adopted, resulting in a lower incidence of antibiotic-associated infections.

Abstract number 481

The app 'Robin' including virtual assistance and a reminder function improves medication adherence in chronic myeloid leukemia patients.

Koos Ris[1], Jeroen Janssen[2], Jan Jacob Beckeringh[3], Jacqueline Hugtenburg[1]

[1]Department of Clinical Pharmacology and Pharmacy, Amsterdam University Medical Centers, Loc. VUMC, [2]Department of Hematology, Amsterdam University Medical Centers, Loc. VUMC, Amsterdam, The Netherlands, [3]Westwijk Pharmacy, Amstelveen, The Netherlands. Email: jg.hugtenburg@amsterdamumc.nl

Background Chronic myeloid leukemia (CML) is a malignant hematological disorder, which can be effectively treated with tyrosine kinase inhibitors. Studies showed that 25%-35% of the patients were non-adherent. Reasons for poor adherence may be internal to the patient, such as hindering beliefs and personality traits, and external, such as demands during work pressure, the relationship with the health care professional as well as the regimen prescribed. Non-adherence has been associated with disease progression. As a solution for this problem, we developed the innovative eHealth intervention 'Robin'. 'Robin' is a program built as smartphone application which can be applied by patients in a personalized way. By using the app patients are supported in dealing with daily life issues. 'Robin' includes: 1. A chatbot with over 150 chats with tips and tricks, personalized to patients' preferences 2. Logs to keep track of medicine adherence, side effects, blood values 3. A list of frequently asked questions 4. A reminder function and support for difficult moments

Purpose The aim of the study was to get insight into the effects of the app 'Robin' on medication adherence and quality of life (QoL) of CML patients.

Method We performed a pretest-posttest intervention study including CML patients older than 18 years. CML patients in The Netherlands were invited to participate via letters from the Amsterdam UMC, location VUMC, the patient advocacy group Hematon website, and at visits to the hospital. Patients interested to participate could register online. During the three-month pretest period patients received usual care and used MEMS. During the three months posttest period the app 'Robin'was used. Adherence was measured with MEMS device and MARS questionnaire. QoL was assessed with EORTC-QLQ-C30. Paired sample t-test, McNemar test and Wilcoxon signed rank test were used to analyse the data.

Findings Of 67 registered patients 14 (21%) completed the study. Medication adherence increased from 83.4% ± 18.8% before to 96.9% ± 4.2% (P < 0.009) measured with MEMS after the app Robin was introduced and increased from 38.5% to 84.6% (P <0.031) measured with MARS. QoL was not influenced.

Conclusion The app 'Robin' in combination with MEMS considerably increased medication adherence of CML patients. It is not known to which extent the reminder function contributes to the effect. The large drop-out limits the study. The app 'Robin' is a promising medication adherence support tool. The effects of the app 'Robin' on the long-term need to be investigated.

Abstract number 482

Potential of digital tools to assist medication management in mental health: a review of e-tools used in dementia

Raquel Inez[1], João Pedro Aguiar[1], Ema Paulino[2], Filipa Alves da Costa[1,3]

[1]Centro de Investigação Interdisciplinar Egas Moniz (CiiEM), Instituto Universitário Egas Moniz, [2]Farmácia Nuno Álvares, [3]Faculdade de Farmácia, Universidade de Lisboa. Email: raquelccinez@gmail.com

