Int J Clin Pharm (2022) 44:787–815
https://doi.org/10.1007/s11096-022-01407-6

ABSTRACT SET

Abstracts 8th PCNE working symposium 'Navigating research on pharmaceutical care'. 11–12 February 2022, Lisbon, Portugal

Published online: 29 May 2022
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Oral presentations

PCNE abstract number 489, Accepted as oral

Key stakeholders' experiences with the implementation of medication reviews in community pharmacies: a systematic review

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Background: Many unplanned hospital admissions occur due to adverse drug events which may be reduced by medication reviews (MRs), a pharmacist intervention that aims to optimise drug use. However, evidence suggests that MRs are not widely available in community pharmacies.
Purpose: The aim of this systematic review was to critically appraise, synthesize and present the available evidence of stakeholders' experiences with the implementation of MRs, and to identify facilitators and barriers to MR implementation in community pharmacy.
Method: A systematic search in 4 databases was conducted in June 2019. Articles in the English, Spanish or German language published in the previous 15 years were included. Key search terms were related to implementation, pharmac*, medication review, facilitator and barrier. Included participants were pharmacists, doctors, patients and other external stakeholders. Two researchers independently performed the screening and quality assessment of the articles. Synthesis and analysis were based on the Consolidated Framework of Implementation Research (CFIR), thus organizing experiences and influences to implementation in the domains "intervention", "outer setting", "inner setting = pharmacy", "characteristics of individuals = pharmacists" and "process".
Findings: 23 studies from 9 high income countries met the inclusion criteria. Participants of the studies were mainly employed pharmacists (n = 12 studies), doctors (n = 3 studies) and patients (n = 3 studies); the remaining studies reported other or several stakeholders' perspectives. Key influences from the 'outer setting' were adequate remuneration and a clear mandate from health authorities. Both could manifest as barrier or facilitator and impacted on influences from other domains such as resourcing ('inner setting') or engaging patients and doctors ('process'). While the advantage of MRs ('intervention') over usual care was appreciated across all stakeholder groups, the complexity of MR implementation and the accompanying excessive documentation was perceived as a barrier. Facilitators from within the pharmacy ('inner setting') were a motivated and well-functioning team. Leadership engagement was reported as fundamental since managers shaped the culture of the pharmacy and allocated resources. Pharmacists ('individuals') were receptive to the idea of conducting MRs as a new clinical task especially after additional MR-training had boosted their self-confidence and efficacy.
Conclusion: This SR highlighted the complexity of MR implementation in community pharmacy and added to the understanding of several stakeholders' perspectives. However, pharmacy owners who (in countries like Germany) decide whether to implement MRs in their pharmacy were not represented in the literature and their views and experiences need to be investigated in future research.

PCNE abstract number 504, Accepted as oral

Screening for patients with hepatitis C in swiss community pharmacies: a pilot study

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Background: Infections with the hepatitis C virus (HCV) are a global public health burden due to their risk of morbidity and mortality. Because of a low HCV prevalence in the overall population in Switzerland (< 1%), screening programs target specific at-risk populations for testing. Research from Scotland showed that around twice as many individuals accepted a test-and-treat pathway in community pharmacies compared with the same offer from other healthcare providers (Radley A. et al., Lancet Gastroenterol Hepatol. 2020 Sep;5(9):809–818.)
Purpose: Community pharmacies are in an ideal position to approach people at risk for HCV and offer screening. This pilot study aimed to assess (i) the feasibility of HCV screening in Swiss community pharmacies and (ii) the pharmacists' perspectives on the implementation of this new service, including barriers and facilitators.

Method: The Pharmaceutical Care Network Switzerland (PCN-S) established guidance on how to approach at-risk populations, on how to perform the screening, and on how to refer positive clients to other healthcare providers. Recruited community pharmacists were trained and had access to supervision throughout the pilot study. The OraQuick® HCV test, a rapid antibody test using a saliva swipe, was used to detect possible carriers of HCV. The tests were free of charge for pharmacies and clients, and pharmacies were remunerated for each performed screening. An online questionnaire assessed pharmacists' perspectives on service implementation in daily practice.
Findings: Out of 36 trained pharmacies, 25 (69%) were able to screen at least one client. From April to September 2021, 435 clients were offered the screening, of which 145 agreed to participate (33%). Eight clients were tested positive (6% prevalence) and were referred to specialists for further diagnostic procedures.. In 15 completed questionnaires, pharmacists mainly responded that they would continue to offer the service (71%) and that the service would fit well into the pharmacy's other services (86%).
Conclusion: This pilot study demonstrated feasibility of and willingness for community pharmacy-based screening service for HCV carriers in at-risk populations. Future development of the service should include interprofessional collaborations to ensure efficient referral for further diagnostic procedures and near-term initiation of appropriate drug therapy. Disclaimer: This study was financially supported by an educational grant provided by Abbvie Switzerland AG.

PCNE abstract number 517, Accepted as oral

Impact of pharmacist-led medication reconciliation on healthcare utilisation: a controlled clinical trial

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Background: Medication reconciliation has been repeatedly shown to reduce medications discrepancies at transitions of care. However, the benefits of medication reconciliation on clinically more important outcomes, as healthcare utilisation, have not been univocally proven.
Purpose: This controlled clinical trial aimed to evaluate the impact of a pharmacist-led medication reconciliation on post-discharge healthcare utilisation in adult medical patients, hospitalised in an academic hospital in Slovenia.
Method: All patients, hospitalised to a ward where medication reconciliation was integrated into routine clinical practice, were included in the intervention group. The control group consisted of randomly selected patients from medical wards where medication reconciliation was not a routine clinical practice. The primary study outcome was patient's healthcare utilisation within 30 days of discharge, defined as any unplanned healthcare visit or death. The secondary outcomes consisted of the number of unintentional discrepancies at and 30 days after discharge. Patient data and study outcomes were collected and assessed by independent pharmacy researchers through medical documentation review and post-discharge patient telephone interview.
Findings: The included 415 patients were elderly (median 71 years), treated with polypharmacy (median 7 medications), with no significant differences between the intervention (n = 225) and control (n = 190) groups. At discharge, patients had a high number of discrepancies between best possible medication history and the therapy at discharge (median 3 in the intervention group versus 5 in the control group). At least one clinically important unintentional discrepancy at discharge occurred in 21/225 (9.3%) patients in the intervention group and in 117/190 (61.6%) patients in the control group. After hospital discharge, the number of patients with at least one clinically important unintentional discrepancy decreased to 12/193 (6.2%) in the intervention group and 44/159 (27.7%) in the control group. Unplanned healthcare utilisation was identified in 65/194 (33.5%) and 46/160 (28.8%) patients in the intervention and control groups, respectively.
Conclusion: Hospitalisations place patients at high risk for medication errors and healthcare utilisation shortly after discharge. Approximately one-third of patients experience unplanned healthcare utilisation within 30 days of discharge. Pharmacist-led medication reconciliation appears to reduce the number of clinically important unintentional discrepancies, while the impact on healthcare utilisation remains to be studied.

PCNE abstract number 519, Accepted as oral

Effect of a pharmacist-led intervention on the quality of drug treatment

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Background: The occurrence of multimorbidity is increasing. Despite this, information on the effectiveness of interventions to improve outcomes in this patient group is limited. Multimorbid patients often use several medications and are at risk for inappropriate drug use, but may still be undertreated.
Purpose: The aim of the study was to measure the effect of a pharmacist-led Integrated Medicines Management (IMM) intervention on the quality of drug treatment at hospital discharge in multimorbid patients over 65 years using the systematic tools START-2 and STOPP-2.
Method: Patients over 65 years from the Oslo Pharmacist Intervention Study—Effect on Readmissions were included. This was a randomized, controlled study, which included multimorbid patients admitted to a medicine ward at Oslo University Hospital, Ullevål. Patients were randomized 1:1 to standard care (control) or pharmacist led IMM (intervention). START-2 and STOPP-2 was used to evaluate the quality of drug treatment, revealing potential prescribing omissons (PPOs) and potential inappropriate medicines (PIMs), respectively. 24 of 34 START-2 and 64 of 80 STOPP-2 criteria were applied. In the assessment of the individual patient's drug treatment, each applied criteria could generate 0 or 1 point. A higher score indicated undertreatment (START-2) or inappropriate treatment (STOPP-2). The patient's drug treatment where assessed at admission and discharge. Analysis for covariance (ANCOVA) was used to see if there was a difference between the groups in the number of PIMs or PPOs at discharge, adjusted for values at admission.
Findings: The analysis population comprised 80 patients, 42 from the control group and 38 from the intervention group. The mean age was 82.6 ± 7.5 years. The mean number of PPOs was statistically significantly lower in the intervention group compared to the control group, estimated difference -0.36, 95% confidence interval -0.66 to 0.07, p = 0.017. There was no statistical significant difference between the intervention- and control group in mean numbers of PIMs, estimated difference 0.09, 95% confidence interval -0.32 to 0.51, p = 0.652. The mean number of PPOs at discharge was

1.6 ± 0.10 for the control group and 1.2 ± 0.11 for the intervention group. The mean number of PIMs at discharge was 1.8 ± 0.14 for the control group and 1.9 ± 0.15 for the intervention group.
Conclusion: Pharmacist-led IMM resulted in a statistical significant reduction in potential prescribing omissions, but caused no statistical significant difference in potential inappropriate medicines at discharge between the groups. This implies that the IMM-model contribute to an improvement in undertreatment, but that no effect on overtreatment was detected.

PCNE abstract number 530, Accepted as oral

Development and psychometric validation of the CONTACT-patient-centered care questionnaire

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Background: Oral anticancer therapies (OACT) have many advantages but also poses important challenges to medication adherence and toxicity management. As OACT are prescribed more frequently, instruments to measure the quality of patient-centered care (PCC) to assess PCC in the context of OACT.
Purpose: The aim of this study is to develop a valid and reliable instrument for assessing PCC, that is appropriate for the context of OACT.
Method: This study was conducted in two phases. In the first phase, the CONTACT—Patient-Centered Care Questionnaire (CONTACT-PCCQ) was developed based on an evidence-based and validated set of key elements (KE) for patient-centered education and counselling in patients on OACT. Face validity was evaluated by means of cognitive interviews. In the second phase, data was collected in 16 Flemish hospitals. A psychometric evaluation of construct validity and reliability was performed. Four separate exploratory Factor Analyses (EFA) were conducted to examine the factor structure of the questionnaire. First, EFA was performed on all fixed subscales of the questionnaire. Thereafter, an EFA was conducted on each of the three conditional subscales separately. Items with a factor loading < 0.40 or with cross-loadings were considered for deletion. The reliability of the obtained questionnaire was examined by calculating Cronbach's alpha.
Findings: The first phase resulted in an 86-item instrument, divided into seven subscales. Three out of seven subscales are conditional and do not have to be filled in by every patient. For every item, patients are asked to indicate on a 5-point rating scale how they have experienced a specific aspect of care. In the second phase, 464 patients completed the questionnaire. EFA on the fixed part revealed a 4-factor solution, which corresponded with the a priori PCC-based structure of the questionnaire. However, the factors were renamed to better match the content of the items. For the conditional subscales, the a priori structure of one subscale could be confirmed. EFA on the other two subscales showed two or three different factors. In total, 10 items had a factor loading < 0.40 or cross-loadings. Based on item content and relevance, 5 items were deleted from the questionnaire. Cronbach's alpha for the final subscales ranged between 0.696 and 0.909. Cronbach's alpha for the subscales ranged between 0.696 and 0.909. All coefficients are satisfactory as they fall above the threshold of 0.70, except for one.
Conclusion: The CONTACT-PCCEQ showed acceptable psychometric performance, supporting its use for the assessment of quality of PCC for patients on OACT. The results of the CONTACT-PCCEQ can aide healthcare professionals to identify areas in care with room for improvement.

PCNE abstract number 540, Accepted as oral

Co-creation of an intervention to increase medication safety among vulnerable migrants

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Background: Correct use of medication is essential to ensure medication safety and thereby patient safety. However, some patient groups face several barriers to obtaining medication safety which needs to be addressed. One of these patient groups is vulnerable migrants with language barriers and cognitive impairment. Health care professionals also face barriers in their work to ensure medication safety for these patients and call for new tools and methods.
Purpose: The present study aims to develop an intervention to increase medication safety among vulnerable migrants. The researchers aim to co-create the intervention with stakeholders to increase the acceptability of the intervention.
Method: The development of the intervention is based on 'A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance' combined with the co-creation participatory approach 'Participatory Appreciative Action and Reflection'. The development consisted of three stages: (i) a creative workshop with researchers and stakeholders, (ii) test and refinement, and (iii) final evaluation. All stages will be evaluated using 'The theoretical framework of acceptability (TFA)' in qualitative interviews with stakeholders, patients, and additional participants involved in the test of the intervention.
Findings: Three researchers and two stakeholders, a community pharmacy technician and a general practitioner (GP), met to participate in a creative workshop. Based on previous studies in the field and the everyday experience of the stakeholders, all participants discussed and identified barriers to medication safety, the target patient group, potential solutions, and competencies to draw on. Finally, all participants committed to testing the following intervention. Patients with language barriers or cognitive impairment are referred to the pharmacy by GPs who prescribe new medication or suspect non-compliance. The pharmacy conducts an interpreted and pictogram-supported compliance service with the patient. The pharmacy also offers the service when facing the target patients at the counter. Currently, the intervention is tested and refined with the stakeholders every 14th day. Two weeks after the workshop, twelve additional GPs have shown interest in taking part in testing the intervention.
Conclusion: The current intervention intent to improve cooperation between GP and the community pharmacy to unleash the potential of already existing pharmacy services tailored for the patient group. The final intervention and conclusion on the development follows.

PCNE abstract number 542, Accepted as oral

Implementation fidelity of a pharmacist-led transitional pharmaceutical care program: process evaluation of the MARCH study

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Background: The MARCH-study that aimed to test the effect of a transitional pharmaceutical care program (TPCP) on the occurrence of adverse drug events (ADE) post-discharge failed to show effectiveness. In order to clarify whether this was due to poor implementation or to ineffectiveness of the intervention as such, a process evaluation was conducted. In the MARCH-trial 369 patients aged 18 years and older using five or more chronic medications, having at least one adjustment in their chronic medication at discharge from the cardiology, surgery or internal medicine departments and living in the service area of the participating 49 community pharmacies, were included. The TPCP consisted of teach-back at discharge to check patients' understanding of medication changes, a pharmaceutical discharge letter to inform the community pharmacist on medication changes, a home visit to discuss patients' medication use and their experience, concerns and beliefs regarding medication and a transitional clinical medication review (tCMR) to discuss drug related problems, identified during the home visit.
Purpose: This study aimed to gain insight into the implementation fidelity of the TPCP of the MARCH-trial.
Method: A mixed methods design using quantitative and qualitative data and the Conceptual Framework for Implementation Fidelity was performed. Data were collected by means of questionnaires and interviews among clinical pharmacists, community pharmacists, pharmacy consultants, pharmacy technicians and patients that participated in the MARCH-trial. Quantitative data of the study administration were also included in the analysis. Four key intervention components, including teach-back, the pharmaceutical discharge letter, the post-discharge home visit and the transitional medication review and moderating factors were assessed.
Findings: Not all key intervention elements were implemented as intended. Researchers were more involved in the execution of the intervention components than planned and teach-back was not always performed. Moreover, 63% of the pharmaceutical discharge letters, 35.4% of the post-discharge home visits and 44% of the tCMRs were not conducted within their planned timeframes. Training sessions, structured manuals and protocols with detailed descriptions facilitated implementation. Intervention complexity, time constraints and multidisciplinary coordination were barriers for the implementation.
Conclusion: The implementation fidelity was considered moderate. Not all key intervention components were carried out as planned. The absence of effect of the TPCP on ADE may at least partly be explained by poor implementation of the intervention. In order to successfully implement the TPCP, interventions should be fully integrated in the standard work-flow and healthcare providers need sufficient compensation for the time investment.

