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Oral communication I: Community pharmacy and public health

CP-PC001: Community pharmacist-directed point-of-care group A strep testing: results of a Canadian pilot program

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Please specify your abstract type: Research abstract
Background and objective: *Streptococcus pyogenes* is an aerobic, gram-positive extracellular bacterium responsible for a wide variety of infections. Its subtype, group A (β-haemolytic) strep (GAS) causes common pharyngitis (also known as "strep throat"). Novel rapid antigen detection tests allow for diagnosis of Group A Strep at the point-of-care and are ideally suited for use by community pharmacists. The objective of the study is to evaluate the impact and feasibility of community pharmacist-directed GAS testing.
Setting and method: A retrospective analysis of aggregate billing data was conducted using descriptive statistics to evaluate the effectiveness of a community pharmacist-directed strep testing program at Shoppers Drug Mart pharmacies in the Canadian provinces of British Columbia, Alberta, and Nova Scotia. Pharmacists trained in sample collection offered the screening to patients with symptoms suggestive of Strep from November 28, 2015 to May 31, 2016. Throat swabs were collected and analysed using the BD Veritor™ system for rapid detection of GAS.
Main outcome measures: Proportion of GAS-positive cases that resulted in the same day initiation of antibiotic therapy by pharmacists.
Results: 7050 patients were tested across 204 participating locations. Average age was 27.3 years with children (5–14) representing 30.7% of the population. 25.5% of patients tested positive for GAS. Of the patients who screened positive, antibiotic therapy was initiated within the same day in 68.7% of cases. In Alberta, where pharmacists have advanced prescribing authority, same day initiation of therapy was 73.8% compared to a rate of 40.5% ($p < 0.0001$) in the other jurisdictions.
Conclusion: These results highlight both the public readiness to access point of care services in community pharmacies and the ability of pharmacists to conveniently expedite management of patients with GAS. Community pharmacy-based Strep testing can facilitate prompt and appropriate access to antibiotic therapy as was demonstrated in those regions with advanced prescribing authority. Communication of recommendations to the physician in a timely manner remains a barrier to accessing treatment in those regions without this additional scope of practice.

CP-PC002: Influence of physicians' beliefs about statins on patients' beliefs and adherence on statin therapy

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Please specify your abstract type: Research abstract
Background and objective: According to literature adherence to statins ranges from 32 to 71%. Medication adherence is affected by both practical barriers and patient's beliefs about medication. However, physicians also have their beliefs about medication. Several studies have shown that these beliefs also impact the decision of patients to agree with a particular treatment or not. As current published interventions on medication adherence (which focus predominantly on patients) are not or just partly effective, physicians' beliefs might be a promising target for interventions to improve adherence. However, there is currently no information available on physician's beliefs about statins and whether these beliefs affect patient's beliefs and adherence. Therefore, the objective of this study is to examine whether physicians' beliefs about statins influence the beliefs and adherence of patients using a statin.
Setting and method: This cross-sectional study was conducted in GP practices and community pharmacies, between September 3, 2014 and March 20, 2015. Physicians' and patients' beliefs about statins were assessed with the Beliefs about Medicine Questionnaire (BMQ) specific. Patients' adherence on statins was assessed with both the MARS-5 and the Morisky-8 questionnaires.

Main outcome measures: Association between physicians' BMQ scores and patients' BMQ scores and adherence (MARS-5 and Morisky-8)
Results: 1504 patients (mean age 66.8 (SD ± 9.9) years, 46.5% female, 8.0 (SD ± 7.0) years of statin use) and 209 physicians (mean age 49.5 (SD ± 10.0) years, 45.9% female) participated in this study. Patient scores

Mean adherence scores were MARS 24.0 (±1.8) and Morisky 7.1 (±1.3). The mean BMQ necessity score was 16.9 (SD ± 4.3) and the mean BMQ concern score 12.3 (SD ± 3.9). Adherent patients have higher BMQ necessity scores than non-adherent patients (17.1 (SD ± 4.3) vs. 15.7 (SD ± 4.2), $p < 0.0001$). Non-adherent patients have higher BMQ concern scores than adherent patients (13.2 (SD ± 4.2) vs. 12.0 (SD ± 3.9)).

