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Poster presentations

23. Experiences of using prescription medicines among the general public in the UK- a comparison of paper- and online-reported experiences

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Background Regular use of prescription medicines can impact on an individual's quality of life and create treatment burden. Health professionals require appropriate methods to identify patients' experiences of medicines use. Patient-reports provide a more direct assessment of such experiences. Different methods of questionnaire-administration may reveal varied medicine-related experiences.
Purpose This study aimed to compare paper- and online-reported experiences of using regular prescription medicines among adults living in the UK.
Method Paper- and online-versions of the Living with Medicines Questionnaire© were used. This 60 item, 5-Likert-type (strongly agree to strongly disagree), questionnaire covers 8 domains: Relationships with health professionals, Practicalities, Information, Efficacy, Side-effects, Attitudes, Impact and Control. Paper questionnaires were distributed to community pharmacy users, and the general public of South-East England. The online survey was promoted via links on patient health websites, social media, and flyers. Inclusion criteria were: adults, living in the UK, and using regular prescription medicines. Using SPSS version 22, Chi-square tests were conducted to examine significant differences ($p<0.05$) in reported experiences between these methods. Institutional ethical approval was granted.
Findings 1174 individuals completed the survey via paper (43.1%, n=506), and online (56.9%, n=668). There were more females in both groups, but more completing the online survey were younger, highly educated and using 4 or more medicines ($p<0.01$). More online respondents disagreed their doctor spent enough time discussing medicines with them (39.4% Vs 26.6%, $p<0.001$) or knew them personally (39.1% Vs 19.3%, $p<0.001$), and more felt they sometimes needed more information from other sources (83.5% Vs 51.3%, $p<0.001$). More online respondents were also dissatisfied with the effectiveness of their medicines (27.6% Vs 9.9%, $p<0.001$),concerned about side-effects (71.9% Vs 58.9%, $p<0.001$), and that their medicines would interact with each other (21% Vs 10.6%, $p<0.001$). There were also differences in perceptions that medicines caused problems with daily tasks (26.2% Vs 11.4%, $p<0.001$) and affected their sexual lives (26.2% Vs 15.3%, $p<0.001$). However, slightly more online respondents felt they could choose whether or not to take their medicines, compared to paper-based respondents (14.6% Vs 13.2%, $p<0.001$).
Conclusion Patients' reported experiences with using regular medicines measured using this instrument vary with the method of completion; online-reported experiences being more negative than paper-reported experiences. The survey is subject to non-response bias, but social desirability bias may be higher for personally-distributed surveys, whereas online respondents may have used the internet for support with negative experiences and have developed greater awareness of medicines risks through this information source.

20. Pharmaceutical Services Cost Analysis Using Time-Driven Activity Based Costing in a Sample of Portuguese Community Pharmacies

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Background Pharmacists have experienced an expansion of their role in the last decades, developing the scope of services offered. One challenge that pharmacists face when obtaining payment from patients is establishing a price for the service that is sufficient to support it, and is perceived as a good value by the patient. However, little research has been conducted on the costs of pharmaceutical services (PS) in Portugal.
Purpose To accurately calculate costs it is important to use a costing methodology that supports itself on real-world data. This study describes the development and application of a Time-driven Activity Based Costing (TDABC) model in a sample of pharmacies in Portugal, with the objective of calculating the cost of the PS provided.
Method PS supply patterns were studied through a time and motion observation in selected pharmacies. The main inclusion criteria were their urban location in the metropolitan Lisbon area. Three pharmacies were included as participants. The observation study took place during a regular weekday full 8 hours shift. The main outputs of interest were the time spent performing a service and the activities required to carry out each service. Data on pharmacy costs were obtained through pharmacies' accounting records for the month the observation took place. With this data, cost rates for each activity and time equations for each service were developed.
Findings The main pharmaceutical services observed were the dispensing of medicines, counseling provision without dispensing, OTC provision with counseling and health screening services. We found the overall costs of services across three pharmacies to be very similar, with the average dispensing service cost at €3.66. Excluding depreciation, amortization and taxes (DAT), this value drops to €2.12; for the counselling service, the average was €1.34, or €0.87 excluding DAT; OTC dispensing average cost was €2.16, or €1.30 excluding DAT; Health screening services' average costs were €3.59, or €1.90 without the DAT.
Conclusion The TDABC model described gives us new insights on management of community pharmacies in Portugal. As the time equations show which activities demand more time, pharmacy managers may get an idea of which activities lead to higher costs. This study shows the importance of cost analysis for pharmaceutical services provision. Results from this analysis are expected to contribute to the improvement of community pharmacy organizational business models.

25. Specialized clinical services offered in community pharmacy in Quebec: a survey of pharmacy owners

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Background Pharmacy practice is evolving rapidly in Quebec. Many pharmacies have

developed and offer specialized clinical services. However, these initiatives are not well documented.
Purpose Estimate the prevalence and describe the nature of specialized clinical services offer in community pharmacies in Quebec (Canada).
Method A survey was conducted among all Quebec pharmacy owners. Using the a Dillman modified method, pharmacists were invited to complete a web-based survey to document the specialized clinical services offered in their pharmacy and their perceptions of the benefits and barriers to the provision of specialized services. The characteristics of the pharmacy were also documented.
Findings A total of 511 out of 1505 pharmacy owners (34%) completed the survey; 66% were associated with a chain or banner, 43% were large pharmacies (surface area of 5,000 square meters or more), and all regions were represented. Eighty-one percent of pharmacies offer at least one specialized service, with an average of three per pharmacy. Most prevalent services include anticoagulation (45% of pharmacies), hypertension (36%), diabetes (28%), and dyslipidemia (13%). For each of these conditions, the mean number of patients seen annually is equal to 22, 60, 54 and 63, respectively. The median duration of the initial and follow-up visits vary between 17-25 and 8-13 minutes, respectively. In anticoagulation, dosage adjustments are performed by pharmacists using collective (30%) and individual (68%) prescriptions. For hypertension, diabetes and dyslipidemia, pharmaceutical opinions are used to make pharmacotherapeutic recommendations to treating physicians (89%, 90% and 100%) and dosage adjustments are done by pharmacists using individual (30%, 41% and 22%) and collective (8%, 7% and 0%) prescriptions. Perceived benefits of offering those services include the establishment trusty relationship (61%), customer loyalty (58%) and personal satisfaction (56%), while the main barriers are the lack of time (73%) and inadequate monetary compensation (62%).
Conclusion In Quebec, a minority of pharmacies does not offer specialized clinical services. The majority of services are related to the prevention of cardiovascular disease. To facilitate the implementation of specific clinical services, barriers related to work organization and remuneration must be addressed.

26. Quality and safety in medication use in residential facilities for the disabled – development of an educational programme

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Background Persons with physical and mental disabilities in residential facilities often use many medicines and experience patient safety issues related to their medication. More than 10,500 medication errors were reported to the Danish Patient Safety Database from residential facilities in 2.5 years. It is a challenge that in many facilities staff with health care training is not permanently available.
Purpose The aim of the educational programme was to give staff the necessary competencies to understand the residents' medication, observe and act on the effects of medicines, and handle medicines in accordance with formal procedures and regulations.
Method The programme was designed based on a task-and-learning analysis conducted with 14 residential facilities of which 10 participated in this study. The programme consisted

of seven separate days with several tasks in the intervening periods. Key learning goals concerned basic and practical use of medicines, quality and safety in medicines management, and communication and cooperation with healthcare professionals. Staff responsible for quality improvement received two additional days' training in quality improvement and implementation of improvement initiatives. The programme was aimed at staff with a non-healthcare background and delivered by consultants from Pharmakon, local community pharmacists and risk managers. The study was designed as a formative before-after study. The participants answered a questionnaire before and after the educational programme, where they scored themselves according to 22 learning goals. After the educational programme, a focus group was conducted with participants in each municipality, and telephone interviews were conducted with managers of the facilities. All teachers completed a questionnaire concerning the outcomes of each individual session, and community pharmacies also completed a status report at the end.
Findings The participants felt they achieved a common understanding of the importance of safety in the medication use process, an open dialogue about medicine and increased focus on medicine from management. The participants had improved significantly at 21 of the 22 learning goals measured. The managers reported that their staff became more competent, motivated and confident in relation to solving medicine-related tasks. In addition, they became more focused and thorough in all steps of the medication process.
Conclusion The educational programme was successful in improving the staffs competencies concerning safety and quality of medicines. To achieve full outcomes of the programme, it is important to actively engage leaders of facilities, to adjust programme according to needs and goals of the facilities, and to prepare teachers on the target group and the pedagogical methods used.

27. Do patients receive information leaflets with their dispensed medicines in Kuwait?
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Background The importance of the provision of written information, including patient information leaflets (PILs), is emphasised during the training of pharmacists in Kuwait. To date, however, it is not mandatory to provide such information with the dispensed medicines. It is not clear whether the voluntary supply of PILs is sufficient.
Purpose To assess how many medicines are supplied with PILs for patients and to evaluate the appropriateness of the leaflet provided by primary care pharmacies in Kuwait.
Method A cross-sectional exploratory study was conducted to collect data from January to April 2014 via a questionnaire and a semi-structured interview. A convenient sample of patients attending primary care pharmacies was selected. Those who consented to participate were asked to complete the questionnaire and to allow a pharmacy student to check their medicines for the presence of leaflets and to determine the language used for each leaflet if found. Participants were reassured for the confidentiality and anonymity. An ethical approval was received from the Department of Community Medicine, Kuwait University.
Findings Of the 264 medicines supplied to the 100 patients, there was no leaflet available for 151 medicines (57%). Of the 113 medicines accompanied by PILs, 102 (91%) leaflets were written in both English and Arabic languages, 9 (8%) were in English only, and 1 (0.8%) was in an unidentified language (the official language of Kuwait is Arabic). The majority of the

participants (83%), who were with educational levels varied from high school to a university degree, thought of the readability and clarity of the PIL language as acceptable. More than two-thirds (70%) said that they mainly relied on the doctor or the pharmacist when more information was required.
Conclusion Although the supply of PILs with the dispensed medicines is not mandatory in Kuwait, pharmacists should, as part of their ethical obligations, take all the necessary measures to make the leaflets available to their patients. Also, pharmacists should emphasize the importance of reading the leaflet and to keep it as an essential source of information.

28. Continuing pharmaceutical care – DOAC

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Background Direct oral anticoagulants (DOAC) are delivered regularly by pharmacists and a high medication adherence is essential for the therapy to succeed. Patient education and pharmaceutical advice given by the pharmacist are necessary in that respect.
Purpose To develop practical tools and (patient) materials in order to support the pharmacist in his (or her) role as a provider of pharmaceutical advice and to emphasize his role as an expert in medicines regarding DOAC. To familiarize the pharmacist with these tools and materials through interactive trainings.
Method In consultation with specialists, pharmaceutical companies, universities and KAVA, a step-by-step procedure (a checklist) was devised for the delivery of DOAC. This checklist was proof-tested by community pharmacists to assess its workability. Based on that and in consultation with the participating universities and industry, practically-oriented tools and materials were developed to support the pharmacist. Pharmacists will also be given the possibility to attend refresher courses to stay abreast.
Findings (1) a 'handy guide for the delivery of DOAC', containing all the requisite information for proper dispensing of DOAC. This guide is available in digital form as a tree diagram with direct links to relevant information and digital patient materials. (2) Patient materials forwardable by email via a digital platform (www.farmacompendium.be): an info-card, an educational video and some useful tips for the patient. (3) Three interactive workshops have already taken place (with more than 240 community pharmacists attending) in which the materials were explained by means of case studies. Two Medical Pharmaceutical Consultations have also been planned already in Antwerp.
Conclusion Drug guidance and patient education are essential in order to obtain a high medication adherence among patients who are on DOAC. At present, the pharmacist is assisted, advised and coached too little (software-wise) in that regard. By developing practical (digital) tools and materials and by training the pharmacist therein, KAVA is supporting the community pharmacist in one of his core tasks, namely pharmaceutical care.

30. The WestGem study; Medication management in the elderly

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Background The WestGem-Study (WESTphalian study on a medication therapy management and home care based intervention under Gender specific aspects in Elderly Multimorbid patients) is designed to add evidence to the implementation of a Medication Therapy Management (MTM) in Germany. It is funded by the European Union and the State of North Rhine-Westphalia, Germany
Purpose Data to support the effects of a MTM is scarce for Germany. The WestGem-Study aimes to contribute data regarding quality of therapy, clinical outcomes, quality of life and expenses
Method The central intervention is a MTM that is provided 2 times by specialized pharmacists for the primary care physician. Local care-support-centres are involved in the interprofessional setting and contribute further information about the social embedding of the patient and the need for further care and support. The WestGem-study is a prospective, cluster-randomized, controlled trial in a stepped wedge study design Inclusion criteria are: Men and women over 65 years with three or more chronic diseases affecting at least two different organ systems and a cardiovascular background. Prescription of five or more systemic long-term medications. Exclusion criteria: life expectancy less than one year, no given informed consent. 166 Patients were recruited at 12 Primary Care Centres.
Findings The WestGem-Study is still going on, results will be published by the end of 2015. Preliminary data and results: Median patient age: 77,2 y (male) and 78,5 y (female) Morbitity: Most frequent diseases found were: 90% Hypertonic disease 60% Hyperlipidemia 48% Diabetes mellitus Typ II 44% CHD 25% AFIB 24% Lower back pain Morbidity is in accordance with previous population data found by other studies. We found a deviation between the prescription plan and medicine intake at home for 3,9 drugs for men and 4,9 drugs for women. 22% of this deviation was caused by OTC-selfmedication, the remaining 78% by Rx-drugs. An average of 1,1 PRISCUS PIMs were detected per patient. 12 (male) and 13,95 (female) DRPs were found per patient and categorized by the PCNE 6.2 definition. First results show that about 33% of the pharmacist suggested interventions were implemented by the physician.
Conclusion The population data is in accordance with other MTM studies. Preliminary results indicate that there is a strong deviation between the prescribed medication plan and the real intake at home. Furthermore the number of ABPs detected in this study is very high. The acceptance of suggested interventions is well, showing a high level of interprofessional cooperation.