PCNE abstract number 566, Accepted as oral

Management of acute upper respiratory infections during the COVID-19 pandemic: challenges for community pharmacies

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Background: During the COVID-19 pandemic, the accessibility of health services at community pharmacies for the management of minor ailments became even more relevant, particularly in the case of acute Upper Respiratory Infections (URI) for which symptoms are often similar.
Purpose: To provide a clinical pharmacy service to assess and manage symptoms of acute URI and to reaffirm the role of community pharmacies, in these challenging times, as the first line of advice, treatment, and referral, preventing unnecessary visits to emergency rooms.
Method: A literature review was carried out to define the appropriate pharmaceutical intervention to assist patients with symptoms of acute URI. Patients were identified by pharmacy teams based on the presence of symptoms suggestive of acute URI or when filling a prescription for an acute URI treatment. The service consisted of an initial assessment and two follow-up contacts (conducted either by phone or face-to-face) 2 and 10 days after initial assessment. A total of 110 pharmacies received training and educational resources to support the service, and surveys to collect data were designed for each contact. Patient registration, task scheduling and surveys were setup and made available through a computer application.
Findings: From February 2020 to November 2021, a total of 2239 patients were enrolled in the programme, in 63 participating pharmacies. Most patient were between 31 and 70 years old (n = 1290; 56.3%) and 1344 (60.0%) of them were female. At the initial assessment, the top 3 symptoms identified were: runny or itchy nose, and sneezing (23.0%), sore throat (22.9%), unusual cough or worsening of the usual pattern (16.6%). At the initial assessment and during follow-up, the counseling of non-pharmacological measures to alleviate symptoms, along with other pharmaceutical interventions, mostly focused on increasing health literacy, were 3.5 times more frequent than the dispensing of over-the-counter medicines. In addition, there were 346 referrals to the physician. At first follow-up contact, 90.4% of patients reported feeling better, and at the second follow-up contact this percentage was 97.1%. A total of 215 medical consultations were reported by the patients, during follow-up contacts (127 by the first follow-up contact and 88 by the second). As result of these medical appointments, patients were diagnosed with COVID-19 (n = 16), other respiratory illnesses (n = 75), chronic disease decompensation (n = 7), or other diseases (n = 39).
Conclusion: During this challenging context for the health care sector, pharmacists play an important role in managing minor ailments, supporting patients throughout their journey, and cooperating with other health care professionals.

Poster abstracts

PCNE abstract number 488

Continuity of care after hospital discharge in type 2 diabetic polymorbid patients

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Background: The transition of care between hospital and ambulatory settings is a complex and high-risk period for patients who experience potential discontinuity of care and difficulties in medication management and care organization. Polymorbid patients are particularly at risk for rehospitalisations, adverse events and drug related problems.

Purpose: The aim of this qualitative study was to describe patients' itinerary in the health care system following hospital discharge, the changes in their medications, their difficulties and needs by interviewing polymorbid type 2 diabetic patients over a two-month period.
Method: The target population of this study was type 2 diabetic inpatients with at least two other comorbidities returning home after discharge and with an autonomous medication management. The recruitment took place during patients' hospitalization in a university hospital in Geneva (Switzerland). This longitudinal research consisted of four semi-structured sequential interviews per patient based on an interview guide. These interviews took place over a period of 2 months following discharge. Interviews were transcribed verbatim and transcriptions were analyzed by themes and subthemes. Patients' journeys in the health care system were represented by "patient journey mappings" in order to visualize their health care professionals encountered over time based on their point of view and experience.
Findings: The recruitment took place from October 2020 to July 2021. Twenty-one participants were included (12 men and 9 women) between the ages of 45 and 86. Seventy-five interviews were conducted with a mean duration of 42 min. The analysis of the content is ongoing. Preliminary results show that patients are seen at discharge by several different caregivers such as home care nurses, pharmacists, general practitioners, medical specialists or nutritionists. Patients' verbatim were subdivided into three key moments: the hospitalization, the transition period and the ambulatory follow-up. Discharge preparation, ambulatory follow-up and medication management are heterogeneous among patients.
Conclusion: This patient-centered study seeks to better understand the post-hospital context and to identify difficulties and needs encountered by type 2 diabetic polymorbid patients during the transition of care from hospital to ambulatory settings. This context analysis is the first step to an implementation project with the goal to implement a patient-centered interprofessional intervention with an active role of community pharmacists.

PCNE abstract number 490

Pharmacy owners' views and experiences with the implementation of medication reviews in German community pharmacies: a qualitative study

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Background: Following amendment of German legislation in 2020, patients are entitled to pharmaceutical care services including medication reviews (MRs). Despite this, provision of such services is not mandatory for community pharmacies and MRs are not widely available. The decision to implement these depends on the individual pharmacy owners.
Purpose: This study aimed to explore pharmacy owners' understanding, beliefs, and experience of MRs. Further objectives were to investigate their willingness to offer MRs as a service and to examine their perceptions of barriers and facilitators towards the implementation of MRs in German community pharmacies.
Method: Online semi-structured interviews with pharmacy owners were conducted between June and September 2021. Participants were purposively sampled based on a background survey. Recruitment occurred via a professional journal and newsletters. Interviews were conducted following written informed consent. The piloted topic guide for the interviews was based on findings of a previously published systematic review and used the Framework for the Implementation of Services in Pharmacy (FISpH) as theoretical underpinning. All interviews were audio-recorded, transcribed verbatim and then coded against the FISpH independently by two researchers. QRS NVivo® was used to assist with analysis and data management. (Ethics approval: RGU, Aberdeen; Ärztekammer Hamburg).
Findings: Sixty-seven pharmacists responded to the survey of which 21 participants were sampled according to implementation stage and geographical region. Participants identified themselves as being in the implementation stages of exploration (4), preparation (4), implementation (4), sustainment (7) and other (2). Data saturation was reached after 18 interviews. Pharmacy owners believed that implementation of MRs would benefit patients' medication safety, contribute to cost savings in the health system, and add to professional satisfaction of pharmacists. Owners' understanding of and experiences with MR was very heterogenous and MR-training as well as implementation support were desired. Nevertheless, most owners were willing to implement the service as they considered MRs to be the essence of a pharmacists' professional responsibility. Reported barriers were a general lack of awareness of the service, qualified staff and adequate remuneration. Long standing rapport and good relationships with patients and the community were perceived as important facilitators which help to advance implementation of MRs.
Conclusion: The research indicates owners' desire to implement MRs but also highlighted their wish for implementation support. Various strategies such as raising awareness of the service and continuous support need action from different stakeholders on different socioecological levels to advance implementation of MRs and ensure patients have access to adequate pharmaceutical care.

PCNE abstract number 491

Evaluating patterns of prescription of tramadol/dexketoprofen following an alert-based intervention

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Background: In a previous study realized in the Department of Primary Care (DAP) Costa de Ponent of the Catalan Institute of Health (Catalonia, Spain), the pattern of use of the combination tramadol/dexketoprofen in the primary health care setting was off-label and with not high quality evidence available. As a result, it was proposed to add warnings in the electronic primary care clinical station that alert the general practitioner of the proper duration of treatment at the moment of prescribing the medicine.

Purpose: To assess the pattern of use of the combination tramadol/dexketoprofen in the primary health care setting, after the implementation of the intervention.
Method: A descriptive and multicenter cross-sectional study was carried out in September 2021. Study population: Patients from DAP Costa de Ponent (53 primary health care centers, covering 1,300,000 inhabitants) and with active prescription of tramadol/dexketoprofen. Target population: Patients who were prescribed the combination studied over 20 days, considered 20 days as the limit for a short-term treatment of acute pain. A comparative analysis of the results obtained in the variables studied (demographic variables: age and sex and clinical variables: dosage and duration of treatment, main source of prescription) pre (2017) and post-intervention (2021) was carried out.
Findings: Compared to 2017, both the number of patients with active prescription of tramadol/dexketoprofen and who had a treatment duration > 20 days, showed a decrease of 57.4% (N = 176 vs. N = 75) and 53.9% (N = 128 vs. N = 69), respectively. A 43.5% (N = 30) of patients with an active prescription of tramadol/dexketoprofen in 2021 had the drug combination prescribed for almost a year, which implied an increase in long-term prescriptions compared to 2017 (36.7%, N = 47). About gender, compared to 2017, the number of men increased slightly in 2021 (26.5% vs. 30.4%, respectively) while women decreased (73.5% vs. 69.6%, respectively). As for the age, the number of patients older than 60 years and with a treatment duration greater than 20 days increased by 1.6 times (18% in 2017 vs 29% in 2021). In 2021, 91.3% (N = 63) of prescriptions came from the general practitioner and in 2017 was 65.6% (N = 84).
Conclusion: The use of tramadol/dexketoprofen improved after the alert-based intervention. However, it is convenient to continue insisting on its safer and more effective use in primary health care, especially in women over 60 years of age and in treatment of more than 20 days.

PCNE abstract number 493

Effects of multidisciplinary medication review in geriatric fallers: a patient's perspective

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Background: In May 2021, multidisciplinary medication reviews (MMR) were gradually implemented for geriatric patients at the Geriatric Fracture Centre (GFC) of the University Hospital Salzburg (SALK) in Austria. Within the MMR, geriatric patients with a fall have their medication assessed by a multidisciplinary clinical team made up of a geriatrician, an orthopaedist/traumatologist and a pharmacist.
Purpose: The principal aim of this project was to qualitatively explore and compare patient's views/experiences via interviews regarding to their fall and medication status. A further aim was to quantitatively characterise changes in the medication due to the MMR. The study was conducted to gain a better understanding of patients' opinions on their medication and to develop recommendations on fall prevention and drug safety.
Method: The study was based on a complementary mixed methods approach and a before/after study followed by the design of an embedded experimental model. The qualitative data consisted of guided semi-structured interviews before (T0) and after the MMR (T1) and was analysed via qualitative content analysis according to Mayring. The quantitative, subordinated data included a descriptive analysis of the medication characteristics (e.g. fall-risk increasing drugs, FRID) and was collected via medical records. Using a mixed methods design, both arms were analysed separately and then mixed to provide a full picture of the fall event and to identify patterns of patients' perspectives regarding to medication-related risk of falling.
Findings: At the current stage, five patients have been recruited and four patients completed the study with nine interviews. The participants received 45 drugs (mean: 9 ± 1.8) with 13 (mean: 2.6 ± 0.5) identified as FRID. Nine drugs were either discontinued or their doses were reduced after the MMR. Preliminary outcomes indicate that fall-related medication can be optimised. An implementation barrier was patient's fear of a change. Further outcomes were that geriatric fallers showed reduced awareness of adverse effects on medication and that patients' needs referring to medication information at hospital discharge need to be addressed individually.
Conclusion: In patients with high risk of falling, medication could be optimised by an interprofessional team. Nevertheless, patients preferred keeping their medication rather than reducing their fall risk. Recommendations for preventative efforts should include the awareness of medication-related risk of falling at the point of prescribing and moreover, focus on interprofessional approaches to ensure drug safety among geriatric patients, especially those with a fall history.

PCNE abstract number 494

Understanding risk factors and reasons of non-participation to an interventional study to monitor medication adherence in patients with diabetic kidney disease

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Background: An interprofessional medication adherence intervention, led by pharmacists, combining motivational interviewing and electronic monitoring (EM) feedback was introduced to all consecutive patients with diabetic kidney disease (eGFR $\leq$ 60 ml/min/1.73m2) visiting their nephrologist or diabetologist in a University Hospital. About 73% (202/275) of eligible patients declined to participate.
Purpose: Risk factors for non-participation are assessed: (1) By comparing sociodemographic (age, gender, nationality and civil status) and clinical (diabetes types and years since diagnosis) variables between patients who refused vs. accepted. (2) By exploring reasons for non-participation in patients who refused (n = 16) and perceived usefulness in patients who accepted (n = 14).
Method: Eligibility: patients having signed the general consent form (CGF) from the Hospital. (1) Sociodemographic and clinical variables were collected retrospectively in medical records. T-student or Mann–Whitney tests were used to compare continuous variables with a normal or asymmetric distribution respectively. The Chi-squared test was used to compare categorical variables. (2) Qualitative 30-min semi-structured interviews were led until data saturation. Verbatim transcription and inductive coding were performed by two investigators until consensus.
Findings: Included patients are more willing to participate to research projects, as they are more numerous to sign the CGF vs. patients who refused: 56/73 (74%) vs. 111/202 (55%), p = 0.001. 1) Patients who refused to participate are older: mean age 68 yrs (IC95% 66–70, SD: 11) than those who accepted: 64 yrs (IC95% 61–67, SD: 10), p = 0.044. More women vs. men refused participation: 37/43 women (86%) vs. 74/124 men (60%), p = 0.002. Time since diagnosis was longer in patients who refused vs. those who accepted: 16 yrs (IC95% 14–19, SD: 12) vs. 11 yrs (IC95% 9–13, SD: 9), p = 0.002. 2) Main reasons for non-participation were: no perceived need, patients did not agree to use EM and the intervention design was perceived as a burden. Patients who refused described a well-established routine with their medications but could have beneficiate from the intervention earlier in their therapeutic journey. Other factors emerged from the analysis: a difficult relationship with healthcare providers, a lack of awareness of the pharmacist's role in supporting adherence, negative perception in clinical research. On the other side, included patients find the EM feedback useful in preventing forgetfulness, they were reassured by the interprofessional intervention and their medication literacy and motivation increased.
Conclusion: Investigating reasons for non-participation in a study helps tailoring intervention designs to the needs of polypharmacy patients. There is an urgent need to advocate for the role of pharmacists in interprofessional collaborations.

PCNE abstract number 495

Counseling first hand: understanding the customer and yourself through mentalizing—developing an education for pharmacy workforce to support patient centered care

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Background: Counselling in community pharmacy has been studied over the years in different ways. Often the studies focused on pharmaceutical care and identification, solution, and documentation of drug related problems. Inclusion of the patient-perspective has been described to a lesser extent.
Purpose: A Danish study concluded that pharmacy staff only rarely attended to and included patients' perspectives. In particular, it was found that staff held back if they sensed the patient were emotionally affected. Based on these findings, an education was developed and evaluated to ensure patient-centered care in community pharmacy.
Method: The education program was developed in Denmark by researchers from The University of Copenhagen and Pharmakon and tested in both Denmark and the Netherlands. The development was done in a data-driven workshop format, including user perspectives from patients, pharmacy workforce and owners. The education spans across four months and combines physical attendance and online modules in the topics the mentalizing mindset, mentalizing communication and pharmacy practice. The combination of topics from natural and humanistic sciences resulted in a unique program. The evaluation consists of quantitative evaluations of each module including specific topics in respect to knowledge gained and level. Additionally, the evaluation included reflections from participants on personal and professional practices.
Findings: 28 participants attended the education in Denmark, 14 pharmacy technicians, 13 pharmacists and 1 pharmacy owner. The final education corresponds to 3.5 ECTS and consists of 20 h onsite and 16 h online. Between the modules the participants did homework supporting the modules. The participants got individual feedback twice based on video recordings of their counselling at the counter. A final report was handed in finally. Participants reported that the education is extremely relevant and adds a new perspective to patient counselling in community pharmacies. The program is long and intensive, but pharmacy workforce experienced that this format made a significant difference in the counselling situation. (The education will finish by the 10'th of January and based in the evaluation further results will be presented at the PCNE conference).
Conclusion: 28 participants completed the education "Counseling first hand—understanding the customer and yourself through mentalizing". They found the program relevant and groundbreaking, and experienced that their counselling practice became more patient-centered.

PCNE abstract number 572

Patient-reported sexual adverse drug events on an online platform for medication experiences

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Background: For more than 300 drugs, sexual side effects are included in the drug information leaflet. Patients experiencing sexual adverse drug events (sAE) may share these more easily on anonymous platforms. Real-world information from drug platforms may therefore complement current knowledge on sAE.
Purpose: This study evaluated numbers and types of sAE reported on an online platform (mijnmedicijn.nl) to identify drugs with disproportional high numbers of reports with sAE. For these drugs, the risk for sAE in their drug information leaflets were examined. In addition, gender differences in patient reporting of sAE were evaluated.
Method: Firstly, on the platform, terms for sAE as used by patients were collected with a poll. With the identified terms, drug reports posted between 2008 and 2020 were searched for sAE. The retrieved reports were manually checked. For men and women separately, numbers of reports with sAE and Reporting Odds Ratios (RORs) were calculated for each drug. Drugs were considered to have an association with reported sAE if the lower bound of the confidence interval of the ROR was above two.
Findings: Of the 61,623 reports posted on the platform, sAE were identified in 1,383 reports of women (3.5% of female reports) and 1,026 reports of men (4.7% of male reports). In total, 191 drugs received reports with sAE. Signals of association for at least one of the genders were found for 27 drugs, of which 7 with no or low sAE risk as mentioned in their drug information leaflets. Almost half of the reports with sAE addressed antidepressants, with high RORs for both women (n = 586; ROR 4.2; 95%CI 3.8–4.7) and men (n = 510; ROR 7.5; 95%CI 6.6–8.5). From women, contraceptives received 585 reports with sAE (ROR 5.6; 95%CI 5.0–6.3) and from men, drugs used for benign prostate hypertrophy received 118 reports with sAE (ROR 9.6; 95%CI 7.7–12.0). Cardiovascular drugs showed the most notable gender difference: men reported sAE in 152 of 3949 reports for cardiovascular drugs (ROR 0.8; 95%CI 0.7–0.9) and women in 25 of 3965 reports (ROR 0.2; 95%CI 0.1–0.2). In addition, women reported more desire-related sAE (n = 1059) than men (n = 488).
Conclusion: 3.9% of drug patient reports on mijnmedicijn.nl included sAE, mostly patients using antidepressants or hormonal contraceptives. Signals for potential discrepancies with drug information leaflets were found for 7 drugs. Men more often described sAE in their reports than women, most notably for cardiovascular drugs. This study exemplified the potential value of online platforms for AE detection.

