PHARMACISTS’ ACTIVITIES TO MINIMISE MEDICATION WASTE: AN INTERNATIONAL SURVEY

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Introduction: Medication waste has unwanted economic and environmental effects. Actions to combat waste are warranted. Pharmacists are involved in the distribution of medicines and can play a major role in decreasing medication waste.

Objectives: To gain insights into and quantify pharmacists’ related activities that focus on minimising medication waste in both community and hospital pharmacies of Western countries.

Methods: We conducted a mixed-methods (double staged) cross-sectional study among community and hospital pharmacists working in Western countries, with a ranking of ‘very high’ on the human development index. In the first stage (qualitative stage), pharmacists were approached through pharmacists’ organisations and authors’ personal network who distributed a questionnaire by mail to identify activities taken by pharmacists to minimise waste. Non-responders received two reminders after every two weeks. Answers were thematically analysed to construct a list of activities. In the second stage (quantitative stage) a paper questionnaire was designed to assess (1) patient- and medicine related factors associated with medication waste and (2) the association between patient- and medicine related factors with the possibility for redispensing these returned medicines.

Results: Of the 759 returned medicines that were returned by 279 persons (median grades 1.06-2.07). Medicines dispensed for longer periods were significantly more likely to be returned compared to other medicines (OR 1.48; 1.06-2.07). Medicines dispensed for longer periods had significantly more wasted. For prevention, specific patients and/or medicines to be targeted and attention for redispensing if the package was unopened, undamaged and the time until the expiry date was >6 months. Associations between the patient- and medicine characteristics and the outcomes (waste, possibility for redispensing) were analysed with multivariate logistic regression and expressed as odds ratios with 95% confidence intervals (OR; 95%CI).

Discussion and conclusions: This study emphasizes the complexity of the multi-causes that lie behind medication waste and demonstrated that a large proportion of returned medicines in community pharmacies is wasted. For prevention, specific patients could be targeted and attention for redispensing if the package was unopened, undamaged and the time until the expiry date was >6 months. Associations between the patient- and medicine characteristics and the outcomes (waste, possibility for redispensing) were analysed with multivariate logistic regression and expressed as odds ratios with 95% confidence intervals (OR; 95%CI).
should be paid to the period of time for which medicines are dispensed. Approximately one in five medicines are eligible for redispensing and this could help to prevent waste.

**WASTE OF ORAL ONCOLYTICS AND BIOLOGICALS AMONG USERS WHO DISCONTINUE THERAPY**

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**Introduction:** Oral oncolytics and biological DMARDs (bDMARDs) are costly therapies. An estimated one out of four users stops their therapy early, which may lead to medication waste if medicines are already taken from the pharmacy but left unused. To avoid this waste, the unused medicines that are still of good quality could be redispensed to another patient.

**Objectives:** To examine the proportion of oral oncolytics and bDMARDs users who stop therapy and have medicines left over, the related medicine costs, and the proportion of users with unused medicines that could theoretically be redispensed.

**Methods:** Patients who had stopped using their oral oncolytic or bDMARD, as prescribed by a medical specialist, from November 2015 to March 2016 were identified in a Dutch academic hospital outpatient pharmacy from the electronic pharmacy information system. This system shows the dispensing date, the amount prescribed and the daily dose for each medicine by which a date could be calculated that indicates when the patient would be in need of a refill. Patients receiving no refill of the medicine were selected. Patients were approached by phone and after consenting directly interviewed about the amount of medicines that was left unused including the number of unopened packs. Medicines were defined as suitable for redispensing when contained in unopened packs and not used at all. Costs of leftover medicines were determined using Dutch medicine prices. Data were descriptively analysed.

**Results:** 1483 oral oncolytic users were included of which 29 patients (2%) had stopped therapy and medicines leftover. Of them, 12 patients (<1% of total) had unused packs that were suitable for redispensing, with a total cost of around €29,730. 804 bDMARD users were included of which 19 patients (2.4%) had stopped therapy and medicines leftover. Of them, 12 patients (1.5%) had unused packs that were suitable for redispensing, with a total cost of around €18,900.

**Discussion and conclusions:** Few patients who stop oral oncolytics and bDMARDs therapy have unused medicines leftover. Even less patients, around one per cent, receiving those medicines has medicines that could theoretically be redispensed, but as these are very expensive, nation-wide nationwide, power is not owned, and exertions of power are attempts to control other people’s possibilities to react, behave, or act. These attempts might or might not be successful.

**ADHD, MEDICINE, AND POWER: PERSONAL EXPERIENCES IN A FOUCAUDIAN PERSPECTIVE**

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**Introduction:** Attention-deficit hyperactivity disorder (ADHD) is a disorder describing difficulties in hyperactivity, inattention, and impulsivity. It is very present and much debated in Denmark. According to the philosopher Michel Foucault, power is everywhere and inescapable. Untraditionally, power is not owned, and exertions of power are attempts to control other people’s possibilities to react, behave, or act. These attempts might or might not be successful.

**Objectives:** The aim was to, from a Foucauldian perspective, explore and analyse the beliefs, experiences, and behaviours held and executed by Danish young adults with ADHD in relation to ADHD-medication treatment.

**Methods:** A convenience sampling strategy was applied, including participants 18-29 years who had been prescribed medication for ADHD. Participants were interviewed either individually or in a focus group. A deductive analysis was conducted using concepts by Foucault.

**Results:** A total of ten participants were interviewed whereof seven were women, the mean age was 23.9 years. Three discourses on ADHD were identified: sociological, biopsychosocial, and biomedical, which were falsified, present, and dominant, respectively. Difficulties to get non-pharmacological treatments and easiness to get medication lead to encouragement of medicine treatment, and hence strengthening the dominance of the biomedical discourse. The identified network of power was found to affect the participants and included: The three discourses on ADHD, governmentality of society, the public debate about ADHD in Denmark, external surveillance by doctors; and in the individual: internalisation of the biomedical discourse as truth of ADHD-causality, and objectification of their self. The last resulting in self-monitoring and self-surveillance. Furthermore, medicine was used as control of oneself and to increase efficiency in order to fulfil requirements of the contemporary society. Overall, power was found to both subjectify and objectify ADHD-diagnosis, albeit there was also identification of some resistance to power.

**Discussion and conclusions:** Decision-making on taking ADHD-medicine is complex and networks of power play a part in individuals’ decisions, also on a conscious level. These results show that a wider picture is accessible, that offer a diverse insight into the decision-making on medicine use compared to what on the surface can appear to be the choice of a single person. In addition, this stresses the importance of research within social pharmacy to include analyses that go beyond a traditional view of medication procedures.

“**TO TAKE OR NOT TO TAKE**: FEARS ABOUT ANTIRETROVIRAL THERAPY AMONG PEOPLE LIVING WITH HIV/AIDS IN RUSSIA**

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**Introduction:** The Russian Federation is one of 30 priority countries that UNAIDS has identified as needing focused action in order to scale up access to antiretroviral (ARV) therapy and achieve 80% HIV treatment coverage. Addressing the gap in access to HIV treatment is especially crucial given that the HIV epidemic continues to grow in Russia. ARVs have become more widely available in Russia in the past ten years; however, linkage to and retention in care remains a problem. A deeper understanding of factors influencing the uptake of and adherence to HIV treatment of people living with HIV is important in order to address the HIV treatment gap.

**Objectives:** The purpose of this research was to identify different types of fear related to starting and adhering to antiretroviral (ARV) therapy among people living with HIV in Russia.

**Methods:** Data were collected from the Russian-language internet forum for people living with HIV (hivlife.info) which is a specialized forum for the discussion of challenges that people living with HIV experience. Qualitative data analysis was focused on the sections of the forum where users discussed health-related issues in order to examine the role of fear in decisions to start or continue ARVs. We developed a codebook to analyze the text and verified the coding through peer debriefing.

**Results:** Fear influences decisions regarding HIV treatment in two ways: as a barrier or a motivator for engaging in treatment. Motivators for taking ARVs included fear of the illness itself and fear for well-being of significant others. Barriers to taking ARVs include fear of side effects, fear of therapy to be ineffective, fear that the appropriate medications will become unavailable, fear of changes to one’s lifestyle, fear to interact with the doctor, and fear to learn the negative information about one’s health.

**Discussion and conclusions:** Different types of fear related to HIV are caused not only by the illness itself, but also by treatment and the conditions associated with treatment. Efforts to increase the uptake of and adherence to ARVs should take into account the fears of people living with HIV. Fear can be both a barrier and also a motivator for receiving HIV
treatment. Health care providers should have a deeper understanding of patients’ fears and therefore to focus communication on or provide the necessary information to patients to help them address these fears.

AN INVESTIGATION INTO THE BELIEFS ABOUT MEDICINES OF UNIVERSITY STUDENTS ACROSS DISCIPLINES

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Introduction: The beliefs about medicines of individuals have an impact on the manner in which they interact with medicines. This, may either support positive health outcomes or contribute to negative health outcomes.

Objectives: To determine the beliefs about medicines of students across various disciplines at the University of Malta.

Methods: Students in their third year of study were invited to participate in the study. A questionnaire was distributed, filled in and collected during a lecture period. This was done with the permission of the University Registrar and respective lecturer. The questionnaire collected demographic data in the first section and beliefs about medicines, using the Beliefs about Medicines Questionnaire (BMQ) in the second section. The BMQ is an 18-item questionnaire comprising two subscales: BMQ-Specific which deals with necessity and concerns of individuals taking medication and BMQ-General, which enquires about general issues about medicines relating to their harm and overdose. Students who were taking medication were asked to answer both subscales, whilst those who were not, were only asked to answer the General subscale. Ethics approval for the study was obtained. Statistical analysis was carried out through ANOVA and further analyzed through post-hoc Fishers Least Significant Difference analysis

Results: A total of 738 students participated in the study. The largest number of students were from the Faculty of Education (n=146) and the least number from the Faculty of Media and Knowledge Sciences (n=6). The majority of students 83.7% had a negative orientation towards medicines. 14.2% of the study population reported having a chronic illness with the majority of these, 52.4%, stating that the medicines were necessary for their health and were mostly dependent on medication for their future. Students, irrespective of discipline were of the belief that medicines were overused. Significant differences emerged in the harm scale. Students following a course leading to a patient-oriented profession, including pharmacy and medical students, perceived medicines to be less harmful when compared to students from other faculties. Similar results were obtained for students in information and communication technology (p<0.00). Nurses, however, perceived medicines to be more harmful when compared to pharmacy and medical students (p<0.02, multivariate regression analysis).