32. Evaluation of a community pharmacy spirometry testing service for current and recent ex-smokers

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Background Early diagnosis of Chronic Obstructive Pulmonary Disease (COPD), combined with smoking cessation, can help to slow progression of the disease. Community pharmacists may be able to identify those patients at risk of COPD who would not visit their general practitioner (GP).
Purpose This study evaluated a pilot spirometry testing service provided within four community pharmacies, from the perspectives of clients, providers and general practice

staff. Current or recent smokers who attended these pharmacies for an NHS Health Check (cardiovascular screening) and were not ill or using inhalers were eligible.
Method Eligibility for spirometry was assessed using data from pharmacy Health Check records. Attending clients were invited to participate in a telephone interview, exploring their perceptions of the usefulness and appropriateness of pharmacists providing spirometry. All pharmacists providing spirometry were invited to attend a focus group, which explored their views on training, recruitment, balancing service delivery with other activities, perceptions of the client experience and referrals. GPs and nurses from selected practices whose patients had attended the pharmacy service were invited to undertake a telephone interview exploring their views on this service. Interviews and focus groups were digitally recorded, transcribed and thematically analysed. University Ethics approval was obtained.
Findings Nineteen of 190 Health Check (9.8%) clients were eligible for spirometry testing; eight (42%) were tested. None required referral. The two clients interviewed described the pharmacist as supportive and non-judgemental in their consultation, were comfortable doing the test in the pharmacy, and stated that it had encouraged them to stop smoking. The four pharmacists attending the focus group were confident in their ability to provide spirometry. Their suggestions for change were to review eligibility criteria and combine spirometry testing with smoking cessation services. All felt that an opportunistic approach would be beneficial, but would require a second pharmacist. The two nurses and three GPs interviewed were all positive about the service. GPs agreed with pharmacists that offering spirometry to NHS Health Check clients, a service potentially attracting the worried well, was unlikely to capture smokers. Suggestions to improve uptake included providing outreach services and publicising the service more widely.
Conclusion Overall pharmacy-based spirometry testing was well received and the consensus was that the service was worthwhile and should be developed. Two of the eight clients who underwent spirometry testing stopped smoking, illustrating its potential for benefit. However eligibility criteria and low uptake are limitations which need to be addressed in future developments.

33. The community pharmacist: A trustworthy source of information about complementary and alternate medicine?
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Background The evidence to support the use of complementary and alternative therapies (CATs) is often lacking. How individuals obtain information about CATs and their need for trustworthy sources of information has been identified as a priority for research.
Purpose This study aimed to determine the prevalence of use of CATs within the general public. Participants' preferences for information sources were also explored.
Method Interview-assisted surveys were conducted with a convenience sample of the general public recruited from a shopping centre within South East England. A questionnaire was developed from the literature and piloted with ten volunteers known to the researchers. The questionnaire contained mainly closed questions covering the participants' use of thirteen CATs, and their preferences for information sources. Participant's age, gender and ethnicity were recorded. Responses were analysed using SPPS (Version 21) using descriptive statistics and Chi-square. University research ethics approval was obtained.
Findings Three hundred questionnaires were completed. The majority of respondents were

female (190, 63%), and of white ethnicity (202, 67%). Their mean (SD) age was 45(17) years. Sixty percent (181) of respondents had used CATs, 71%, (127) of these being female ($p < 0.05$). There were no other differences in the demographic characteristics between users and non-users. The most commonly used CATs were massage (31%, 56), herbal medicines (28%, 51), and acupuncture (18%, 32). Only twenty two percent (11), of respondents used herbal medicines regularly. The most common reason for using CAT was because it was recommended by a friend or relative (45%, 82). 21.5% (39) and 4% (8) stated that CAT had been recommended by their GP or pharmacist, respectively. The internet and friends were the most popular sources of information about CATs; 50% (90) and 43% (78), respectively. 50 (28%) respondents stated that they would seek information from their GP and 45 (25%) from their community pharmacist. A greater proportion (59%, 30) of those taking herbal medicine would seek advice from the pharmacist than the GP (29%, 15) ($p< 0.05$).
Conclusion CATs are widely used by the general public. Although fewer pharmacists recommend CATs to the public than GPs, pharmacists are perceived as a source of further information for herbal medicines. Pharmacists need to ensure that their knowledge of CATs, particularly herbal medicines, is adequate to safeguard the public. Given their widespread and intermittent use, patients should be routinely asked about their use of herbal medicines and all suspected adverse drug reactions reported.

34. Integration of a non-dispensing clinical pharmacist in primary care: design of the POINT intervention study

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Background Pharmacotherapy plays an important role in primary care. However medication errors occur and can result in hospital admissions.[1] One way of improving pharmacotherapy is to review patients' medication but this seems difficult to implement in primary care. Identified difficulties are 1. lack of access for the pharmacist to patient information 2. poor collaboration between pharmacist and general practitioner (GP) and 3. lack of knowledge and skills by pharmacist and GP.[2]
Purpose The POINT-study is designed to overcome these difficulties and to study the effect of integrating a non-dispensing clinical pharmacist as a member of the primary health care team on medication safety.
Method The POINT-study is a prospective, non-randomized controlled intervention study with pre/post comparison in an integrated primary care setting. In this project we compare the main outcome measures in three different settings: 1) a non-dispensing clinical pharmacist as an integral member of a GP practice, 2) a pharmacist in a community pharmacy with a predefined training in performing structured medication reviews, and 3) a pharmacist in a community pharmacy. Within group 1, a non-dispensing pharmacist will be posted to each of ten GP practices (6 – 10.000 patients) for a period of 15 months. The non-dispensing clinical pharmacist will perform individual patient medication assessments including follow-up and is responsible for the medicines management and pharmaceutical care provided in the practice. [3]
Findings The main outcome measures of this study are medication-related hospital admissions and medication errors in patients with multimorbidity and polypharmacy. The

results of this intervention study are expected in 2016.
Conclusion The POINT-study is a large, intervention research project to study the effect of integration of a non-dispensing pharmacist in primary care on patient safety. The study should provide evidence as to whether this integration will improve effective and safe pharmacotherapy. It also provides knowledge on how this model should be implemented in primary care. 1. Frequency of and risk factors for preventable medication-related hospital admissions in the Netherlands, Leendertse et al. Arch intern med. 2008. 2. Preventing hospital admissions by reviewing medication (PHARM) in primary care: an open controlled study in an elderly population. Leendertse et al. J Clin Pharm Ther. 2013 3. Integrating Family Medicine and Pharmacy to Advance Primary Care Therapeutics, L. Dolovich et al. Clin pharmacol. Ther. 2008.

36. Interdisciplinary collaboration pharmacists-nurses and medication adherence programs: a review

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Background There is a strong need for studies aimed at interprofessional approaches to address medication adherence in routine care. Nevertheless, the implementation of interdisciplinary programs is not simple. Pharmacists and nurses are both qualified to assess and support medication adherence but with different expertise; in consequence they both claim their role at the patient's side.
Purpose The purpose of this review is to 1) identify interdisciplinary adherence programs involving both pharmacists and nurses 2) describe the pharmacists' and nurses' roles in these programs
Method A literature search was conducted in Medline, Cochrane Register of Controlled Trials and Embase, from 2004 to 2014, using the following algorithm: ((((medication adherence[MeSHTerms]) OR patient compliance[MeSHTerms]) OR patient education as topic[MeSHTerms])) AND (((((interdisciplinary*[Title/Abstract]) OR interprofessional*[Title/Abstract]) OR multiprofessional*[Title/Abstract])) OR ((pharmacist*[Title/Abstract]) AND nurse*[Title/Abstract])). To complete the literature search an additional search was conducted in Embase using the "Emtree" terms: ((*patient compliance/) or (*medication compliance/) or (*patient education/)) and ((interdisciplinary* or interprofessional* or multiprofessional").ab. or (pharmacist* and nurse*).ab.). Search was restricted to articles published in English or French. The abstracts were screened according to the following criteria: interdisciplinary adherence programs involving pharmacists and nurses, adherence as primary outcome, patients > 18 years, oral treatment, outpatient setting.
Findings 986 references were identified. After the screening, 11 articles and 7 conference abstracts were included. Competences are classified into: (1) pharmacists' expertise, (2) nurses' expertise and (3) pharmacists'- and nurses' shared skills. Pharmacists' role is more focused on treatment efficacy, security and management, while nurses have an important observational & reinforcing role throughout the continuum of care. Pharmacists and nurses

are both in a strategic position to assess and promote adherence; moreover they can identify eligible patients for adherence programs.
Conclusion Interdisciplinary programs remain rare and often in a development phase. It is crucial to define clearly the expertise of each health professional to successfully implement an interdisciplinary program to support medication adherence. Collection of adherence information should be structured and shared to improve interdisciplinary and patient care.
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37. The development of home medication reviews (HMR) in the Danish educational pharmacies

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Background An HMR program entitled ‘‘Medisam’’ involving patients, pharmacy interns, pharmacist supervisor and physicians was launched in 2008 at the 90 Danish pharmacy internship pharmacies with the aim of developing, implementing and evaluating a collaboration model for HMRs and medicine reconciliations in Denmark. Now, in 2014, with HMRs and medicine reconciliations being an implemented practice for the yearly 160 pharmacy interns, we like to share our program development experiences.
Purpose To illustrate which benefits and constraints were embedded in and emerged from collaborative undertaking of the development of HMRs and medicine reconciliations in Danish educational community pharmacies, and how the constraints were overcome.
Method The methodological framework for the project was action research (AR). The idea underlying behind AR is to conduct research on a scientific basis to solve important social and organisational problems together with people who experience the problem directly. The data production methods used were numerous, as is typically the case for AR-based studies: 1) Interviews (with 10 students their supervisors and cooperating GPs); 2) Minutes from meetings 2008-2011 (project group meetings (6), yearly supervisor meetings (4) meetings with external partners (15) meetings with students (4)) 3) Questionnaires each year 2008-2011 to 150-160 pharmacy interns (response 50-70%)
Findings The following embedded and emerging benefits were identified: * Contextual factors/wide use of existing structures (economical pharmacy support, economic Ministerial project funding, two day long yearly supervisor meeting; many years of research project experience between University and pharmacies) * Strong focus on cooperation and learning though continuous matching with all parties and project adaptation (cyclic process) * Written documents (different manuals, interview guides etc.) The following constraints and ways to overcome the constraints were identified: * Lack of student/supervisor MGG skills (solutions: reference to guidelines and University courses) * GP resistance (not fully solved. Solution attempts through cooperation agreements and increased involvement of physicians in project group) * Lack of patient overview tool (Solution: development and use of a project database www.medisam.dk) * Patient follow up (abandoned) * Dissimination of results (Solution: Final full day stakeholder seminar).
Conclusion Several benefits and contraints were embedded in and emerged in the Danish pharmacy internship HMR development process. Hopefully, HMR program developers in other countries will benefit from our development experiences when setting up their own programs.

38. Clinical drug related problems and interventions of pharmacists on prescribed medicines in Belgium

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Background Pharmacists have an important role in the prevention, detection and management of drug related problems. The added value of the community pharmacists is sometimes questioned.
Purpose The aims of the study are: 1/ to study the frequency and nature of clinical drug related problems (DRP) detected by community pharmacists when dispensing prescribed medicines. 2/ to investigate the nature and frequency of interventions by pharmacists on clinical DRPs.
Method MSc students of Pharmacy of six Belgian universities collected data about all DRPs occurring during five days of their pharmacy internship. Classification of the DRP, cause of the DRP, intervention and result of the intervention was registered by using a web tool, based on the DRP classification list of PCNE.
Findings 5.839 (37%) of the 15.952 registered DRPs concerned problems with at least one clinical cause. The most frequently registered clinical causes were drug interaction (1.911), inappropriate timing of administration (765), dose too high (548), inappropriate drug (537) or dose too low (394). The cause “Drug interaction” was significantly more reported as a cause for DRPs on refill prescription than for DRPs on new prescriptions, who had significant more DRPs due to “inappropriate timing of administration”, “Dose too high” and “Inappropriate drug”. For 852 problems with only clinical causes (n=4.847) there was an intervention at the drug level (18%). Interventions on the level of the patient took place in 87% of these problems. About 80% of the DRPs due to an inappropriate timing of administration dose too low or too high, were totally solved. 43 % of the problems due to a drug interaction were not solved. The percentage of totally solved problems was the highest for dermatologicals (82%) and for systemic anti-infectives (80%), and lowest for drugs with ATC-code B (65%) and N (63%).
Conclusion The analysis of the prescription prior to delivery of the medicines appears necessary. DRPs due to an ‘inappropriate timing of administration’ or an ‘inappropriate dose’ are more likely to be totally solved. The active intervention of the pharmacist indicates that the pharmacist contributes to the optimization of drug therapy with potentially an increase in the quality of life of the patient and a reduction in the cost of healthcare.

39. A cross-sectional study to assess Slovenian community pharmacists’ counselling ensuring patients’ knowledge about their prescription medicines

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Background Patients, who are on multiple medicines, are likely to experience drug-related problems. Good pharmacy counselling improves patient knowledge and their use of medicines thus minimizing the possibility of drug-related problems. The level of counselling when dispensing prescription medicines in Slovenia is unknown.
Purpose To assess patient knowledge about prescription medicines they are taking and to identify patient view of how much community pharmacists’ counselling contributed to their

knowledge.
Method A cross-sectional survey was conducted to obtain information about patient knowledge, pharmacists' counselling at patient last visit of a pharmacy and physician/pharmacist provision of information during their treatment. A questionnaire was designed from pharmacy counselling literature to serve as an interview guide. 400 patients picking up a prescription medicine were structurally interviewed upon leaving one of the 20 randomly chosen Slovenian pharmacies. Factors which were associated with patient knowledge were evaluated by multiple regression analysis.
Findings Patients were familiar with general information about medicine and its application: medication purpose, dose, application rate, timing, and administration route. On the contrary, knowledge about safety issues, including adverse effects and specific considerations, was limited. Patients' responses were mostly consistent with the Summaries of Product Characteristics. However, 42% of responses to the question about taking medicine with meals were incorrect. Pharmacists routinely discussed the following counselling elements: medication purpose, dose, application rate, and timing of medication (in 72 %, 89 %, 89 %, and 77 % of cases, respectively) at patient last visit of a pharmacy. Other information was rarely offered. Most patients (82 % - 99 % depending on the counselling element) felt their physician and pharmacist adequately informed them about medicines in the past, except for information about adverse effects (52 %) and medicine considerations (57 %). Patients with new prescriptions received significantly more counselling and obtained adequate labelling in comparison to patients with regular or refill prescriptions. Factors which were associated with patient knowledge were physician/pharmacist adequate provision of information and patient age.
Conclusion Patients know basic information about administration of their prescription medicines, but lack knowledge about medication safety.