Background There are many technological solutions available today, but information on their feasibility from the user's perspective is often missing. Digital tools, like mobile health (mHealth), may play a key role in facilitating medication management in dementia, where the users are frequently caregivers.
Purpose To identify mHealth solutions available for caregivers and people with dementia and their availability in app stores; To assess the potential of mHealth to assist in medication management in two domains: 1) improving effectiveness and safety of medications used in these patients; 2) access of caregivers to healthcare professionals via the app.
Method A systematic overview of the literature (complemented with a search in app stores) was undertaken, where research papers describing the development of mHealth and/or interventions carried out using these tools for caregivers or patients were included (between January and November of 2020). PRISMA guidelines were followed. The assessment of the potential of these tools to assist in medication management was evaluated initially by dividing mHealth solutions into two groups according to their objective (research purposes or practice implementation), availability in daily life (through app stores), and target population (caregiver and/or person with dementia).
Findings A total of 65 digital tools were included. Half of the tools (n=32; 49.2%) described in those studies were designed for research purposes only, and the other half (n=33; 50.8%) were implemented and available in the daily practice. None of the research-centred tools was available in app stores. The most prevailing target were those addressing both caregivers and elderly with dementia (14/32; 43.8%). Tools helping medication management or communication with healthcare professionals (13/32; 40.6%) were found in half of the papers included in this first group. Most of the tools available in app stores addressed the caregiver (14/33; 42.4%), by including information from recent literature to teach and assist them in dealing with daily situations, e.g. symptom guide. Few tools accessible in stores incorporate a resource to manage medication or had the option to communicate with healthcare professionals (6/33; 18.2%). Apps specifically designed for patients usually contained cognitive training including memory exercises and brain games.
Conclusion Almost half of the apps identified in this review showed some functions for medication management and the possibility to communicate with healthcare professionals. Future work will explore carers' and healthcare professionals' views on core domains to be included in a digital tool that could be adapted to the Portuguese context.

Abstract number 483

Fast-Track to Irritable Bowel Syndrome (IBS) diagnosis: a multidisciplinary approach to increase awareness and screening through community pharmacies

Patricia Soares[1], Ana Pinto[1], Ema Paulino[1], Maria Teixeira[1], Mariana Rosa[1]

[1]Ezfy, Portugal. Email: patricia.soares@ezfy.eu

Background In Portugal, IBS has an estimated prevalence of more than 1 million patients, although many individuals with symptoms do not consult a physician and are thus not formally diagnosed. This has an impact on daily life and social functioning.
Purpose To identify and fast-track to diagnosis people with symptoms suggestive of Irritable Bowel Syndrome (IBS) through a pharmaceutical intervention based on the application of Rome Criteria IV in the community pharmacy setting.
Method Prospective study in community pharmacies. A literature search was conducted in PubMed/Medline, as well as sources for grey literature. The keywords used were: "IBS patient journey" and "IBS care". A pharmaceutical intervention that would fast-track people with symptoms to diagnosis was designed by the research team: the "Happy Gut" program consisted of three tasks that correspond to an initial symptom assessment (t0) with subsequent referral to the physician, and two follow-up contacts, that take place 1 and 2 months after referral. A computer application was customized to support the intervention: patient registration, automatic task scheduling, and follow-up forms. Logins were assigned to 108 pharmacies and training was provided to pharmacy teams. The data collected was anonymized and handled by the application.
Findings Preliminary data from the first phase of implementation indicates that 183 people were included in the program since July 2020, having been identified by pharmacists using the pivotal Rome IV Criteria. Participants were mainly female (75,0%). The mean age was 55 years (min 7; max 93). The dropout rate was 5,47%. 75 participants have already completed the follow-up after referral, of which 6 (8,0%) have been diagnosed with IBS.
Conclusion The early identification of symptoms can be done at the community level by pharmacists who have been trained to recognize key criteria for IBS. The design of the IBS patient journey allows data-driven interventions performed in everyday pharmaceutical practice.

Abstract number 484

Classifying determinants of non-adherence in oncology breast cancer patients in Portugal according to the ABC taxonomy for medication adherence

Catarina Bernardo[1], António Moreira[2], Helena Florindo[1], Filipa Alves da Costa[1]

[1]Faculty of Pharmacy, University of Lisbon, Portugal, [2]Department of Medical Oncology, Instituto Português de Oncologia, Rua Prof. Lima Basto, Lisbon, Portugal. Email: catarina.simoes.bernardo@gmail.com

Background The ABC taxonomy describes medication adherence as a process comprising three quantifiable phases, initiation, implementation and discontinuation, being possible to estimate adherence according to treatment phase. For oral antineoplasic therapies non-adherence and their determinants have been scarcely researched.
Purpose Our main goals are (a) to estimate the prevalence of non-adherence to breast cancer oral treatments (b) to identify determinants of non-adherence in these patients and (c) to classify those determinants according to the ABC taxonomy medication adherence phase (implementation and discontinuation).
Method A cross-sectional study will be conducted across 5 hospitals in mainland Portugal. A questionnaire will be developed by gathering key surveys which can identify non-adherence determinants and measure medication adherence through self-report. To track patient's medication adherence phase, we will combine the questionnaire with prescriptions renewals, pharmacy refill data and pill count. Women

must be aged 18 years or over, have a diagnosis of metastatic breast cancer (stage IV) and be prescribed with capecitabine, palbociclib, riblociclib or abemaciclib for at least 3 months. All participants must sign an informed consent. Data analysis will resort to SPSS, version 24.