Discussion and conclusions: Most of the present findings, with the exception of results pertaining to nursing students, are supported by the literature. Interventions based on increasing knowledge about medicines and enabling patients to have positive experiences with medicines are necessary to encourage positive beliefs about medicines.

POTENTIALLY INAPPROPRIATE MEDICATION USE IN NURSING HOMES IN NORTHERN NORWAY – USING THE NORWEGIAN GENERAL PRACTICE – NURSING HOME CRITERIA

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Introduction: Several criteria lists exist measuring potentially inappropriate medications (PIM) in the general elderly population. In 2015, a set of explicit criteria for assessing pharmacologically inappropriate medication use in nursing homes was developed; the Norwegian General Practice -Nursing Home criteria (NORGEP-NH).

Objectives: The aim of this study was to investigate the prevalence of PIMs in nursing home patients using NORGEP-NH. Furthermore, possible associations between the PIMs and factors like gender, age, and the number of drugs used was studied.

Methods: The study included 103 nursing home patients from two geographical different locations (six nursing homes) in Northern Norway; Tromsø city (n=70) and Lofoten Islands (n=33). Data was cross-sectionally collected during November 2015 to January 2016. PIMs were identified by NORGEP-NH. We did not contact any physicians about individual patients, but informed the nursing homes about the aggregated results. We used logistic and poisson regression to examine possible associations between the use of PIMs and factors like gender, age, geographical area and the number of drugs used. Main outcome measures: Number of PIMs per patient, and odds ratios (OR) and marginal effects for associations.

Results: Nursing home patient used a mean (SD) of 10.9 (4.3) drugs; 7.2 (3.6) regularly and 3.7 (1.9) as needed. At least 69% of patients used one PIM. Concomitant use of three or more psychotropic drugs was the criterion most commonly identified (33%), followed by the use of antidepres- sant (26%) and hypnotics (23%). An increasing number of regularly used drugs increased the odds of having PIMs (OR: 1.74), as well as it leading to 0.18 more PIMs per extra drug used. On average, after adjustment, patients ≥80 years had 0.46 fewer PIMs than patients <80 years. No statistical significant associations were seen between having PIMs and gender, nor geographical area and the use of as-needed medication.

Discussion and conclusions: This is one of the first studies that explicitly uses NORGEP-NH. Our results confirm that nursing home patients often use potentially inappropriate medications. This is an area where further work is necessary, not only to measure the prevalence of PIM, but to develop and measure the effect of interventions designed to decrease the use of PIMs.

AUTOMATED DOSE DISPENSING’S EFFECTS ON NURSES AND PRACTICAL NURSES’ WORK – A NATIONAL STUDY IN FINLAND

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Introduction: As pharmacotherapy is part of care for a majority of older community-dwelling adults living at home or care homes, remarkable share of nurses and practical nurses’ (PNs) working time is consumed for manual dispensing of medicines. Automated Dose Dispensing (ADD) has been introduced as a service that can save nurses and PNs’ time from dispensing for other tasks.

Objectives: To examine perceptions of nurses and PNs on the effects of ADD on their use of working hours and on the tasks they perform.

Methods: A national online survey to all 1157 members of the Finnish Nurses Association and 7967 members of the Union of Practical Nurses working in outpatient elderly care was conducted in February 2016. Responses by nurses/PNs who were familiar with ADD were included.

Results: The response rate for members of the Nurses Association was 24% (n=370) and for members of the Practical Nurses Union 18% (n=1433). After applying the inclusion criteria, 245 and 1108 responses were included, respectively. Most of the respondents were working in communal home care or outpatient elderly care units (88%). Almost all had experience in handling ADD sachets (91%) and manual dispensing (99%). For 71% of nurses and 79% of PNs ADD was in use at their current workplace. A majority of nurses (88%) and PNs (90%) totally or partly agreed that ADD reduces time used to dispense medicines, saves working time (85% of nurses, 80% of PNs), releases time for patient care (84% of nurses, 78% of PNs) and eases their work (88% of nurses, 86% of PNs). On the other hand, 82% nurses and 86% of PNs perceived that ADD complicates implementation of acute drug treatment changes. When asked how the saved working time was used, 70% of nurses and 51% of PNs responded that in patient care.

Discussion and conclusions: According to nurses and PNs’ experiences, ADD saves their working time from dispensing to patient care. Considering the benefits in nurses and PNs’ time allocation, ADD could be more widely used in outpatient care. Wider use of QR code in identification of tablets when acute medication changes are needed could ease nurses and PNs’ distress for making the required changes.
PRINTING MEDICINE: NEW TECHNIQUE AND ITS IMPACT ON SOCIETY
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Introduction: New techniques for manufacturing medicines are currently developed. These so-called additive manufacturing (AM) techniques - or macroprinting - make it possible to manufacture medicines in other settings than industry, and also to individualize therapy, e.g. doses. This, together with new possibilities for continuous monitoring of patients' health (via e.g. smart devices) could possibly transform medicine logistics as well as the relationships between patients, pharmacists and prescribers.

Objectives: The objective was to anticipate consequences of large scale implementation of AM techniques for society in general and pharmacists specifically, with regard to two scenarios: 1) medicine manufacturing taking place in pharmacies and 2) medicine manufacturing taking place in patients' homes.

Methods: A group discussion with experts was held, structured according to the themes of Health Technology Assessment (The HTA Core Model) and three scenarios (one not presented here), with researchers from social pharmacy (including social scientists and pharmacists), pharmaceutical technology and engineering.

Results: Areas found to be impacted by the technique, or in need of profound changes in order to make the implementation possible, included for both scenarios: regulations on manufacturing, quality systems and patient information; economy for payers; curricula for pharmacists and prescribers; privacy issues for patients. The second scenario, with patients manufacturing medicines in their homes, will probably involve the most profound changes, but also lead to more patient empowerment. As a consequence, pharmacists will have to adapt their role, not least when it comes to patient communication. With the first scenario, pharmacies will in a new way, get back to their former role as medicine manufacturers, and pharmacists' roles will have to change accordingly.

Discussion and conclusions: New technology changes not only the way things are done, in this case medicine manufacturing, but also impacts roles of e.g. health care professionals. By prospective studies, using scenarios, society as well as professionals can prepare for changes, and influence the outcome. Working across disciplines within pharmaceutical research is essential in such work.

PERCEPTIONS ABOUT THE USE AND SAFETY ASPECTS OF MEDICINES AMONG SCHOOLCHILDREN IN TARTU, ESTONIA
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Introduction: Use of medicines among children is common. It is important to learn about their medicine-related perceptions to better understand potential threats children may experience especially while using medicines independently.

Objectives: To explore awareness and beliefs about use of medicines and medication safety among 9-12 and 13-16 year-old schoolchildren in Tartu, Estonia.

Methods: Mixed methods approach was used: 1) questionnaire with open-ended questions about medicines, 2) drawing of medicines cabinet children have at home (results not presented in this abstract), and 3) 3-4 children in 62 groups discussing about symptoms, spread, cure and prevention of various ailments (asthma, flu, migraine, accidents, snake bite and earache). The study was undertaken in one primary school of Tartu, Estonia, in December 2015-January 2016 among 4th to 9th graders. Content analysis was used to analyse all the data. In each category found (presented in results), number of responses was calculated and for analysis of statistical differences in responses to open-ended questions, children were divided into two groups by age: 9-12 (n=121) and 13-16 (n=123) years.

Results: Most of the discussion groups presented extensive and correct descriptions about symptoms, treatment and prevention of different ailments. Medicines were recalled by mode of action (e.g. analgesics, cough and cold medicines), active substance (e.g. paracetamol, ibuprofen) as well as by particular trade name of medicine (e.g. Xymelín®, Nospa®, Suda-fed®). In comparison with other medicines, different analgesics were listed more frequently by almost all of the respondents. Half of older children and 1/3 of younger children described threats (adverse reactions, drug addiction, overdose of medicines, irrational use of medicines, death), connected with use of medicines. At the same time in the older age group it was suggested that children could use medicines independently starting 12 years of age in contrast to 17 years of age in the younger age group (p<0.01).

Discussion and conclusions: Schoolchildren demonstrated awareness and sense of responsibility in prevention and treatment of various ailments. Children identified commonly used non-prescription medicines by treated symptoms, active substance or product name. Medication safety was less recognised, and independent use of medicines was suggested at a fairly young age by the children. In the future, more attention has to be paid on education of schoolchildren about safe and rational use of medicines. Pharmacists could be more involved in different educational activities in collaboration with schools.

MEDIA COVERAGE OF DIAGNOSIS AND TREATMENT OF ADHD IN NORWAY
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Introduction: Attention Deficit/Hyperactivity Disorder (ADHD) or hyperkinetic disorders are among the most common neuropsychiatric childhood diseases, with symptoms like large concentration difficulties, agitation, restlessness and impulsivity. ADHD, which can be seen as a controversial and difficult topic for patients, the public and professionals, has for years been discussed in the media, frequently with specific focus on drug treatment and diagnosis. Media coverage of ADHD and ADHD medication, its development as well as scope and characteristics, shows what aspects are considered to be of interest for the public. Scant research has been found regarding this issue.

Objectives: The purpose of this project is to map the media’s view of what is risky and non-risky linked to ADHD diagnosis and -treatment in Norway, using Aven & Renn’s Risk Management Governance as a framework.

Methods: A qualitative analysis was conducted, based on texts retrieved from the media database “Atekt” in the period 2006-2015, and restricted to Norwegian newspapers and ADHD relevant themes. Search terms (translated to English, combined in various ways in search strategy): ADHD, medicines, pharmaceutical(s), drugs(s), misuse, stimulating, perception, impression, view, Ritalin, Concerta, Equazym. Data was manually coded and analyzed simultaneously, and NVivo analysis software was used for a part of the data. Meaningful units were identified, decontextualized and condensed, categorized and recontextualized in accordance with Malterud’s Systematic Text Condensation approach.