Physician scores

The mean BMQ necessity score for physicians was 13.9 (SD ± 2.7) and the mean BMQ concern score was 11.5 (SD ± 2.8).

Association between physician and patient scores

Physicians with a high BMQ concern score have patients with a higher concern score than physicians with a low concern score (12.5 (SD ± 4.0) vs. 11.9 (SD ± 3.8), $p < 0.05$). There was no association between the physicians' necessity scores and patients' necessity scores. There was no difference between physicians' necessity scores for adherent patients and non-adherent patients (14.2 (SD ± 2.7) vs. 14.2 (SD ± 2.6)) and no difference in physicians' concern scores for adherent patients and non-adherent patients (11.5 (SD ± 2.7) vs. 11.5 (SD ± 2.8)).
Conclusion: There is an association between patients' beliefs about medicine and adherence. Although physicians' beliefs about statins seem to influence concerns of patients, these beliefs do not seem to affect adherence of patients using a statin.

CP-PC003: What factors affect high perceived sensitivity to medicines (PSM) in Norway?

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Please specify your abstract type: Research abstract
Background and objective: No previous study has measured the perceived sensitivity to medicines (PSM)[1] in a Norwegian setting and its relation with patient health-related factors. This study aimed to explore the prevalence and factors associated with high PSM in a sample of Norwegian chronic medicine users.
Setting and method: Cross-sectional questionnaire study among Norwegian patients filling prescriptions for chronic medicines in three community pharmacies in Oslo in the period October 2015-February 2016. The PSM scale consists of five questions on a 5-point Likert response scale; 1: strongly disagree to 5: strongly agree. Questions are summed and the total PSM score lies between 5 and 25. A high score indicates high sensitivity to medicines[1]. Data on PSM, Beliefs about Medicines in General (BMQ-General), sociodemographic, medical and health-related factors were collected via a structured questionnaire. Descriptive statistics and univariate logistic regression was conducted [crude odds ratio (OR_c) and 95% Confidence Interval (CI)].
Main outcome measures: PSM, the total score was categorized into low (5–9), middle (10–15) or high (16–25) sensitivity to medicines.
Results: 218 chronic medicine users were included (response rate: 36.7%). Most participants were female (61.0%) and aged 67 years and over (45.4%). The prevalence of low, middle and high PSM was 19.7, 60.6, 17.9%, respectively. Compared to no previously experienced adverse drug reaction (ADR), having 1–2 ADRs (OR_c 3.3; 95% CI 1.1–10.2) or ≥3 ADRs (OR_c 7.7; 95% CI 2.4–24.8) was associated with higher likelihood of having high PSM. Negative attitudes towards medicines were also associated with high PSM ($OR_{c:\ BMQ\ harmful}$ 1.3; 95% CI 1.1–1.5; $OR_{c:\ BMQ\ overuse}$ 1.3; 95% CI 1.1–1.5). Women were shown to be more sensitive to medicines than men (OR_c 4.4; 95% CI 1.8–11.0). Patients using generics had a 50% reduced odds of having high PSM compared to those not willing to use generics ($OR_{c:generic\ users}$ 0.5; CI 0.3–1.0).
Conclusion: Nearly 1 out of 5 patients in the study had high PSM. Gender, previous ADRs, attitudes towards medicines, and acceptance of generic drugs were important factors associated with high PSM. Health professionals should take the time to ask patients about attitudes and experiences with ADRs to promote good communication and information about medications.

Reference

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PH001: Adherence to antihypertensive medication in 12 sub-Saharan countries: is patient socioeconomic status a barrier?

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Please specify your abstract type: Research abstract
Background and objective: Hypertension is the leading risk factor for cardiovascular disease (CVD) in sub-Saharan Africa and highly contributes to the fact that more than 80% of deaths from cardiovascular disease worldwide occur in low and middle-income countries. Increasing adherence to life saving CVD therapies in resource limited countries could lead to a reduction of these deaths. The aim of this study was to assess impact of patients' socioeconomic status on hypertensive drugs intake in 12 subSaharan countries.
Setting and method: We conducted an observational study based on a questionnaire survey completed during outpatient consultations-specialized in hypertension- in the cardiology departments in 12 sub-

Saharan countries (Benin, Cameroon, Congo (Brazzaville), Democratic Republic of Congo, Gabon, Guinea, Ivory Coast, Mauritania, Mozambique, Niger, Senegal, Togo).