40. Patients' knowledge and attitude towards therapeutic reference pricing system in Slovenia

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Background Therapeutic reference pricing (TRP) system is a reimbursement policy that sets a maximum allowable cost covered by public funds for a group of medicines. Implementation of TRP system in Slovenia for proton pump inhibitors in 2013 and for angiotensin-converting enzyme inhibitors and lipid-lowering medicines in 2014 should represent a significant challenge to patients as well as to health care workers, including pharmacists.
Purpose To assess patients' knowledge and attitude towards therapeutic reference pricing system.
Method A representative sample of 676 patients that were prescribed at least one medicine from the three therapeutic groups established in the Slovenian health care practice was surveyed about knowledge and attitudes towards TRP system. The survey was carried out in 40 community pharmacies in Slovenia with the help of the pharmacists who fulfilled the first part of the questionnaire in the presence of patients. The second part of the questionnaire was fulfilled by patients at home and returned by a prepaid mail. The survey was conducted in May and June 2014.
Findings Out of the 676 patients who fulfilled the first part, 475 (70 %) patients also accomplished the second part of the questionnaire. On average, only half of the patients

understood the statements evaluating patients' knowledge about TRP system. Of particular concern are elderly, patients with worse health condition, less educated, retired and patients with lower income that had less knowledge about the TRP system. Patients were not homogenous in their view about the cost containment effectiveness of the TRP system, the necessity for the implementation of the TRP system in the Slovenian practice, and the potential savings that could be used in order to establish a better access to medicines. Approximately 80 % of patients perceived TRP system as an unnecessary burden that reduces the confidence in the Slovenian health care system. Slovenian patients were reluctant to medicine substitution within TRP system, while almost half of the patients co-paid for their medicine. Enforcement of new therapeutic groups, therefore, represents a special challenge. This should also take into account that patients are willing to pay € 10.4 for a three-month treatment, while the average co-payment observed in the study was already approaching this number and reached € 6.92.
Conclusion The results of the present study indicate that the implementation of the TRP system and potential upgrades in the future represent a significant challenge for patients.

41. Prevalence of potential drug-drug interactions in Slovenia in 2013

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Background Percentage of population exposed to potential drug-drug interactions varies widely among studies and can be as high as 40 %. Exposure to potential drug-drug interactions is associated with increased risk of adverse effects and use of medical resources, including hospitalizations.
Purpose The aim of the study was to evaluate the prevalence of potential drug-drug interactions in outpatient setting in Slovenia.
Method In this cross-sectional study, health claims data on prescription drugs obtained from the Health insurance institute of Slovenia were analysed to determine the prevalence of potential drug-drug interactions in Slovenia in 2013. A potential drug-drug interaction was defined as dispensing of two interacting drugs to one patient on the same day. The reference source of interactions was the Lexicomp Online drug interactions database. Analysis evaluated the prevalence of potential interactions for the 100 most often prescribed drugs in Slovenia that represent 72.5 % of all prescriptions dispensed in 2013.
Findings There were 15,626,511 prescriptions dispensed in 2013 to 1,344,023 persons receiving at least one prescription with the drug of interest. Among these, 524,287 (39.0 %) persons were exposed to at least one potential drug-drug interaction, 57.2 % of which were female. Elderly people aged 65 years and over represented 47.0 % of all persons exposed to at least one potential drug-drug interaction. The average number of different potential drug-drug interactions per person was 4.34 in general and 5.68 among elderly. Among 4,932,839 identified cases of potential drug-drug interactions there were 42,043 (0.9 %) drug-drug combinations that are supposed to be avoided (type X) and 521,933 (10.6 %) drug-drug combinations where therapy modifications should be considered (type D). Number of persons exposed to type X and D interactions were 11,631 (2.1 %) and 170,256 (31.4 % of all exposed to potential interactions), respectively. Drugs most frequently involved in type X potential drug-drug interactions were quetiapine, escitalopram, olanzapine, risperidone and ophthalmic carbonic anhydrase inhibitors. Drugs most frequently involved in type D potential drug-drug interactions were zolpidem, acetylsalicylic acid, calcium carbonate, tramadol and diclofenac.

Conclusion The study shows that 25.5 % of the Slovenian population (2,059,114) is exposed to potential drug-drug interactions, of which 39.2 % are of type X and D. If only 1 % of type X and D potential interactions result in adverse effects, approximately 2000 people would experience clinically significant outcomes each year.

43. Development and validation of an algorithm to manage drug interactions with risk of QTc-prolongation in a community pharmacy

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Background More than 170 drugs of different therapeutic classes are linked with a prolongation of the QTc-interval, which in rare cases can lead to Torsade de Pointes and sudden cardiac death. The risk is especially high in patients with other risks factors for QTc-prolongation or when two or more QTc-prolonging drugs are combined. At the moment, there are no clear guidelines available for community pharmacists to deal with this risk.
Purpose The purpose of this study is to develop and validate a decision support system for community pharmacists to manage drug interactions with risk of QTc-prolongation, taking patient characteristics into account.
Method The development of the algorithm is based on information available in the literature and on opinions of experts and pharmacists/physicians of the work field. The algorithm will be validated in an epidemiological study in community pharmacies with medication profiles of ±1000 patients who received a QTc-prolonging antibiotic. This will allow to investigate the number of times an action would be suggested by the algorithm and to compare this with current actions performed. Additionally, semi-structured interviews will be performed to analyze the experiences of 20 pharmacists who will test the algorithm.
Findings A first version of the algorithm has been developed. The algorithm starts upon presentation of a new prescription for a QTc-prolonging antibiotic; in the next steps the medication profile of the patient is checked for other QTc-prolonging drugs or pharmacokinetic drug interactions and a QTc-risk score is calculated. The following factors are incorporated in this score: female gender (1 point), age > 65 years (1 point), cardiovascular comorbidities (1 point), diabetes (1 point), thyroid disturbances (1 point), use of anti-arrhythmic drugs (4 points), use of potassium-lowering diuretics (3 points), smoking (1 point), alcohol abuse (1 point) and obesity (1 point). A risk score of 5 or higher is considered as a relevant risk for QTc-prolongation. Based on the combination of both factors, a certain action is suggested (to contact the prescribing physician or to warn the patient). In some cases, an alternative antibiotic is recommended.
Conclusion An algorithm to help community pharmacists to deal with drug interactions with risk of QTc-prolongation, taking the specific characteristics of the patients into account, has been developed. The algorithm will be validated over the next months. In future studies, efforts will be taken to train pharmacists to use this algorithm and to implement it in clinical practice.

What stage are pharmacists at with the implementation of the schedule? Some figures, motivation and hurdles

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Background In Belgium, the medication schedule is the tool for exchanging medication data between different healthcare providers (first and second line). It is also important when preparing the medication or in emergencies (e.g. emergency admittance). The pharmacist plays a crucial role because (s)he is the healthcare provider with the most complete view of the medication taken by the patient.
Purpose To ascertain the degree of implementation of the medication schedule in the pharmacy. The question of motivation and to pinpoint obstacles.
Method The survey was conducted amongst the customers of the KAVA tarification unit. Based on the answer to the question 'Which profile best describes your pharmacy team?', we catalogued the degree of implementation in 3 categories: novices, starters and experts. Depending on the profile chosen, the pharmacy team was given a coloured envelope containing a motivating message, a survey that goes with it and a competition form.
Findings 601 Pharmacies were polled. Only two pharmacies decided not to participate in the survey. The novices made up 43.7% of all respondents. They see the need to produce schedules but, in most cases, don't know how to implement it in the pharmacy. The starters (44.6%) have already produced one or more schedules in the pharmacy and see it as a key part of pharmaceutical care. Their challenge is to keep the existing schedules up to date. 1 in 5 pharmacists was asked by a GP or a patient to prepare a medication schedule. As for the experts (11.6%), the medication schedule was seen as a real eye-opener. Consequently, this group has already taken the step towards an (exhaustive) medication review.
Conclusion The pharmacist is the best placed healthcare provider to prepare medication schedules. Over 55% of all the surveyed pharmacists are already engaged in it. However, they expressed the need for good software support and payment for this pharmaceutical care initiative. In order to get hard figures on the degree of implementation in Flanders, the Network of Flemish Pharmacists (VAN) will repeat this survey in 2015.

45. Therapeutic consumption for improved performance. Is there a risk?

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Background Although there have been reports on the use of medicines, food supplements and foods for performance enhancement, little is known about the prevalence, off-label uses pattern and associated risks in Portugal. Continued use of these lifestyle drugs can lead to physical and psychological dependence, and present severe interactions with other drugs and alcohol, thus representing an opportunity for pharmaceutical counselling and guidance.
Purpose The aim of this research was to characterize pharmacological and natural therapeutic consumption for physical, intellectual and social performance amongst youngsters.
Method A national survey with non-proportional quota sampling was used. Focus groups (10 sessions; total n=57) were conducted previously and a questionnaire (n=1483) applied to university students (70%) and to workers with no higher studies (30%) between 18-29 y.o. Statistics (IBM-SPSS-21.0) considered a 95% confidence interval and results are expressed as % of responses. Ethics committee approval was obtained.
Findings Therapeutic consumption for enhanced performance was reported by 71.9% of those inquired. Medicines (36.9%), food supplements (33.7%) and foods (29.4%) were

equally consumed. Risk perception (in a scale 1-5) was higher for drugs (ranging between 2.9 and 4.09) and lower for natural products (2.37-3.44), but undervalued by users since consumption is sporadic. Amongst medicine consumers, psychotropic drugs were by far the most used (76.5%), represented mainly by anxiolytics (53.6% for the herbal medicine or food supplement valerian and 16.8% for alprazolam) and the anti-depressant fluoxetine (3,5%). Reported off-label uses take advantage of the indirect effects resulting from anxiety/depression control (e.g. better response to daily professional requirements). Foods and food supplements were classified according to their alleged function. Energizing drinks represent 39.9% of the total consumption of these products, followed by memory or concentration enhancers (25.3%). 52% of the food supplements consumed were sold in pharmacies strengthening the idea that these are frontier products and contributing to the potential confusion between medicines and food supplements.
Conclusion The prevalence of therapeutic consumption among youngsters, especially of herbal psychotropics and energizing drinks, was high. However, our study does not validate the current thought that smart drugs' consumption (such as metilfenidate, modafinil and fluoxetine) is, at least in Portugal, generalized amongst youngsters. The study clearly demonstrates that legal boundaries between medicines, food supplements and foods are tenuous, and that natural and pharmacological consumption is intertwined. Adequate legislation is mandatory so that pharmacists can play a role in informed counselling of lifestyle drug users and in preventing health hazards related to their use. FCT (PTDC/CS-SOC/118073/2010).

46. Potentially inappropriate medication in nursing homes: application of the Beers criteria
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Background The elderly population is frequently polymedicated, including with potentially inappropriate medications (PIM). The use of explicit criteria can play an important role in the identification of areas for pharmaceutical interventions.
Purpose This study aimed to characterize and to quantify the occurrence of PIM detected during medication review, in a sample of institutionalized elderly patients.
Method A descriptive cross-sectional study was undertaken in 4 invited nursing homes in the region of Lisboa e Vale do Tejo (n=2) and in Alentejo (n=2). Patients aged ≥65 and using ≥5 medicines were included in the study and their medication was evaluated by a team of pharmacists and a physician using three different tools. This paper presents results obtained using the most recent version of the Beers criteria (American Geriatrics Society, 2012). Data were analyzed using univariate and bivariate descriptive statistics ($\chi 2$, Spearman, One-way ANOVA, Mann-Whitney U and Kruskal-Wallis), considering a significance level of 5%. The study was ethically approved.
Findings The sample included 161 individuals, with a mean age of 84.7 years (SD=6.35), 68.9% of which were female. A total of 401 PIM were identified through the application of the Beers criteria. The vast majority of the sample (85.1%) presented at least one PIM independent of diagnosis (PIM-ID), and 42.1% had one or more PIM dependent of diagnosis (PIM-DD). The drugs most commonly detected as PIM were benzodiazepines, followed by antipsychotics and first-generation antihistamines. Nearly half of the sample (42.1%) taking PIM were patients with history of fractures. There were significant differences in the number

of PIM-DD detected, amongst nursing homes (p=0.002). The location of the nursing home, however, had no impact on the distribution of PIM-ID. The number of PIM was neither influenced by the patients' socio-demographic characteristics, nor by the number of comorbidities, but directly correlated, although weakly, with the number of medicines prescribed (Pearson r=0.241; p=0.002).
Conclusion The application of the Beers criteria in an elderly sample enabled the identification of a considerable number of PIM. The most commonly detected drugs as PIM can lead to falls and fractures and nearly half of the sample with PIM were patients with history of fractures. Therefore this specific aspect of geriatric patient care should be more carefully addressed. The development of pharmaceutical competencies for the care of geriatric patients may constitute the basis for future pharmaceutical intervention opportunities with unquestionable benefit for patient safety.

47. Identification of Drug Related Problems in a sample of Portuguese nursing homes
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Background The numerous comorbidities associated with ageing often lead to treatment with multiple drugs. Pharmacist-led medication review of polymedicated patients may play an important role in the detection of Drug Related Problems (DRP), thus contributing to their prevention or solution.
Purpose To determine the prevalence of real and potential DRP in polymedicated elderly residing in nursing homes; to describe the nature of DRP.
Method A multicentered randomized controlled trial was undertaken in 3 nursing homes. Eligible patients were elderly (≥65 y.o.) and polymedicated (≥5 medicines). Patients were randomly allocated to intervention (IG) and control (CG) groups. Clinical and therapeutic data were collected from clinical records and analyzed for DRP in both groups by a trainee pharmacist and reviewed by a team involving clinical pharmacists and a physician. DRP were classified according to the II Granada Consensus, considering: necessity (untreated condition-DRP 1; unnecessary medicine-DRP 2), effectiveness (non-quantitative-DRP 3; quantitative-DRP 4), and safety (non-quantitative-DRP 5; quantitative-DRP 6). Registered negative outcomes were used to classify the DRP as potential or real. The intervention consisted on the prioritization of DRP and report of those clinically relevant detected in the intervention group to prescribers and nurses, with the suggestion of therapy changes. Ethics approval was obtained. Uni and bivariate statistics were used, considering a confidence interval of 95% (IBM SPSS 21.0).
Findings The sample included 126 elderly (nIG=63; nCG=63) and 1332 medicines were analyzed. An overall of 2109 DRP were identified: 1030 in the IG and 1079 in the CG (MDIG=13.5;MDCG=16.0;p=0,252). Real DRP occurred in 31.75% of the intervention group (n=29), the most frequent being DRP 4 (n=18; 40.0%), followed by DRP 6 (n=6; 13.3%). Potential DRP were detected in 100% of the intervention group (n=1001), the most frequent being DRP 5 (n=385; 18.7%), followed by DRP 2 (n=277; 13.4%). Amongst the 1030 DRP identified, 584 (56.7%) were worth reporting to prescribers and 113 (11.0%) to nurses administering the medication. DRP reported to prescribers covered all types of DRP, whilst only DRP 3 were reported to nurses.
Conclusion Pharmacist-led medication review proved useful in identifying DRP in elderly polymedicated patients. Information on the acceptance rate of pharmacist's reports will be

presented at the conference. The current absence of such information constitutes a limitation as it may indicate that there is a need to develop stronger bonds between healthcare providers involved, so that this information flows naturally.