Results: All search strings/keywords used in Atekt resulted in approximately 4600 newspaper articles. After sorting, removing duplicates and excluding irrelevant texts, the analytical material was 430 articles in total. Based on the topic and the theory, ten categories were established, 3 negative (more than half of the texts were classified as negative), 2 neutral and 5 positive. Negative categories, expressing risks, were: criminal offenses associated with ADHD medication, under- and overdiagnosis and stigma and discrimination. Neutral categories were: alternative treatment and support measures. Positive categories were: View on pharmacological development, benefits of medicines use for school and soul, benefits of having ADHD, focused focus on ADHD in adults and females, benefits of being without medications.

Discussion and Conclusions: Negative publicity, consisting in particular of the above risk categories dominate the media coverage. Media has fewer non-risk perspectives, but in the most recent year the focus has shifted somewhat to more positive aspects of ADHD and its treatment.
MOVING ON FROM THE SCHOOL-MEDICINE STUDY

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Introduction: Following a Finnish initiative, migrant medicine education was introduced in Danish primary schools in 2011 via the so-called School-Medicine Study. Pharmacy interns did and still do the teaching in the schools, and the study has spread out to the entire country, resulting in highly satisfied pupils, school teachers, pharmacy interns and pharmacy staff. Since 2011, the study has also resulted in two further studies: Study #1 involving educated community pharmacists in a whole-day school teaching program and Study #2 dealing with the overall medicine use, habits, attitudes, and interactions among adolescent students in high school and vocational schools.

Objectives: To describe and discuss the two recent development of the School-Medicine Study.

Methods: Study 1: An action-oriented approach, involving methods such as documentary method analysis, participation, feedback on instructional videos and remedy boxes, focus groups and questionnaires are used for data collection. Study 2: A survey was conducted among students at an elite high school (HS) and a vocational school (VS), aged 15–19. The digitally distributed questionnaire included variables on issues such as medicine consumption, attitudes, knowledge and social network in relation to medicine use. Descriptive analyses were carried out.

Results: Study 1: An interdisciplinary project group has supplemented the existing teaching material with instructional video material and a box of different remedies designed to act as a springboard for reflection. The teaching will take place at 10 different primary schools in the spring of 2017. Study 2: Response rate for VS was 59, and for HS it was 40. Of the 93 adolescents’ respondents, 75% had used medicine within the last month respectively 64% (HS) and 94% (VS) (p = 0.0012). Analgesics were the most frequent consumed medicine. Two thirds of the students always had someone to talk about medicine and the majority assumed medicine to be safe. Sharing medicine was a common practise at both type of schools.

Discussions and conclusions: Study 1: Preliminary results from the study shows that evaluation data from the original study were useful for developing new initiatives for this extended medicine education program. A full presentation of results and conclusions will be provided at the conference. Study 2: The overall medicine use was different at the two schools with the highest consumption among students at VS. No significant school difference was found in availability of social network. Prevalence of sharing medicine was high in both students’ groups in particular among those adolescents scoring low on medicine safety perception.

THE MEETING BETWEEN ETHNIC MINORITIES, MEDICINE USE AND THE NORDIC COUNTRIES: AN OVERVIEW OF THEORY-BASED INTERVENTION STUDIES AND LESSONS LEARNED

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Introduction: Migrants constitute a significant and increasing proportion of the population in the Scandinavian countries mainly due to a sharp increase in the number of refugees and migrants fleeing from armed conflicts and poverty. This high influx of refugees and migrants has implications for healthcare systems, and there is a need to adapt the systems to provide migrant and ethnic sensitive healthcare services.

Objectives: The objective of this presentation is to provide an overview of and discuss recent research carried out in Norway, Sweden and Denmark studying or intervening in the meeting between the ethnic minority patient and the health-care system, with a special focus on theory-based medicine use studies on medicine use among ethnic minorities.

Methods: The overview is conducted through a purposeful review of the scientific and grey literature on ethnic minorities and their access to and use of medicine, first of all in Denmark, but then supplemented with studies from Norway and Sweden. A variety of methods have been used in the included studies (questionnaires, focus group interviews, individual interviews, documentary methods and register-based designs).

Results: Thirty-six (36) studies carried out in the Scandinavian countries for the last 10 years were included, and the following overall results were identified: 1) Successful practice comes from trust building between the pharmacist and the ethnic minority patient, but it is important to secure sufficient personal and organizational support for the pharmacist when he/she is used as both a peer and as a health professional; 2) Ethnic minorities should preferably be involved in all phases of a health-related intervention; 3) Developing an ethnically sensitive culture among pharmacists has to be based on openness, curiosity and respect; 4) When possible, involving family and friends is urgent, especially when there is a need for behavioural change related to medicine use or lifestyle habits; 5) Special caution is suggested when classifying social groups based on migrant and ethnic premises.

Discussion and conclusions: Involvement, trust-building, cautionness, openness, curiosity and respect are pivotal for successfully meeting the ethnic minority patient in the health care system. With the increasing numbers of ethnic minorities trained as healthcare professionals and the increasing number of ethnic minority patients in the Scandinavian countries, the above results should be taken into consideration in future studies.

USE OF LOW DOSE NALTREXONE AND CHANGE IN USE OF PRESCRIPTION DRUGS IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE – A DRUG UTILIZATION COHORT STUDY BASED ON THE NORWEGIAN PRESCRIPTION REGISTER

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Introduction: Naltrexone is a non-selective opioid antagonist traditionally used to treat opioid and alcohol addiction. Low Dose Naltrexone (LDN), 3–5 mg/day, has gained popularity as an off-label adjunctive therapy for several autoimmune diseases, including inflammatory bowel disease (IBD). Studies have shown improved quality of life, reduced area of inflamed intestine, reduced C-reactive protein and lower Crohn’s Disease Activity Index.

Objectives: The aim of this study was to investigate whether there is an association between the use of LDN and change in use of other prescription drugs in patients with IBD.

Methods: We obtained data on dispensed drugs (762 patients, 34 417 prescriptions) from the Norwegian Prescription Register. All patients received at least one LDN prescription in 2013, and the first prescription was used as index date. We captured retrieval of all other prescription drugs two years before and two years after (observation period) the index date. Selected drugs were collated in ATC-groups chosen based on Norwegian Guidelines for treatment of IBD and clinical relevance. The number of Defined Daily Doses (DDD) for each group were summarized per week, and the weekly number of DDDs during the observation period were analysed using interrupted time series.

Results: We analysed 20 ATC-groups. Weak opioids showed a statistical significant drop in number of DDD per week after index date (p < 0.001), but increased to the same level as before index date at the end of the observation period. We found a lesser immediate drop for strong opioids, but an increase in consumption during the observation period resulted in a net increase compared to the level at the index date (p < 0.001). For systemic glucocorticoids, we found a significant drop in level after index date, but no change in slope. Statistical significant differences were also found in use of TNF-α-inhibitors and some other ATC-groups for sub-groups of LDN users.

Discussion and conclusions: This study demonstrated a minor reduction in use of weak and strong opioids after starting LDN. However, the initial reduction was not sustainable, and may be related to advice on refraining
from simultaneous use of LDN and opioids. We also found evidence for temporary change in use for a number of other ATC-groups. Assuming consumption of drugs related to treatment of IBD is a proxy for possible LDN effects, our results suggest further investigation of possible effects of LDN in a randomized controlled trial.

CONTEXUTALIZING STUDY DRUGS: WHAT GENERAL PRACTITIONERS, PSYCHIATRISTS AND UNIVERSITY COUNSELLORS SAY

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Introduction: Research on the use of prescription drugs for non-medical purposes (so-called study drugs) among university students primarily focuses on behavioural patterns and attitudes among the students using these drugs. Little research extends its focus to include the view of other actors, who might otherwise provide insight into some of the contextual aspects of study drug use.

Objectives: The aim of this presentation is to explore attitudes and experiences among general practitioners (GPs), psychiatrists and university counsellors in relation to students’ use of study drugs, in order to broaden the horizon of the listener on some of the ways in which this type of drug use is framed and dealt with by professionals surrounding students.

Methods: The study is based on data from two different studies, covering semi-structured interviews with 9 GPs, 2 psychiatrists and 7 university counsellors, carried out in 2013–15 in Denmark.

Results: University counsellors experience a great deal of perfectionism and stress among university students, particularly among those they call ‘overachievers’ (students seeking to be the “best”, both academically, socially and personally). However, none of the counsellors had experienced students talking to them about study drugs with the occasional exception of beta-blockers for exam anxiety. Strategies of help include talking about postponing exams, cutting down on courses and/or seeking help from a psychologist. GPs and psychiatrists express differing attitudes towards students’ use of study drugs, with half of them being comfortable with optimizing students’ capabilities by the means of study drugs. There is, however, far more acceptance of using beta-blockers than ADHD drugs as study drugs among GPs. Presently, none of the GPs initiate ‘treatment’ with ADHD drugs while more than half of the GPs prescribe varying amounts of beta-blockers to students.

Discussion and conclusions: University counsellors, GPs and psychiatrists are in contact with university students who seek help in order to manage or optimize their capabilities in various ways. However, there is presently no consensus regarding how to help students or when to prescribe medication as the right solution. Whether a GP prescribes beta-blockers or not, and whether a psychiatrist prescribes ADHD drugs or not, seems to be a matter of attitude towards the limitations of human capabilities and the medicines which can manipulate these.

DRUG USE AND DRUG RELATED PROBLEMS IN THREE NURSING HOMES IN RURAL MUNICIPALITIES IN NORWAY

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Introduction: About 41,000 (0.8%) of the Norwegian population residing in nursing homes in 2015. Nursing home resident are often exposed to polypharmacy, which have been associated with drug-related problems (DRPs), such as unnecessary drugs, too high doses, adverse drug reactions and drug-drug interactions. Studies from Norway have shown a mean number of DRPs in nursing home residents in the range 1.6–5.1. DRPs were presented and discussed at interdisciplinary case conferences. We categorized DRPs according to the Norwegian classification system, six different categories; 1. Drug of choice, 2. Dosage, 3. Side effects, 4. Drug-drug interactions, 5. Deviant drug use and 6. Other. START, STOPP and NORGEP-NH were used as tools in the medication reviews. Since the data not are normally distributed, we applied the Kruskal-Wallis test for continuous data. P-values < 0.05 were considered significant.