PCNE abstract number 497

Strengthening medication safety in Danish municipalities

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Background: The Danish Patient Safety Authority has reported an increase in the number of registered unintentional accidents from 2017 to 2019. This increase is especially observed in municipalities, where 66% of the registered accidents are due to medicine management. Until now no studies have identified which challenges with medicine-related tasks are experienced in the municipalities. Also, there is a lack of knowledge about medication safety in municipal institutions that are not supervised by authorities.
Purpose: The aim of the present study is to map challenges with medicine-related tasks in the municipalities identified by municipal managers. The results of the study can be used to discover how pharmacy technicians from community pharmacies can strengthen medication safety in the municipalities in cooperation with municipal employees.
Method: To understand the experience with medicine-related tasks, semi-structured, in-depth qualitative interviews with two–three municipal managers in ten different municipalities were conducted. The interviews were transcribed verbatim before conducting a content analysis using NVivo version 2020.
Findings: The following challenges were identified from the interviews with the municipal managers: "Medicine during transitions", which can be understood as the situation when patients are discharged from hospital and transferred to the municipality. The employees of the municipality are faced with a time-consuming and difficult task, and they do not always have control over the medicine and prescriptions of the patient. Another challenge is "The care-requiring and complex patient". This challenge involves the complexity of treating patients with multiple diseases and of keeping pace with the constantly changing medical area. The fact that there is a shortage of health professionals in municipalities in most Danish regions adds to the complexity. The last challenges identified are: "Observation of effects and side effects of medicines in patients in nursing homes and residential facilities for adults and children with physical and mental disabilities", "Compliance with existing procedures and instructions related to dispensing and giving medication or lack of procedures and instructions" and "Medicine-related issues in disease-preventing and health-promoting activities at municipal health centres".
Conclusion: The analysis is still ongoing, and more results will be presented at the conference.

PCNE abstract number 498

Medication review based on electronic medication records and patient clustering: firsts steps to design an algorithm that assists the provision of tailored pharmaceutical services

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Background: Current pharmacy practice continuously collects patient electronic medication record (EMR) that remain underused. Medication review entails detecting drug related problems and recommending interventions. To provide tailored pharmaceutical services, community pharmacists need tools that analyse EMR easily, quickly, continuously making the review less time consuming.
Purpose: The aim of this study was to identify patient clusters that enable the definition of an algorithm to tailor pharmacy professional interventions through a simple (type 1) medication review on patient's medication records.
Method: An exploratory retrospective observational study was conducted performing a type 1 medication review to electronic patient records. A convenience sample was used, extracted from the database of electronic medication records of a community pharmacy located in the district of Lisbon. The following inclusion criteria were used: records of continuous therapy in 12 months (June 2017–July 2018); use of two or more chronic prescription medications. Continuous therapy was defined has having records for medication dispensation fulfilling the expected duration of therapy without interruption.

Statistical analysis used a two-step cluster to identify common characteristics among patients.
Findings: The final sample of electronic records eligible for simple (type 1) medication review included 55 patients. 54.5% were female and 45.5% were male. Mean age of the sample was 65.67 years (SD 14.8) with a median of 68 years [IQR: 55.0–77.0]. It was found that 58.1% of patients in the sample went to the pharmacy at least once a month. A total of 289 drugs were analysed. The median number of drugs used per patient was 5.0 [IQR: 3.0–7.0]. Age had a positive correlation with the patient's total number of medications (Spearman's coefficient = 0.345, p = 0.010). The variables included in the model for the two-step cluster analysis were severity degree of interactions, severity degree of contraindications, Beer's criteria, number of drugs used and medical condition with measurable biomarkers. Four clusters and one outlier patient were identified. 69% of patients could benefit from more advanced interventions. The outlier was considered at high risk needing urgent type 2A medication review.
Conclusion: Performing a simple medication review enabled the identification of patient clusters. Patient clusters can thus support the design of criteria-based algorithm likely to be automated, signaling patients who could benefit from professional pharmaceutical services, suggesting an intervention and their scheduling according to patients' visits to the pharmacy or risk level.

PCNE abstract number 499

Community pharmacists' perceptions on counselling and follow-up of patients using high-protein or hypercaloric food supplements

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Background: High protein and hypercaloric Food Supplements (FS) are frequently used for treatment of sarcopenia and malnutrition, common in the elderly and cancer patients. Most of the times, their indication does not always come from medical and/or nutritionists' advice, leaving this counselling role to the community pharmacist.
Purpose: This study aimed to characterize the experiences of community pharmacists, with the counseling and follow-up of patients using high protein and/or hypercaloric FS.
Method: A qualitative, observational, cross-sectional study was performed. To this end, an interview script was developed, and applied to a convenience sample of community pharmacists obtained by the snowball sampling technique. As inclusion criteria, the pharmacists contacted had to work in community pharmacy, in rural or urban settings in Portugal, with a minimum of three years of professional experience. All interviews were subject to audio recording for later transcription. The final sample was constituted by 19 pharmacists from 19 different pharmacies.
Findings: Three quarters of respondents said that their pharmacy has Nutrition Consultations, provided by nutritionists. All respondents said that the pharmacy has FS for sale, even those who do not have a nutrition consultation. These FS are counselled, in most cases, at least once a week. All respondents considered important to monitor the patient using FS. However, only 11% said they perform this monitoring proactively, asking the patient to return to the pharmacy within a certain time interval to assess the effectiveness of the FS. Barriers to the provision, such as lack of time and a lack of a tailored information system, were mentioned. When oncology patients seek FS, the majority of the interviewees considered that they should immediately refer patients to a doctor, reflecting a feeling of insecurity in counselling these patients.
Conclusion: The results of this study allow us to conclude that it is easier for the pharmacist to give advice than to continue the follow-up after that advice. Respondents believe that even if there were a consultation performed by a nutritionist, which may or may not be a service provided by the pharmacy, it would be important to have a counselling consultation by pharmacists in order to facilitate and formalize patient monitoring. New studies should focus on exploring the interaction between pharmacists and nutritionists, developing a set of outcomes of interest to monitor these patients.

PCNE abstract number 500

Facilitators and barriers in communicating medication adherence appraisal electronically to physicians

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Background: Knowledge about patients' medication adherence is often insufficient in general practices. Understanding individuals' medication intake behaviour is crucial to optimize treatment and improve patient care. We developed an adherence monitoring package (named AMoPac) to communicate patients' adherence to their physicians electronically. AMoPac consists of an electronic monitoring device to record patient's medication intake, data analysis, a home visit with feedback on patient's performance and clinical-pharmaceutical evaluation of adherence that are summarized in a short appraisal report.
Purpose: To assess the transmission and integration of AMoPac appraisal reports into physicians' electronic health record (EHR) system with emphasis on the contributing factors.
Method: Six general practices within the area of Basel-city, Switzerland, participated and recruited nine patients with chronic heart failure from August 2020 to March 2021. The patients monitored their medication intakes during 4 weeks with a small electronic device (Time4Med^{TM}). A pharmacist evaluated the recorded data and wrote an adherence report that was sent electronically to the physician. Twenty physicians were invited to participate in semi-structured interviews and 11 took part (55.0%). Interviews were recorded, transcribed, and inductively coded by two independent researchers.
Findings: We observed the following facilitators: patients accepted well the adherence monitoring including home visit and short feedback. Physicians considered AMoPac as beneficial for selected populations, particularly patients with chronic diseases and poorly controlled clinical parameters. Physicians appreciated the content and structure of the adherence report and rated the practical relevance of the transmitted information with 6.9 ($\pm$ 2.3) on a scale from 1 (unnecessary) to 10 (indispensable). We also noticed some barriers: the transmission of the report directly into the EHR system failed, mainly due to incompatibilities between the primary EHR system and the transmission software. Physicians were a priori reserved when asked to install a new software.
Conclusion: An adherence monitoring package including a short report is accepted and appreciated by physicians and patients, however, EHR systems in Switzerland are not yet ready for smooth integration of external reports.

PCNE abstract number 501

Antidepressants prescribing trends 2009–2018: a national database study

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Background: Although antidepressants are among the most commonly prescribed drugs, there is little data regarding their prescription patterns in clinical practice and in certain vulnerable subpopulations, e.g., elderly patients.
Purpose: The aim of the study was to evaluate the prevalence and patterns of antidepressants prescribing between 2009 and 2018 in Slovenia.
Method: This retrospective cross-sectional study performed a nationwide database analysis of all outpatient antidepressants prescriptions in Slovenia between 2009 and 2018. The study was based on Slovenian health claims data. Prescribing prevalence was defined as number of recipients prescribed at least one antidepressant per 1000 inhabitants. Antidepressants consumption was defined as total dispensed defined daily doses per year. Persistence on treatment was evaluated using COX regression. All data was analysed with IBM SPSS software version 25.
Findings: The prevalence of prescribed antidepressants increased by 16% in ten years and by 7.6% in age standardized data, implying that much of the increase is due to an aging population. The largest increase in prevalence was seen in the oldest patients (> 80 years, 25% increase); of these, antidepressants are now prescribed to 1 in 4. Antidepressants use increased by 38%, suggesting longer treatment duration, increase in dose prescribed or both. SSRIs (selective serotonin reuptake inhibitors) were the most prescribed antidepressants (70% share), with escitalopram and sertraline the most commonly prescribed drugs from this group. Approximately one third of patients discontinued treatment within the first 30 days or received only 1 antidepressant prescription. Among those who received at least 2 prescriptions or were treated for at least 30 days, as many as 40% discontinued treatment within the first 6 months. The mean persistence time in this group was 16.7 months. In total, 2/3 of the recipients discontinued therapy within the first 6 months. Persistence was higher in patients on monotherapy and among older patients. Significant differences in treatment persistence were observed with respect to the first pharmacological group prescribed, with SSRI and SNRI groups showing the best persistence.
Conclusion: The prevalence of antidepressant prescribing and antidepressants' consumption is increasing, mainly due to the population aging and the increasing prescribing among elderly patients. SSRIs remain among the most commonly prescribed antidepressants. Persistence on therapy is not in line with treatment guidelines, with only 40% of individuals persisting on treatment for more than 6 months.

PCNE abstract number 502

From pharmacists to pharmacists: how to find a global definition for pharmacy service?

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Background: Since three decades, community pharmacists have been moving from traditional medication dispensing activities towards more patient-centered modes of practice. For pharmacists to take a new active role in patient health, they need to offer new professional services in all care settings. The terminology for these services varies largely in literature from very detailed "cognitive pharmacist-led services" to more elusive "medication management services".
Purpose: The aim is to develop an internationally accepted definition of the term: Pharmacy Service.
Method: Definitions were searched through a pragmatic literature search in PubMed database with synonyms of the terms "pharmacy service", "medication therapy management service", and "definition". The construction of the sentences was analysed to detect analogy and extract fragments. Participants of the 8th PCNE Working Symposium 2022 in Lisbon, Portugal, will be invited to a workshop to select the most appropriate fragments of sentences. Suggestion of new fragments will be welcomed.
Findings: In May 2021, 29 articles were retrieved that reported single definitions. All definitions followed the same construction with fragments answering the: (1) by whom, (2) for whom, (3) for what, and (4) what. A total of 118 fragments will be presented to the workshop's participants to generate a first new definition.
Conclusion: The first version of the definition will be proposed to international experts in pharmacy practice with a Delphi method to seek for a worldwide consensus. A unique definition for Pharmacy Service should help summarize the evolution of the profession and enable comparison between countries.

PCNE abstract number 503

Creating and validating a medication adherence universal questionnaire: the MAUQ

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Background: With the aim of creating a universal medication adherence questionnaire, a multi-step process started with the amendment of the Maastricht Utrecht Adherence in Hypertension (MUAH) to obtain an overall adherence score by creating the MUAH-16. Then, the modification of five items of the MUAH-16 resulted in the Medication Adherence Universal Questionnaire (MAUQ), whose equivalence with the MUAH-16 was presented in 2021 PCNE conference.

Purpose: To analyse the structure of the MUAQ by elucidating the different latent variables through a confirmatory factor analysis (CFA) using the initial MUAH-16 structure as hypothesized model.
Method: The MAUQ is a 16-item questionnaire with four subscales: positive attitude towards health care and medication (PAM), lack of discipline (LD), aversion towards medication (ATM), and active coping with health problems (ACHP). This allows obtaining an overall score representing the medication taking behavior and four sub-scores representing four areas of beliefs about medication taking. A purposive sample of 300 patients using at least one medicine in a regular basis was recruited in a community pharmacy. After signing an informed consent, the two questionnaires, MUAH-16 and MAUQ, were applied by a trained pharmacist. The study was approved by the University of Coimbra, College of Medicine ethics committee. A CFA was performed using the initial MUAH-16 s order 4-factor model (standardizing for the first latent variable, maximum likelihood method). An additional bifactor model with the four factors uncorrelated and an overall score was tested.
Findings: A sample of 300 hypertensive patients completed the instruments, with mean of 68.6 years (SD 9.9) and 53.7% females. The initial CFA with the second order 4-factor solution resulted in a chi-square (100) = 156.761, $p < 0.001$, the CFI = 0.937, RMSEA = 0.043 [90% Confidence Interval: 0.030–0.056] and SRMR = 0.06 for the MUAH-16; and chi-square (100) = 159.913, $p < 0.001$; the CFI = 0.930, RMSEA = 0.045 [90%CI: 0.031- 0.057] and SRMR = 0.061 for the MAUQ. The bifactor model produced chi-square (88) = 111.873, p = 0.044, the CFI = 0.974, RMSEA = 0.030 [90%CI: 0.005–0.046] and SRMR = 0.043 for the MUAH-16; and chi-square (88) = 108.645, p = 0.067, the CFI = 0.976, RMSEA = 0.028 [90%CI: 0.001–0.044] and SRMR = 0.044 for the MAUQ.
Conclusion: A CFA demonstrated that MAUQ presents a better fit to both models than the MUAH-16, obtaining a robust instrument to assess medicine taking behavior and four medicine beliefs components. An intensive assessment of MAUQ performance in different populations, as well as the cross-cultural adaptation to different languages has been initiated to create an open access medication adherence instrument. MAUQ is licensed under a CC BY ND license.

PCNE abstract number 505

A no-filter snapshot of drug-related problems in Ankara University Hospitals

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Background: As a postgraduate degree, clinical pharmacy education had started in 2018. We recognize the necessity of clinical pharmacist as part of the health-care team and want to adapt European standards of pharmaceutical care to our activities.
Purpose: Our major goal was to take a "no-filter" picture of drug-related problems in one of the major university hospitals in Turkey. Next, we wanted to delineate the necessity of the clinical pharmacist and create evidence for this. Finally yet importantly, we wanted to accumulate the information in a standard format.
Method: This is a cross sectional retrospective study conducted in inpatient clinics of Ankara University Hospitals that have a total number of 2000 beds on two campuses. We randomly selected cases where we detected at least one drug-related problem. Our selection had no other criteria such as being limited to a particular clinic or whether or not the issue was solved. When collecting our data, we utilized PCNE "Classification for drug related problems V9.1" due to its simplicity and applicability of use as well as its wide acceptance among clinical pharmacists from around the World.
Findings: This is the first study that utilized V9.1 in our university. Of the 72 drug-related problems, 75% were manifest. They were mostly (51%) related to treatment safety (P2). Dose selection (C3) was the most common cause (38%) of all drug-related problems. Eighty percent of the interventions were at prescriber level (I1) and none at drug level (I3). The lack of I3 in our study is a natural outcome of authorization limits of pharmacists in Turkey. We encountered unique causes of drug-related problems that we were not able to categorize into V9.1: 1. Should we consider parenteral vehicles as drugs (related to C6.5)? 2. How shall we classify a nonoptimal site of injection (we propose C6.7)? A high rate (85%) of acceptance of the intervention (A1) indicated a positive perspective of the prescriber towards the rather new concept of clinical pharmacist in our hospital.
Conclusion: Ankara University is one of the few educational contributors to the postgraduate degree of clinical pharmacy. Although based on a limited number of cases, we still believe that we this study not only raise awareness on drug-related problems, but also is a big step towards solving them.