56. Evaluation of influenza vaccination services in a community pharmacy in Lisbon, Portugal

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Background Influenza is an acute infectious respiratory disease responsible for outbreaks annually affecting 5-20% of the population. The administration of vaccines is recommended as a preventive measure to avoid complications in susceptible individuals, such as the elderly, diabetic and asthmatic, to name a few. The recognition of the pharmacist's role in this context led to the inclusion of the service in the law (2007) and its classification as an advanced service extending the concept of pharmaceutical care.
Purpose To estimate the seasonal flu vaccine coverage in the population served by an urban pharmacy (and to characterize the evolution) and the proportion of the population resorting to vaccination against influenza using the pharmacy service.
Method A retrospective study was undertaken using the pharmacy records from 2009 till November of 2014. The theoretical population used corresponded to the pharmacy legal capitation (3500 inhabitants). The sample consisted of all patients that resorted to the pharmacy, in the study period, to purchase the influenza vaccine and/or to have it administered. Data was analysed using univariate statistics in IBM SPSS v.22.0.
Findings Flu vaccines sales decreased by 43.3% from 2009 to November of 2014, the decline being most substantial from the season 2011/2012 to 2012/2013 (-32.3%). Since the beginning of the flu season of 2014/2015, the pharmacy has sold 319 influenza vaccines, corresponding to 9.1% of the theoretical population covered by the pharmacy. The demand for administration of influenza vaccines increased sharply from 2008 till 2011. In 2012, there was an abrupt decrease (-28.96%), consequence of a free vaccination measure for the elderly in public health care facilities imposed that year. The elderly corresponded, in all years, to the majority of patients vaccinated in the pharmacy (> 65%), but their proportion also decreased in 2013 (-7% from 2012 to 2013). From 2013 to the current year, an increase of 13.3% in the administration of flu vaccines was observed in this pharmacy. At the moment, the pharmacy has administered 205 influenza vaccines, corresponding to 5.86% of the theoretical population.
Conclusion In the current flu season, this pharmacy has increased the number of pharmacists with specific training for vaccines administration and implemented a more extensive schedule of administration in order to make this pharmaceutical service more accessible. Some measures implemented by the government can be a barrier to this service as they affect the equity of care.

49. Supporting self-management of type 2 diabetes: is there a role for the community pharmacist

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Background Background: Community pharmacists are uniquely placed to deliver a range of

services to support clients with type 2 diabetes (T2D). However successful uptake of new services depends on consumers' willingness to access these. An understanding of consumer perspectives is thus pivotal to designing appropriate services and to developing strategies to promote uptake. To address this gap, we recently developed and validated a measure to quantify consumers' attitude to pharmacist diabetes services.1 However, to explore consumers' experiences and opinions in greater depth, we conducted a follow-up qualitative study.
Purpose 1) to investigate consumer self-management practices and experiences of health services including pharmacy to identify potential unmet needs in disease management support and 2) to explore consumer preferences for a T2D support model to be delivered in Australian community pharmacies.
Method A focus group study was conducted in Sydney, Australia between 21 August and 17 September 2013. Participants were members of the Australian Diabetes Council and recruited through a survey on medication use in T2D. Each focus group was recorded, transcribed and thematically analysed. Focus groups were continued until saturation was reached.
Findings : Five focus groups with a total of 32 T2D consumers were conducted. A wide diversity in both diabetes self-management practices among T2D consumers as well as experiences of receiving community pharmacy services were identified. Although unmet needs were not overtly expressed, participants' self-management practices suggested some gaps in understanding, and some degree of non-adherence to aspects of lifestyle and medication and self-monitoring regimens signalling a need for additional monitoring, motivational support and education. Although consumers generally had positive views about pharmacists' services, many had very limited experience of any enhanced diabetes support services. As a result, many consumers perceived that the main role of pharmacists in diabetes care should centre on medication administration, with some enhancements to support adherence and continuity of supply. Consumers identified several potential barriers to an enhanced role in diabetes care including time constraints; a perceived lack of knowledge and skills and interest by pharmacists.
Conclusion Given the unmet needs in diabetes self-management, opportunities exist for pharmacists to become more involved in diabetes care. The challenge is for pharmacists to upgrade their diabetes knowledge and skills, organise their workflow and become proactive in promoting their capacity to deliver enhanced diabetes care support.
Ref.: Krass I, Costa D, Dhippayom T. Development and validation of the Attitudes to Pharmacist Services for Diabetes Scale (APSDS). Res Social Adm Pharm 2014;pii: S1551-7411(14)00063-1.

48. The impact of education process for ability to self-measurement of blood pressure among patients with diagnosed hypertension. (jdymek@cm-uj.krakow.pl)
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Background Self-control plays an important role in the treatment of hypertension. The self-measurement of blood pressure (SMBP) is useful in therapy process only when the SMBP is made correctly and in accordance with guidelines. Lack of patient's skills in SMBP techniques or interpretation of its results limits clinical usefulness of the obtained results.
Purpose The aim of the study was to estimate the effect of educational process on quality and precision of SMBP made by patients at selected public pharmacies, Health Care Centres

and doctor's offices, with attention paid to the effect of personalised written information (leaflet) used in the education process.
Method Patients with diagnosed hypertension made two SMBP a day using semi-automated sphygmomanometers (RossmaxAI95CA). Measurements were performed for 20 days, after 10 days patients were educated by pharmacist. All SMBP was observed - directly (by the investigator) and indirectly (by recording with a digital camera). Each individual SMBP was analyzed by two independent researchers. We assessed the 20 parameters, which create the correct measurement among them were correct posture, appropriate number of repetition and proper recording of the results. The patients knowledge about the self-measurement were also assessed at the beginning and the end of the study.
Findings We obtained the results of 14 patients, which means the 1038 recorded SMBP in total. In the SMBP the mean value per patients was 12 points before education (range: 8.5 to 15.6). The worst results obtained before educational meeting was 6 points, while after education it was 13. None of SMBP before education was not obtained 20 point. Average number of points after education was 17.3. Significant improvement concerns: rest time before the measurement, the correct application of the cuff, the correct position at the table. In the knowledge tests at the beginning of the study patients obtained 3.9 point per 10. They usually did not know how many measurement should be done daily, if they should use the right or left hand to made SMBP, what is the minimum gap between the coffee drink and the SMBP.
Conclusion Results of the study showed that education has an positive impact on abilities and behavior during the SMBP. It indicated also the need for re-education process in order to increase and consolidate new skills and correcting new errors.

52. Intervention program for hypertensive patients in community pharmacy
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Background Based on evidences, poor hypertension control is caused by various factors, patient and medication related. By their involvement in screening and monitoring programs, pharmacists have an important role in supporting hypertensive patients to achieve the treatment goals.
Purpose To explore the influence of pharmacist's specific interventions (through frequent monitoring, treatment follow-up, prevention of disease progression or delay the onset of complications, and lifestyle changing measures implementation) on hypertensive patients' blood pressure (BP) levels. To create electronic patient data sheets for documenting relevant demographic and medical information, as well as pharmacist's recommendations.
Method Interventional study with controlled group, carried out between July 2007 and December 2009 and comprised of 4 stages (patient screening, pre-intervention monitoring, intervention and post-intervention monitoring). The selected patients, based on eligibility criteria, were randomly and equally split into control (CG) and intervention groups (IG). Throughout the study, the patients' blood pressure was measured in four chain community pharmacies by a collaborating physician, and the values were recorded on the monitoring sheets. During the intervention stage, IG patients received recommendations concerning lifestyle changes and proper medication administration, while possible drug related problems (DRPs) were notified to the family doctor.
Findings The enrolled patients (112) had BP values monitored throughout all stages of the

study. During the intervention, IG patients had monthly meetings with the pharmacist and received advice on adequate lifestyle changes, education on treatment's importance and consequences of lack of BP control. Preventable DRPs (208) were discovered in IG patients, most of them being addressed by the pharmacist (168), while 40 of them were referred to the family doctor. After the intervention stage, patients from IG had a more consistent decrease in their systolic BP values compared with the patients from CG (-7.4 vs. -2.4 mmHg, $p < 0.001$), as well as on diastolic BP values (-2.4 vs. -0.5 mmHg, $p < 0.001$), relative to baseline. In post-intervention, BP measurements were made in order to get an indication of patients' continuity in taking the treatment and maintaining a healthy lifestyle, especially in IG. As found, only 21 IG patients and 37 CG patients maintained or lowered their BP levels.
Conclusion The results of the study demonstrated that pharmacist's intervention contributed to a significant BP decrease in IG patients, as well as to an improved control in CG patients, by evenly monitoring of their BP levels. Preventable DRPs were referred to family physician or addressed by the pharmacist, through specific recommendations.

53. Point prevalence survey on perioperative antibiotic prophylaxis in a German hospital
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Background An adequate perioperative antibiotic prophylaxis (PAP) has been shown to be an effective measure for preventing surgical site infections. Thus, the correct use of the PAP in terms of indication, selection, timing, dosage and duration is highly relevant.
Purpose The objective of this study was to screen patients with the need for PAP in order to record (1) indications, (2) antimicrobial substances used, (3) time of administration and (4) to draw conclusions regarding the appropriate use of antibiotics within this setting. Our overall aims are: to improve patient safety and to promote implementation of instruments for a rational use of antibiotics.
Method Point prevalence survey on PAP in a German hospital. Interdisciplinary development of a standardized 2-sided data entry form (4 categories; 32 items overall) to determine the use of antibiotics per patient currently or during their stay. Data were collected on 7 random dates (sept, oct 2013) in an acute care hospital with surgical, gastrointestinal and cardiological main departments. Patients from all wards were involved, reviewing their medical records and anaesthesia protocols as far as available. All cases with surgical interventions were discussed with a physician.
Findings Of 269 patients (12 wards) screened, 53% did not receive any antibiotics. Within the antibiotic population, 10% received only PAP for surgery, 29% were prescribed antibiotic therapy as nonsurgical treatment and 8% had both. In 64 procedures PAP was indicated; 89% of those were accomplished; 7 patients failed to receive PAP or documentation was missed. The following drugs were used: 78% cefuroxime, 10% ampicillin/sulbactam, 6% cefuroxime in combination with metronidazole, 4% ceftriaxon, and 2% vancomycin. Generally, the intravenous route is recommended in order to achieve adequate drug levels. PAP should be applied 30 to 60 minutes before incision with the exception of glycopeptides. If surgery lasts < 3 h and no significant blood loss occurs, a single dose of PAP should be preferred over multiple doses. In our study, only 41 % of the antibiotics were administered within 30 to 60 minutes before skin incision. 10 % of prophylaxis were given more than 60 minutes before, 46 % were injected in the time window 0 to 30 minutes.
Conclusion The choice of the antibiotics for PAP was predominantly in accordance with the

hospital-wide guidelines. However, specific programmatic efforts are necessary to ensure the administration of PAP in the optimum time frame. Our study shows the need for continuing efforts to encourage anesthesiologists for the matter.

81. Evaluation of essential pharmacy services and roles of pharmacists in Ukraine

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Background In 2011 the development of the national Good Pharmaceutical Practice (GPP) guidelines in Ukraine was initiated. The joint FIP/WHO guidelines on GPP (2011) are setting the standards on quality of pharmaceutical services is one of the basic document to be adopted.
Purpose To evaluate the current pharmacy practice, pharmaceutical services and roles of pharmacist prerequisites for development and implementation of the national GPP standards in Ukraine based on the Joint FIP/WHO Guideline on GPP
Method We developed an on-line questionnaire that included questions regarding demographic data of the respondent, the structural and process indicators of pharmacy and questions regarding the 4 roles of pharmacists described in the Joint FIP/WHO Guideline on GPP. The invitation for the anonymous on-line survey was sent to all Ukrainian pharmacies (20 637, 100%) using the database of the State Administration of Ukraine on Medicinal Products. We asked for 1 reply per pharmacy, the respondent was supposed to be a pharmacist. The survey was conducted in June 2013. The analysis of the responses was done using SPSS.
Findings The response rate achieved 10,1% , all 27 regions of Ukraine were represented. The majority of respondents were females (81,8%), average work experience 5-10 years (36%), working in private pharmacies (48,8%), located in urban areas (84,4%). The identified essential pharmaceutical services are dispensing and consulting by dispencing, therapeutic substitution (92% pharmacies), consulting of patients with cardiovascular diseases (64% pharmacies – daily practice), contraception and pregnancy testing (55%), health promotion (43%). In the same time but in half of pharmacies (48%) there is no area for healthy lifestyle promotion, 35% of pharmacies do not provide blood preassure measurement and 86% - do not provide weight measurement. Role of management of effective use of medicines is one of the key improvement areas, 38% of pharmacies do not have area for private conversation with the customer, and in 72,7% of pharmacies the customer satisfaction is not measured at all. The continuous professional development (CPD) is the strongest side – 95% of pharmacists take part in the CDP programms regularly, as obligation to renew their license.
Conclusion We identified the essential pharmacy services provided in Ukrainian pharmacists, the actual fulfillment of the roles of pharmacists. These finding build a background for the development of national GPP guidelines as well as for the improvement of CPD programs and licensing requirements for pharmacies.

54. The legal benzodiazepines users – is there a role for community pharmacists in Poland?

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Background The previous part of the study of the benzodiazepines(BZD) and z-drugs usage

scheme based on health documents in community pharmacy in Poland showed that nearly 70% drugs were prescribed for female, among them 90% were ≥45 years old.
Purpose To evaluate the appropriateness and patient's knowledge about the BZD and z-drugs use and to show whether the community pharmacists are able to identify the DRPs during the standard dispensing process. Study is supported by National Science Centre,Poland(DEC-2011/03/D/NZ7/05099).
Method The study has been carried out between March and June 2014.The randomly selected community pharmacist were asked to collect data about the patients attitude and knowledge about the BZD during the standard dispensing process. In the standard dispensing process pharmacists are able to collect the following information: drug name, number of doses dispensed and the physician's specialty. The pharmacists were used a questionnaire, which enabled to collect the additional data as follows: when the BZD were prescribed first time, whether patients is aware of the risk of BZD dependence, does the patient know the indication of BZD.
Findings The pharmacists collect data of 67 BDZ users. The most of them used alprazolam (25%) or zolpidem (25%). Almost 95% of patients took anxiolytics/hypnotics each day, less than 6% of the responders took the drug occasionally ("as needed"). 18 initial-users were identified (27% of responders). Among the 45 patients, recognized as prolonged users, only 3 were short-term users (less than 3 month of therapy duration). The duration of usage was more than 3 years in 27 responders. Only 10 patients who chronically use BDZ/zolpidem have ever tried to discontinue. Among all long-term users (42 patients) only three was ever in the past advice about discontinuation by their GP. The most frequently identified DRP (PCNE classification version 6.2.) was effect of drug treatment not optimal (P1.2) and adverse drug event (P2.1). The most common causes were duration of treatment to long (C4.2,drug overused (C5.3) and drug abused (C5.6).
Conclusion The study showed the simple modification of the dispensing procedures provides additional information, which could be useful in DRP identification. Our study showed that pharmacists in Poland should dedicate more attention to BZD users during the dispensing process, because most of them could be at risk for BZD abuse.