Results: There were 114 patients in the nursing homes at the inclusion times. In total, 108 (94.7 %) patients (mean values; age: 84.8 years, 66% women, weight: 73.0 kg) was included. The average total number of drugs ranged from 10.6, 11.1 to 12.9 (p = 0.09). The pharmacist identified 447 DRPs in 103 of the 108 patients. The average number of DRPs per patient varied significantly between the nursing home; 2.7, 4.2 and 5.6 DRPs, respectively (p < 0.01). DRPs most frequently identified concerned ‘Too high dose’ (15.3%), ‘Unnecessary drug’ (13.7%), ‘Drug-drug interactions’ (11.8%) and ‘Monitoring required’ (11.1%). The nursing home physicians agreed with the student in 47.4% of the DRPs and the suggested solutions, while 28.0 % of the DRPs were declined. In the last fourth part the patients died before case conference, the patients refused medication changes or the DRP were already solved.

Discussion and conclusions: Nursing home residents in these three rural municipalities show similar drug use and number of DRPs compared to nursing home residents in Norwegian cities. We found a statistic significant difference in the total number of DRPs between the included nursing homes. Further research and sub-analyses are warranted to identify the reasons for these differences.

DETERMINATION OF MEDICINES WASTAGE AND ITS ASSOCIATION WITH BELIEFS ABOUT MEDICINES AND LOCUS OF CONTROL IN PATIENTS SUFFERING FROM CHRONIC CONDITIONS – A PILOT STUDY

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Background: Medicines wastage is a multi-faceted issue influenced by various factors; literature on the influence of patients’ beliefs about medicines regarding wastage is limited.

Objectives: To determine awareness, beliefs and behaviours regarding medicines and their relationship to medicines wastage in patients suffering from chronic conditions.

Method: A structured questionnaire was developed based on a previous questionnaire used amongst the general public in Malta, Patients attending out-patients’ clinics having a confirmed diagnosis of asthma, cardiovascular conditions or diabetes were invited to participate in the study. The first 100 patients who accepted to participate completed a self-administered questionnaire which sought to determine awareness about medicines wastage using a 5-point Likert scale, health locus of control using ‘The Multidimensional Health Locus of Control Scale’ Form C (MHLOC) and beliefs about medicines using the ‘Belief about Medicines Questionnaire’ (BMQ) Specific and General respectively. A logistic regression was performed to ascertain the effects of MHLOC, BMQ and demographics in relation to awareness about medicines wastage and incidence of unused medicines. P-values ≤ 0.05 were considered significant. Ethical approval was obtained.

Results: A total of 100 patients were recruited (54% male; mean±standard deviation age: 50±16 years); 40% asthma, 37% diabetes and 23% cardiovascular. The majority agreed that they were fully aware of the issue of medicines wastage (73%) and 49% agreed that they fill their prescriptions for chronic medicines regularly, whether they have run out of them or not. Thirty-eight percent of respondents claimed to have unused medicines at home, the main cited reason being filling the prescription irrespective of whether they still have a supply of medicines. Only 13% of patients dispose of unused medicines through a medicines disposal site. Only half of the patients (53%) felt they had enough information about the benefits of medicines and less than half (44%) about the side effects. The logistic regression model for MHLOC and BMQ in relation to incidence of unused medicines wastage using a 5-point Likert scale, health locus of control using ‘The Multidimensional Health Locus of Control Scale’ Form C (MHLOC) and beliefs about medicines using the ‘Belief about Medicines Questionnaire’ (BMQ) Specific and General respectively. A logistic regression was performed to ascertain the effects of MHLOC, BMQ and demographics in relation to awareness about medicines wastage and incidence of unused medicines. P-values ≤ 0.05 were considered significant. Ethical approval was obtained.

Discussion and conclusions: Nursing home residents in these three rural municipalities show similar drug use and number of DRPs compared to nursing home residents in Norwegian cities. We found a statistic significant difference in the total number of DRPs between the included nursing homes. Further research and sub-analyses are warranted to identify the reasons for these differences.

Determinant of medicines wastage and its association with beliefs about medicines and locus of control in patients suffering from chronic conditions – a pilot study

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Abstracts / Research in Social and Administrative Pharmacy 13 (2017) e1–e15
medicines was statistically significant, $\chi^2(9) = 22.979, p<0.05$. Lower ‘general benefit’ beliefs (p=0.05) and higher beliefs in ‘other people’ (p=0.05) were associated with an increased likelihood of having unused medicines. The male gender was associated with an increased likelihood of awareness about medicines wastage (p=0.05) but also a higher incidence of unused medicines (p=0.05).

**Discussion and conclusions:** Interventions targeting medicines wastage need to recognise the value of patients’ beliefs about their conditions and medicines to influence a change in wastage behaviours.

**THE ASSOCIATION OF ADHERENCE TO MEDICINES WITH MEDICINES LITERACY, BELIEFS ABOUT MEDICINES AND LOCUS OF CONTROL IN PATIENTS SUFFERING FROM CHRONIC CONDITIONS – A PILOT STUDY**

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**Introduction:** Non-adherence to medicines is considered to be a factor leading to negative health outcomes. Current behavioural models highlight the importance of health beliefs in the decision-making process of patients about their medicines.

**Objectives:** To determine the relationship between adherence to medicines in patients with chronic conditions and medicines literacy, beliefs about medicines and health locus of control.

**Methods:** Sequential adult patients having confirmed diagnosis of asthma, cardiovascular conditions or diabetes were recruited to participate in a cross-sectional study from respective out-patients’ clinics. Patients completed a self-administered questionnaire which sought to determine medicines literacy, adherence to medicines using the ‘Tool for Adherence Behaviour Screening’ (TABS), health locus of control using ‘The Multidimensional Health Locus of Control Scale’ Form C (MHLOC), and beliefs about medicines using the ‘Belief about Medicines Questionnaire’ (BMQ) Specific and General. The 8-item TABS has two subscales (adherence/nonadherence), each comprising four items answered on a 5-point Likert-scale. Non-adherence was considered to be a score $< 19$ for the ‘adherence’ subscale and $> B$ for the ‘non-adherence’ subscale. A logistic regression was performed to ascertain the effects of each factor on the likelihood that patients are adherent to medicines. P-values $\leq 0.05$ were considered significant. Ethics approval was obtained.

**Results:** Hundred patients were recruited (54% male; mean±Standard deviation (SD) age: 50±16 years; 40% asthma, 37% diabetes, 23% cardiovascular). Mean±SD adherence score on the ‘adherence’ subscale was 17.5±2.3 (48% non-adherent) and mean adherence score on the ‘non-adherence’ subscale was 8.6±3.2 (50% non-adherent). Logistic regression model for MHLOC and BMQ covariates in relation to ‘adherence’ sub-scale was statistically significant, $\chi^2(9) = 16.917, p=0.050$. Higher general harm beliefs were associated with an increased likelihood of non-adherence (p=0.021). The mean±SD necessity–concern differential was 3.42±6.10. For 30% the necessity score was lower than concerns score and for 9% it was equal. Education was significantly related to adherence on the ‘non-adherence’ subscale, with the lower the level of education (p=0.022) and the need for support to read material about medicines (p=0.033), the higher the adherence. Overall, patients had strong doctor beliefs 15.1±2.52; however, there were no significant associations of adherence with MHLOC.

**Discussion and conclusions:** Greater perceived medicine harm translated to lower medicines adherence. Interestingly, the lower level of education was associated with higher self-reported adherence. Interventions targeting adherence need to recognise the value of patients’ beliefs about their conditions and medicines to influence adherence behaviour. Following this pilot, data collection will be carried out on 750 patients with the aim of determining whether there is a further relationship between the examined variables.

**A SOCIETAL PERCEPTION ABOUT COMMUNITY PHARMACIES IN PAKISTAN: AN OUTLINE OF PROSPECTIVE INVESTIGATION**

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**Introduction:** Patient satisfaction is an indicator to evaluate the quality of health services and is useful for strategically improvement of community pharmacy services.

**Objectives:** The aim of this study was to identify the societal perceptions about the community pharmacies in Punjab, Pakistan.

**Methods:** A qualitative research method was used in two phases. In the first phase, adult medicine purchasers from urban and rural pharmacies were selected by using a snowball technique. In-depth interviews were conducted until saturation was achieved (n=43). In the second phase, the themes were derived from the results of first phase. In both phases, interviews were audio-recorded verbatim and were transcribed. Finally, semi-structured interviews were conducted from other participants till the level of saturation (n=27). Consent of interviewee was a major consideration in entire study that conducted from Aug 2016 to September 2016.

**Results and discussion:** All the participants were male. In first phase, two questions were asked: Q1. How did you feel when visiting the pharmacy? Q2. How should pharmacies improve their services? The analysis of results from first phase provide 6 themes which are given as

1. Location of pharmacies
2. Operational standards of pharmacies
3. Medicines in pharmacy
4. Staff of pharmacies
5. Practices (counseling and dispensing services)
6. Extended services in pharmacies

In the second phase, in-depth interviews about derived themes give us profound knowledge about the desire of patients. Exploration from the survey responses in this phase yielded 44 items. However, it was found that many participants had difficulties in interpersonal relationships with staff of pharmacies. Some clients claim that visiting a pharmacy is time-consuming because immediate response to prescription and dispensing was delayed. Location of pharmacy specially parking facility was a big issue of clients in many areas. Patients seem dissatisfied about the education of staff and qualified person therefore they are unable to provide good counseling services. Availability of medicines was also a major concern of patients especially in rural areas. In rural areas, the operational hours of pharmacies are also a concern of some patients. However, patients seem to be satisfied about the on call availability of pharmacy services in the emergency cases. Extended services in pharmacies are neglected in Pakistan.

**Conclusions:** A qualitative societal perception depicts that services in community pharmacies should improve. Moreover, there is also an utmost need to explore more on the level of patient satisfaction about the community pharmacy services.

**PHARMACOLOGICAL TREATMENT APPROACHES TO ADHD IN NORWAY AND SERBIA**

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**Introduction:** Attention deficit hyperactivity disorder (ADHD) is a psychiatric disorder characterized by inattention, hyperactivity, and/or impulsivity. It is predominantly a disorder of childhood, but it can also be diagnosed in adults. Prevalence of ADHD varies worldwide and more boys will get diagnosed and treated than girls. In many countries the prevalence is not well investigated, and there are no national guidelines for ADHD treatment. Currently there is no single test available to diagnose ADHD.