PCNE abstract number 506

Pharmacological basis of anticholinergic burden scales and indexes

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Background: Anticholinergic burden scales and indexes are explicit tools developed to be used in medication reviews in older people. However, literature shows that their predictive ability for negative clinical outcomes is limited and their usefulness in clinical practice is compromised.
Purpose: To analyze the basis that supported the inclusion of drugs into the different anticholinergic burden instruments taking into consideration the evidence about their antagonism of the five subtypes of muscarinic receptors (M1, M2, M3, M4 and M5).
Method: A comprehensive literature review was performed to compile anticholinergic burden scales and indexes. Drugs included in these instruments were searched in four pharmacological databases (DrugBank, Guide to Pharmacology, Inxight: Drugs, and PDSP-Ki

database), supplementing the investigation with PubMed. The information supporting the antagonism of muscarinic receptors was gathered, comprising the following: equilibrium dissociation constants (Ki, Kd), antagonist potency (pA2) and IC50. The proportion of drugs included in the anticholinergic burden instruments with affinity for muscarinic receptors according with each database was evaluated.
Findings: A total of 23 anticholinergic burden instruments were identified: ADS, ARS, ACB, AAS, ABC, ALS, Cancelli, Chew's list, Minzenberg, CrAS, Summers' DRN, MARANTE, AEC, German scale, Korean scale, Brazilian scale, Durán's scale, Salahudeen's scale, Cao's scale, AIS, DDS, DRS, and ATS. These instruments include 304 different drugs with only 48.68% having affinity to M1 receptor reported in any pharmacological database, 47.70% to M2, 48.03% to M3, 43.75% to M4, and 42.76% to M5, according to at least 1 database or PubMed. The only one drug included in the 23 instruments had antagonism reported in the four databases. Proportion of drugs with antagonism reported in databases varied among the instruments with the highest in 100% to M1, M2 and M3 in Minzenberg's scale (28 drugs), 92.6% to M1, M2 and M3 in Cao's scale (27 drugs), and 85.0% to M1 and M3 in AEC (60 drugs), and the lowest in 36.8% to M4 in DRS (106 drugs), 41.3% to M4 in Summers' DRN (63 drugs), and 41.9% to M5 in ADS (117 drugs).
Conclusion: A substantial number of drugs included in anticholinergic burden instruments have not a demonstrated antagonism of muscarinic receptors. Our results may explain the low predictive power of anticholinergic burden instruments demonstrated in previous studies. Collaboration between mechanistic and clinical pharmacology is needed to crate reliable instruments to increase patient safety by reducing anticholinergic adverse outcomes.

PCNE abstract number 573

Detection of reasons for excessive use of short-acting β2-agonists (SABA) therapy in asthma: a descriptive study

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Background: Excessive exposure to short acting β2-agonists (SABA) inhalation medication is observed in approximately one third of asthma patients in Europe. This occurs in the presence and absence of concomitant maintenance therapy with inhalation corticosteroids (ICS). Excessive SABA use is associated with increased airway hyper-responsiveness, a higher risk of life threatening exacerbations and mortality. Pharmacy dispensing data are used to detect excessive use and adherence of medication. Further investigation is warranted to understand the relation between high numbers of SABA dispensing and actual excessive SABA use by the patient.
Purpose: This study describes reasons for the prevalence of high numbers of SABA dispensing in primary care asthma patients in the presence and absence of concomitant ICS therapy.
Method: A total of 50 community pharmacies in the Netherlands were invited to participate in this observational study between September 2021 and February 2022. Participating pharmacists agreed to use their dispensing data as collected by the Foundation of Pharmaceutical Statistics for the selection of asthma patients ≥ 18 years with high numbers of SABA dispensing. These potential excessive SABA users were defined by ≥ 2 SABA dispensing in the past 6 months and an average use of ≥ 2 inhalations per week. Patients with concomitant ICS therapy were defined by ≥ 1 ICS dispensing in the past year. To evaluate underlying reasons for high numbers of SABA dispensing, 12 potentially excessive SABA users were invited per pharmacy to fill out an online questionnaire on their SABA use. These patients were also asked for a subsequent semi-structured interview to further elaborate on the identified reasons.
Findings: Results of this study are expected to be available in January 2022 and will be included for the 8th Pharmaceutical Care Network Europe (PCNE) Working Symposium in Lisbon.
Conclusion: A conclusion will be added when the results are available and will be included for the PCNE Working Symposium in Lisbon.

PCNE abstract number 508

Evaluation of eHealth interventions to improve medication adherence: who is being left behind?

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Background: Medication non-adherence is one of the major challenges in managing chronic diseases. Efforts to tackle medication non-adherence through e-Health interventions have not achieved the needed improvement. Reasons for this might be linked to one-size-fits-all solutions for distinct non-adherence patterns or the inclusion of specific groups of patients in the assessment of eHealth interventions, which are not representative of real-world patients.
Purpose: This study aimed to identify the characteristics of patients enrolled in randomized control trials (RCTs) about eHealth interventions concerning medication adherence and analyze possible social health inequities.
Method: The Journal of Medical Internet Research, a leading journal in the field of digital medicine, was searched in May 2021 for systematic reviews concerning eHealth and medication adherence. Systematic reviews needed to: be published after 2020; include only RCTs; not be population-specific and describe eHealth interventions in accordance to the eHealth definition of Eysenbach. After selecting the systematic reviews, individual studies were collected. A standardized form including author's last name and year of publication, country, health condition, interventions, eligibility criteria, sample size and participants characteristics was used to extract data from each article.
Findings: Two systematic reviews fulfilled the eligibility criteria yielding 45 RCTs. Most studies addressed eHealth interventions for

chronic conditions. The majority of studies (36.4%) used the telephone as the main channel for the intervention. Digital apps were the second most studied intervention (29.5%). A total of 47,501 participants with a mean age of 60 ± 10 y/o were selected. Participants of studies supported by the use of digital apps had a lower mean age (53.9 ± 7.5 y/o) than in studies using the telephone (63.4 ± 6.3 y/o). Overall, female and male participants were balanced (47%/53%). Frequent inclusion criteria were, being able to use or access a smartphone (29.5%); being fluent in a specific language (27.3%); or being able to use or access internet (18.2%). Most studies did not report participants' digital literacy, 57.8% also did not report the educational level. 14 studies reported race with white participants in higher proportions (31 to 95%).
Conclusion: Gender, age, educational level and race are not fully representative of real-world chronic patients. This inevitably biases the studies, but these biases are seldom recognized. Also, selecting systematic reviews from just one journal hinders the generalization of our results. Nevertheless, there is a clear need to include digital literacy assessment and improve RCT selection procedures to better inform on the eHealth intervention effectiveness.

PCNE abstract number 509

Integrating a new cardiovascular medicine in daily routine: applying Greenhalgh's implementation framework to assess patient perspectives

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Background: Readmission to primary care is challenging for patients due to involvement of multiple healthcare providers across settings and implementing new medicines into their daily routine. Initiating cardiovascular medicines might highlight these challenges due to the absence of an immediate noticeable effect. Elucidating individual needs is crucial to tailor pharmacy adherence support.
Purpose: To identify patients' adherence barriers and facilitators for implementing a newly prescribed cardiovascular medicine into their daily routine. To elucidate the accompanying counselling needs at readmission to primary care from a patient perspective.
Method: A qualitative study was performed within the outpatient pharmacy (Almere, The Netherlands). Adult patients who were prescribed a new cardiovascular medicine by their hospital physician at hospital discharge or during an outpatient clinic visit were eligible to participate. Purposive sampling was applied for equal distribution of factors that may influence adherence to new medicine treatment: gender, age, number of new medicines, previous experience with medicine use. Patients were interviewed by telephone and inclusion continued until theoretical data saturation. Interviews were audio recorded and transcribed verbatim. An adapted version of the Greenhalgh framework for implementation research was used for thematic content analysis by conceptualizing the new medicine as an innovation that requires implementation by a patient (adopter).
Findings: Data saturation was reached after inclusion of 44 patients; 24 discharged patients and 20 outpatient clinic patients. Mean age was 54.5 (25–84) years and patients started with 2.1 (1–6) new cardiovascular medicines and had 1.8 (0–7) medicines already in use. At time of the interview, 19 patients discontinued their new medicine, due to side-effects, insufficient efficacy, negligence, repeat prescription issues or a switch. Patients considered a lack of knowledge as a major barrier for adopting the new medicine into their daily routine. Patients viewed their pharmacist as a trusted counseling expert. They were in need of information on risks and benefits of their newly prescribed cardiovascular medicine. A noticeable effect and tailored counseling facilitated patients in taking their medicine as prescribed. Discharged patients expressed a need for splitting information into manageable pieces over a longer period of time. Patients mentioned that personalized organizing tools and routinization of medication intake as important success factors for addressing their practical challenges with their new medicine.
Conclusion: This study provided an unique and structured identification of patients' adherence barriers, facilitators and corresponding needs of implementing a new cardiovascular medicine at readmission to primary care. This knowledge enables pharmacists to tailor their adherence support program accordingly.

PCNE abstract number 510

Changes in antihypertensive medications and intensity of antihypertensive treatment at hospital discharge and 30 days afterwards

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Background: Hospitalization is associated with changes in therapy, which commonly includes antihypertensive medications. Changes in antihypertensive therapy may affect the intensity of antihypertensive treatment and increase the risk of adverse events after discharge.
Purpose: The main purpose of this study was to examine changes in antihypertensive therapy at hospital discharge and 30 days afterward and to assess the expected effects of these changes on blood pressure using the Total antihypertensive therapeutic intensity score (TIS). The secondary outcome was the occurrence of selected adverse events within 30 days of discharge, including dizziness, vertigo, and falls.
Method: A prospective observational study was conducted in 299 adult medical patients hospitalized at the University Clinic Golnik, Slovenia, with antihypertensive therapy prescribed at admission or at discharge. Comprehensive medication history was obtained by interviewing patients, discharge therapy was obtained from hospital medical records, and information on medication therapy 30 days after discharge was obtained by interviewing patients by telephone. Changes in antihypertensive therapy were classified as drug initiation, drug discontinuation, dose increase, dose decrease or drug substitution. TIS was calculated by summing the proportion of the prescribed daily dose to the recommended maximum daily dose of each medication.
Findings: The 299 patients had a median age of 73 years, 55% (164/299) were male. Changes in antihypertensive therapy at hospital discharge occurred frequently, in 62% of patients (184/299) and in 44% of antihypertensive medications (352/804), with the most common change being drug discontinuation. In the cohort with changes in antihypertensive therapy a median change in TIS was -0.21 (IQR; -0.79 – 0.50). TIS change was inversely correlated with patient age ($r = -0.142$, $p = 0.014$), higher number of all medications at admission ($r = -0.231$, $p < 0.001$), and a higher number of antihypertensive medications at admission ($r = -0.456$, $p < 0.001$). After discharge, a change in antihypertensive therapy occurred in 37% (88/239) of patients, and almost exclusively in patients whose therapy had been changed at discharge (79/88; 90%). Changes were often opposite to those at discharge. Dizziness and vertigo were reported by 28% of evaluable patients (43/153), whereas 4.5% of patients (6/133) reported a fall. Changes in antihypertensive therapy at discharge were not significantly associated with the occurrence of adverse events.
Conclusion: After discharge, changes occurred significantly more frequently in patients whose antihypertensive therapy had already

been changed at discharge. Therefore, at discharge, all changes should be carefully considered and re-evaluated shortly after discharge to ensure patient safety.

PCNE abstract number 512

The ENABLE online repository of medication adherence technologies: interim result of the Delphi study

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Background: Developing an online repository of medication adherence technologies (MATech) to facilitate their dissemination and adoption are goals of the ENABLE COST Action (CA19132). However, creating a useful repository for diverse stakeholders requires careful consideration of their needs and views.

Purpose: We aim to consult diverse stakeholders to explore their views and level of agreement on the relevance, clarity and completeness of the ENABLE proposed definition of MATech and repository structure.

Method: A real-time online Delphi study with 250 invited stakeholders from 39 countries involved in research, practice, policy, patient representation and technology development was launched in October 2021. The proposed structure consists of 3 domains (product and provider information (D1), medication adherence descriptors (D2) and evaluation and implementation (D3)), with 13 distinct attribute groups. Stakeholders are asked to evaluate the MATech definition and attributes' relevance, clarity and completeness on a 9-point scale and have multiple opportunities to reconsider their evaluations based on real-time aggregated feedback. We will quantify agreement and process indicators on the whole sample and per stakeholder group.

Findings: So far 64 stakeholders have started their participation and 40 have completed the survey at least once (16% response rate). MATech definition is the most commented topic with several suggestions for alternative wording and delimiting, narrowing or widening. The median level of agreement with the MATech definition is 6.03, with a clarity of 6.13. The median for relevance of D1 is 6.40, with a clarity of 5.98. Median for relevance of D2 attribute groups ranges from 5.97 for health conditions to 6.76 for targeted use scenarios, while clarity is the lowest for adherence phases (4.46) and highest for intervention provider (5.94). Among D3 attributes, use related quality indicators are most relevant (6.92) and clearly described (6.99), while ISO standard has the lowest ratings (relevance 5.79, clarity 6.06). Some missing attributes were highlighted (e.g., cost details, patient expectations) and concerns raised about the fitness of the structure for technologies without electronic components.

Conclusion: Interim results of the Delphi study show a high level of agreement with the proposed definition and structure. However, several controversies have been noted requiring further in-depth consultation and evidence generation on the issues. This work will accompany the iterative improvement of the repository during the ENABLE Action.

PCNE abstract number 513

Medication persistence with and adherence to dipeptidyl peptidase-4 inhibitors among patients with diabetes type II in Slovenia

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Background: The effectiveness of treatment with antidiabetic medication depends on the appropriate medication persistence and adherence of patients with diabetes type II.

Purpose: The purpose of this study was to evaluate medication persistence with and adherence to dipeptidyl peptidase-4 inhibitors (DPP-4i) among patients with diabetes type II in Slovenia.

Method: This nationwide retrospective study was conducted using data from the Slovenian health claims database (Health Insurance Institute of Slovenia). The analysis was performed with the AdhereR software. The study population represented a cohort of patients with DPP-4i, who started their treatment in 2013 or 2014, who had at least three prescriptions of DPP-4i and for whom the data on any prescription were available until the end of the five-year observational period. Persistence was defined as the time from first dispensing to discontinuation of treatment (first episode), with discontinuation defined as a gap of 60 days or more after the refill date. Medication persistence was evaluated by Kaplan–Meier survival analysis, and the influence of various factors on persistence by the Cox regression model. Adherence was evaluated with the proportion of days covered (PDC, algorithm CMA5) and the influence of various factors on adherence by the logistic regression model.

Findings: The study population included 2,844 patients with newly dispensed DPP-4i in 2013 or 2014, who were prescribed a total of 48,224 prescriptions until the end of five-year observational period (mean age 63.4 years). During the five-year observational period 71% of patients discontinued their treatment. Half of the people discontinued their treatment 836 days after the first dispensing. The probability of discontinuation was highest during the first year and

lowest during the last year of observational period (30% and 6% respectively). Mean PDC was 84.7%, meaning that patients had access to DPP-4i on average on 84.7% of days. The proportion of patients who were adherent was 72.6% (patients with PDC > 80% were considered adherent). Medication persistence and adherence were significantly associated with age and geographical region, but not gender. Younger age was associated with decreased adherence and persistence ($p < 0.05$). The lowest medication persistence and adherence were observed in eastern geographical regions of Slovenia.
Conclusion: Almost three quarters (72.6%) of patients are adherent to DPP-4i treatment. These results indicate relatively high adherence to DPP-4i in Slovenia compared to similar research in other countries. Five-year persistence rate is 29%, with permissible gap length having a significant impact on median time. Persistence with DPP-4i in Slovenia is comparable to other studies.