55. Dose Administration Aid system in the elderly: testing student active participation in the implementation of a new service for community pharmacy

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Background Adherence in the polymedicated elderly is recognised to be suboptimal. The use of dose administration aid (DAA) systems has been proposed as an effective tool to reduce unintentional non-adherence, especially effective when combined with other enhanced services.
Purpose To test the ability of students to be actively involved in the implementation of a new service for community pharmacy; to explore the acceptability of the system by pharmacies; to judge the competency of pharmacists in delivering advanced services.
Method A quasi-experimental design was used; patients were recruited by MPharm students, during the last semester of the course, as trainees in community pharmacies distributed throughout mainland Portugal. Eligible patients were those aged ≥65, taking ≥ 5 medicines and living alone or with a partner within the same age category. Two different

interventions were considered: adherence (compulsory) and medication review (optional). The first consisted of the delivery of their medicines using a DAA system. Adherence was measured using an adapted version of the MMAS for Portugal [(intervention group (IG) and control group (CG)] and pill-count (intervention only). Intermediate medication review was proposed and pharmacists were instructed to use Beers criteria for Portugal to detect potentially inappropriate medicines (PIM) and/or II Granada Consensus to detect DRP.
Findings Twenty one students participated in patient recruitment and most students recruited 2 patients {1-9}. A total of 50 patients joined the study (nIG=28; nCG=22). From these, adherence data could only be collected at 3 months for 20 patients. Nonetheless, results indicate that the use of the DAA system had a positive impact on patients' adherence measured by the MMAS as the CG obtained the same score at baseline and at 3 months (p=0.357), whilst the IG improved significantly their score (Median-IGt0=33.5 (SD=4.33); Median-IGt3=40.5 (SD=3.89); p=0.017). Pill-count at 1 month (IG) was very high (98.7%), leading to little effect observed at 3 months (99.5%; p=0.128). Only 4 pharmacies reviewed medication for 10 patients (IG, 50.0%), leading to 4 reports due to DRP detected and 1 due to PIM detected, all of which were accepted. PIM were detected in 15 patients of all included by the research team (29.6%).
Conclusion Results indicate that while pharmacists were motivated to use the DAA system, they showed little confidence with medication review. Additional sessions are needed to implement this service. Patients rated their satisfaction with the service provided by students as very high (>90%) and indicated they would like to have it available at their pharmacy even at a cost (42.9%) or if for free (42.9%).

57. The non-dispensing clinical pharmacists' needs in a clinical pharmacy training program
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Background The Pharmacotherapy Optimization through Integration of a Non-dispensing pharmacist in primary care Team (POINT) study is a research project in the Netherlands on the implementation of a non-dispensing pharmacist in general practice to improve effective, efficient & safe pharmaceutical care. To support the pharmacists in their new role, a clinical pharmacy training program (CPTP) has been developed.
Purpose The aim of this study is to explore the pharmacists' needs in their CPTP to enable them to practice as a clinical pharmacist in a general practice as a member of the healthcare team.
Method Within this qualitative study all ten participating non-dispensing clinical pharmacists and four involved teachers were interviewed, three months after the start of the CPTP. An additional group interview with eight potential patients was conducted to include patients' perspective. The semi-structured interviews were audio taped, transcribed verbatim and coded. The transcriptions were entered into qualitative data analysis software, NVivo V9.0 (QRS International). From the theoretical framework of the course design a code list was developed from which an overall theme and subthemes were identified in the transcriptions.
Findings The translation of knowledge is identified as an essential need of the CPTP. This overall theme is achieved in the CPTP by 1) patient centered teaching instead of focusing on the medication 2) training of communication skills to obtain clinical information from the

patient and to discuss and execute a pharmaceutical care plan 3) Learning to establish pragmatic pharmaceutical care,instead of following protocols and guidelines, and learning to be reflective on and responsible for this care. A safe learning environment, a community of practice and a flexible working environment is required to achieve translation of knowledge.
Conclusion The non-dispensing pharmacists' needs have changed due to the transition from community pharmacy to general practice. The CPTP provides support and structure and stimulates translation of knowledge, which enables them to practice as a clinical pharmacist in a general practice as a member of the healthcare team. The non-dispensing clinical pharmacists and teachers mention the following essential elements of the CPTP: case presentations, communication training, clinical reasoning, improving reflective practice and peer to peer learning.

58. Potential drug-related problems associated with vitamin K antagonists in hospitalized patients

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Background Vitamin K antagonists (VKA) are frequently implicated in drug-related problems (DRP) in hospitalized patients. Warfarin has been identified as one of the four drugs causing the 67% of hospitalizations in patients older than 65 years and interactions with VKA have been related to almost half of the cases of cerebral haemorrhages. Consequently, treatment with VKA should be monitored to avoid its effects on morbidity and mortality.
Purpose -To analyse the types of potential VKA-DRP identified trough the daily monitoring of all hospital prescriptions by clinical pharmacists. -To determine the factors related to the presence of potential VKA-DRP in hospitalized patients.
Method Prospective study carried out in a tertiary hospital during 2012. Patients with prescribed VKA were included and potential DRP concerning VKA were identified and classified according to the Pharmaceutical Care Network Europe (PCNE) classification by clinical pharmacists. Data collected: demographics (gender, age), Charlson index (CI), admitting department (surgical or medical), type of admission (urgent or scheduled) and types of VKA-DRP. Characteristics of patients with and without potential VKA-DRP were compared. Statistical analysis: Chi-square or Fisher's exact test for categorical variables, Student's T-test or Mann-Whitney U test for quantitative variables.
Findings Hospitalized patients with VKA treatment: 635 (2.7%). Of them, 78 (12.3%) presented a potential VKA-DRP. Types of DRP: -VKA-drug interaction: 53 (67.9%) (49 (92.4%) induction/inhibition; 3 (5.7%) antagonism); 1 (1.9%) alteration of bioavailability -Altered international normalized ratio: 12 (15.4%) -Related to an incorrect use of our Computerized Physician Order Entry: 9 (11.5%) -Duplication of therapeutic group: 2 (2.6%) -Inappropriate frequency of administration: 1 (1.3%) -Inappropriate dosage form: 1 (1.3%) -Admitted patients with VKA-DRP versus those without VKA-DRP: men: 44 (56.4%) vs. 300 (53.9%), p=0.672; age (SD): 74.4 (10.9) vs. 74.5 (11.4) years, p=0.964; CI 2: 22/42 (52.4%) vs. 269/532 (50.6%), p= 0.762; surgical admission 8/78 (10.3%) vs. 52/530 (9.8%), p=0.902; urgent admission 39/42 (92.9%) vs. 474/532 (89.1%), p=0.606.
Conclusion -Around 0.3% of total hospitalized patients and more than 10% of those treated with VKA presented a DRP related with this drug group. The frequency of these DRP was not related to any demographic or clinical patients' characteristics. -Interactions with VKA were

the most frequent DRP. -A multidisciplinary approach to the use of VKA in order to increase their safety seems essential to avoid important clinical consequences.

59. Medication adherence and health outcomes among asthma patients in Slovenia

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Background Non-adherence among asthma patients has been shown to range between 30% and 70% and is supposed to be associated with poor health outcomes and increased health care costs.
Purpose The aim of the study was to assess medication adherence in asthma patients in Slovenia and to evaluate the association of medication adherence with health outcomes, defined as asthma control status and quality of life.
Method Patients with asthma above 12 years old that were dispensed at least one medicine for asthma management were invited to participate in the study by pharmacists in 15 community pharmacies evenly distributed across Slovenia. The study was conducted in September 2014 for a period of one month and is part of a broader study evaluating health outcomes of asthma patients. The survey included 8-item Morisky Medication Adherence Scale questionnaire (MMAS-8), Asthma Control Test (ACT), Saint George Respiratory Questionnaire (SGRQ) and patient socio-demographic data: sex, age, educational level, smoking status, living/not living alone, possession of asthma self-management plan, information regarding asthma pharmacotherapy, number of medicines for treatment of comorbidities, and information regarding asthma exacerbations during the past year. The association between potential predictors and asthma control or quality of life was estimated using multiple linear regression in IBM SPSS Statistics version 22.
Findings 165 patients accepted the invitation to participate in the study with the following characteristics: mean age 55.4 (± 20.0) years, 61% were males, the majority (89%) were prescribed inhalation glucocorticosteroids, almost all received therapy for other diseases (mean number of medicines 2.66, range 0-18), exacerbations in the past year were experienced by 55% of the patients. Significant change in quality of life could be seen at MMAS scores of 6. Seventy six percent of all patients scored >6 points and were therefore regarded as adherent. Mean ACT scores and SGRQ scores were 19.6 (range 7-25) and 33.9 (range 0-95.3), respectively. Medication adherence was found to be associated with better asthma control and quality of life. ACT scores and SGRQ scores of the adherent patients were 2.3 points higher ($p=0.041$) and 12.3 points lower ($p=0.006$) respectively, in comparison to the scores of the non-adherent patients. Additionally, higher number of medicines for treatment of comorbidities was found to be statistically significantly related to poorer quality of life ($p<0.0005$).
Conclusion Approximately one quarter of asthma patients can be regarded as non-adherent. The study also shows that medication non-adherence is associated with poorer asthma control and worse quality of life.

61. Contribution to creating a Good Practice Guideline for home visits to isolated polypharmacy elderly

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Background The complexity of the medication scheme in the elderly, in conjunction with isolation and possible physical and cognitive alterations, make this population particularly vulnerable to the medication non-adherence. Pharmacists may assist these patients and promote the rational use of medicines through domiciliary programs.
Purpose To identify the elements required for an appropriate medication self-management in elderly in order to create a Good Practice Guideline for home visits to isolated polypharmacy elderly.
Method Patients with 65 or more years old, living alone and integrating a social support network of the Coimbra City Council concerning the provision of meals on weekends were invited to participate in this study. After signing the informed consent, a comprehensive ad-hoc designed questionnaire was applied to each senior at their home. In order to assess the cognitive function three questions of the Mini Mental State Examination (MMSE) were included, and to evaluate the medication adherence the Portuguese version of the Morisky-Green Questionnaire was used. Data about the way of preserving their medication, the memory strategies they used, and their ability to use pill-boxes were evaluated during the home visit.
Findings From a total of 37 seniors visited, 34 agreed to participate. Only 61% of participant could answer correctly the three questions of the MMSE, 62% were considered non-adherents although 87% knew when to take their medication, and 85% reported using different memory strategies, such as associating the administration with a specific activity, pill-boxes, or the location of the medicine at home. The number of medicines hold at home raged from 2 to 41, with a mean of 14 medicines not currently used stored at home. Regarding the preservation conditions, 47% of medicines were exposed to humidity, 47% to heat, and 8% to excessive light; 25% of the medicines lacked patient information leaflet, 15% were without the secondary packaging, and 11% were expired.
Conclusion There is a potential to improve medication adherence in the elderly living isolated in their homes by defining pharmaceutical care interventions to overcome the identified barriers. A Good Practice Guideline to assist pharmacists in their visits to isolated polypharmacy elderly was created.

75. Evaluation of multidisciplinary health care program for patients using warfarin at primary health care settings, Amnatcharoen province, Thailand(pkittiboonyakun@gmail.com)
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Background Proper heath care services are needed for patients using warfarin. This is particularly true for those living in the rural area and/or having problems with the access to the nearest hospital when having adverse drug events involving warfarin.
Purpose The objective of this study was to evaluate the multidisciplinary health care program developed specifically for patients using warfarin and receiving services at primary health care settings (Health Promotion Sub-District Hospitals) in Pathumratwongsa District, Amnatcharoen Province, Thailand by using the concepts of CIPP model.
Method Qualitative method were used. Nine primary health care settings in Pathumratwongsa District participated in the study. In-depth interviews were conducted among key stakeholders including nine health care administers, nine health volunteers and

16 patients using warfarin and one caregiver of patient using warfarin. A focus group was conducted among pharmacists (3) and nurses (7). Patients were categorized into two groups: well-controlled (INR 2-3) and poorly-controlled (INR out of range 2-3) groups. Four main factors of CIPP model (context, input, process and product) were taken into account for analytical process using the principles of content analysis. The study was approved by the Mahasarakham University ethics committee.
Findings Four main themes (context, input, process and product) were described in detail for each group of participants interviewed. The key results showed that health care administers and health care professionals had positive opinion of the benefit of this health care program. They agreed that having health volunteers visiting at patients' homes could help to improve access to health care services and to provide close monitoring for patients potentially having adverse drug reactions. Health volunteers perceived that their work directly contributed to community access to the network of the multidisciplinary team working collaboratively at the main district hospital. All patients using warfarin had positive impression of the program. They had better knowledge and understanding of the safe use of warfarin as well as effective means to modify their lifestyles to improve the outcome of warfarin medication. However, there were some major barriers of implementing this health care program including limited staff support, continuity of the work process, and monitoring and evaluating the results.
Conclusion In conclusion, using CIPP model for evaluating the multidisciplinary health care program for patients using warfarin can effectively facilitate the improvement of the program in all aspects (context, input, process and product). The concept of self-management of warfarin use was also importantly sustainable safe and effective use of warfarin.

62. No time for pharmaceutical care?

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Background Like many of his colleagues abroad, the Belgian pharmacist finds him(her)self in a transitional phase between compounding/dispensing and (pharmaceutical) care. However, pharmacists in public pharmacies often complain not having enough time to implement this pharmaceutical care.
Purpose The purpose of this study is to measure the time that is used by each member of the team for his or her activities in the pharmacy. This way we can deduce how much time is spend by the team on pharmaceutical care in the Belgian public pharmacy.
Method The activity was measured in 23 public pharmacies using the multi-dimensional work sampling method. Three dimensions (activity, location and contact) were defined and were registered per team member by trained observers at fixed intervals during five different working days using a software application.
Findings 12278 Observations were registered. These show that on average 18% of the time in the pharmacies is dedicated to pharmaceutical care. Administrative and logistic tasks take up 35% of the time. Analyzing the time spend by each team member (i.e. pharmacist, pharmacy assistant, …) shows that pharmacists spend 21% of their time on pharmaceutical care and pharmacy assistants spend 16% of their time on pharmaceutical care.
Conclusion Dedicating 18% of the time to (pharmaceutical) care can be considered low if pharmacists want to become caregivers. By using a software application that also registers

other activities per team member and per location, pharmacists should be able to optimize the work organization in the pharmacy so that more time can be spend on pharmaceutical care activities.

64. Attitudes of patients and pharmacists about the community pharmacy service of prevention and treatment of osteoporosis (ljtasic@pharmacy.bg.ac.rs)

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Background Osteoporosis is a chronic progressive disease. Preventive measures against osteoporosis should be emphasized during the period of youth. Therefore, health care professionals could play an important role in prevention and identification of osteoporosis risk factors.