**Objectives:** To describe and compare the use/sale of ADHD medicines in Norway and Serbia and describe possible differences in therapeutic approaches. To assess the quality of available Serbian data.

**Methods:** This study used open retail/wholesale data and additional data collected from the Clinic for Neurology and Psychiatry for Children and...
Use of methylphenidate, in DDD/1000 inhabitants/day was on average 200 times larger in Norway than in Serbia during the observed period 2007-2013. The percent-wise increase in use per year was similar in both countries. In Serbia, 90% of all ADHD cases were males, while in Norway 60% were males. In both countries, half of the ADHD medication users were in the age group 10-14 years. The quality of the used Serbian data was evaluated to be good, but accessible and coverage much more limited than for the Norwegian data. Serbian wholesale data regarding ADHD medications was evaluated to be complete and of good quality because of the fact that narcotic drugs are thoroughly monitored in Serbia.

**Discussion and conclusion:** Pharmacological treatment approaches to ADHD in Norway and Serbia are different. While in Norway, atomoxetine, desmethylamphetamine and lisdesmethylamphetamine are used in addition to methylphenidate, in Serbia only methylphenidate is registered for ADHD treatment. Further research is needed to identify usage of ADHD prevalence in Serbia and to evaluate possible over- or under-diagnosis in one or both of the countries. It is also important to map the role of genetic, cultural and diagnostic factors.

**ASSOCIATION BETWEEN ANTI-OSTEOPOROTIC DRUG USE AND QUALITY OF LIFE (QoL) IN WOMEN AND MEN WITH OSTEOPOROSIS—A CROSS SECTIONAL ANALYSIS WITHIN THE TROMSØ STUDY**

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**Introduction:** Osteoporosis is characterized by decreased bone density and is a risk factor for hip, wrist, and vertebral fractures. This is a worldwide public health problem, and causes more than 8.9 million fragility fractures per year. Fragility fractures lead to increased mortality, morbidity, pain, immobility, social isolation and depression, which all may affect the quality of life. Use of anti-osteoporotic drugs (AOD) reduce the risk of fractures and may influence the quality of life.

**Objectives:** To investigate a potential association between AOD use and quality of life (QoL) among women and men with osteoporosis.

**Methods:** This is a cross-sectional study, based on data from the sixth Tromsø study (Tromsø 6), a population-based health survey which took place in 2007-2008 (n=12984). The study population were inhabitants in the municipality of Tromsø aged ≥ 50 years. Osteoporosis in need of treatment was defined by T-score for bone mineral density (BMD) <-2.5 or T-score from -2.5 to -1.6 combined with prior fracture (n=544). BMD was measured on the non-dominant femoral neck by dual energy X-ray absorptiometry (DXA), fractures were self-reported (n=518). AOD use was based on a self-reported list of medications (brand names) (n=544). In multivariable linear regression, we used QoL scores (EQ-5D 3L) as the dependent variable, endpoint, AOD as independent variable (exposure), and adjusted for age, sex, education and other diseases. Significance level was set at 5%.

**Results:** The mean QoL score was 0.68 (SD=0.28) in 54 participants using AOD and 0.82 (SD=0.18) in 424 participants not using AOD. The QoL was inversely associated with use of AOD (B=-0.116, P=0.002) after adjusting for covariate. After stratifying the population into prior fracture and not, QoL was inversely associated with use of AOD (B=-0.131, P=0.001) among those with prior fracture (n=295). Among those not reporting prior fracture (n=163), AOD use was not significantly associated with QoL (B=-0.088, P=0.285).

**Discussion and conclusions:** Persons with osteoporosis who were using AOD had significantly lower QoL compared to those who did not use AOD at survey time but only in those who had a prior fracture. This must not be interpreted as AOD use leads to lower QoL. As this is a cross-sectional study, the direction of the association and the causal relationship cannot be established. Confounding by severity or awareness of disease could be a problem, as not all participants knew they were osteoporotic.

**PHARMACY STUDENTS AS AGENTS OF MEDICINE EDUCATION IN SCHOOLS**

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**Introduction:** Pharmacy students have since 2014 given medicine education lessons in schools during their internship after the third study year in Finland. Students choose the content of lessons from two modules: for grade 4–6 (pupils 7–12 years) “What do you need to know about your own medicine?” and grade 7–9 (pupils 13–16 years) “Where can you find reliable information about medicines?”. They are instructed to piggyback assignments of medicine education website (www.laakkekasvatus.fi, in Finnish and Swedish). The role of students’ supervisors in pharmacies is to contact the school and support the student in planning the visit.

**Objectives:** To explore the experiences of students, supervisors and teachers about medicine education lessons given by pharmacy students and co-operation in organizing them.

**Methods:** Students (n=315), supervisors (n=169) and teachers (n=115) filled in Internet questionnaires targeted to each group. Experiences were assessed by multiple-choice questions with a 5-point Likert scale (fully agree, agree, neither agree nor disagree, disagree, fully disagree).

**Results:** Medicine education lessons were given in 203 schools during 2014–2016. Teachers expressed that the topics of the lessons suited well for the specific age group of pupils (fully agree or agree 90%) and curriculum (90%). Teaching methods were considered appropriate by both teachers (93%) and students (84%). Especially teachers (84% vs students 66%) estimated that pupils enjoyed the lessons. All respondent groups assessed students’ competence sufficient (supervisors 98%, teachers 97%, students 89%). Co-operation in organizing students’ visits to schools was considered as a positive experience (teachers 98%, supervisors, 93%, students 71%) and students fit easily into the school environment (students and teachers 90%). The majority of teachers (83%) expressed willingness to continue this type of co-operation. Also supervisors were interested in continuing co-operation in medicine education, especially if the lessons are given by students (85% vs lessons given by pharmacists 34%).

**Discussion and conclusions:** Medicine education lessons given by pharmacy students are a feasible way to increase medicine education in schools and to increase teachers’ awareness of the importance to include correct use of medicines in health education. This type of visits to schools are also a good way to increase collaboration between local schools and pharmacies, and to make pharmacy sector more known among pupils. Further research is needed about the impact of medicine education on pupils’ knowledge and skills.

**PHARMACISTS BRIDGING THE GAP BETWEEN PRIMARY AND SECONDARY CARE MEDICATION**

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**Introduction:** Seamless transition of care is a well-known risk factor for poor clinical outcomes and medication related errors. Various approaches have been initiated in Denmark, locally as well as nationally, to prevent adverse events and medication errors, for example medication reconciliation upon admission and discharge and electronic tools.

**SECONDARY CARE MEDICATION**

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**Introduction:** Seamless transition of care is a well-known risk factor for poor clinical outcomes and medication related errors. Various approaches have been initiated in Denmark, locally as well as nationally, to prevent adverse events and medication errors, for example medication reconciliation upon admission and discharge and electronic tools.
However, these errors are still occurring and are affecting both the primary and secondary care settings. Recently, the Zealand Region implemented a Clinical Pharmacist Service (CPS) in the acute wards, where clinical pharmacists conduct medication reviews upon admission contributing to rational pharmacotherapy during hospital stay. However, the changes made during hospital stay are rarely carried on into primary care.

Objectives: The aims of this study are: 1) Develop a pharmacist-to-pharmacist cross-sectorial service to optimize the transfer of medication changes in connection with transition of care. 2) Evaluate a pilot-implementation of the service in the Danish community pharmacies and hospital pharmacies. 3) Evaluate the effect of the service in a controlled trial.

Methods: The project is divided into three parts: development, implementation, and evaluation following the guideline from MRC: “Guidance on Developing and Evaluating Complex Interventions”. The development process consists of focus-group interviews with community and hospital pharmacists where the following idea for the intervention is proposed: The hospital pharmacist conducts a clinical pharmacist service upon admission to a Region Zealand hospital and uploads the pharmacist note to a database accessible by the community pharmacist. The patient receives a follow-up discharge consultation when they pick up medication at a community pharmacy, focusing on medication changes and identifying new or persisting drug-related problems, taking into account the hospital pharmacist’s notes from the medication review. The evaluation consists of a controlled clinical-trial, measuring on medication-related Quality of Life and Medication Satisfaction after 3 months and on hard endpoints: all contact to the Danish Health-Care system after 3 months.

Results: Results from the development and piloting parts of the project are expected in early 2018, while results from the intervention study are expected in early 2020.

Discussion and conclusions: Developing an intervention that link pharmacist work in both primary and secondary care may enable pharmacist interventions in secondary care to reach outside hospital and have a higher chance of affecting readmissions and securing rational use of medicines. At the same time this sort of intervention would highlight the role of the Danish community pharmacist as a more active player in the health-care system in general.

ESSENTIAL CYTOTOXIC AND ADJUVANT MEDICINES IN ARMENIA

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Introduction: Many medicines necessary for patients with oncology diseases are often unavailable in low- and middle-income countries.

Objectives: The objective of this work is to evaluate availability of essential cytotoxic and adjuvant medicines in Armenia.

Methods: The Armenian Essential Medicines Lists (AEML) of 2013, the List of medicines registered in Armenia (2016), and pricelists of 4 main wholesalers (for 2016) were analyzed. The following indicators have been calculated: the percentage of medicines from the World Health Organization Model Essential Medicines List (WHO EML) which are (a) included on the current AEML of 2013, (b) authorized (registered) in Armenia and (c) included in pricelists.

Results: In 2016, only 70.3% of all the 37 names of cytotoxic and adjuvant medicines listed in WHO EML were included in AEML and authorized; only 51.3% - available in pricelists. However, calculations made with taking into account pharmaceutical forms and strengths, revealed that only 72.1% of pharmaceutical forms and 50.0% of strengths recommended by WHO are covered by AEML. Only 72.1% of recommended pharmaceutical forms and 53.9% of strengths were authorized.

Discussion and conclusions: Essential cytotoxic and adjuvant medicines recommended by the WHO are only partly covered by the medicines supply system in Armenia; as such, there is a lack of access to these essential medicines.