PCNE abstract number 515

Patterns of benzodiazepine consumption before and during the COVID-19 pandemic in the azores archipelago population

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Background: The Azores, an autonomous region of Portugal, is an nine islands archipelago in the Atlantic Ocean, were mental health concerns have long been present. The pandemic of COVID-19, declared in march 2020, has put additional strain health systems. Moreover, there are initial signs that depression and anxiety's prevalence is expected to increase. Monitoring consumption can be an indirect way of assessing medicines' adherence and accessibility.
Purpose: To explore how the pandemic of COVID-19 impacted the consumption of anxiolytics, the aim of this study was to assess patterns of Benzodiapezine consumption in the Azorean population, one year before and one year after the beginning of the COVID-19 pandemic.
Method: For this ecological study, the Benzodiazepines consumption database was obtained from hMR, a health market research company. This database contains information relative to the total number of all benzodiazepines acquired in the Portuguese market, organized by Anatomical Therapeutic Chemical (ATC) classification, and information relative to dosage and package size. The number of total sold packages per drug was obtained for the years 2019 and 2020. Azorean population was obtained from government official data. The defined daily dose (DDD) was obtained from the WHO ATC/DDD index website, and the DDD/1000hab./day was calculated. Only oral dosage forms were analysed. Descriptive and inferential statistical analysis was performed to assess yearly, biannual and quarterly drug consumption and uncover seasonal trends.
Findings: Total benzodiazepine acquisition pattern in DDD/1000hab/day was not different between 2019 and 2020 ($p = 0.987$). The most consumed benzodiazepines were alprazolam 69.5 DDD/1000hab/day ($\pm$ 4.3), followed by diazepam 27.1 ($\pm$ 1.7) and lorazepam 26.7 ($\pm$ 1.5).Only clonazepam and potassium clorazepate showed a significant increase from 2019 to 2020 ($p = 0.001$ and $p = 0.003$). The maximum of total DDD/1000hab/day was registered at the onset of the pandemic (march 2020). For the remaining of 2020, higher standard deviations were observed. Two other peaks are noticed in july 2019 and july 2020, exceptions to the apparent seasonal effect with a biannual period of higher DDD/1000hab/day in the winter months ($r^2 = 0.567$).
Conclusion: The pandemic of COVID-19 did not aggravate the consumption of benzodiazepines in the Azorean population. However, a change in the pattern of benzodiazepines' acquisition during 2020, was noticed. Patients might have avoided frequent visits to health services and pharmacies in order to decrease the risk of COVID-19 infection. Nevertheless, the adherence is unclear, and should be further investigated. A weak seasonal pattern in benzodiazepine consumption in the Azorean population was also found.

PCNE abstract number 516

Medication reconciliation at internal medicine wards in Norway

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Background: In 2011 a study on medication reconciliation, conducted at internal medicine wards in Norway, found that almost eight out of ten patients had at least one medication discrepancy. Since then, national awareness on patient safety has increased and several measures have been launched to improve the situation.
Purpose: Describe the frequency of patients with one or more medication discrepancies at hospitalization. Furthermore to assess the potential long term clinical relevance of these discrepancies.
Method: Patients have been enrolled from three internal medicine wards, at two different hospitals, during the period 26.10.21–19.11.21. Three master students, conducting the study, were trained to do medication reconciliation according to the Integrated Medicines Management method. Medication reconciliation entails conducting an interview with the patient to determine the actual drug regimen in use prior to admission. Other sources were also used to gather information regarding the patient's use of medicines before admission, such as the patient's next of kin, home nurses, pharmacy, general practitioner and the summary care record. Discrepancies between the medication list in the patient's hospital record and the medications the patient actually used before admission to the hospital, were assessed for long-term clinical relevance together with a senior physician at the ward.
Findings: Thus far 59 of the planned 250 patients have been included. Eight out of ten patients had one or more medication discrepancies. The total number of medication discrepancies were 218 and the average number of medication discrepancies per patient was 3,7 (range 0–13). One third of the medication discrepancies (74 discrepancies) were assessed to be of moderate, severe or extremely severe long term clinical relevance.
Conclusion: The results show that despite several measures to increase awareness on the importance of obtaining a correct medication list, the proportion of patients with one or more medication discrepancy are no different than the results from the study conducted 10 years ago. However, the number of discrepancies assessed to be of moderate, major or extreme long term clinical relevance has been halved since 2011.

PCNE abstract number 518

Development of the eHealthResp online course to improve antibiotic prescribing for respiratory tract infections – a two-round Delphi study

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Background: eHealthResp is a mobile app targeted to physicians, that consists of a series of algorithms with decision trees on the management of respiratory tract infections(acute otitis media, acute rhinosinusitis, acute pharyngitis, acute bronchitis and community-acquired pneumonia) in a primary care context. These algorithms were built based on scientific literature, by a team of researchers and experts in the field of pharmacology.
Purpose: The objective of this work is to evaluate, through a two-round Delphi study, the appropriateness of the algorithms of the application eHealthResp, aiming to improve the prescription of antibiotics for respiratory tract infections. Through this methodology, an improvement in the quality of the eHealthResp algorithms is expected.
Method: Following the validation of the visual aspects of the mobile app, and to ensure the correctness of these algorithms A Delphi study was conducted through two rounds. Fifteen physicians with expertise in primary care, pulmonology, immunology, and infectious diseases were recruited through a convenience sample to compose the Delphi panel. In each round, panellists were asked to provide feedback on the appropriateness of i)vocabulary, ii)information clarity, iii)algorithm sequence, iv)clinical history/risk factors, v)evaluation criteria, vi)treatment options/follow-up. This questionnaire included both quantitative—using a 5-point Likert scale—and qualitative assessments—with a box for suggestions/comments on the algorithms. After the first round, the scores were analyzed and the algorithms were corrected based on the feedback provided by the panel. After careful analysis of the feedback provided and consequent algorithms' reformulation, a report was sent to the panellists with an overview of the 1st round results, and the revised algorithms were sent on a new questionnaire for further feedback, for a second round.
Findings: Fifteen physicians responded to the 1st round questionnaire, in which a consensus of over 70% was obtained, where participants considered every parameter of all algorithms to be "very adequate" or "adequate". Furthermore, some panellists provided valuable feedback to improve some parts of the algorithms. In the second round, the consensus reached over 80%, thus reinforcing the usefulness of this iterative evaluation process.
Conclusion: The preliminary results of this Delphi study are particularly positive, thus guaranteeing the quality and accuracy of the eHealthResp algorithms. It is expected that the use of the eHealthResp app within the primary care context will ultimately decrease inappropriate antibiotic prescribing. This work was financially supported by the project PTDC/SAU-SER/31678/2017, funded by FEDER, through COMPETE2020—Programa Operacional Competitividade e Internacionalização (POCI-01-0145-FEDER-031678) and by national funds (OE), through FCT/MCTES.

PCNE abstract number 520

Potentially inappropriate medication prescribing in older adults according to EU(7) PIM list: a nationalwide study in Portugal

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Background: Age-related comorbidities prone older patients to the use of multiple medicines and potentiate the consumption of potentially inappropriate medication (PIM). The use of PIM has been associated with an increase in adverse drug reactions.
Purpose: This study aims to analyses the PIM prescription in older adults, applying the EU(7) PIM list criteria to the prescribing data published in a national public database.
Method: A nationwide retrospective study was conducted to evaluate PIM-prescribing in Portugal between January 2019 and September 2021. All prescribing data, to subjects aged $\geq$ 65 years old, were retrieved from the official System of Information and Monitoring of the Portuguese National Health System (SIM@SNS) database. The EU(7)-PIM list operationalized for Portugal, was used to classify medication as PIM. Criteria dose-related or treatment duration-related have not been applied. Prescription data were presented in Defined Daily Dose (DDD).
Findings: Between January 2019 and September 2021, 9.20% of the total DDDs prescribed to older patients belong to PIM medication. The pharmacological subgroups (3rd ATC level) with the higher prescribed PIM were N05B (20.67%), N06A (17.01%), B01A (11.59%), and M01A (7.80%). Among these, the top 3 chemical substances (5th ATC level) were alprazolam (N05BA12), fluoxetine (N06AB03), and rivaroxaban (B01AF01).
Conclusion: A high frequency of PIM prescriptions was observed, mainly drugs from the central nervous system. One of the limitations of this study was the impossibility of applying all criteria, demonstrating that the frequency of PIM may be much higher than that presented. This work was financially supported by the project PTDC/SAU-SER/31678/2017, funded by FEDER, through COMPETE2020—Programa Operacional Competitividade e Internacionalização (POCI-01-0145-FEDER-031678) and by national funds (OE), through FCT/MCTES. AIP, BT and DA wparticipation was funded by CENTRO-04-3559-FSE-000162, Fundo Social Europeu (FSE).

PCNE abstract number 523

Information needs and preferences of pharmacy staff regarding safe compounding of medicines during pregnancy and lactation: results from a cross-sectional survey in Belgium

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Background: Pharmacy staff can be exposed to ingredients of medicines when compounding. Exposure during pregnancy or

lactation may hold a risk to the unborn or nursing infant. In the absence of up-to-date information, this may raise safety questions. Still, the extent and type of questions among pharmacy staff has not thoroughly been studied.
Purpose: The aim was to gain insight into the information needs and preferences of pharmacy staff regarding safe compounding of medicines during pregnancy and lactation. The findings also provide evidence on the type of medicines that are considered to pose a risk.
Method: A cross-sectional, anonymous e-survey (Dutch / French) was distributed between Sept-Nov 2021 among pharmacists and pharmacy technicians (PTs) in Belgium, in community as well as in hospital setting. The survey explored personal characteristics, individual safety questions and information preferences, and was promoted via newsletters and social media of professional organizations and companies commercializing compounding ingredients. Participants provided online consent prior to study initiation; the study was approved by EC Research UZ/KU Leuven (MP018096). Results were descriptively analysed.
Findings: In total, 153 community pharmacists, 82 hospital pharmacists and 26 PTs employed all over Belgium participated (N = 261); the majority was female (90%) and Dutch speaking (87%). Overall, 98% had already questioned the risks to pregnancy or lactation in women compounding medicines; 32% questioned safety for men. With regard to compounding by women, 60% had reflected upon the likelihood of congenital anomalies (97%), miscarriage (83%), developmental disorders (78%), and infertility (74%). Most frequently questioned medicines were tretinoin (82%), metronidazole (74%), finasteride (71%), corticosteroids (69%) and methadone (66%). With regard to compounding by men, 41% had reflected upon the likelihood of reduced semen quality (85%) and congenital anomalies in the offspring (80%). All respondents (99%) agreed that safety information on manipulating medicines during pregnancy or lactation should be available. Respondents were mainly interested in concrete advise ('manipulate it or not') (97%)—if possible per trimester (73%)—specific protective precautions (86%) and information on 'specific' risks (71%), preferably accessible online (79%), as a poster (78%) or integrated in the pharmacy software (51%).
Conclusion: Despite the overrepresentation of female pharmacy staff of reproductive age, information needs towards safe compounding of medicines during pregnancy or lactation were ubiquitous. Besides, one-third had already questioned pregnancy-related risks of paternal exposure during compounding. These findings highlight the importance of safety information on this topic, which soon needs to be provided to pharmacy staff in Belgium.

PCNE abstract number 524

Methods to elicit and evaluate the attainment of patient goals in medication optimization interventions for nursing home residents: a scoping review

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Background: Aligning treatment plans with patient goals may hold a new approach to medication optimization interventions and to improve person-centered care in nursing homes. Nevertheless, earlier research has shown that the implementation of person-centered care is challenging, and that support is needed to elicit and evaluate patient goals.
Purpose: Currently, no overview is available of patient goal elicitation and evaluation methods. This scoping review aimed to identify and describe methods, both to elicit patient goals and to evaluate the attainment of these goals, that can be used in medication optimization interventions for nursing home residents.
Method: A scoping review was performed, guided by the methodological framework of Arksey and O'Malley. First, a broad search was performed, not focusing solely on medication optimization interventions, nor on nursing home residents. In a second step, included papers were reconsidered to identify patient goal elicitation and evaluation methods that can be used in medication optimization interventions for nursing home residents. PubMed, Embase, CINAHL, and Web of Science were searched. A two-stage selection process was performed: (1) screening of titles and abstracts, (2) screening of full texts. Selection of references and data extraction were performed by three independent reviewers, followed by team discussions to solve discrepancies. An inductive thematic analysis was applied to synthesize the extracted data.
Findings: A total of 96 references was included in the review. Thirty-eight patient goal elicitation methods were identified. Three main observations were made with regard to these methods: (1) differences in interpretations of patient goals, (2) differences in patient involvement levels during method development and goal elicitation, and (3) a continuum of methods with regard to content and structure. Five elicitation methods were specifically developed for nursing home residents. However, none of these contained a medication-related assessment. Twelve patient goal evaluation methods were identified, of which three were used in nursing home residents and one was used to investigate patient goal attainment after a medication optimization intervention in older adults. Two main observations were made when analyzing the evaluation approaches: (1) quantitative versus qualitative evaluation approaches, and (2) patient's versus assessor's judgement.
Conclusion: No comprehensive method was identified that allows the elicitation and evaluation of patient goals and integration thereof in a medication optimization intervention for nursing home residents. Nevertheless, some of the instruments contain components that might be promising when adapted into a medication optimization intervention.

PCNE abstract number 525

CAVAsa: Pharmacists' taking up a role in the detection and referral of patients with (unmet) mental and psychosocial needs

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Background: The role of community pharmacists has recently evolved from a medication to a patient-centered basis. Moreover, the pharmacist is one of the most accessible first line healthcare providers. Due to COVID-19, a growing need to support people with psychosocial needs, like suffering from family violence or mental health problems, was noted.
Purpose: This pilot study evaluates the added value and feasibility of pharmacists' taking up a role in the detection and referral of patients with (unmet) mental and psychosocial needs. Therefore, a collaboration between community pharmacies and psychosocial organisations was set up and evaluated using quantitative and qualitative indicators.
Method: A project named CAVAsa was launched in 70 community pharmacies situated in 9 primary care zones in Flanders (Belgium). In eptember 2021, all participating pharmacists were trained to detect

psychosocial needs, to inform and help patients and to refer them to a Flemish Center for General Welfare Work (CAW) if needed. Posters and informative leaflets are used to support pharmacists and to inform patients. All patient contacts in the context of the project, going from giving advice to a referral, are registered on an online registration platform and will be fully analysed in January. Moreover, eight focus groups were held in November 2021 to explore the perspective of the participating pharmacists on the project.
Findings: Up to date, 50 patient contacts in the context of CAVAsa have been registered. Patients are dominantly female and middle-aged, and the majority of patients' needs relate to family problems and/or mental health problems. The focus groups revealed that pharmacists are willing to take up this role because patient wellbeing and personal assistance are key values of community pharmacy. However, the high workload (partly due to the pandemic) is one of the most important barriers for registration and referral. Good cooperation, coordination and close involvement between the partners (project management, social workers and pharmacists) were shown to be vital.
Conclusion: Despite the good position of the community pharmacist to detect psychosocial needs and the willingness of the participants, some barriers exist for the implementation, especially time constraints. COVID-19 made this extra challenging. Nevertheless, we decided to further promote the project and to train and include more pharmacists in the nearby future.

PCNE abstract number 526

Do individuals with chronic diseases perceive conflicting information regarding their medications?

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Background: As the number of individuals with multiple chronic diseases rises so does the need to visit various healthcare professionals, exposing a person to potential risks of perceiving contradictory information regarding medication.
Purpose: This study investigates the prevalence of conflicting information on medications, perceived by individuals with chronic diseases and the impact on their medicine self-management and navigation in the healthcare system.
Method: Through a quanti-quali mix-method, we enrolled participants with $\geq$ one prescribed medicine for $\geq$ 6 months, and have visited $\geq$ two prescribers in the past 3 months. From March 2019 to February 2020, 405 participants filled in a survey on perceived contradictions, sociodemographic and clinical data of which 22 participated in a single 20-to-60-min interview.
Findings: Results from the epidemiology survey showed that 47% of participants perceived conflicting information related to one or more medication topics including indication, schedule, dosage, duration of treatment, and side effects, with general practitioners (82%), special physicians (74%) and pharmacists (49%) being the professional sources most often involved in such conflicting information. Consequently, 65% of the participants modified their navigation of the healthcare system and 34% reported medication non-adherence. The qualitative analysis points out that the healthcare professionals lack time, active listening and coordination, and provide insufficient information.
Conclusion: The issue of conflicting information is prevalent in the ambulatory healthcare system but is widely overlooked because the health system is not yet organized to address it. National guidelines in Switzerland should help elaborate new models of interprofessional care.