Purpose To present the attitudes of patients and pharmacists about the service provided during the Project "Women's Health – prevention and treatment of osteoporosis" which were conducted in collaboration among community pharmacists and rheumatologists.

Method The Project was implemented in 5 community pharmacies during the 2013 year. Pharmacies were selected according to distance from the health clinics and all of them belonged to the public Pharmacy chain of Nis (covered population about 300.000). The five team of pharmacist and rheumatologist offered specific service "counseling on prevention and osteoporosis medications", once a month during the six months period. Rheumatologists from the Institute for Treatment and Rehabilitation "Niska Banja" and pharmacists engaged in this Project attended the course about osteoporosis and counseling service/communications skills at the beginning of the project. Project was coordinated by University of Belgrade (Faculty of Pharmacy and School of Medicine). Attitudes of patients and pharmacists (providers of the service) about the service were examined using the questionnaire (the Likert scale).

Findings During the project, 131 women received the service in prevention and osteoporosis treatment from team of pharmacists and rheumatologist (22.14% of women had osteoporosis). Almost all women (92%) agreed that the provided service could be useful for prevention and treatment of osteoporosis and 97% of women found that this service should be implemented in all pharmacies. Pharmacists' attitude about the contribution of this service was predominantly positive (56.25% positive, 6.25% negative and 37.50% neither positive nor negative). Pharmacists scored their work load during the project/service delivery as light (18.75%), average (62.50%) and heavy (18.75%).

Conclusion There is a need to establish services in community pharmacies which will include specific counseling about osteoporosis. Services that include collaboration of physicians and pharmacists can contribute to better disease prevention of patients.

65. What makes a "good" medication plan? Identification of factors that influence the quality of medication plans

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Background In the area of patient safety, an actual medication plan is identified as one of the most important factors for patient safety. In Germany, in 2012 a draft for a standardized medication plan was developed. Information is lacking, which data is essential on a medication plan.
Purpose We assessed which categories from the draft are already included in patient plans and can we derive quality indicators for medication plans, based on numbers of discrepancies and their correlation with the predefined categories. Aspects to improve patient-safety through the medication plan shall be studied.
Method In this cross-sectional study participants of the Apo-AMTS-course conducted intermediate medication reviews in community pharmacies including assessements of the patient`s medication lists with an evaluation sheet. 500 data sets were analyzed. Data evaluated were availability of plans, authors, number of discrepancies, presence of general information (patient name, DOB, issue date), information about the listed drugs (brand name, generic name, strength, formulation, dosage, intake directions, indication). Results were given in percentage of availability of each category. Correlation and statistical analysis for the different indicators was calculated with SPSS.
Findings 399 from 500 patients owned a medication plan. No plan included all suggested categories from the standardized medication plan. Most of the plans listed the patient name (78.4%). 61.8% showed a mix of brand names and generic names, mostly seen on lists written by patients or relatives. Generic names were more often missed on plans provided by general practitioners (GP). No plan had both parameters generally integrated. The number of discrepancies increases when only the brand name is listed. Dosage was listed completely for 65.4% and strength for 65.7% of all medication listed. In only 19.8% of cases, the formulation of the drug was filled in and only 5% were matched with an indication. Only 3.3% of all drugs had intake directions. The mean age of the plans was 4.5 month with plans from medicinal specialist being significantly older than plans from other authors ($p=0.012$). A significant linear correlation could be detected for age of the plans and Rx-discrepancies but not for OTC-discrepancies. The mean number of discrepancies increases by 50%-75% if a plan is 3 month and older.
Conclusion Older medication plans frequently contain high numbers of discrepancies. Using a medication plan for improvement of patient safety adding formulation, intake directions and formulations is generally to consider. Pharmacists are therefore in an optimal position to improve medication safety through the medication plan.

66. Adherence to Polypharmacy in Patients with Opioid Substitution Therapy using ELectronics (APPOSTEL): A Study Design

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Background A study design. Electronic dispensers for polypharmacy aim to assist patients with their medication management and to improve medication adherence. Opioid dependent patients with substitution therapy often exhibit multiple risk factors for non-adherence. The increase of both the age and associated comorbidities in this population demand for innovative solutions to optimize medication management compatible with substitution therapy.
Purpose We suppose that a novel medication supply model with an automated electronic

medication dispenser could simultaneously assist opioid dependent patients with their medication and objectively improve their adherence.
Method We will conduct a prospective multiple-baseline single-subject design trial with patients from an outpatient addiction clinic (OAC) in Basel, Switzerland. Eligible patients will receive all daily medication in unit-dose pouches from an automated electronic dispenser located at their home, except from opioid substitution treatment that will still be provided from the clinic as directly observed therapy. Baseline electronic adherence data will be obtained from the dispenser without providing intake reminders during the first 1 up to 12 weeks. During the following intervention phase, visual and audible signals will remind patients of medication intakes (12 weeks). Self-reported adherence, clinical and humanistic outcomes, and satisfaction with the novel supply model will be obtained from patient records, questionnaires, and patient interviews. Data will be collected at inclusion, during dispenser refills (baseline and intervention phase), and during follow-up (36 weeks after inclusion).
Findings Hypothesis: Patients will accept and be satisfied with the novel supply model and compared to baseline, they will show higher adherence and non inferior clinical and humanistic outcomes.
Conclusion Analyses: Electronic adherence data will be examined using the two-standard deviation band method to compare baseline and intervention phase. Quantitative outcomes with more than 8 observations will be analysed using C statistic. Qualitative date will be analysed contextually.

Oral versus intramuscular vitamin B12 substitution: The patient's preference
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Background Many drugs can be applied either by oral or parenteral therapy. The preferred route of administration is often predetermined by indication, affordable dose and therapeutic setting. Substitution of vitamin B12 (VB12) deficient outpatients is one example where the equivalent efficacy of oral and intramuscular application offers both opportunities. In a study with electronically monitored adherence for the oral treatment we showed equivalent efficacy of oral and intramuscular application (unpublished data). Within the same study we investigated the patient's preference.
Purpose Our objective was to assess patient's preferences for oral and intramuscular (i.m.) VB12 therapy and associated factors.
Method Prospective randomized unblinded parallel group trial. Newly identified VB12 deficient patients were recruited through their general practitioner. Before block randomization to oral or i.m. therapy patients were asked to fill in a questionnaire about their preference for the two therapy options. The questionnaire consisted of items with 3 answer options and 9 items with 10-point Likert Scales focusing on factors influencing preference, subdivided in a) and b) to answer each item for both therapy options. After treatment with either oral daily or i.m. weekly VB12 for 28 days, patients were again asked to fill in the questionnaire.
Findings A total of 24 patients completed the study (mean age 51.8 ±19.7 years; 66.7 % women). Before randomization, 10 patients (41.7%) preferred the oral route of administration, 6 patients (25%) preferred the i.m. treatment and 8 (33.3%) had no preference. If therapy was lifelong, 18 (75%), 2 (8.3%) and 4 (16.7) patients would prefer oral

therapy, i.m. therapy or had no preference, respectively. Patients rated “expected pain”, “disgust”, “time consumption” and “financial aspect” of the i.m. route significantly higher and “effectiveness” significantly lower of the oral route. Patients who preferred the oral route showed that important factors for choosing this route were “expected pain”, “disgust” and “inconvenience” to the i.m. route. Changes in patient’s preference after treatment were observed in 1/14 of patients receiving oral therapy and 5/10 of patients of the i.m. group.
Conclusion As expected, at initiation of therapy patient’s preference for the oral therapy was higher. However, there are patients preferring i.m. therapy and after one month of therapy the patient’s preferences changed in both groups. Hence, it is not only important to consider patients’ preference and evaluate the risk of non-adherence, but follow-up of an initiated therapy is essential to end up with a final shared decision.

86. Readability assessment of medicine safety briefing notes targeted to the patients

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Background Our Agency of Medicines publishes relevant information on the safety of medicinal products periodically on its website. From January 2013, it also publishes online information on the way available to citizens for the reporting of suspected adverse drug reactions (ADRs) together with a web-based reporting form.
Purpose To determine the degree of readability and number of words (length) of the information on the safety of medicinal products (briefing notes) targeted to both citizens and healthcare professionals and since the entry into force of the new regulatory measures adopted for safety reasons.
Method All the safety briefing notes targeted to citizens and healthcare professionals and published on our Agency website were selected since January 2013 (entry into force the new Pharmacovigilance regulatory) until November 2014. One of them was the announcement of the initiation of the procedure in our Agency web-portal, where for the first time citizens could report suspected ADRs. The notes were downloaded from Agency website, and their readability was evaluated using SMOG and Szigriszt's perspicuity (PERS) indices. The total word of briefing notes (length) was also measured. Both readability and length were compared according to the recipient (citizens vs. healthcare professionals).
Findings There were statistically significant differences (p-value < 0.05) between the readability scores of safety briefing notes of both groups (citizens vs. healthcare professionals) according to the readability indices used, where the readability of the information targeted to the patients was above the readability of the corresponding information targeted to health professionals (SMOG medians: 21.0 and 22.5, respectively). Moreover, PERS, used to analyse the results qualitatively, showed that both groups of briefing notes were difficult to understand (15 < PERS < 35). On the other hand, regarding the note length, no significant differences (p-value > 0.05) were observed in both groups, where the median turned out to be higher in the first group (citizens = 706, range: 630-731; healthcare professionals = 675, range: 600-838).
Conclusion The briefing notes related to ADRs, and targeted to citizens, should be easy to read, in order to they can contribute to minimize the risks associated with the use of medicines. It would be recommended to improve the readability degree of the safety briefing notes and taking into account the length of them.

69. The optimization of medication use of Belgian nursing home residents based on a multidisciplinary collaboration (the Come-On study). Study protocol

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Background Ageing has become a worldwide reality and presents new challenges for the health care system. Research has shown that the prescription of potentially inappropriate medications is highly prevalent in older people, especially in the nursing home setting. The use of potentially inappropriate medications is associated with adverse drug events, hospitalizations, mortality and healthcare costs.
Purpose The Come-On study aims to evaluate the effect of a complex, multifaceted intervention, including multidisciplinary case conferences, on the appropriateness of use of medicines for older people in Belgian nursing homes.
Method A multicentre cluster controlled trial has been set up in 60 Belgian nursing homes (29 intervention; 31 control). In each of these nursing homes, 35 residents will be selected for participation. Three-monthly multidisciplinary case conferences between nurse, general practitioner and pharmacist will be conducted on a resident-level. Case conferences will facilitate a structured medication review in order to optimize the resident's medication profile. Education and training, both through e-learning and on-site sessions, will be provided to participating health care professionals. Furthermore, local concertation will be held on the level of the nursing home to discuss and generate consensus on the appropriate use of two specific medication classes, and stimulate collaboration. As primary outcome the number of potentially inappropriate medications and potentially prescription omissions per resident will be compared between groups. Secondary outcomes will relate to process and outcomes of case conferences, cost, facilitators and barriers for implementation of the intervention.
Findings The study protocol, based on input from a pilot study performed in four nursing homes, has been approved by the Ethical Committee of UZ Leuven and by the Privacy Commission. The content for the e-learning platform and on-site trainings has been built, and a webapplication to support multidisciplinary case conferences and data collection has been developed. Patient recruitment started in November 2015; data collection will start from January 2015 onwards.
Conclusion This abstracts describes the protocol for a multicentre cluster controlled trial that will be conducted in 60 nursing homes in Belgium from January 2015 onwards.

70. The effectiveness of pharmaceutical care in diabetes in Poland - Markov model

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Background The idea of pharmaceutical care has not became a standard pharmaceutical practice in Poland. According to the pharmacists, one of the reasons in lack of an additional remuneration. The reimbursement of pharmaceutical care from public budget is possible only when its efficacy and cost-effectiveness is proven.
Purpose To assess effectiveness of pharmaceutical care in diabetes in Poland.
Method Alternatives compared are: pharmaceutical care (PC) and standard medical care

(SMC). The effects of SMC were assessed in 3 outpatient clinics. PC was conducted based on Strand and Hepler definition of pharmaceutical care by community pharmacists. The inclusion criteria were: adults with diabetes at least 3 months after first prescription for antidiabetic medicine, able to communicate with others, with full legal capacity. Patients with myocardial infarction or stroke during 6 months before inclusion, depression, schizophrenia, dialysis, after transplantation of organs or tissues, visually impaired, drugs, alcohol or medicines dependent were excluded. The effectiveness analysis is based on Markov model. Time horizon is 360 days and the cycle length - 30 days. The model consists of 3 health states: proper blood glucose (according to Polish guidelines), improper blood glucose and death.
Findings The probabilities of transitions are derived from data on 24 transitions of 7 PC patients and 94 transitions of 31 SMC patients. Mean age of PC patients was 63 years (SD 10 years, range 49-79), SMC patients - 68 years (SD 11 years, range 38-86). Women consisted of 100% of PC patients and 25,8 % SMC patients. The majority of the parameters reflecting blood glucose level at the baseline were within normal ranges in 5 (71%) of PC patients and 18 (58%) of SMC patients. The probabilities of maintaining proper blood glucose in next cycle is 0,7136 for PC and 0,9221 for SMC. The probabilities of normalizing blood glucose is 0,2997 for PC and 0,1665 for SMC. Probability of death is 0,0010. Cohort modeling indicates that after 12 cycles 50,6% of PC patients would achieve proper blood glucose level, compared to 66,1% of SMC patients.
Conclusion PC for patients with diabetes in Polish health care system may lead to the higher probability of improving blood glucose compared to SMC. After 12 months more SMC than PC patients would achieve proper blood glucose levels.

71. Preventable medication errors involving Look-Alike/Sound-Alike: training the future pharmacists from direct experience

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Background Confusion caused by Look-Alike/Sound-Alike (LASA) medicine names and Look-Alike (LA) packaging is a well-known source of medication error (ME) all over the world. Training future health care professionals is an important strategy towards preventing ME.
Purpose To analyse reporting of preventable medication errors involving LASA medicine names and LA packaging by pharmacy students in order to highlight the importance of their future role in error prevention and patient safety.
Method The ME were detected and reported by pharmacy students in the course “Clinical Pharmacy and Pharmaceutical Care” (fourth year, second semester of the pharmacy syllabus), from their own and direct experience (at home, friends, etc.). The reporting method was voluntary through the Medication Safety Reporting Program (SEGURMED) available at our website. This program allows analyzing, classifying and recording ME. The reporting period was conducted over three months (March-May 2014).
Findings A total of 193 students sent 505 reports. After that, these were analysed by the teaching staff resulting in 375 accepted and 87 refused (1.9 accepted errors per student). From the total accepted errors, 128 (34.1%) involved unsafe medicines naming and packaging. All information was analysed and classified into four separate categories: 1. Look-Alike (LA) packaging and same drug (66.4%), 2. LA packaging but different drug (23.4%), 3. LASA brand name (8.6%) and 4. LASA drug name (2.3%). In addition, within each category,

subgroups were made, pointing out that in the second category it is possible to find a set of LASA drug names and LA packaging at the same time (n=7, 5.6%). Taking into consideration the category of the error, most of them (n=125, 96.7%) were considered potential ME (category A). Just 3 out of 128 (2.3%) were considered ME (concretely, dispensing errors related to LA packaging that occurred in community pharmacy), although these did not cause harm to the patient (category B). We must note that one of this ME observed happened while using an electronic prescription order, which is considered one of the strategies used for avoiding these kinds of errors.
Conclusion LA packaging was found to be the main contributing factor for potential ME found by pharmacy students. In order to bring attention to this situation it is important to establish a clear classification and point out the complexity of this problem. Working with future pharmacists from their direct experience will help establish new approaches to aid in abolishing preventable ME in our country.