ALTERATION OF PRESCRIPTION-ONLY DRUG UTILIZATION BY LOW DOSE NALTREXONE USERS WITH HYPOTHYROIDISM. A COHORT STUDY BASED ON THE NORWEGIAN PRESCRIPTION DATABASE FROM 2011–2015

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Introduction: In recent years, Low Dose Naltrexone (LDN) (≤5 mg / day) has increasingly been used as supportive treatment in chronic pain, fibromyalgia, multiple sclerosis, inflammatory bowel disease, Sjögren’s syndrome and other autoimmune diseases. There are no studies on LDN in hypothyroidism.

Objectives: The aim was to examine whether use of LDN was associated with change in the prescription pattern for other drugs in patients with hypothyroidism.

Methods: We obtained information from the Norwegian Prescription Database on dispensed drugs during 2011–2015 for patients (n= 1779) who got their first LDN-prescription in 2013. The date for the first prescription was defined as the index date. Our observation period for all other prescription drugs was two years before and two years after the index date. We aggregated prescription drugs into ATC-groups based on treatment guidelines and clinical relevance, and summarized the number of DDDs of each ATC-group per week. We used interrupted time series to investigate possible change in drug utilization over the period.

Results: We analysed 14 ATC group. Consumption strong opioids (ketobemidone, pethidine, fentanyl, buprenorphine, ketobemidone (with spasmylticyand) and tapentadol) (p = 0.031) and codeine (p = 0.026) decreased significantly after starting LDN. We found an increased level for codeine to almost the same level as before the index date at the end of the observation period. For strong opioids, it showed a less immediate drop, but increased to a higher level than index date. The consumption of benzodiazepines increased significantly after starting LDN (p = 0.018), and the slope increased slowly after the index date. We also found a statistical significant difference in antidepressant (not tricyclic antidepressants, selective serotonin reuptake inhibitors or monoamine oxidase inhibitors) (p = 0.007), but no change in consumption of other ATC-groups.

Discussion and conclusions: This study demonstrated a minor but significant immediate drop in consumption of strong opioids and codeine after starting LDN. The initial fall was not sustainable, and may relate to advice on refraining from simultaneous use of LDN and opioids. We found evidence for temporary change in consumption for some ATC-groups related to treatment of hypothyroidism. Our findings suggest for further observation of possible effects of LDN in a randomized controlled trial.

ACUTE MEDICATION CHANGES DURING AUTOMATED DOSE DISPENSING – NURSES AND PRACTICAL NURSES’ PERCEPTIONS

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Introduction: Automated Dose Dispensing (ADD) aims to increase medication safety and release nurses’ time from manual dispensing of medicines to patient care. As ADD sachets are delivered for two weeks of medication, acute and unexpected need for medication changes may occur because of a patient’s health condition necessitating nurses to remove or add tablets to ADD sachets. To ease identification of individual tablets/capsules in the ADD sachets, the ADD dispensing units in Finland provide QR codes in ADD patients’ medication cards. The QR code also has visual images of patient’s medicines.

Objectives: To examine nurses and practical nurses’ (PNs) perceptions of implementing acute medication changes to their ADD clients. Aspects studied were the frequency of implementing such acute changes and the methods used by nurses and PNs to identify tablets/capsules in the ADD sachets.

Methods: A link to an online webropol survey was send to all 1157 members of the Finnish Nurses Association and 7967 members of the Union of Practical Nurses working in outpatient elderly care in February
The overall aim of this study was to explore motivation and academic work. There are no extensive studies conducted on university students’ desire to participate in class and trying harder. Motivation is essential to learning and understanding education content. Motivation is a practice reality that complicates nurses’ work, but QR code designed to fasten identification of individual tablets in ADD sachets is still rarely used.

A STUDY ON STUDENT ENVIRONMENT, EXTRACURRICULAR ACTIVITIES, MOTIVATION AND ACADEMIC ACHIEVEMENTS

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Introduction: Some of the basic needs for college students are feelings of esteem, belonging, and safety. These can be met through e.g. extracurricular activities. It has also been found that the sense of belonging in class cultivates the students’ desire to participate in class and trying harder. Motivation is essential to learning and understanding education content. Motivated students have been shown to be more persistent when it comes to academic work. There are no extensive studies conducted on university students studying pharmacy in this regards.

Objectives: The overall aim of this study was to explore motivation and extracurricular activities of pharmacy students and describe how these influence academic achievement at three Pharmacy Schools with different properties.

Methods: A comparison was performed between Pharma School at Copenhagen University and two other universities, one which has a similar community, but uses distance learning, and one which has a diverse community. All of the respondents had experience in handling ADD, ADD staff units were used by 31% and ADD units’ websites by 20% of nurses and 23% of PNs. QR code was least used: only 6% of nurses and 11% of PNs had used it.

Discussion and conclusions: Acute medication changes to ADD sachets are a practice reality that complicate nurses’ and PNs’ work, but QR code designed to fasten identification of individual tablets in ADD sachets is still rarely used.

PATIENTS’ EXPECTATIONS ON RECEIVING MEDICINES INFORMATION FROM COMMUNITY PHARMACIES

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Introduction: Receiving medicines information is important for patients...
as it assists them in achieving more safe and effective use of pharmaceuticals. Many patients seek information from community pharmacies' staff. Objectives: The objectives of this study were to identify specific topics of medicines information which patients expect to receive at community pharmacies, as well as to evaluate the level of trust to information provided.

Methods: A survey was conducted in all 10 regions of Armenia and Yerevan in 2012. Face-to-face interviews were conducted with 1059 visitors of community pharmacies, as well as to evaluate the level of trust to information on medicines. Face-to-face interviews were conducted with 1059 visitors of community pharmacies. A previously developed questionnaire was used for interviewing patients. The results were analysed with the SPSS statistical software.

Results: More than three quarters of all the participants acknowledged importance of receiving from community pharmacies' staff (pharmacists and pharmacy assistance) information on therapeutic indications of pharmaceuticals (91.1%), dosage and method of administration (90.8%), the duration of treatment (86.3%), expiry date (85.7%), adverse reactions (85.0%), contraindications (84.6%), storage conditions (77.5%) and type of activity (76.0%). Importance of receiving information on some specific topics depends on patients’ age. Participants' acknowledgement of information on interaction with other medicines, certain categories of users, and potential effects on the ability to drive is decreasing with patients’ age increasing (p < 0.001). The opposite trend was observed with attitude to receiving information on medicine price that was mostly valued by elderly patients (p = 0.046). 79.7% of respondents reported that they completely or mainly trust the information provided by community pharmacy staff. 74.2% of patients mentioned that they always or often received comprehensive responses when applying for medicines information to pharmacy staff. The number of patients who trust the information provided was higher among those who more often received comprehensive responses from pharmacists and pharmacy assistants (p < 0.001).

Discussion and conclusions: Receiving medicines information from the staff of community pharmacies is important for patients, and the majority of them trust the information received. Patients are mainly provided with comprehensive responses to their questions about medicines, and there was dependence between a frequency of receiving comprehensive responses and a level of patients’ trust the information provided by pharmacy staff. As some patients do not receive appropriate responses from pharmacy staff there is an urgent need in increasing patients’ awareness on their right to get medicines information from community pharmacies’ staff. It seems important to introduce strategies leading to increasing knowledge of pharmacy professionals on their responsibilities as well as about medicines.

SOURCEs OF MEDICINES INFORMATION USED BY PHARMACY PROFESSIONALS

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Introduction: Pharmacists and pharmacy assistants working at community pharmacies play an important role ensuring safe and effective use of medicines. To provide appropriate service, these professionals need objective and up-to-date information on pharmaceuticals. However, not all the resources of medicines information (MI) provide reliable data.

Objectives: The objective of this study was to identify sources of MI used by pharmacy professionals working at community pharmacies in Armenia, as well as criteria they use for selecting the resources.

Methods: 348 professionals working at randomly selected community pharmacies in all regions of Armenia, including Yerevan, were interviewed. The sample included both pharmacists and pharmacy assistants. Previously developed questionnaire consisted of closed-ended questions was used for interviewing pharmacy professionals. They were asked how often they use each of MI sources from the list of information resources. A survey was conducted in 2012. Statistical analysis was carried out with using SPSS statistical software.

Results: 88.2% of respondents reported that they always and often use patient information leaflet (PIL). Many professionals mentioned using certain reference books: 66.7% seek information in the Reference book “Medicines” by M. D. Mashkovski, 44.8% - in the Reference book “Vidal” and 27.6% - the Armenian National Formulary (ANF). 59.5% of participants gather information on the Internet; 32.4% of pharmacy professionals who seek data on the Internet, access a website of the Armenian Center of Medicines Expertise that provides officially approved PIL and Summary of Product Characteristics, and 53.1% often utilize the search engine Google. Another popular source is medical representatives of pharmaceutical companies; 51.4% of respondents reported use of information provided by them. Some resources are less used: 24.1% of respondents noted that they seek information in professional journals and newspapers, 13.3% - at congresses and conferences, 6.9% use data received from clinical trials and 3.7% - from the Cochrane Library. More than half of professionals consider as very important the following criteria for selecting sources of medicines information: accessibility (56.6% of respondents), recency (56.3%), comprehensibility (50.8%) and reliability (50.8%). 37.1% of participants would like to have an access to references with up-to-date information.

Discussion and conclusions: Pharmacy professionals use different sources of MI, both printed and electronic. The most frequently used resource is PIL. Reference books in Russian are used by a lesser number of professionals. The most reliable resource, ANF of 2008 (the last edition) is not used by the majority of professionals. Part of respondents considers some criteria, necessary for correctly selecting sources of information, as low important. There is an urgent need in publishing a new reference book in Armenian that would include objective and up-to-date information on all the authorized medicines in Armenia, as well as in improving knowledge of pharmacy professionals on MI.

ECONOMIC CONSIDERATION OF CLINICAL PHARMACIST-LED SERVICE FOR PATIENTS ON WARFARIN IN SERBIA

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Introduction: Despite being the most commonly used oral anticoagulant for the thromboembolic disorders treatment, warfarin entails a considerable risk of adverse effects. So far, Pharmacist-Managed Anticoagulation Service (PMAS) tailored for the patients on warfarin, has been identified as highly efficient in enhancing anticoagulation control as well as declining the rate of bleeding and hospital admissions, hence lowering the healthcare costs.