PCNE abstract number 527

Quality of patient-centered care for patients treated with oral anticancer drugs

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Background: In the last years, there has been an exponential increase in the number of oral anticancer therapies (OACT). However, no research has yet been conducted on the current quality of patient-centered care (PCC) for patients on an oral anticancer treatment (OACT) in Belgium.
Purpose: The aim of this study was to gain insight in the quality of PCC for patients on OACT. Therefore, we examined which aspects of patient-centered education and counselling were being delivered adequately, according to patients, and which areas required improvement.
Method: This was a quantitative cross-sectional study. Patients were recruited in 11 hospitals in Flanders, Belgium. They completed the CONTACT-Patient-Centered Care Questionnaire (CONTACT-PCCEQ) online or on paper. The CONTACT-PCCEQ consists of 86 items, which all represent a key element in patient-centered education and counselling for patients on OACT. The instrument has seven subscales: (a) medication counselling at the start of OACT, (b) follow-up of OACT, (c) communication style, (d) counselling by hospital treatment team, (e) counselling by primary care healthcare professionals, (f) psychosocial support, and (g) involvement of family and friends. Each item was scored on a 5-point Likert rating scale. The answer options were dichotomized into 'delivered' and 'not delivered'. Subsequently, the degree of delivery of each item was defined by calculating the proportion of patients that indicated that the item was delivered. Mean total scores were calculated on subscale-level. Additionally, sociodemographic and treatment characteristics were collected.
Findings: In total, 268 patients completed the CONTACT-PCCEQ. The score on the subscales varied between 57.7% and 88.5%. The highest score was obtained on the subscale 'Counselling by hospital treatment team'. The area of care that was most commonly reported as not being delivered was 'Counselling by primary care healthcare professionals'. The mean score on item-level ranged from 21 to 96%. Items regarding instructions on how to handle specific situations (e.g., in case of vomiting or a forgotten dose) and adherence monitoring scored low. Low scores were also obtained on the items about the involvement of the community pharmacist and homecare nurse—in contrast to the items regarding the general practitioner. Some other items, e.g., regarding information about vaccinations and palliative care, also scored below 50%.
Conclusion: This study gave insight in the overall quality of patient-centered education and counselling for patients on OACT. Areas of care that are in high need of improvement could be identified. These results enable hospitals and policy makers to set priorities in care quality improvement for patients on OACT.

PCNE abstract number 528

Food instructions on oral anticancer therapy: evidence and impact on clinical practice

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Background: The oral administration of anticancer drugs (OACD) entails many advantages. Nevertheless, it also comes with various challenges, including a risk for food-drug interactions at the level of absorption and the ensuing importance of correct drug administration with respect to meal intake.
Purpose: The aim of this study was to investigate the quality of scientific evidence for drug intake instructions (before/with/after meal) of oral anticancer drugs, and to explore the impact of those recommendations on patients and clinical practice.
Method: First, clinical pharmacokinetic data on drug absorption in fed and fasted condition were collected from scientific literature and databases from the European Medicines Agency (EMA) and United States Food and Drug Administration (FDA). The obtained data were compared to food instructions in package leaflets. Second, a qualitative study was set up including structured telephone interviews with 51 patients from 11 Belgian hospitals and semi-structured online interviews with 10 healthcare professionals (nurses, clinical pharmacists, physicians, and a dietician). Patients were questioned about their use of OACD, more specifically regarding food intake. In addition, healthcare professionals were questioned about their interpretation of food instructions and how they implement these in practice.
Findings: The first part of the research showed that drug intake instructions of certain oral anticancer drugs conflict with scientific data (although scarce). However, the results of the qualitative part indicate that both patients and healthcare professionals stick to these instructions. All healthcare professionals recognized the importance of the timing of drug administration with respect to meal intake and clear instructions on this. Some of them expressed concerns about the impact of the instructions on the patient's quality of life. Clinical pharmacists did have doubts about the scientific evidence. They asked for more clarity and transparency from pharmaceutical companies so that they can better interpret these instructions and judge whether deviating from the leaflet instructions would be harmful or not.
Conclusion: This study concludes that the food instructions on package leaflets are strictly followed, regardless of scientific evidence. However, application of these rather strict instructions can be challenging for patients and may endanger medication adherence or affect quality of life.

PCNE abstract number 529

Development of the Estonian medication review documentation system for drug-related problems based on PCNE's classification v9.0

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Background: The medication review (MR) service is currently being implemented in Estonia and involves detecting drug-related problems (DRPs) and recommending interventions. A thorough and easy-to-use classification system for problems related to medicines use can support pharmacists in documenting the results of an MR service.
Purpose: The aim of this study was to amend the Pharmaceutical Care Network Europe's (PCNE) classification for DRPs to document the results of an MR service. [1].
Method: The PCNE's classification of DRPs v9.0 was translated into Estonian using the forward–backward method. For amending the PCNE classification, two meetings with an expert panel consisting of 15 Estonian MR work group members (community pharmacists, academics, members of professional organizations and state agencies) was held to reach consensus on more suitable structure, wording and categories for documenting the MR service. To test the usability of the upgraded tool, 140 problems identified in the Estonian MR pilot project (2019–2020) were retrospectively classified. The results were compared to a previous study conducted in 2020 which used the PCNE's classification v9.0.
Findings: Compared to the PCNE's classification v9.0, two main categories and 13 subcategories were removed, four main categories and 18 subcategories were reworded, and four main categories and 16 subcategories were added. Only main categories were kept for acceptance of the proposed interventions and the status of the DRP. The updated classification allowed more problems to be classified compared to the original PCNE's classification, mainly due to adding new categories related to the availability of information on patient's medicines.
Conclusion: The amended DRP documentation system is sufficient for documenting problems detected during an MR service in Estonia. The upgraded tool is currently being validated. References 1. The PCNE's Classification System for Drug Related Problems V 9.0. https://www.pcne.org/upload/files/334_PCNE_classification_V9-0.pdf.

PCNE abstract number 531

Changes in the medication during six months' participation in the interprofessional medication management programme ARMIN

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Background: To optimize drug therapy, patients with polymedication in the German programme ARMIN paticipated in an interprofessional physician-pharmacist intervention, consisting of an initial medication review followed by a continuous medication management (MM). To obtain an overview on their medication, patients received printed medication plans (MPs) that were updated regularly. As this intervention focuses on the detection of discrepancies from the different sources of information (patient, pharmacy, and physician) and identification of drug related problems, changes in the medication documented on the MPs may result.
Purpose: To analyze discrepancies and changes in the patients' medication for the different steps of this interprofessional MM process over a period of six months'.
Method: We aimed to recruit a convenience sample of n = 60 patients. Discrepancies and changes in the medication were analyzed by comparing (1) the patient-stated medication documented by the pharmacist during the brown bag review versus (2) that is, the provisional MP prepared by the pharmacist, (2) versus (3) that is, the consolidated MP checked by the physician, as well as (3) versus (4) that is, the MP after 6 months. Discrepancies and changes were assessed using the medication discrepancy taxonomy MedTax (Almanasreh E et al. RSAP 2020).
Findings: Altogether, 79 patients (54% female) were recruited by 17 community pharmacies. The mean number of drugs on the consolidated MPs was 10.2 (median: 9; range 5–27); this did not change significantly over six months (10.8; median: 9, range 5–26). We

observed changes in the medication of all patients and detected 856 medications with at least one discrepancy or change: 444 (53.2%) were identified when comparing (1) and (2), 167 (21.1%) comparing (2) and (3), and 245 (30.3%) comparing (3) and (4). Most frequent were changes in the dosing regimen (n = 225; 26.3%) and changes in the time of administration with respect to meals (n = 221; 25.8%). Drug omissions accounted for 111 (13.0%) of all changes, mostly (n = 62) between (1) and (2), commission of new drugs occured 126 times (14.7%), mostly (n = 80) between (3) and (4).

Conclusion: Although discrepancies and changes were observed in all phases of the MM process, the number and types varied between the analyzed steps: Most were observed between (1) and (2) whereas new drugs were most frequently added between (3) and (4). The results indicate that patients with polymedication require a continuous support from health care professionals. However, intended and unintended discrepancies and changes in medication need to be differentiated (Schumacher PM et al. Front Pharmacol. 2021) to assess the potential of this service.

PCNE abstract number 534

Evaluation of key questions to identify patients' difficulties in medication administration

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Background: Drug handling and medication administration may overburden patients. However, patients will often tend to downplay the difficulties they experience or are even unaware of the errors they make. Thus, appropriate questioning techniques are essential to identify patients who might need help. In a previous project, we therefore developed key questions that specifically address potential difficulties in medication administration.

Purpose: To evaluate the suitability of exemplary key questions to identify patients´ difficulties in medication administration.

Method: Six exemplary key questions were tested against patients' actual administration of their drugs. For this purpose, patients were asked to either demonstrate the administration of their drugs, for example by using placebo drugs and devices, or to explain the administration process as accurately as possible (depending on the key question tested). In addition, patients' answers to the key questions were compared to their answers to two general questions that were assumed to be frequently asked in patient consultations.

Findings: A total of 36 patients were included in the testing and five of them participated in the evaluation of at least two key questions (43 individual tests of key questions). In 55.8% of the tests (N = 24/43) an error could be identified and 70.8% of these erroneous administrations were consistent with patients' answers to the key questions in this regard compared to 33.3% that were consistent with the answers to the general questions (P = 0.021). Overall, the key questions led more often to the disclosure of difficulties than the general questions (18 tests vs. 9 tests). Indeed, in 17 of 18 tests respectively 8 of 9 tests, the difficulties disclosed according to a key question respectively a general question, could be verified by the observation (positive predictive value = 94.4% vs. 88.9%; false positive rate = 5.3% in both cases).

Conclusion: The key questions predicted difficulties in medication administration with a high specificity and sensitivity. Hence, such key question might be helpful to identify patients who experience difficulties in medication administration.

PCNE abstract number 536

Do clinical pharmacists have access to timely serum creatinine levels to prevent acute kidney injury?

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Background: Acute kidney injury (AKI) is a major iatrogenic concern in inpatients associated to the use of nephrotoxic medications and responsible for chronic kidney disease that will also affect the use of renally eliminated medications. Different criteria were created to identify (AKI) using on serum creatinine (SCr) levels, namely AKIN, KDIGO, RIFLE. An important difference between these guidelines is the identification of AKI at an early stage by using SCr levels increased in 48 h as an alert criterion.

Purpose: To assess the ability to monitor AKI occurrence based on the availability of timely measured SCr levels in a retrospective cohort of patients admitted to hospital.

Method: Data from patients admitted to a district public hospital between 1-Jun 2018 and 31-Dec 2020, were collected. Patients whose length of stay was < 24 h were excluded from the analysis. AKI stage was calculated for each patient based on the AKI staging cut-offs using the three major criteria (RIFLE, AKIN, and KDIGO). The different AKI identification procedures were followed: (1) ignoring time to reach the SCr cut-off; (2) taking into consideration the time to reach SCr cut-offs (recommended by the different criteria): 48 h AKIN, and 7 days RIFLE and KDIGO. Descriptive analyses of the AKI stage allocation were performed.

Findings: 25,777 admissions occurred in 31 months corresponding to 18,935 patients (4,112 patients with more than 1 admission; range 1–18). Mean age of admissions was 60 years (SD = 27), 14,146 (54.9%) were female and the mean length of stay was 10 days (SD = 16); 63 admissions were excluded. During 263,969 bed-days, 81,892 SCr tests were recorded, representing one test per 3.22 bed-days. In 4,407 admissions (17.1%) no SCr test was recorded. The first SCr test was done on average 2.2 days after admission (SD = 2.0). In 6,958 tests SCr increased 0.3 mg/dL from baseline indicating, at least, an AKI stage 1. However, for 1,689 of these cases time between SCr

tests exceeded the 48 h interval, impeding the use of the early stage AKI identification criterion.
Conclusion: To accurately monitor AKI, clinical pharmacists need access to SCr levels of inpatients measured at least every 48 h for prompt identification of changes and immediate intervention to prevent medication harm, which are not always available.

PCNE abstract number 539

Perspectives on medication safety from older migrants with cognitive impairment and exposed to polypharmacy and their families

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Background: Medication safety is important to ensure the safety and health of the patient. Many factors are known as risks to medication safety such as; the number of medications, change in metabolism, language barriers, cultural gaps, memory loss, compliance, and more. Many risk factors are investigated separately but the synergy of several risks present simultaneously within the same patient group is unknown.
Purpose: This study aims to investigate the problems and barriers to medication safety among older migrants with cognitive impairments using five or more medications daily from the perspective of the older patients and their relatives.
Method: Eight semi structured interviews with additional observations were conducted. In seven interviews, one or more relatives participated, in one interview the patient participated on her own. The study adapted an inductive hermeneutic phenomenological approach. All interviews were conducted in the home of the patient. All interviews were recorded and transcriped. Observations during the interview by the interviewer were noted or recorded immediately after every interview. The study used both 'Analyzing the present' by Revsbæk & Tanggaard and 'Systematic text condensation' by Malterud as inspiration for the analysis of the notes, records, and transcriptions of the interviews.
Findings: Three main themes were identified: (i) potential threats to medication safety, (ii) medication information and communication, and (iii) living with the medication. Threats to medication safety included both medication perception, health literacy, and cognitive impairment of the patient, but also miscommunication amongst medical departments, wrong diagnosis, and medication, and unlocked medication cabinets. However, most families expressed to have no problems in terms of medication, which could be explained by the limited medication information provided to the patient by the health care professionals.
Conclusion: This study identified several threats to medication safety among older migrants with cognitive impairment exposed to polypharmacy as expressed by the patients and their families.

PCNE abstract number 541

Health care professionals' perspectives on medication safety among older migrants with cognitive impairment exposed to polypharmacy

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Background: Older migrants with cognitive impairment exposed to polypharmacy constitute a vulnerable group of patients.
Purpose: This study explored the perspectives of health care professionals on medication safety among older migrants with cognitive impairment who use five or more medications daily.
Method: In total, 34 health care professionals (general practitioners and hospital-, community pharmacy-, and home care staff) participated in nine focus groups and one semi-structured interview about their perspectives on medication safety among older migrants with cognitive impairment exposed to polypharmacy. The analysis was inspired by Revsbæk and Tanggaard's "Analyzing in the Present" and was followed by systematic text condensation.
Findings: Three main themes emerged: (i) relations importance for medication safety, (ii) culture and economics as risk factors, and (iii) the health care system as a risk factor. Subthemes and codes were related within and across main themes and revealed a high level of complexity within the barriers to medication safety. Some barriers were closely related to characteristics of the specific patient group of interest, while other barriers, described as being more general, also affected other patient groups. These general problems were when working with this patient group, further complicated by language barriers and cognitive impairment.
Conclusion: This study found that health care professionals across sectors and professions experienced several barriers that threaten medication safety among older migrants with cognitive impairment exposed to polypharmacy. Closer collaboration between health care professionals, patients, and relatives is required to improve medication safety.

PCNE abstract number 543

Pharmacogenetic testing and consultation in the community pharmacy: development of a new pharmaceutical care service

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Background: Pharmacogenetic (PGx) testing in the pharmaceutical care setting is not yet widespread. One of the challenges for the pharmacist is the communication of the results of the PGx testing to the patient and the physician.
Purpose: To evaluate the patients' and physicians' current understanding of results of PGx panel testing.
Method: We conducted semi-structured interviews with patients involved in the observatory study (Clinicaltrials.gov: NCT04154553) where patients had two visits (one for sample drawing and another for communication of the PGx results). The patients received an individual list of concerned substances coded with a traffic light system. Both the patient and the treating physician received a written recommendation. Six months after the second consultation, patients were questioned about the implementation of the recommendations, the list

of concerned substances, the perceived safety of their medication, and the willingness to pay for the PGx testing. Patients answered 12 closed questions, three ratings via a 10-item Likert-scale and six open questions. Moreover, four physicians were invited to a focus group discussion on their appraisal on the written PGx recommendations and the PGx panel testing as a pharmaceutical care service.

Findings: We analyzed results of 41 patient interviews. Based on the PGx testing, there has been a change in the treatment plan for 71% of the patients, whereof 45% resulted in a new medication. For both patients and physicians, yellow-labelled substances in the list of concerned substances were the most difficult to interpret. Out of the patients, 56% would not buy a yellow-labeled pain killer while 10% were not sure. 56% knew that they could look at the list of concerned substances in case of a new medication and 73% expressed that they knew more about their medication after PGx testing. 61% would pay for the PGx testing and commented that it was a good experience. Physicians expressed that they would like the PGx consultation being more focused on the current question in the medication instead of comprehensive information on comedication and potential future pharmacotherapy and, in some cases, being more involved in the PGx consultation to patients.

Conclusion: Patients and physicians were generally able to understand the results of the PGx testing concerning current questions, whereas the implications of additional information about comedication and future pharmacotherapy were difficult to apply. Closer collaboration with physicians when communicating PGx results to patients could improve successful implementation of a pharmaceutical care service involving PGx panel testing in primary care.

PCNE abstract number 544

Validation of an announced telephone pill count compared to a home-visit pill count in people with type 2 diabetes or cardiovascular disease

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Background: Medication non-adherence is a highly prevalent health problem in people with chronic diseases such as type 2 diabetes (T2D) or cardiovascular disease (CVD). To improve medication adherence, it is important that healthcare providers are able to identify people that do not adhere to their medication. Pill count is a simple and cheap objective method to measure medication adherence and has a high inter-rater and intra-rater reliability. To date, an announced telephone pill count has not been validated and also a learning effect of repeating the pill count has not been assessed as yet.

Purpose: We aimed to assess the validity of an announced telephone pill count in people taking oral type T2D and/or CVD medication by comparing this method to a home-visit pill count. We also assessed whether a second pill count improved the accuracy of the pill count.