73. Design of an implementation study related to an interdisciplinary ART adherence program for HIV patients in community pharmacies

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Background The community pharmacy of the Department of ambulatory care & community medicine (Lausanne, Switzerland) implemented an interdisciplinary antiretroviral therapy (ART) adherence program for HIV patients in 2004. This program aims to support and to reinforce medication adherence through a multifactorial and interdisciplinary intervention. Motivational interviewing is combined with medication adherence electronic measure (MEMSTM) and feedback. The positive impact of this program has already been demonstrated (Krummenacher et al., Aids Care 2011) but the capacity to implement it in other community pharmacies and medical settings has never been assessed.
Purpose The aim of this study is to assess the capacity of the infectious diseases service of a public hospital and community pharmacies of Neuchâtel area (Switzerland) to implement an interdisciplinary ART adherence program based on the Lausanne collaborative model.
Method Quantitative and qualitative analysis of an implementation process through a multicentric and prospective study will be conducted following the Re-AIM model (www.re-aim.org). This evaluation framework is used to assess the impact of an intervention on health care and to transfer an intervention into the current health system. The five dimensions of the Re-AIM are: Reach, Effectiveness, Adoption, Implementation and Maintenance. Quantitative variables will be collected through patients' medical records, and prospectively during medical and adherence assessments at the hospital and at the pharmacy (SISPhaTM Software). Qualitative variables related to implementation will be collected during separated focus groups with doctors and nurses on the one hand and with pharmacists on the other. Patient's perception will also be collected during individual interviews. Data will be continuously collected and implementation will be assessed at 12 and 24 months.
Findings Implementation started in November 2014. One physician, 1 nurse and 5

pharmacists agreed to participate. So far, 5 patients accepted the inclusion and 5 refused. Collected quantitative data are divided into 3 categories: patient-related (sociodemographic and clinical data, electronic adherence data, length of follow-up), program adoption-related (number of pharmacists, physicians and nurses involved) and program reach-related (number of patients who accepted and refused). Qualitative analysis will bring information about feasibility and utility of the program, adoption, motivation, identified barriers and facilitators, satisfaction, interdisciplinary collaboration, collaboration with patients and proposals for improvement.
Conclusion Transfer of this program just started from an academic to a regional setting. The implementation study should facilitate firstly adoption and secondly dissemination. Key steps as well as necessary changes to implement this program further within pharmacy and medical setting will be highlighted.

80. Opinion of pharmacy practitioners regarding pharmacists' competencies in Republic of Moldova

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Background A competent and capable practitioner workforce is an essential pre-requisite for development and implementation of pharmaceutical care programs. A global competency framework is a useful mapping tool for pharmacy practice evaluation, developed by FIP education initiatives.
Purpose The aim of this study is to identify core professional competencies in opinion of community pharmacists in Republic of Moldova by using the Global Competency Framework, divided into four separate clusters: pharmaceutical public health, pharmaceutical care, organisation and management, and professional/personal competencies.
Method This study has been performed in Republic of Moldova among community pharmacists, which are acting as tutors for V-th year pharmacy students during their experiential training. Questionnaire has been translated into Romanian and distributed to 100 community pharmacists. 66 valid questionnaires have been returned. Pharmacists were asked to think about ther own pharmaceutical practice and then rate each individual behavioural statement as highly relevant, relevant, with low relevance or not relevant to their practice. For analysis we scored "highly relevant" with 4 and "not relevant" with 1. Data have been analysed according to gender, age, studies and experience.
Findings Most of proposed competencies (60%) have been ranked as relevant, having an average score 3.0-3.5. The dispersion of average values is between 2.47±1.12 and 3.68±0.50. Only 6% of proposed competencies had a score higher then 3.5, coresponding to the "highly relevant". Top- 5 most relevant competencies are: 1.Accurately dispense medicines for prescribed and/or minor ailments and monitor the dispense (re-checking the medicines); 2.Counsel population on the safe and rational use of medicines and devices (including the selection, use, contraindications, storage, and side effects of non-prescription and prescription medicines); 3.Ensure appropriate medicines, route, time, dose, documentation, action, form and response for individual patients; 4. Appropriately select medicines formulation and concentration for minor ailments (e.g. diarrhoea, constipation, cough, hay fever, insect bites, etc.); 5. Advise patients on proper storage conditions of the medicines and ensure that medicines are stored appropriately (e.g. humidity, temperature, expiry date, etc.). There were some differencies in appreciation observed according to the gender, age

and experience of respondents.
Conclusion There were no significant differencies observed in competencies ranking, most of them being evaluated as relevant. Slightly higher scores were obtained for competencies in pharmaceutical public health (3.35±0.632), less in pharmaceutical care (3.17±0.771), and same for organisation and management (3.11±0.802), and professional/personal competencies (3.11 ± 0.81).

77. Pharmacist's perceptions regarding the documentation of interventions

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Background In daily practice, pharmacists are not used to routinely document their interventions in a standardised way. A classification could help to record interventions and data generated provide a pool for epidemiological studies. To increase patient safety while transferring between care settings and to ease seamless care, the structure of the classification system should be similar across the settings but provide different levels of details, and should be integrable into patient file. To suit the community pharmacy setting, we adapted an existing classification system for pharmaceutical interventions, which stemmed from the GSASA system implemented in several Swiss hospitals. Both systems were previously validated and reached a good inter-rater reliability. To further develop and implement it successfully, we will invite pharmacists to participate in a focus group.
Purpose To obtain the experiences and perceptions of practicing pharmacists, to further develop an existing classification system for pharmaceutical interventions for community pharmacy, and to determine barriers and facilitators of its implementation.
Method We will conduct a focus group interview with practicing and experienced pharmacists, working in different institutions and highly interested in the topic. As preparation, the participants will document a standard case using the classification system to become acquainted with. The first question 'Why is it important to document what we are doing?' will allow the panellists to express two to three reasons on paper sheets, which will be gathered and discussed. The core content, structure, and order of the system will be discussed to evaluate the level of agreement. The panellists will have the possibility to accept, reject or revise each item. We will determine the different levels of detail of the tool in a discussion round. The closing question will assess the barriers and facilitators for a successful implementation. The interview will be recorded on audio tape, anonymously transcribed, and analysed using thematic analysis.
Findings Out of 11 pharmacists invited, 9 will join the focus group scheduled on 2nd Dec. 2014. The panellists will consist of six community pharmacists (three of them developed or previously used a documentation system), and three clinical pharmacists who routinely worked with a classification system in their hospital. The results of the interview will be presented at the conference.
Conclusion The data will enable to improve the classification system, resulting in a final version which will be tested in a cross-sectional study with community pharmacists. The perceptions of the panelists should enhance a successful implementation of the system.

78. Healthcare professionals' contribution on spontaneous reports of adverse reactions following immunization from 2009 to 2011 in Portugal

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Background The study of adverse reactions following vaccination (ARFV) is a valuable tool for the maintenance of credibility of the government vaccination programs, to establish measures for risks minimization and for public health protection. It´s well known that healthcare professionals can be of main importance on the spontaneous reporting of adverse drug reactions (ADR).
Purpose The aim of this study was to characterize the different contribution of healthcare professionals on the pharmacovigilance of vaccine by analyzing the spontaneous reports of ARFV registered in the database of the National Pharmacovigilance System (NPS) of Portuguese Authority Agency (Infarmed), from 2009 to 2011.
Method Observational descriptive and cross sectional study, based on the Individual Case Safety Report (ICSR) submitted to the NPS. The ICSR were selected based on the reception date, between January 1st of 2009 and December 31st of 2011, with at least, one vaccine (J07) as suspected medicinal products, classified by Anatomic Therapeutical Chemical (ATC).
Findings During the studied period, 702 reports of ARFV were analyzed out of 6,622 of total reports, from those, 42% were received during the last 2 months of 2009, due the massive vaccination campaign against the H1N1 influenza virus. The nurses were responsible for 56% (393) of the ICSR, physicians for 31% (218) and pharmacist for 7% (52). Only 2% reports were sent by consumers indirectly through marketing authorization holders, as by this time, patients weren't allowed to independently report ADR in Portugal. Physicians were responsible for 44% of the serious cases, nurses for 41% and pharmacists for 6%. The pharmacists reported the highest proportion of unexpected ARFV (62%), followed by physicians (38%) and nurses (21%). These results are not in accordance with the profile of ADR reports by healthcare professionals during the same period of time, as for all of the ICSR, pharmacists reported 23.3% (1,541) of ADR, while physicians and nurses notified 20.6% (1,364) and 8.6%(570) respectively.
Conclusion The study showed that, during the studied period, in Portugal physicians and nurses were the main reporters of ARFV unlike what happens with other medicines. Nurses were the main notifiers of ARFV understandable, as vaccines are mostly administered at Healthcare Centers by nurses.

79. The pharmacist's role in drug safety monitoring in the elderly, in the south of Portugal, from 2009 to 2013

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Background Aging is associated with physiological, pharmacokinetics and pharmacodynamics changes as well as to co-morbidities, polypharmacy and the risk of potentially inappropriate medication prescription making this population more vulnerable to the emergence of adverse drug reactions (ADR). Spontaneous reporting allows safety drug monitoring through their life cycle, in large populations and in the real world, enabling detection of safety early signs in spite underreporting, according to Mittmann et al that about 94% of serious ADR are not reported to the authorities. Generally, among health professionals, the pharmacists are not the main reporters, particularly in Portugal. During the studied period Pharmacists were responsible, in average, for 42% of the ADR reports. However south region of the country, having pharmacists as pharmacovigilance delegates,

presents greater involvement of these health professionals.
Purpose To study pharmacist's suspected adverse drug reactions reports regarding old population, in the South Region of Portugal, during 2009-2013.
Method Cross sectional study performed in the Pharmacovigilance South Center based on its spontaneous report database concerning suspected ADR occurred in old patients, reported during 2009-2013. A descriptive analysis with EPI INFO 2007 system was done. Medicines were classified by Anatomic Therapeutical Chemical (ATC) and ADR by MedDRA dictionary.
Findings Among 1,236 spontaneous ADR reports, received during the studied period, 425 (34.4%) ADR occurred in old patients were analyzed. Patients' mean age was 74 years with higher frequency of ADR (65.4%) in female. Pharmacists were the main reporters with 81.2% (n=345); being from hospital 50.0% (n=212)) and community pharmacy 44.0% (n=187). The causality assessment between suspected drugs and reported adverse reactions were classified, for 97.2% of cases, as definitive, probable or possible. The ATC groups L (antineoplastic and immunomodulators agents), N (nervous system), C (cardiovascular system), J (general anti-infective for system use) and M (musculoskeletal system) were the most frequent groups related to ADR reports in old patients. Of the reported ADRs, 27.5% (n=117) were severe. "General disorders and administration site conditions", "Skin and subcutaneous tissue disorders", "Gastrointestinal
Conclusion This study showed high frequency of ADR in old patients and allowed a more complete understanding of its profile, leading the conclusion of the need to increase knowledge in this area in order to promote safe and rational use of medicines in this age group. Pharmacists, by patient's proximity, can provide a great reinforcement to the Pharmacovigilance system by their place as main reporter in this region of the country. Pharmacovigilance can be an opportunity for the pharmacists to provide a better centered patient's care, to increase medicines knowledge and confidence and, to conquer, through his professional empowerment, a stronger role in the health systems and society.

82. Medication use and drug related problems in elderly: self-reported questionnaire showed good agreement compared with a home visit interview

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Background Clinical medication reviews (CMR) are used to identify and solve drug-related problems (DRPs). Information on actual drug use, user problems and adverse effects can only be obtained by asking patients. Interviewing patients, however, is time-consuming. Alternatively, patient information needed to conduct a CMR can be obtained by a self-reported questionnaire.
Purpose Comparison of patient information on drug use and DRPs in older patients obtained by means of a structured interview with a self-reported questionnaire.
Method Agreement study involving patients from nine GP practices in an urban part of the Netherlands. Patients were asked to complete a questionnaire and were interviewed at home. Two target groups aged over 65 years were selected based on information in the Electronic Medical GP Records; I. Polypharmacy patients and II. Patients with ≥1 predefined general geriatric symptoms. A questionnaire was developed aimed to obtain information on actual drug use and DRPs. The results obtained by means of questionnaire and interview,

were compared for actual drug use and DRPs. Observed agreement, sensitivity and specificity were calculated.
Findings Ninety-eight patients participated (response rate 61%). On individual drug level, 85% was identical in questionnaire and interview. Complete list agreement was 41%. On DRP level, questionnaire and interview data corresponded between 70-90%. Total number of reported DRPs was 106 in the questionnaire and 144 for the interview. Sensitivity and specificity was 25-67% and 90% respectively.
Conclusion The self-reported questionnaire showed good agreement compared with the interview. The total number of DRPs identified was limited. Although being highly specific, the questionnaire method was only of moderate sensitivity. Taking these limitations into account, a questionnaire seems a suitable tool that may replace an interview and may increase the feasibility of CMRs in daily practice.

83. In search for efficient implementation methods for first and second delivery consultation: what can be helpful?

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Background Since October 2013 pharmacists in Belgium can receive a fee for a first and a second delivery consultation of inhalation corticosteroids for asthma. Standard conditions were imposed and an internet tool was made to help the pharmacist provide this service. In each province one pharmacist meeting was organized. However, monthly registration data showed poor results for this first and second delivery consultation.
Purpose 1.Detection of problems with implementation of first and second delivery consultation in the case of asthma 2.Development and try out of a patient and pharmacy friendly first step method 3.Evaluation of implementation of the first step method.
Method Detection of problems with the national presented method was done by a group discussion with 25 pharmacists. Participants were responsible pharmacists of sublocal pharmacy regions, united in the Region Council of KOVAG. Problems were listed and prioritized. Based on the results we developed a new first step pharmacy procedure and an extensive implementation strategy closely to the pharmacist.
Findings Main barriers for the national presented method were: 1)pharmacists had to follow the complete procedure of consultation in a software program with too many pages and clicks, 2)different steps were unusual in pharmacy: 2a)a written informed consent, 2b)signing different papers at one single visit, 2c)one of the conditions was to perform the service on a fixed appointment, 3)fee too low, 4)number of patients too low, 5)pharmacists were already used to give a lot of information. Now they were asked to do the same but with much more administration. In a new first step method we tried to develop a pharmacy and patient friendly approach. We stayed close to the guidelines for reimbursement, without excessive information. A thin paper dossier was worked out instead of working with an extensive specific software program to guide the pharmacist. Specific patient friendly education material was selected and developed to facilitate the conversation. A pilot project was performed and resulted in some adaptations. Implementation has started in six sublocal regions. 135 pharmacies were reached by local meetings. We will keep in touch by mails, newsletter and chat sessions with the participants. Evaluation of implementation will be made in January 2015.
Conclusion It is clear that a new health insurance regulation (including fee for the pharmacist), an extensive tool and one meeting are not sufficient to reach implementation.