Objectives: This study aimed to evaluate cost-effectiveness of providing PMAS to patients on warfarin compared with Usual Medical Care (UMC) at the secondary/tertiary level of healthcare facilities in Serbia.

Methods: A cost-effectiveness analysis was performed from the payer’s perspective (National Health Insurance Fund-NHF), over a ten-day time horizon. The decision tree was constructed based on possible clinical situations where a patient was either well-controlled on warfarin (INR value in therapeutic range), or with hypercoagulable state, without any symptoms or with minor or major bleeding. The probabilities of all decision consequences for the two strategies (PMAS vs. UMC) were obtained from the published studies, while direct medical costs were arrived at on the basis of NHIF Drug and Service lists, including the acquisition costs of warfarin, blood products and drugs for anti-coagulation reversal, as well as hospitalization and patient’s monitoring expenses. Finally, bivariate sensitivity analysis was conducted, to ascertain the results robustness.

Results: The cost-effectiveness ratio obtained, i.e., the average cost per patient with INR value in therapeutic range, was EUR 3.8 (considering currency exchange rate 1 EUR = 123.3 RSD, i.e. Serbian dinars) in the case of PMAS, while it was EUR 10.2 for UMC. In order to gain an adequate understanding of the aforementioned figures, the average Serbian salary is app. EUR 370. Additionally, negative incremental cost-effectiveness ratio confirmed PMAS as a dominant strategy, due to its higher effectiveness and lower costs. Sensitivity analysis corroborated the results robustness by demonstrating that PMAS remained a dominant strategy irrespective of the combinations of varied critical parameters, such as probability of patients’ INR being in therapeutic range (±15%), as well as of major bleeding.
occurrence (+1%) in the case of PMAS.

Discussion and Conclusions: The results obtained suggest that providing PMAS to patients on warfarin is a more cost-effective strategy than UMC, based on the more favorable both clinical and economic outcomes. Therefore, the implementation of this pharmaceutical service could contribute valuably to the improvement of Serbian healthcare system in the future.

OFF-LABEL PRESCRIBING TO CHILDREN IN OUTPATIENT CARE

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Introduction: Due to a lack of suitable drug formulations for children, as well as a lack of data on safety and efficacy of use in pediatric population, medicines are often prescribed to them off-label. Despite recent studies have resulted in the addition of pediatric information to the labeling for many medicines, an overwhelming number of pharmaceuticals still have no appropriate information. The results of some studies suggested that off-label use of medicines can be associated with the risk of adverse drug reactions.

Objectives: The objective of this work was to evaluate a practice of off-label prescribing to children in outpatient care in Armenia.

Methods: A survey was distributed among pediatricians and family physicians practicing in primary health care settings. Participants were randomly selected from a database of local health authorities separately in each of all the administrative districts of the country (12 districts of Yerevan and 10 regions of Armenia). They were asked to provide the information related to three last visits: age and sex of child, diagnose and medicines prescribed. All the records were provided anonymously. Data on medicines prescribing were received from 293 pediatricians and family physicians. Medicines prescribed for 879 children aged 0-17 years were studied. Off-label medicine use was identified by comparing actual prescribing and information from the Summary of Product Characteristics. The following off-label categories were used: age, dosing, contraindication, indication, pharmaceutical form, method of administration, absence of pediatric information.

Results: In total, 1817 prescriptions of 194 different individual medicines were prescribed to children, 114 (6.3%) out of 1817 medicines were prescribed off-label. 32.5% of all the off-label prescriptions were off-label contraindications, 19.3% - off-label age, 17.5% - off-label method of administration, 8.8% - off-label dosing, 7.9% - off-label indications, 7.0% - off-label pharmaceutical form, 7.0% - absence of pediatric information. Medicines most commonly prescribed off-label were Vitamin C (ascorbic acid) in solid pharmaceutical form (21.8%), Linkus syrup (17.5%) and salbutamol tablets (12.2%). Solid pharmaceutical forms of Vitamin C and Salbutamol were off-label prescribed to some patients despite other pharmaceutical forms of these medicines, which are authorised for use in children, are available in the pharmaceutical market of Armenia.

Discussion and conclusions: Off-label prescribing to children in primary health care settings is observed in Armenia. Although a level of off-label prescribing is not as high as identified in studies conducted in other countries, in some cases off-label use could be avoided and more appropriate pharmaceutical forms could be prescribed. It seems that education of physicians in the area of clinical pharmacology and medicines information would be beneficial for improving situations with safety of medicines use.

SELF-CARE AMONG DIABETES PATIENTS INTERVIEWED AT NORWEGIAN PHARMACIES

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Introduction: Treatment guidelines for diabetes recommend that patients are well-informed about their disease, treatments and treatment goals, e.g., glycosylated haemoglobin (HbA1c).

Objectives: To describe diabetes patients’ self-monitoring of blood glucose (SMBG) and potential need of guidance.

Methods: During their pharmacy practice, 53 Norwegian pharmacy students interviewed diabetes patients. Questionnaire data on demographics and self-monitoring (frequency, training, area of application, insecurity) and blood glucose were analysed using descriptive statistics and multiple logistic regression. Need of pharmaceutical guidance was defined as patients fulfilling at least one of these criteria: HbA1c >12%, extreme blood glucose values reported (>30 mmol/L; highest) or (>6 mmol/L; lowest), use of ≥10 or an unknown number of medications, SMBG performed without reporting any use of the results. The main outcome measure was achieved treatment goal, defined as HbA1c ≤7% among younger (<65 years) or <9% among older patients. Unachieved treatment goal included unknown HbA1c value.

Results: Among 490 interviewed patients, 159 had type-1 diabetes (T1D), mean age 39 years, and 321 had type-2 diabetes (T2D), mean age 63 years. Ten patients with other or unknown type of diabetes were excluded. There was no significant difference between patient groups in achievement of treatment goal, but 44% of persons with T2D versus 12% of those with T1D were not aware of their HbA1c-value (<p<0.01). Among 436 patients practicing SMBG, 24% were self-taught, while health personnel had taught 62%, 17% measured less often than once a week (23% among T2D), while 52% measured several times a day (30% among T2D). Most patients (75%) never controlled their glucomerat; 19% were sometimes unsure of the measurements’ accuracy, 8% felt SMBG had little or no importance, and 5% did not use the measurements. The proportion in need of guidance was 36%, no significant difference between patient groups. The multiple logistic regression analysis suggests that higher measurement frequency and higher age is associated with higher odds for achieved treatment goals.

Discussion and conclusions: Diabetes patients interviewed in Norwegian pharmacies think self-monitoring of blood glucose is important and they feel relatively confident that their measurements are right. However, the results uncover an information need among the patient group, and particularly in patients with T2D when it comes to knowing your treatment goal.

EDUCATIONAL INTERVENTION BASED ON THE NORMALISATION PROCESS THEORY TO ENHANCE ADHERENCE TO ANTIBIOTICS – A PILOT STUDY

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Introduction: Global consumption of antibiotics in humans has increased by nearly 40% between 2000 and 2010. Non-adherence with antibiotic regimens for community acquired infections is found to be high and the level of knowledge about antibiotics use amongst European countries remains low.

Objectives: To assess whether an educational intervention enhances medication adherence in patients taking antibiotics at community level.

Methods: An educational tool was prepared based on ‘Get Smart: Know when Antibiotics work’ by Centers for Disease Control and Prevention and underwent face/content validity. Twelve community pharmacies were chosen at random, two from each region of Malta; six pharmacies used the tool to counsel patients and six pharmacies acted as control. Prior to initiating, a focus group based on the first three concepts of the Normalisation Process Theory (coherence, cognitive participation, collective action) was held with pharmacists from the intervention group to discuss and agree upon the tool. Patients attending pharmacies with an antibiotic prescription were then recruited consecutively until the sample size was reached (50 patients per group). After the stipulated termination of antibiotic course, patients were contacted to assess adherence using the Medication Adherence Report Scale (MARS-5), storage, knowledge about antibiotic resistance and beliefs about medicines using Beliefs About Medicines Questionnaire-General (BMQ-General). MARS-5 scores were dichotomised into adherent/non-adherent. A paired T-test was used to compare adherence; a logistic regression was performed to ascertain the effects of BMQ on the likelihood of adherence. P-values ≤ 0.05 were
considered significant. Ethical approval was obtained.

Results: Fifty patients per group participated in the study: 34% of the intervention group and 42% of the control group were males. Adherence was higher in the intervention group (86% vs 74%, p=0.110), as well as MARS-5 scores (24±3 vs 23±3, p=0.071). The majority of patients in both groups stored antibiotics in the kitchen. There was no difference in knowledge regarding the reason for taking the full course of antibiotics, with 24% of both groups stating they did not know. There was no statistically significant association between BMQ subscale scores and adherence in both groups.

Discussion and conclusions: This pilot provides insights on the impact of an educational intervention on adherence to antibiotics. Whilst improved adherence in the intervention group is not statistically significant, this will be analysed further on 400 patients. Following the full study, another focus group will be held with pharmacists participating in the intervention group to reflect on/appraise the intervention (reflective monitoring).

WORKSHOP: HOW TO PROMOTE COST-EFFECTIVE PRESCRIBING?


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Introduction: International policies influencing prescribers include budgetary restrictions, feedback, education and information. Information alone has generally not been enough to change prescribers’ behavior. Differences in prescribers’ adherence to guidelines, or tendency to use newly marketed medicines have been described in the literature. New, expensive therapies targeted to small patient groups and the introduction of biosimilar products increase the role of prescribers in making cost-effective decisions on patient-level.

The objective of this workshop is to share experiences of good practices or obstacles in increasing cost-effective prescribing, and to discuss and innovate new policies, tools and models of collaboration.

Methods: The workshop will start with a short introduction of the challenges of influencing prescribers and strategies attempted in Finland. Participants are then split into groups to share their ideas and experiences about the topic. These will be summarized for the whole group. In the second part, groups will focus on a specific theme based on the results from the first part (e.g. curricula and education programs, uptake of biosimilars, feedback systems, budgets, formulas, guidelines, reimbursement restrictions). The results of the group discussion are presented to all participants and final conclusions are collectively made.