Method: Participants were 35 years or older and users of T2D or CVD medication. Participants (n = 34) completed an announced telephone pill count followed by a home-visit pill count by the researcher on the same day according to a standardised protocol. A subsample (n = 11) completed a second telephone pill count. Intraclass correlations (ICCs) were used to determine concordance and Bland–Altman plots were constructed for assessment of agreement and outliers.

Findings: In total 203 pill counts were conducted in 34 participants, 53% men, mean age of 69.6 ± 9 years and an average of 6.1 ± 3 medication prescriptions per participant. Concordance between the first telephone pill count and the home-visit pill count was high with an ICC of 0.96 (95% CI 0.94–0.97) at medication count level and 0.98 (95% CI 0.96–0.99) at individual level. No learning effects were observed in the group that completed a second telephone pill count (n = 11), the ICC for the first telephone pill count was 0.88 (95% CI 0.81–0.93) versus 0.89 (95% CI 0.82–0.93) for the second telephone pill count. The Bland–Altman plots showed small limits of agreement indicating high agreement between the telephone and home-visit pill count.

Conclusion: An announced telephone pill count is a valid alternative for a home-visit pill count in people with T2D or CVD and a single pill count appears sufficient. Future studies could explore the use of new technologies to contact the participants, such as secured video conferencing software, through which the researcher and participant can meet face to face digitally and the medication can be shown.

PCNE abstract number 545

Evaluation of cardiovascular pharmacotherapy guideline compliance and risk factor control in Portuguese community pharmacy patients

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Background: Cardiovascular disease remains the leading cause of death in the Portuguese population. Despite effective cardiovascular pharmacotherapy, risk factor control remains suboptimal. To improve the management of cardiovascular risk patients, community pharmacists have to optimize interventions.

Purpose: To assess cardiovascular risk category, define risk factor treatment goals, review medication and assure that physician-prescribed pharmacotherapy is clinical cardiovascular guideline compliant, in order to adapt pharmacotherapy and improve risk factor control.

Method: Single-center, cross-sectional study to assess global cardiovascular risk, individualized-level treatment goals and risk factor treatment (hypertension, type 2 diabetes-T2D, and dyslipidemia), considering the European Society of Cardiology-ESC Guidelines on cardiovascular disease prevention in clinical practice. The pharmacist performed a medication review at the interview, collected capillary blood sample for glycated hemoglobin-HbA1c, blood glucose, total-cholesterol, high density lipoprotein cholesterol-HDL-c, low density lipoprotein cholesterol-LDL-c and triglycerides-TG in-pharmacy point-of-care testing, and blood pressure and anthropometric measurements. To evaluate the effect of compliance of the prescribed pharmacotherapy to guidelines, the patients were stratified into compliant versus non-compliant-group and Chi-square test was used to analyze associations between the groups and the control of risk factors, considering $p < 0.05$ as statistically significant.

Findings: Of the 333 patients, 63.1% were in high or very-high cardiovascular risk category and 91.9% showed at least 2 modifiable risk factors. We found 7.8% tobacco users, 30.9% patients with obesity, 29.1% with non-diagnosed dyslipidemia, 9.6% with non-diagnosed hypertension, and 3.0% with HbA1c $\geq$ 6.5%. Furthermore, 68.8% were being treated for hypertension, 60.7% for dyslipidemia, and 20.1% for T2D, but of those patients 76.4% did not achieve blood pressure targets, 61.9% did not achieve LDL-c goals, and 25.4% did not achieve HbA1c targets. We identified 61.9% patients whose prescribed cardiovascular pharmacotherapy was non-compliant to current ESC guidelines. The lipid lowering therapy was found to be the least guideline compliant, with a suboptimal use of statins. However, we found no statistically significant difference between the guideline-compliant and the non-compliant groups, in terms of risk factor control. The pharmacist recommended 603 interventions, in order to adapt pharmacotherapy to the guidelines.
Conclusion: We identified a high cardiovascular risk factor burden and intervention opportunities through medication review to optimize cardiovascular pharmacotherapy, which would require collaboration with physicians. However, guideline compliance did not show improved risk factor control, providing us a perspective for future research on the impact of improved medication adherence and patient education on cardiovascular risk factors.

PCNE abstract number 548

Recognizing and addressing limited pharmaceutical literacy (RALPH) interview guide: validation to Spanish language and agreement with the original English version

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Background: Vervloet et al. (1) developed the RALPH interview guide, to recognize patients' limited pharmaceutical skills, in the three health literacy domains: functional, communicative and critical. All questions are linked to patient's own medication, designed to be incorporated during the dispensing process.
Purpose: To describe the validation process into the Spanish language of the RALPH interview guide, in order to obtain a tool that allows pharmacists to assess patients' pharmaceutical literacy skills in community pharmacies. Secondly, to compare the Spanish patients' responses with the original RALPH-English guide.
Method: The study was conducted in three stages, designed according to the guidelines of a linguistic validation. First, the translation into Spanish language, following the principles of good practice for the translation and cultural adaptation process for patient-reported outcomes. Second, the interviews performance, by piloting (n = 30) and for final validation study (n = 100). The target population included adult patients who attend the participating community pharmacies, proportionally distributed. Third, the psychometric properties analysis ensured the new cultural context adaptation through the validity, viability, and reliability features. To compare with the original guide responses, dichotomized questions and two-proportion z-test were needed.
Findings: The first draft of RALPH-Spanish was obtained after the translation process and subsequent harmonization performed by the expert committee (content validity). Viability was analyzed by piloting, and changes were proposed according to observational criteria. Cronbach's alpha statistical analysis indicated correct internal consistency. Intertemporal stability was tested using the interclass-correlation-coefficient by a test–retest. Factorial analysis performing was appropriate, since it was verified by KMO ($\geq$ 0.5) and Bartlett's sphericity test (P-value $<$ 0.05) results. A total of 103 patients among 20 pharmacies participated, and each one conducted 3–6 interviews. When comparing the percentages of the correct answers with the original RALPH-English, no significant differences were observed in most of the items. However, Spanish patients' correct answers were significantly higher in assessing information reliability (P-value $<$ 0.005) and shared decision-making (P-value $<$ 0.005), and the opposite occurred in understanding of warning or specific instruction for use (P-value $<$ 0.005).
Conclusion: The RALPH interview guide in the Spanish language complies with viability, validity and reliability requirements. This tool will allow recognize and address limited pharmaceutical literacy skills of patients in Spanish community pharmacies. Moreover, it may be extended to other Spanish-speaking countries. Spanish patients' responses agree compared with RALPH-English original results. (1) Vervloet et al. Res Social Adm Pharm; 2018; 14(9), 812–816.

PCNE abstract number 550

Pain severity and its impact: perceived implications on pain management with medications

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Background: Pain management is often sub-optimal and is associated with a number of challenges during selection of the adequate analgesic and its dose. In order to adequately manage pain, there is a need for assessment of pain as well as consideration of how patients are impacted by pain severity. In this regard, there is a paucity of literature exploring how pain severity and impact on the patient relates to medication management.
Purpose: In this study, we aimed to explore perceived differences between pain intensity and its impact on patient's daily activities and how this relates to medication-based management of pain.
Method: This was a qualitative study during which we used focus groups to collect the data. Focus groups were organized in the University Clinical Center of Kosovo (UCCK) and Peja Regional Hospital in Kosovo and consisted of patients receiving analgesic medication for chronic or intermittent pain, doctors, pharmacists, nurses and medical students. A thematic approach was used to analyze the data. The audio-recorded data was compared with field notes, transcribed verbatim and then thematically analyzed.
Findings: A total of six focus groups were conducted with 28 participants of various backgrounds. We identified three key 3 themes pertaining to: (a) patients information regarding assessment of pain, (b) assessment of pain impact on the patient and (c) pain management in relation to pain severity. Each theme had a number of sub-themes. Our findings indicated that patients were poorly informed about pain

assessment, including the impact of pain on them but acknowledged the value of proper pain assessment considering the subjective nature of pain experience. On the other hand, our findings indicated that doctors, pharmacists and nurses were not using assessment tools that would enable them to ascertain the intensity of pain or the impact of pain on their patients' daily activities. Furthermore, our findings suggested that patients usually consult their doctors when dealing with moderate to severe pain but self-medicate without consulting healthcare providers when experiencing mild pain. Improvement of sleep, communication and movement were identified to be important indicators of how therapy is affecting the impact of pain on patient's daily activities.

Conclusion: There is a lack of using pain assessment tools amongst health professionals in Kosovo. This could have implications on ascertaining the severity as well as the impact of pain on patient's daily activities therefore potentially leading to sub-optimal management of pain.

PCNE abstract number 551

Exploring stoicism during self-reporting of pain and its subsequent management with analgesic medication

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Background: Behavior associated with stoicism in patients suffering from pain is characterized by individual attributes to stay strong and tolerant to pain without complaining. These behaviors are relevant to explore as they may subsequently affect pain management and use of analgesic medication.

Purpose: This study aimed to explore patients' stoic attitudes during self-reporting of pain and the potential influence on use of analgesic medication.

Method: We conducted separate focus groups (FGs) with patients who were receiving analgesics for chronic or intermittent pain, doctors, nurses, pharmacists and medical students. This qualitative method was chosen to leverage from discussions generated between participants. Focus groups were organized during February 2020 in the University Clinical Center of Kosovo (UCCK) and Peja Regional Hospital in Kosovo. Data collected was transcribed verbatim and then analyzed thematically. A grounded theory approach was used in the analysis of data.

Findings: A total of six FGs with 28 participants were organized. Two FG groups had patients and the rest were homogeneous each containing doctors, nurses pharmacists and medical students. Each FG groups had five participants, except two which due to withdrawal ended up with four participants. The following key themes pertaining to: (a) Difficulties in reporting, assessment and pain management; (b) Stoicism during self-reporting of pain; (c) Occurrence of self-medication with analgesics; and (d) Difficulties in monitoring analgesic therapy. Our findings suggested that stoicism occurred more during self-reporting of lower-intensity chronic pain, as opposed to high-intensity intermittent or acute pain. This may lead to sub-optimal identification and treatment of lower-intensity pain. There were differences between health professionals in relation to their experiences with stoicism in their patients. In this regard, doctors working in hospital setting did not consider stoicism during self-reporting of pain to be an issue due to usually high levels of pain reported by their hospitalized patients. This differed from nurses who spent more time with patients and reported to encounter stoicism during their care. Pharmacists reported that their time with patients was too short in order to identify any stoicism related issues.

Conclusion: Experience of high-intensity pain does not seem to be associated with patients' stoic attitudes, as opposed to low-intensity chronic pain. Stoic attitudes may contribute to under-reporting of low-intensity pain and subsequent patient self-medication with analgesics. Differences between health professionals' exposure to patients' stoicism during self-reporting of pain may also have implications on their pain management recommendations and should be further explored.

PCNE abstract number 552,

Development of a maturity matrix for community pharmacies to implement guideline recommendations: the diabetes care case study

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Background: In the Netherlands, a guideline on pharmaceutical care to type 2 diabetes mellitus (T2DM) patients was developed. However, tools to support guideline implementation are still lacking. A maturity matrix (MM-P) could be useful for pharmacy teams to assess their implementation status within meaningful organisational domains to start with a sustainable implementation of guideline recommendations.

Purpose: To develop an MM-P for community pharmacy teams to assess organisational growth states relevant for the implementation of recommendations from the T2DM guideline.

Method: An adapted Delphi Technique was applied to develop the MM-P in an expert group. In three consensus meetings, twelve pharmacists with expertise in diabetes care iteratively designed the MM-P as a grid with two dimensions: the columns with relevant organisational domains and the rows with subsequent and distinctive growth steps. The meetings were guided by two facilitators experienced in guideline development and implementation processes. All participants were emailed an MM-P draft and a preparatory assignment for idea generation prior to each meeting. Generated ideas were collated by facilitators and discussed in the meetings to reach consensus on inclusion. After the meeting, the facilitators updated the MM-P draft. To explore whether it was possible to develop generic dimensions and create an MM-P applicable to other guidelines as well, data from comparable consensus meetings in two other expert groups on the guidelines medication surveillance (9 participants) and multidose drug dispensing (7 participants) were utilized. Participants were informed about the explorative approach, but instructed to contribute on domains and growth steps corresponding to their respective guideline. A content analysis was applied to retrace discussion outcomes and decisions taken by facilitators.

Findings: A five-by-five MM-P was developed with universal dimensions: the organisational domains 'Personalized care', 'Internal organization and teamwork', 'Information systems and data exchange', 'Multidisciplinary cooperation' and 'Education and research' on the horizontal axis. On the vertical axis growth steps were defined as 'Being aware of, and willing to implement', 'Being able to implement', 'Doing', 'Evaluating and improving' and

'Innovating'. The fifth domain 'Education and research' and the growth step 'Innovating' were meant to inspire pharmacy teams to look beyond the guideline recommendations. For the MM-P cells, practical examples of growth states within each domain were formulated, based on implementation stages of the T2DM guideline recommendations.

Conclusion: An MM-P for the assessment of the implementation status of T2DM guideline recommendations was developed and is ready for piloting with community pharmacy teams.

PCNE abstract number 554,

Patient-reported use patterns and adverse effects with analgesics: a Danish pharmacy survey

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Background: Patients suffering from pain constitute a sizeable and heterogeneous patient group. Conventional oral analgesics is considered a cheap and generally safe first-line treatment for pain. However, these drugs are used as both regular medications and on an as needed basis, and are further often obtained over-the-counter (OTC). Systematic knowledge about the actual use patterns of analgesics and patients' experience of side effects is lacking.

Purpose: We explored patient-reported use patterns and adverse effects of analgesics via a survey in the Danish community pharmacy setting.

Method: We conducted a survey in eight community pharmacies, recruited via The Danish Network for Community Pharmacy Practice Research and Development. Pharmacy staff invited patients aged $\geq$ 18 years redeeming prescriptions for analgesics or requesting analgesics over the counter to participate in the study. The survey included questions about type of analgesics, on-label and self-reported indications and dosage, as well as self-reported adverse effects when using analgesics.

Findings: A total of 2,410 patients completed the survey; 68% were female and 50% were above 60 years old. Most patients (61%) filled a prescription for paracetamol, followed by non-steroidal analgesics (NSAIDs; 23%). 73% of the patients had an analgesic medication prescribed for daily use, while 41% reported daily use of their medication, and 55% of all patients reported using analgesics "as needed". Among patients using OTC analgesics, 17% reported using their medication daily. The majority of all prescriptions (80%) had the standardized indication "against pain" on the drug label, while self-reported indications were most commonly back pain (31%), muscle/joint pain (18%) and arthritis (17%). The most common self-reported indications among patients using OTC analgesics were headache and muscle/joint pain with 38% and 19%, respectively. Finally, we found that 90% of all patients reported not experiencing adverse effects when using analgesics. Among the 10% of patients who did experience adverse effects, the majority reported experiencing gastrointestinal adverse effects (57%).

Conclusion: A considerable proportion of patients used analgesics differently than prescribed, while almost one-fifth of patients requesting OTC analgesics used their medication daily. The majority of all prescriptions for analgesics have the standardized phrase "against pain" on the drug label rather than a specific indication. This can hinder individualized counselling at the pharmacy. Additionally, the vast majority of patients experience no adverse effects from using analgesics.

PCNE abstract number 556,

Task sharing in an interprofessional medication management program (ARMIN): a survey of general practitioners and community pharmacists in Germany

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Background: Medication review and medication management programs (MMP) are well-known strategies to improve medication safety. If performed interprofessionally, implementation and clinical outcomes might improve. However, MMP are often pharmacist-led and little is known about task-sharing in interprofessional MMP.

Purpose: In 2016, an interprofessional MMP named ARMIN was launched in two states of Germany, Saxony and Thuringia. General practitioners (GP) and community pharmacists (CP) collaboratively perform medication reviews and continuous follow-up with designated medical and pharmaceutical tasks, respectively. The objective of this study was to survey participating GPs and CPs about which tasks they performed in MMP.

Method: We conducted a cross-sectional survey among GPs and CPs who participated in the interprofessional MMP. We developed, piloted, and pretested a multi-part, self-administered questionnaire about GPs' and CPs' experiences with ARMIN. Here, we report on the part "Collaboration in MMP". Participants were asked to state which healthcare professional (HCP) took on which task in MMP, e.g., checking for interactions, side effects, clinical parameters, using a 5-Likert scale ranging from "Do I take" to "Does the other HCP take". Results were analyzed using descriptive statistics. The study was conducted from 11/2020 to 01/2021; two reminders were sent to increase response rates.