Main outcome measures: Patients' socioeconomic status, drugs regimen, and clinical data were completed by physicians during consultation. Low, medium and high adherence were respectively defined as a score of <6.6–<8 and 8 on the validated 8-Item Morisky Medication Adherence Scale completed by the patients. Data were compared using multivariate logistic regression analyses.

Results: Between January 2014 and November 2015, 2167 patients with hypertension were included. The proportion of patient belonging to the lowest, middle and highest socioeconomic groups was 17.3, 49.2, 33.5% respectively.

In the lowest socioeconomic group, 48% of the patient admitted having stopped their treatment due to financial reasons; this figure decreased to 11% in the highest socioeconomic group of patients.

Patients in the lowest socioeconomic group were less adherent (39.5% of low adherent) than patients in the highest socioeconomic groups (25.3%) ($p < 0.05$). Indeed, this difference was even more characterized in low income countries (50 vs. 24.9% of low adherent in lowest vs. highest socioeconomic group respectively).

Conclusion: Poor adherence was frequent and impacts even more patients in the lowest socioeconomic group. Our results suggest that improvements to the affordability of those drugs are likely to enhance their use and might impact on the burden of CVD in sub-Saharan countries.

PH002: Cardiovascular drugs poor quality and mortality in 10 sub-saharan countries: the SEVEN study

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Please specify your abstract type: Research abstract

Background and objective: Substandard/counterfeit drugs pose a serious threat to patient safety and public health. Drug quality studies in Africa have focused mainly on anti-microbials, with no studies on cardiovascular drugs.

We assessed the quality of seven common cardiac drugs (anticoagulants, antihypertensives and statins) in sub-Saharan Africa.

Setting and method: Drugs were prospectively collected using standardized methods between 2012 and 2014 from licensed (random pharmacies) and unlicensed (street-markets) places of sale in 10 African countries. Countries of the collaborative network participated, Benin, Burkina-Faso, Congo, Democratic Republic of Congo, Guinea, Ivory Coast, Mauritania, Niger, Togo and Senegal.

Main outcome measures: We developed a validated reversed-phase liquid chromatography with tandem mass spectrometry method to accurately quantify the active ingredient in a certified public laboratory. Three quality categories were defined based on the ratio of the measured to the expected dosage of the active ingredient: A: 95–105%, B: 85–94.99% or 105.01–115%, C: <85 or >115%. Country-specific cardiovascular mortality rates were obtained from WHO data.

Results: According to the sampling protocol, 3468 samples were collected and 1530 were tested at random, of which 249 (16.3%) were deemed to be of poor quality (B or C). Poor quality was more frequent for amlodipine and captopril (29 and 26%, respectively), for generic drugs (23%) and for drugs produced in Asia (35%), and reached 50% for drugs produced in Asia and purchased in street-markets. Cardiovascular mortality rates were significantly related to the prevalence of drugs poor quality ($P < 0.001$).

Conclusion: In this first study to assess the quality of cardiovascular drugs in Africa, more than one in every six samples tested did not meet quality standards. The quality of cardiovascular drugs in Africa is questionable and associated with cardiovascular mortality. This requires continued monitoring strategies.

PH003: A qualitative exploration of pharmacist provision of pharmaceutical care services to patients in dispensing medical practices in remote and rural settings of Scotland

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Please specify your abstract type: Research abstract

Background and objective: NHS Highland and NHS Western Isles are the most remote and rural health boards in the United Kingdom, with high numbers of dispensing medical practices. A pilot is underway in dispensing practices with clinical pharmacists undertaking targeted medication reviews. A previous quantitative service evaluation demonstrated its value, with pharmaceutical care issues identified in almost all patients, the vast majority of which (86.7%) were managed by the pharmacist without any need for general practitioner (GP) referral. The objective was to undertake a qualitative exploration of the service.

Setting and method: All patients and staff involved in the service were invited to participate. A semi-structured interview schedule was developed and piloted. Telephone interviews were conducted with all consenting staff and a purposive sample of consenting patients recruited to the point of data saturation. Interviews were audio-recorded, transcribed verbatim and analysed thematically. NHS ethics and research and development approvals were obtained.