WORKSHOP: DOCTORAL TRAINING IN SOCIAL PHARMACY – ENHANCING NETWORKING AND SHARING RESOURCES TO IMPROVE QUALITY OF SOCIAL PHARMACY RESEARCH

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Introduction: Nordic countries are pioneers in social pharmacy, and they have remarkably contributed to the evolution of the discipline’s paradigm. Even recognized as a discipline belonging to pharmaceutical sciences, social pharmacy researchers have difficulty in finding suitable theoretical and methodological studies within the context of pharmacy. However, these studies are essential in strengthening the discipline and its ability to provide sound evidence on a wide range of research areas covering rational and safe pharmacotherapy in various settings. The fact that all social pharmacy units in Nordic countries have quite limited resources adds to the challenge. This can be particularly seen in doctoral training.

Objectives: The objective of this workshop is to discuss current status of doctoral training in social pharmacy in Nordic countries. The specific aim is to find actual strategies to enhance networking and sharing resources to improve quality of research and competences of junior researchers specializing in social pharmacy.

Methods: The workshop will consist of 1) short introduction by the moderators, 2) inventory of doctoral training practices in different social pharmacy units in Nordic countries, 3) inventory of courses and other doctoral training resources that could be shared with other units, and 4) interactive brainstorming to find ways to enhance networking between PhD students and their supervisors/other senior researchers/stakeholders contributing to social pharmacy research.

Results: Learning objectives: The workshop will provide an opportunity to learn about doctoral training practices in different social pharmacy units and how the existing resources and practices could possibly be better shared between the units in the future (e.g., through PhD student exchange, participation in courses, online learning and research seminars, journal clubs, joint research projects etc).

LATEST TRENDS IN PHARMACOVIGILANCE RESEARCH: AN INSIGHT INTO METHODS AND PATIENTS’ INVOLVEMENT

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Introduction: Pharmacovigilance has been undergoing several innovations in the past years. The landscape of methods used to detect and assess potential drug safety issues has increased. Healthcare regulators are developing policies that integrate evidence from different sources. The interest in non-interventional studies has been growing. This type of studies investigates various aspects of drug use, including efficacy and safety, under real-world conditions. This data can provide evidence to key stakeholders in decision-making processes about drug safety. Another trend has been the growing focus in the patient as a privileged source of information. Patient-generated information about adverse events is being more valued in every step of the drug development process. In pharmacovigilance, the efforts are being directed in evaluating the impact that regulatory framework poses, and in using methods that allow for a quicker decision on the benefit-risk assessment of medicines.

While there is growing demand for information about comparative effectiveness, there is substantial debate about whether and when observational studies have sufficient quality to support decision making.

Objectives: This workshop aims to increase awareness to new methodologic and regulatory environment in which drug safety is evolving and to explore the opportunities to enhance training in this area.

Methods: –

Results: –

Discussion and conclusions: The proposed workshop aims at building skills on different methods to support researchers. It also aims to provide practical information on which research pathways are being targeted in drug safety. It will also highlight evolving the role of the patient in drug development and safety, pointing research topics in this area. This interactive workshop will provide an overview of further education opportunities to enhance the knowledge in the concepts touched by the workshop. A panel of specialist researchers in the field will give insight in each of the specific areas covered by the workshop. The workshop will have the following structure: 1) introduction; 2) workshop purpose/learning objectives and agenda; 3) research methods being used in drug safety; 4) patient involvement in drug regulation and safety; 5) Education resources; 6) Discussion panel and Q&A.

The workshop will use as education materials PowerPoint presentations, group exercises, will provide evaluation and share the resources being used.

Although targeted at junior researchers, the workshop focuses on practical issues in this scientific area that can also be of interest to more experienced researchers. The workshop also provides a networking opportunity.

WORKSHOP – HOW TO CHARACTERIZE COMMUNICATION AT THE PHARMACY COUNTER

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Introduction: Communication at the pharmacy counter about rational use...
of medicine is of increasing importance for the professional role of community pharmacies and also for the patients’ possibility to use their medicine in an informed and optimal way. However, lack of in-depth knowledge about what really takes place at the counter in the interaction between pharmacy staff and patients, makes it difficult to estimate the consequences of the counseling as well as adequately improve the meeting. A Danish project, conceived of by researchers from the University of Copenhagen, the University of Southern Denmark, Pharmakon (The Danish College of Pharmacy Practice) and the Danish Pharmaceutical Association, will be launched 2017 to investigate what characterizes pharmacy encounters - including how to distinguish between them.

**Objectives:** The objective of the workshop is to inform about the upcoming project, to invite participants to join the project as well as to specify focus areas of the project by discussing and incorporating experiences of workshop-participants into the project design.

**Methods:** The workshop will start by researchers from the University of Copenhagen describing the background for the project along with the initial ideas of the project design and content. Participants will then discuss (first in groups in case of a larger number of attendees for the workshop):

a) What factors might be included when characterizing pharmacy encounters?

b) How do these factors potentially influence patients’ outcome of the counseling taking place?

c) What are the experiences of participants conducting studies about pharmacy communication?

Suggestions will be summarized and it will be further discussed if participants like to join the project and/or make parallel studies in their own country. Specific plans for collaboration will then be drawn.

**WORKSHOP: MEDICATION OPTIMIZATION OF THE AGED: WHAT IS KNOWN ABOUT COLLABORATIVE MEDICATION REVIEW PROCEDURES AND THEIR EFFECTIVENESS**

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**Introduction:** Polypharmacy and medication costs accumulate on a small proportion of medicine users, of which a majority is older adults. Polypharmacy increases risk of clinically significant medication-related problems and severe adverse drug events. Collaborative medication reviews have been suggested as a key in managing these risks and optimizing medications of the aged. Procedures are under development in many countries, including Nordic countries. Procedures differ internationally by core elements, such as comprehensiveness of the medication review, patient involvement, and roles and responsibilities of healthcare professionals involved.

**Objectives:** The objective of this workshop is to discuss current evidence on the collaborative medication review procedures, their implementation in different settings, and their effectiveness. Special focus is in comprehensiveness of the procedures and methodology applied in assessing their effectiveness.

**Methods:** The workshop will consist of 1) two short introductory presentations by the moderators and 2) interactive group discussions reflecting current status of implementing collaborative medication reviews and assessing their effectiveness in Nordic countries. The introductory presentations are based on current systematic reviews on medicines optimization of the aged by applying collaborative medication reviews. The other presentation specially focuses on the development, stimulation and assessment of these procedures.

**Results:** Learning objectives: The workshop will provide an opportunity to learn about principles of medicines optimization of the aged, existing collaborative medication review procedures internationally and in Nordic countries, and state of the art in research methodology applied so far to demonstrate effectiveness of these procedures.

**Discussion and conclusions:** The existing evidence on collaborative medicines optimization procedures is limited and indicates need for enhanced national and international cooperation between practitioners and researchers to further develop the procedures and methods for assessing their effectiveness.

**References**


**PHARMACY INTERNSHIP IN THE NORDIC COUNTRIES – STATUS AND FUTURE**

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**Introduction:** This educational workshop will address best practices, content, assessment methods and research projects from pharmacy internship courses in the Nordic countries. The content components will be described and discussed in terms of development, stimulation and assessment in the different settings.

**Objectives:** The objective of the workshop is to share experiences from the pharmacy internships in the Nordic countries, aiming at developing even better internships.

**Methods:** A short presentation of Swedish, Danish and Norwegian pharmacy internship experiences will be the foundation for the discussion between the workshop participants. Prior to the workshop participants are therefore kindly asked to consider how to answer the questions below:

1) What experiences of using/stimulating different learning activities and assessment methods during the pharmacy internship course are taking place in your pharmacy internship?

2) What obligatory tasks do the pharmacy interns need to solve during their internship? Share. Bring along material. Etc...

3) If the pharmacy supervisors attached to your university are especially selected and trained, please describe how. What competencies are needed and what experiences are wanted in order to be a good supervisor? Share. Bring along material.

4) How is the pharmacy internship evaluated in your university (and why, so?) – do you have ideas for changing the evaluation?

5) What are the three most successful aspects/components of the pharmacy internship run by your university – and what is the most problematic aspect/component?

6) Should we develop a joint, smaller Nordic pharmacy internship study (voluntarily for the interns), which can run as a pilot in all countries in 2018 – and in case yes, on what subject? Please, identify possible research questions regarding pharmacy internship.

**CAREERS, PROFESSIONS & THE ORGANIZATION OF WORK IN CONTEMPORARY SOCIETY – WHAT DOES IT MEAN FOR PHARMACISTS?**

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**Introduction:** Macro approaches to theorizing and understanding the changing nature of work has a long tradition in the field of sociology. The concepts and approaches that dominate the scholarly work include: the division of labour; orientations to work; labour process analysis; the proletarianization of work; sociotechnical and cultural approaches to the
organization and subsequent meaning of work — just to name a few. But what does it all mean? What can we learn from this body of work? The goal of this workshop is to introduce participants to major thoughts and theories in the “sociology of work” and discuss how it can apply to the future of work in pharmacy/pharmaceutical sector including the careers and pharmacy as a profession.

**Objectives:** The aim of the workshop is to present and discuss:

- Some of the most important theories in the “sociology of work”
- Some of the most important influences/innovations in the pharmaceutical sector including
- the production and distribution of pharmaceuticals today and in the future
- current and new forms of work organization — what they mean for the pharmaceutical sector
- political shifts regarding the pharmacy sector (in several Nordic countries) — inspired by New Public Management

The learning objectives of this workshop — participants will be able to 1) understand different approaches to the influences on and organization of work and how they impact their careers and personal identity 2) apply this knowledge to the strategies and planning of their own work and careers 3) apply this knowledge to their research

**Methods:** Workshop organizers will make brief presentations on: 1) Relevant past and contemporary theories in the sociology of work 2) The meaning of work in general and its role in our everyday lives and 3) future challenges affecting work in the pharmacy/pharmaceutical sector. Next, participants will work in small groups to discuss (among other things) what all this means for 1) the pharmacy profession in general 2) pharmacists’ work in various sectors in their own country 3) what work means for them personally — their identity and their careers.

**Results:** A plenary discussion, chaired by the organizers, will include reports from the small groups followed by a summing up by the organizers.**Discussion and conclusions:** Results of the group work will be discussed in the context of theories and approaches to understanding the meaning of work presented in the introduction.