Findings: In total, 114/165 (69.1%) GPs and 166/243 (68.3%) CPs returned the questionnaire. Of these, 2/114 (1.8%) and 3/166 (1.8%) questionnaires were excluded due to incomplete responses. GPs were 52 (median, IQR: 45–60) years old and had 13 (8–26) years of work experience. CPs were 44 (37–52) years old and had 18 (9.5–25) years of work experience. Of the GPs 80/112 (71.4%) had already conducted medication reviews before ARMIN while only 81/163 (49.7%) pharmacists had. GPs stated that they mainly take ("Do I take" and

"Do I take with CP's support") checking on clinical parameter (N = 106, 94.6%), overuse & underuse (91, 81,3%), and dosing (83, 74.1%). CPs stated that tasks they mainly take are checking storage condition of drugs (154, 94.5%), initial compilation of the patient's medication (148, 90.8%), and application times (118, 72.4%). Conversely, these findings match with responses regarding tasks for which GPs and CPs relied most on the other HCP.

Conclusion: The interprofessional MMP in ARMIN was planned with designated tasks for both HCP, who in practice have shown to implement the MMP as intended. Findings show that MMP can be efficiently performed interprofessionally and that pharmaceutical and medical expertise is needed to provide MMP as comprehensively as possible.

PCNE abstract number 557,

Prevalence of potentially inappropriate medications, clinically relevant drug interactions and anticholinergic burden among Portuguese institutionalized patients with dementia

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Background: The elderly are nowadays more prone to experience serious adverse events given the exposure to Potentially Inappropriate Medications (PIMs), clinically relevant drug-drug interactions, and high anticholinergic burden. However, information on the prevalence of such phenomena in Portuguese institutionalized patients with dementia is still scarce.

Purpose: We aimed to evaluate the prevalence of PIMs, clinically relevant drug interactions, and anticholinergic burden in a sample of Portuguese institutionalized patients with dementia.

Method: A cross-sectional study was undertaken in five nursing homes of the region of Lisbon and Tejo Valley and Alentejo (2015–2019). Patients were included if they were 65 or older and had at least one medication in their pharmacotherapeutic regimen. The primary outcomes were defined as: a) prevalence of PIMs; b) clinically relevant drug interactions; and c) anticholinergic burden. PIMs were classified using the Beers criteria (update of 2019), whereas drug interactions were measured using the software Drug Interactions Checker – Medscape (considering the serious and contraindicated drug-interactions) and, the anticholinergic burden using the ACB scale (online calculator, where a score of 2 was considered moderate AB and a score higher of equal to 3 high AB). Data analysis was performed using uni- and bivariate statistics (IBM SPSS v.26).

Findings: A total of 231 residents were included, where 75.3% (n = 174) were female gender with a mean age of 84 $\pm$ 6.8 years old. About 86.0% (n = 231) of the sample experienced polypharmacy, and 33.0% (n = 77) had dementia. Most of the patients were using medications for the central nervous system (38.8%), cardiovascular system (23.6%), and gastrointestinal tract and metabolism (17.0%). Near 92.0% (n = 212) were using at least one PIM, with a mean of 2.2 $\pm$ 1.2 PIMs per patient. In patients with dementia, the prevalence of PIMs was even higher (96.1%; n = 74), where antipsychotics were the most described PIM in this group. The prevalence of clinically relevant drug interactions was 42.9%, with a mean of 0.9 $\pm$ 1.5 interactions per patient. In patients with dementia, the prevalence of clinically relevant drug-interactions was 44.2%. The prevalence of patients having high anticholinergic burden was 48.1% (n = 111), being higher in the group of dementia (62.3%; n = 48).

Conclusion: We found that the prevalence of PIMs, clinically relevant drug interactions, and high anticholinergic burden was higher in institutionalized patients with dementia, which may suggest that pharmacy interventions should be implemented to help targeting this issue.

PCNE abstract number 560,

Comparing different information sources in detecting clinically relevant drug interactions in Portuguese institutionalized patients using quetiapine

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Background: Nowadays, many sources are available to help healthcare professionals (HCP) in detecting clinically relevant drug interactions, but information on their ability to detect the same amount and type of interactions is still scarce.

Purpose: Our aims were: (a) to determine the prevalence of clinically relevant drug interactions detected by different information tools (Summary of Product Characteristics—SmPC, and Drug Interaction Checker, Medscape—DIC-M) for quetiapine; (b) to compare the number of drug interactions detected by both tools; and (c) to correlate the number of interactions detected by both tools.

Method: A cross-sectional study was undertaken using a database of institutionalized users in senior residences from Lisbon and Valley Tejo and Alentejo (March-November 2021). Residents were included if they were using quetiapine and if they had enough exhaustiveness (missing data on therapeutic variables $< 5.0\%$) regarding their therapeutic regimen. Clinically relevant drug interactions were defined as a combination of drugs that is contraindicated, given the high risk of causing an adverse drug event. We have used the SmPC and DIC-M (considering only the serious or contraindicated drug interactions) and developed a common classification system to classified the interactions. Polypharmacy was defined as patients taking 5 or more different drugs daily. We used descriptive and bivariate statistics. Pearson's correlation was used to correlate the number of clinically relevant drug interactions detected using both tools (weak correlation—0.1 and 0.3; moderate correlation—0.3 and 0.5; and a strong correlation—0.5 and 1.0).

Findings: A total of 60 institutionalized patients were included, where 83.3% (n = 50) were female with a mean age of 83.6 $\pm$ 8.0 years old. Most patients experienced polypharmacy (93.3%; n = 56). The SmPC identified a total of 236 interactions, where 1.7% (n = 4) were classified as clinically relevant drug interactions. On the other hand, DIC-M identified a total of 158 interactions, where 11.4% (n = 18) were classified as clinically relevant drug interactions, which was significantly different when compared to the number detected using SmPC (p = 0.004). It was found an inverse and weak correlation (r = -0.024; p = 0.856) when comparing the power to detect clinically relevant drug interactions, showing that DIC-M seems to better detect this type of interactions when compared to the SmPC.

Conclusion: Our results showed that there are differences in the detection ability of different information sources regarding clinically relevant drug interactions, which may suggest that healthcare professionals should complement their search in different tools for a more comprehensive review of drug interactions.

PCNE abstract number 561,

ApoForsk: A Danish video blog communicating research of relevance for community pharmacies

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Background: Most workdays at a community pharmacy are often dominated by running the pharmacy, which may hinder pharmacists and pharmacy technicians in following research related to community pharmacies. The value of research results for healthcare professionals and patients alike is greater when these results are disseminated.
Purpose: We established the video blog ApoForsk (PharmResearch), aiming to disseminate research of relevance for pharmacists and pharmacy technicians working in community pharmacies.
Method: ApoForsk is run by Alaa Burghle and Camilla Lynnerup, both pharmacists and ph.d.-students. In every episode, one of the hosts presents the study and its findings, which are then discussed by both. Each episode lasts 5–6 min and ends with a question to the viewers and an invitation for discussion in the comments section below the video. The authors choose studies to present in the video blog by browsing different scientific journals with relevance to any aspect of pharmaceutical care in the community pharmacy setting. ApoForsk is shared via videos on LinkedIn, YouTube, in several pharmacy-related Facebook groups, and on Spotify.
Findings: To date, 10 episodes of ApoForsk have been published, covering a range of varying topics, e.g., polypharmacy, pharmacist prescribing, influenza vaccination, new pharmaceutical care services, and drug-drug interactions. The ten episodes have accrued over 1,500 views on YouTube and over 10,000 views on LinkedIn. Some community pharmacies report using ApoForsk in their morning meetings for professional updating. Finally, ApoForsk has been promoted in the periodicals for Pharmadanmark (The Association of Professionals in Pharmaceutical Sciences) and the Danish Association of Pharmaconomists.
Conclusion: ApoForsk has, since it has been established, garnered considerable interest among community pharmacies in Denmark and is expected to grow in the coming years, e.g., with an English version as well.

PCNE abstract number 565

Medication reconciliation service at hospital discharge: multicentre study in Spanish hospitals and community pharmacies

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Background: Transition between levels of care is regarded as a cornerstone in patient safety since it is the source of 50% of medication errors. A possible strategy to increase patient safety is medication reconciliation combined with medication reviews at hospital discharge.
Purpose: The aim of the study was to analyse discrepancies and drug related problems (DRP) identified by pharmacists working on different care levels who have, in a coordinated manner, provided a medication reconciliation service after hospital discharge. In some cases, was complemented by a medication use review (MUR) in community pharmacies.
Method: Prospective, multicentre observational study (04/2019–02/2020) in patients aged > 18, ≤ 72 h post discharge, who were regularly taking medication. Institutionalized patients and those for whom there was no reliable clinical and pharmacological information were excluded. 204 community (CP) and hospital pharmacists (HP) from 8 Spanish provinces were involved. Medication reconciliation was provided by the HP at discharge or by the CP when the patient have been discharged without receiving the service. Subsequently, for patients presenting a high risk of presenting DRPs according to Drug-Associated Risk Tool (DART) medication was reviewed by a CP who contacted them at 7, 30 and 60 days.
Findings: 622 patients were included (88% in CP), most of them multi-pathological and polymedicated, with an average age of 71 years and a length of stay in hospital of 10 days. A total of 2515 discrepancies were detected, involving 96% of the patients. Of these, 90% were justified and 10% needed further explanation by the prescribing physician. 22 discrepancies remained unresolved and 118 were regarded as reconciliation errors (12% of patients). 23 patients reconciled by HP underwent follow-up by CP, solving 5 of the 7 pending discrepancies (2 were reconciliation errors). When reviewing the medication used by patients who met DART criteria, 739 DRP were identified (1.9 per patient), lack of adherence (15%) being the most common, followed by medicines interactions (10%). 860 interventions were performed (1.4 per patient), of which 80% were accepted. The number of discrepancies and reconciliation errors increased with the number of health problems, the number of medicines used, and length of the hospital stay ($p < 0.01$). Error probability was higher in omission discrepancies.
Conclusion: Polymedicated patients, with > 5 health problems, long hospital stays, and omission discrepancies are at greater risk for medication errors. Continuity of care by CP to patients increase the reconciliation error detection, the identification and resolution of DRP and the resolution of pending discrepancies.

PCNE abstract number 567,

Preparing future pharmacists to provide effective behaviour change support in pharmaceutical care consultations: early adoption of the Train4Health educational products

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Background: Pharmacists and other professionals are expected to effectively support behaviour change in persons self-managing chronic disease. However, these professionals present gaps in their knowledge and skills to deliver these interventions (Guerreiro et al., 2021). The Train4Health (T4H) project (https://www.train4health.eu) seeks to improve students' behaviour change support competencies for chronic disease self-management. The project draws on behavioural science and co-production with users to develop an educational package (case studies, massive open on-line course and a simulation software).

Purpose: We report students' opinions on the use of a case study in the 'Pharmaceutical Care' module (Faculty of Pharmacy University of Marmara), as part of the T4H Early Adopters Programme.
Method: Preparation before class included the translation and cultural adaptation to Turkish of persons' profiles included in the case studies, deciding on the profile to be used (Luuk Altorf) plus target behaviours to be addressed (medication-taking), and selecting learning outcomes and related open-ended questions for group discussion, provided by the respective toolkit. Prior to in-class case discussions, students joined the lesson on medication related problems in older adults. Classes, held virtually, lasted for 90 min; group discussion of around 30 min was aided by a core list of standardised behaviour changes techniques (Guerreiro et al., 2021), translated to Turkish. Opinions of students were collected through an online survey developed by the T4H project at the end of each class.
Findings: A total of 59 students answered the survey (estimated response rate 66%). Overall students enjoyed using the case study (84.7%, n = 50) and found it useful or very useful for learning behaviour change support in chronic disease (94.9%, n = 56). Opinions on clarity of the case study were generally favourable; clarity of the questions scored lower (84.7%, n = 50) than other case study components (the person's profile, learning outcomes and support materials). Most students did not consider it difficult to answer the questions (76,3%, n = 45). Students were interested in using this approach in the future (79,7%, n = 47) and roughly nine out of ten students would recommend it to those wishing to learn behaviour change support in chronic disease.
Conclusion: Students had favourable opinions on the use of a T4H case study for learning behaviour change support in chronic disease. These results, together with data from other European Higher Education Institutions, will be used to improve case studies plus the teaching process. One of the next steps is measuring the achievement of learning outcomes.

PCNE abstract number 569

Use of the PCNE classification to analyze DRPs associated with the use of antibiotics in caesarean sections

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Background: The Ecuadorian Clinical Practice Guideline for Caesarean Delivery Assistance addresses preoperative antibiotic prophylaxis (PAP), but it does not establish specific protocols for antibiotics use. This leads to a great variability since each physician uses different therapeutic schemes according to his own individual judgment.
Purpose: The aim of this study is to identify and categorise the DRPs associated with the use of antibiotics in women undergoing cesarean delivery in a secondary-care hospital and to analyse the causes of these problems.
Method: Observational, retrospective, descriptive study. 814 women undergoing cesarean delivery at the Ambato General Hospital of Ecuador during 2018 were included. Patients with premature preterm rupture of membranes far from term or antibiotic treatment for active infections, and those with incomplete clinical history were excluded. Different variables related to the patient, the surgery and the antibiotic treatment were collected from the hospital medical records. A clinical pharmacist reviewed the treatments and assessed compliance with international guidelines for PAP use. DRP analysis and characterization was conducted using the Pharmaceutical Care Network Europe (PCNE) Classification V9.1 and considering the following variables: drug selection, dose, treatment duration, prescribing process and drug use process.
Findings: Patients were aged between 16 and 48 years (30.87 ± 5.50). DRPs were detected in all women (1125, 1.38 DRPs/patient), the most frequent ones associated to failure to administer PAP despite being indicated (30.10% of patients, subdomain P1.3 "Untreated symptoms or indication") and to unnecessary postsurgical antibiotic treatment continuation (100% of patients, subdomain P3.1 "Unnecessary drug-treatment"). Of the 1935 possible causes for DRPs identified, most of them were related to inappropriate drug selection. Although the recommendation is to use first generation cephalosporins (cefazolin) or, in patients allergic to beta-lactams, to administer a joint treatment of gentamicin and clindamycin, 13 different antibiotics were used. Cefazolin was administered as prophylaxis in 98.07% of the PAPs, as well as a postsurgical treatment to the 79.36% of the total number of patients. Cefalexin was always administered postoperatively (in 71.45% of the cases). The duration of the postoperative treatment was 7 days.
Conclusion: The high number of DRPs found (1.38 DPRs/patient) suggests the need to stablish protocols for antibiotic usage in the institution. The PCNE V 9.1 Classification made it possible to categorize DRPs and their causes, thus facilitating the reporting of results to the professionals involved.

PCNE abstract number 574

Feasibility of the 'respiratory adherence care enhancer' (RACE) instrument in community pharmacies for asthma and COPD patients with maintenance inhaler therapy: study protocol for a feasibility trial

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Background: The 'Respiratory Adherence Care Enhancer' (RACE) instrument was developed to support patients with lung diseases in improving disease control by tailored care from healthcare professionals. This instrument consists of (1) the validated online RACE-questionnaire identifying individual barriers to self-management of inhaler maintenance therapy, individual treatment goals and disease control; (2) an infographic visualizing the results of the questionnaire and (3) a guide with instructions and interventions based on behavior change techniques (BCTs) to overcome potential barriers in consultations.
Purpose: The proposed feasibility study protocol focusses on: (1) assessing the feasibility and acceptability of the RACE-instrument

from asthma/COPD patients' and pharmacists' perspective and (2) pre-testing the effectiveness of this instrument on improving self-management with inhaler maintenance therapy, achieving treatment goals and controlled disease stability in asthma and COPD patients compared to usual care.

Method: Community pharmacies in the Netherlands will be invited to participate in this feasibility study in which asthma and/or COPD patients with inhaled maintenance therapy will be included between October 2021 and March 2022. A two-arm non-randomized controlled trial will be conducted to assess potential effectiveness of the RACE-instrument, allocating patients to the intervention- or control arm. All patients will be invited to fill in the RACE-questionnaire on three time points (at baseline, after 1 and 2 months) alongside usual care. In the intervention arm, patients will additionally receive the results as infographic and will be appointed to a subsequent pharmacist consultation at baseline and after 1 month. Patient recognition of the results and concomitant agreements made on interventions will be documented for the assessment of the feasibility. Prior to these consultations, pharmacists will be trained on applying the RACE-instrument for the provision of tailored support. For further assessment of the feasibility, participating pharmacists and patients from the intervention arm will be invited for an additional questionnaire and semi-structured interview to evaluate their experiences (barriers and facilitators) with the RACE-instrument in consultations.

Findings: Results of this study are expected in March 2022.

Conclusion: Following the medical research council framework, a feasibility study will be conducted to identify and address undermined problems with complex interventions before progressing to a randomized controlled trial.

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