In this project has been studied if specific first step methods and extensive coaching of the pharmacist may lead to better results.

84. Pharmaceutical practice in Republic of Belarus – a pilot study

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Background Republic of Belarus belongs to countries where the concept of pharmaceutical care (Helper&Strand, 1989) was introduced to pharmacist just recently. Even after the adoption of the national GPP guidelines in 2008, pharmacy education and practice was focused on handling and process of dispensing of medicines in the pharmacy rather than providing patient with advice or recommendation.
Purpose To evaluate the current structure and processes of pharmacy practice in Republic of Belarus to find the ways for implementation of patient-centered pharmaceutical care. We also investigated the beliefs and barriers of pharmacists for improvement of their daily practice to provide better care.
Method The developed questionnaire included questions regarding demographic data of the respondent, the structural and process indicators of pharmacy, possible ways/barriers for implementation of patient-centered care; sufficiency of provided to the patient information for efficient and safe drug use. The questionnaire was sent to all registered pharmacists (174, 100%) in Gomel, second largest city in Belarus (population 522 549). The survey was conducted in June-July 2014. The analysis of the responses was done using SPSS.
Findings We received 59 fully filled questionnaires (response rate 34%). The majority of pharmacists (80%) believe that the information provided to patient is not sufficient for effective and safe use of prescription drugs. As main barriers are lack of time of the pharmacist (45%), lack of collaboration with patient (36%) and insufficient professional knowledge (31%). Regarding the OTC-medicines, 42% of pharmacists believe that the provided information is insufficient, the main barriers are the same, but the ranking is different: lack of collaboration with patient (25%), lack of time of the pharmacist (24%) and insufficient professional knowledge (17%). As major areas for improvement pharmacists identified the professional development (72%) and need in regulations update (46%), need of commitment of pharmacy owners (38%). The majority of pharmacies in Republic of Belarus are in state ownership, so pharmacists are really restricted in their activities.
Conclusion In this pilot study we validated the questionnaire that proved to be specific, acceptable, and feasible for this kind of studies. We also identified the tendencies and major barriers for the implementation of patient-centered care. The next step would be a representative study, discussion with regulatory bodies and adoption of guidelines for provision of pharmaceutical care.

Oral Communications

11. Development and validation of the SCOPE (Severity Categorization for Pharmaceutical Evaluation) criteria to evaluate the severity of drug related problems in chronic kidney disease

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Background Drug-related problems (DRPs) are prevalent among chronic kidney disease (CKD) patients followed-up in predialysis clinics. However, the information about DRPs severity remains scarce.
Purpose The aim of this study is to develop and validate a set of criteria to evaluate the severity of DRPs in CKD patients from a community pharmacy perspective and to assess the prevalence of DRPs by severity level in CKD patients.
Method The criteria were adapted from an existing tool considering interventions required to manage DRPs in community pharmacy. Ten community pharmacists reviewed the criteria. A modified RAND appropriateness process involving community pharmacists (n=4), hospital pharmacists (n=4), family physicians (n=2), and nephrologists (n=2) was conducted. The severity of 487 DRPs identified among 168 patients was rated independently by two evaluators and by one evaluator on two occasions. Kappa reliability coefficients were computed. Severity as assessed by implicit judgment and the SCOPE criteria were compared.
Findings Three severity categories were defined (mild, moderate and severe), each including two levels (I to VI). At each level, specific interventions required to manage DRPs in community pharmacy were listed. Test-retest reliability coefficient by level was 0.85 (95% Confidence interval: 0.79 to 0.90), and inter-rater reliability coefficient was 0.77 (0.72 to 0.82). Test-retest coefficient by category was 0.89 (0.84 to 0.95), and inter-rater coefficient was 0.90 (0.86 to 0.94). Higher level of SCOPE severity was associated with more severe DRP as rated by implicit judgment ($p<0.05$).
Conclusion The SCOPE criteria constitute an innovative research tool to evaluate the severity of DRPs in community pharmacy. The criteria are reliable and are correlated with clinical implicit judgment.

21. Clinical risk management in patients with (risk of) impaired renal function in community pharmacies in the Netherlands

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Background In the Netherlands, there are approximately 1 million people with impaired renal function. Impaired renal function affects the pharmacokinetics of renally excreted drugs. Early detection of impaired renal function may prevent drug related problems caused by renally excreted drugs. However, to date, renal function of patients using such high risk medication is not systematically monitored and data on renal function are frequently not exchanged between different care providers. The community pharmacist could play an important role in clinical risk management of patients with impaired renal function.
Purpose To assess the availability of information on renal function in patients using high risk

medication in Dutch community pharmacies. Furthermore, we aimed to gain more insight in the current procedures regarding clinical risk management of patient using renally excreted drugs.
Method Per pharmacy, 25 adult patients aged ≥65 years using at least one high risk drugs (based on guidelines from the Royal Dutch Association of Pharmacists) were randomly selected from the pharmacy information system. For these patients, both dispensing records and renal function (when available) were collected. Furthermore, per pharmacy the current procedures regarding clinical risk management of patient using renally excreted drugs were collected. Data collection was performed by Master students who followed an internship in one of the participating community pharmacies.
Findings In 24 pharmacies data were collected for 497 patients. Information on renal function was available for 431 patients (86.7%): for 124 patients this information was known in the pharmacy and for 307 patients renal function could be obtained from the GP. Pharmacies used different cut-offs for renal impairment: 14 pharmacies used MDRD<60 ml/min, 7 pharmacies used MDRD<50 ml/min, 1 pharmacy used MDRD<45 ml/min and 2 pharmacies indicated not to use a specific cut-off (the pharmacy led the physician define the presence of renal impairment). Several pharmacies had agreements with the general practitioner to exchange information on renal function, most pharmacies and GPs exchange this information per telephone (72%).
Conclusion Information on renal function is often unknown in the community pharmacy, whilst for most patients this information is available (at the GP). With this study we aimed to increase awareness of pharmacists on the importance of systematically collecting information on renal function and support them in identification of patients with (risk of) impaired renal function.

24. ProFiL, a training-and-communication network program in nephrology for community pharmacists: impact on knowledge, clinical competences, quality of medication use and clinical variables (lyne.lalonde@umontreal.ca)

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Background The quality of medication use is not always optimal in chronic kidney disease (CKD) patients, with a high prevalence of drug-related problems (DRPs) in dialysis and pre-dialysis patients.
Purpose Evaluate the impacts of ProFiL, a training-and-communication network program in nephrology for community pharmacists, on pharmacists' knowledge and clinical competences, as well as the quality of pharmacotherapy (primary objective) and changes in clinical variables.
Method A multicentre, cluster-randomized controlled trial to compare ProFiL to the usual pharmaceutical care (UC). Eligible patients from six predialysis clinics in Quebec (Canada) have been invited to take part to the study. Eligible patients were adults with moderate (30-59 mL/min/1.73m2) to severe (15-29 ml/min/1.73m2) CKD, able to provide an informed consent, speak and read French or English, and having an eligible pharmacy agreeing to participate. Patients and pharmacist were cluster-randomized in a 2:1 ratio. The randomization was stratified by predialysis clinics and pharmacists workload. ProFiL includes

a 90-minute interactive web-training program and a liaison program with the predialysis clinic. Pharmacists' knowledge and clinical competences were assessed at baseline and after one year. The quality of pharmacotherapy was evaluated during the year prior and after patient's recruitment using the PAIR criteria. Clinical variables at baseline and after one year were documented using predialysis medical charts.
Findings A total of 207 community pharmacies, 494 pharmacists and 442 moderate to severe CKD patients take part to the study. Incremental improvements in knowledge [5.3% (95% confidence interval: 2.2% to 8.4%)] and clinical competences [7.3% (95%CI: 4.1% to 10.6%)] scores were observed among ProFiL, as compared to the UC pharmacists. After a year, the mean number of DRPs went from 2.2 to 1.6 DRPs/patient in the ProFiL group as compared to 1.7 to 1.6 DRPs/patient in UC patients; incremental between-groups reduction of 0.5 DRPs/patient (-0.1 to -1.0). Changes in glomerular filtration rate, systolic and diastolic blood pressure, hemoglobin A1C and LDL-cholesterol did not vary across study groups.
Conclusion After a year, ProFiL had a positive impact on pharmacists' knowledge and clinical competences and contributed to improve the quality of medication use.

42. Depression training for pharmacists significantly improves patients' satisfaction, concerns and feelings about side effects regarding antidepressant therapy

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Background Between 2002 and 2010 the number of daily doses (DDD) of antidepressants dispensed in community pharmacy in Belgium continued to grow, from 171 to 272 million, indicating that pharmacists frequently deliver antidepressants to patients with the opportunity to provide proper medication counselling.
Purpose The objective of the SIMCA-study was to Study the Impact of structured Medication Counselling on patients starting a new treatment with Antidepressants.
Method A clustered RCT was set up in the Surplus Pharmacy chain, with 53 pharmacists in the control group (delivered standard care) and 46 pharmacists in the intervention group (trained to counsel patients with a new prescription for antidepressants). Telephone survey interviews based on validated scales were used to collect data at the start of treatment and after one, three and six months of treatment. Mann-Whitney U tests were used to compare the scores of the different scales, at the different points in time, between intervention and control group.
Findings Significantly more patients, who started treatment with antidepressants for mood disorders and visited an intervention pharmacy were satisfied with the pharmacists ($p=0.015$), and the received information regarding treatment ($p=0.003$) and side-effects ($p=0.014$), compared to patients who visited control pharmacies. Both after one and three months of treatment, significantly fewer patients of intervention pharmacies had concerns about negative effects of antidepressants ($p=0.026$ resp. $p=0.004$) compared to patients of control pharmacies. After three months of treatment significantly more patients of intervention pharmacies had positive feelings about side-effects of antidepressants ($p=0.004$) compared to patients of control pharmacies.
Conclusion The SIMCA-study supports the role of community pharmacists in providing pharmaceutical care towards patients with depression in order to improve multiple humanistic outcomes including patients' satisfaction with the pharmacist and the received

information, patients' concerns about the negative effects and feelings about side-effects of antidepressants.

51. Quality of pharmaceutical care in the Netherlands: the results of five years of quality indicator measurement in Dutch community pharmacies

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Background A comprehensive quality indicator (QI) set was developed and applied to monitor the quality of pharmaceutical care in community pharmacies.
Purpose To describe trends of national scores for QIs measured annually between 2008 and 2012, to analyse changes in pharmaceutical outcome QIs for individual pharmacies between subsequent study years and the impact of a certified quality system hereupon.
Method Data were collected annually from Dutch community pharmacies. QI scores of respondents in 2012 were linked to their corresponding annual scores between 2008 and 2011. Using multivariate linear mixed models changes in the scores for numerical outcome QIs were analysed. Composite annual scores were constructed for QIs with complete information available during the study period.
Findings Data of 1,739 pharmacies (88% of all Dutch community pharmacies) provided data for the set of 76 QIs in 2012. Their scores from earlier data collections were used to analyse changes in 11 QI scores measured for all study years. All scores improved over time, but the change differed significantly across pharmacies. The presence of a certified quality system was positively associated with score improvement of the pharmacy outcome QIs for co-dispensing of protective medication with NSAIDs, nitrates and opioids but not with the decrease in number of coumarin interactions. 4% of Dutch community pharmacies consistently remained above the median of the composite annual scores and one third stayed below across all years.
Conclusion The QI scores were useful to monitor the development of pharmaceutical care in community pharmacies. An operational quality management system seemed beneficial for improvement in pharmacy outcome scores. Within a constantly improving sector it was exceptional for individual pharmacies to consistently achieve a composite QI score above the average.

85. Comprehensibly measuring patients' subjective thoughts, feelings and experiences of living with medicines – the Living with Medicines Questionnaire (LMQ)

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Background Patient reported outcome measures (PROMs) are an important component of healthcare evaluation. The use of multiple medications with complex regimens impacts significantly on quality of life. Qualitative research suggests that PROMs designed to comprehensively assess patients' subjective thoughts, feelings and experiences of living with polypharmacy should probe eight underlying dimensions.(1) A 60 item PROM, the "Living with Medicines Questionnaire" (LMQ) was proposed.(2)

Purpose The aim of this study was to validate the LMQ among respondents who use multiple medicines. Since the factorial structure of the LMQ had not yet been elucidated, the first objective was to perform exploratory factor analysis (EFA). The second objective was to use confirmatory factor analysis (CFA) on data obtained from respondents who resided in another country.

Method : This was a cross-sectional study conducted in two phases. In phase one, the LMQ was administered to a convenience sample of UK respondents, which included community pharmacy users, consumers approached in the general public and patient groups contacted via health websites and social media. EFA was conducted on data obtained from adults using multiple medicines regularly. In phase two, CFA was performed on data obtained by administering the LMQ to a sample of Australians who used multiple medicines, recruited using an online consumer research panel. Indices of fit were used to test the validity of the measurement model. Tests of structural invariance between data from the United Kingdom and Australia were performed

Findings In phase 1, 267 (50%) respondents satisfied the inclusion criteria. During EFA, 12 items with poor loadings or high cross loadings were removed. The final EFA solution included 48 items, explaining 56% of the variation. There were ten domains: Communication with doctor; Communication with pharmacist; Satisfaction; Acceptance; Interference to life; Practical difficulties; Access difficulties; Concerns; Continuity of treatment; and Autonomy to vary regimen. In phase 2, CFA was performed on the data from 528 respondents. Following minor model modifications and the deletion of two items, a satisfactory fit for a hypothesised ten domain model was achieved. The 46-item LMQ had good psychometric properties. Configural invariance between UK and Australian data was observed in that ΔCFI was <0.01.

Conclusion The LMQ shows promise as a comprehensive measure of the impact of living with polypharmacy. These results suggest that multiple medicine-users within the UK tend to employ the same conceptual framework to answer the LMQ items as those from Australia. Further development could see LMQ become a foundation for evidence-based, patient-centred practice.