Main outcome measures: Experiences and recommendations for improvement.
Results: Interviews were conducted with sixteen patients, six GPs, four practice managers, one nurse, one dispenser and the two pharmacists providing the service. From the perspectives of the patients, emerging themes were that: they valued the consultation, particularly the opportunity to talk to another professional, and the time commitment; the perceived impact on knowledge and understanding of how their medicines worked; and how to use these to best effect. While there was a preference for face-to-face consultations over other modes, for example telephone, patients were aware of the logistical issues. Staff expressed overwhelming support for the service, particularly the GPs who commented on the quality of clinical dialogue, well documented actions and follow-up plans. Patients and staff supported continuation and expansion of the service.
Conclusion: Findings support plans to develop and expand these services in Scotland and in other remote and rural settings in the UK and beyond. In Scotland, this aligns with the Government plan, 'Prescription for Excellence', which states that by 2023 pharmacists will be independent prescribers managing caseloads of patients and that patients in remote and rural areas are entitled to equity of access to such expertise.

PH004: Change management strategy in the field of polypharmacy and adherence: preliminary results from the "SIMPATHY" program

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Please specify your abstract type: Research abstract
Background and objective: SIMPATHY (Stimulating Innovation Management of Polypharmacy and Adherence in The Elderly) is a consortium of 10 organizations, aiming to stimulate innovation on polypharmacy and adherence. A Change Strategy should be delivered. A set of tools has been used aiming to identify how various factors may influence the Change and to provide the basis for building the Change Strategy towards 2025 Polypharmacy Landscape.
Setting and method: A Strategy, for 2025, focusing on a comprehensive Vision and a clear Road map, has to be built on a consensus basis. PESTEL analysis and SWOT are chosen, as tools, to support the deeper understanding towards consensus, built, pilot tested and guided by a Handbook; Political, Economic, Social, Technological and Legal factors are included and expressed in the form of "question/statement". A workshop (stakeholders and health professionals) gave opinion in each partner country. PESTEL template was not designed to function as a questionnaire but as a prompt for a constructive discussion on a multi-attribute field focusing on the potential in the future.
Main outcome measures: PESTEL is a qualitative rather than a quantitative tool; the opinion expected, for each factor, has been structured in three dimensions: (1) the Level of the estimated Impact of the factor in the scale of 5 (5 high to1 low impact) (2) the Positivity or Negativity (P/N) type of the impact, (3) the Degree of Uncertainty in the scale of 5 (5 high to 1 low uncertainty). The answers have been elaborated in terms of Similarities, Graphic illustration and interpretation under the focus of the Vision and the Road Map phases.
Results: The factors identified as more influential are: Health services Delivery Lines, Chronic Disease Management, Governance structure/ Decision making structure, Health system's Financing, number of Pharmacies per inhabitants, Attitudes and Beliefs, Professionals' Education, Patients' rights empowerment, the existence (or not) of ICT integrated systems, innovative drugs policies, Legal authorities and regulatory bodies authorization, Roles and responsibilities, EU guidelines.
Conclusion: The identified factors meet the partners' consensus, being useful to build the Change Strategy. The process itself helps to share a common understanding towards a comprehensive EU professional culture against inappropriate polypharmacy and non-adherence.

CP-CE001: Multi-national pharmacists needs assessment in the management of anticoagulation therapy: results of the International Pharmacist Anticoagulation Care Taskforce (iPACT) survey