Findings The final questionnaire comprises 5 domains to evaluate health literacy (Medical Term Recognition Test - METER), digital literacy (Get Digital basic skills assessment questions – Get digital from Tech Parternship), disease-related factors (e.g. Illness Perceptions Questionnaire), medication-related factors (e.g. Medication Adherence Report Scale - MARS-9) and healthcare-related factors (e.g. Health Care Climate – HCC). Whenever a key survey was not available in Portuguese, we resorted to Guillemin's guidelines for cross-cultural adaptation. This procedure was applied to adapt the Get Digital questionnaire and the HCC. MARS-9 was already available in Portuguese requiring validation for breast cancer patients, which will include psychometric testing. Patients' sociodemographic variables and treatment regimens will be collected from medical records and supplemented with interviews. The questionnaire will be made available electronically and in paper as self- or interviewer-administered, according to patient's preferences and educational level.

Conclusion Identifying patterns of medication adherence and their determinants in this population will lead to the development of tailored service provision, involving multidisciplinary teams and technology, whenever appropriate.

Abstract number 486

New medicine service: tackling nonadherence at the beginning of the treatment journey

Mariana Rosa[1], Ema Paulino[1], Ana Luísa Pinto[1], Patrícia Soares[1], Maria Luísa Teixeira[1]

[1]Ezfy, Portugal. Email: mariana.rosa@ezfy.eu

Background Medication nonadherence for patients with chronic diseases is extremely common, affecting as many as 40% to 50% of patients who are prescribed medications for management of chronic conditions. In Portugal, a recent review concluded that adherence rates varied from 41.6% to 89%, depending on the disease.

Purpose To identify and assess the adherence, health related needs and pharmaceutical interventions related to newly prescribed medicines used in the treatment of chronic conditions in the community pharmacy setting.

Method The intervention was designed based on the "New Medicine Service" available in the UK, which consists of one follow-up contact approximately 1 week, and a second follow-up contact approximately 2-3 weeks after the initiation of a new medicine for a chronic condition. A computer application, developed on the Salesforce Health Cloud® software, was customized to support the intervention. Logins were assigned to 108 pharmacies and training was provided to pharmacy teams for the implementation of the program. Data collected (after obtaining informed consent) from all completed interventions were anonymized and subsequently treated using Microsoft Excel®.

Findings Between February and October 2020, 3147 interventions were completed. Participants were mainly female (60,0%). The mean age was 64,8 ($\pm$14,9) years. The most frequent indications for new medicines were diabetes – ATC A10 (10,4%, n=326); agents acting on the renin-angiotensin system - ATC C09 (13,9%, n=436); lipid modifying agents -ATC C10 (13,6%, n=428); and antidepressants – ATC N06A (17,7%, n=558). In general, nonadherence at the first contact was 8,4% (n=265) and 10,3% at the time of the second contact. The difference between the first and second contact was even more relevant for antidepressants (13,3% at t1 and 17,0% at t2). In 22,6% (n=72) of non-adherence cases, patients reported not having started taking the medicine at all at the time of the first contact, and 10,2% (n=38) by the time of the second contact. Health related needs identified by pharmacists decreased between the first and the second contact, being the "need for more information about the medicine" the most prevalent one (39,1%, n=780). Pharmacists' interventions were similar at the two contacts: promoting adherence to treatment and educating about the medicine.

Conclusion Following up on patients after dispensing a new medicine for a chronic disease allows pharmacists to identify and address issues related to patient adherence to treatment. We intend to use the data to assist us in designing more effective interventions based on drug class or patient characteristics to improve treatment outcomes.