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Please specify your abstract type: Research abstract
Background and objective: The International Pharmacists for Anticoagulation Care Taskforce (iPACT) is an expert group committed to enhancing the key role that pharmacists play in anticoagulation management. Pharmacists are ideally suited to monitor patients in this therapeutic area, however, an assessment of their knowledge in providing consultations has not been formally evaluated. The purpose of this needs assessment survey is to identify self-reported gaps in competences and confidence among practicing pharmacists in the area of anticoagulation and to identify variances in confidence levels between different countries.
Setting and method: An electronic link to the needs assessment survey was distributed to the pharmacists in the participating countries via their respective professional organizations or colleges. Countries with adequate response rates included in the preliminary statistical analysis were Canada, France, Portugal, Croatia, Brazil, and Ireland.
Main outcome measures: Self-reported competences and confidence levels.
Results: A total of 1118 pharmacists completed the survey. The distribution of respondents were Canada 356 (31.8%), France 304 (27.2%), Brazil 75 (6.7%), Portugal 142(12.7%), Croatia 179 (16.1%), and Ireland 62 (5.5%). The demographic background of the respondents varied with most of the respondents practicing in the community setting (>90%) and reporting their highest educational level as a bachelor's degree (35.8%). France had the highest proportion of pharmacists working in hospital (68.4%) with a doctorate degree (PhD or PharmD 87.7%). With respect to counseling for VKA, pharmacists in France, Canada, and Ireland were the most confident (confidence levels ranged from 87 to 93%), while pharmacists in Brazil were the least confident at 58.6%. Overall, pharmacists were less confident in providing information on DOACs compared with VKA (83 vs. 55%; $p < 0.0001$). Pharmacists in Ireland and Canada

were the most confident with DOACs (range from 73.4 to 75.7%) while Brazilian pharmacists were the least confident at 23%. Surprisingly, 1/3 of pharmacists in all countries were not confident when discussing bleeding risk, INR monitoring, bridging, interaction, and switching between the agents. The vast majority of respondents reported they would like additional education in anticoagulation with personalized e-learning as the preferred source.
Conclusion: These results highlight the apparent lack of confidence by pharmacists when discussing anticoagulation therapy, particularly DOACs. Future continuing education programs should be developed on electronic platforms focusing on practical clinical themes including management of bleeding, adverse events, and bridging between agents.

Oral communication II: Hospital pharmacy and pharmaceutical care 1

HP-PC001: Translation and validation of the CLEO tool to assess the impact of clinical pharmacists' interventions

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Please specify your abstract type: Research abstract
Background and objective: A pharmacist's task in a health care team is to promote drug therapies, which are appropriately indicated, effective, and safe, and meet patients' needs and preferences. Responsibility for this task may be taken by adequately documenting, monitoring, and reviewing the interventions that were made. Existing classification systems for pharmacists' interventions (PIs) help to document interventions but lack in evaluating their impact. The French tool CLEO is an evaluation system, which allows clinical pharmacists to assess the potential impact of a pharmaceutical intervention in three independent dimensions (CLinical, Economic, and Organisational) by themselves.
Our objectives were to translate CLEO into German and to validate the German version.
Setting and method: We translated CLEO according to the ISPOR Principles of Good Practice for the Translation and Cultural Adaption Process for Patient Reported Outcome Measures (https://www.ispor.org/workpaper/research_practices/PRO_tlva.asp). We assessed interrater reliability and test–retest reliability of the German version of CLEO ($CLEO_{de}$) with 10 model cases. Appropriateness, acceptability, feasibility, and precision were tested by distributing a 19-item questionnaire (7-point Likert scale; 1: *entirely disagree*, 3: *neutral*, 7: *entirely agree*) to 10 clinical pharmacists who had worked with $CLEO_{de}$ for 13 days.
Main outcome measures: Interrater reliability (Fleiss Kappa coefficient κ), test–retest reliability (Kendall Tau-b coefficient τ), appropriateness, acceptability, feasibility, and precision.
Results: Until $CLEO_{de}$ was completed, 10 German versions were created. After cognitive debriefing and back-translation, the final version was proposed to 10 clinical pharmacists, each of them classifying 10 model cases with the tool. The interrater reliability among the 10 $CLEO_{de}$ users was fair for the dimensions *clinical* ($\kappa = 0.37$) and *organisational* ($\kappa = 0.28$) and substantial for *economic* ($\kappa = 0.75$). Test–retest correlation was moderate for the dimensions *clinical* ($\tau = 0.69$) and *organisational* ($\tau = 0.59$) and high for *economic* ($\tau = 0.87$). $CLEO_{de}$ as a system to evaluate PIs was seen as appropriate (mean = 5.45; SD = 0.76), acceptable (4.43; 1.28), feasible (5.27; 1.44), and precise (5.90; 1.16) on the 7-point Likert scales of the questionnaire.
Conclusion: We successfully translated the French evaluation system for PIs CLEO into the German version $CLEO_{de}$. Our results for the interrater and test–retest reliability are well in-line with other tools assessing only clinical impacts of interventions; However, they highlight sections of CLEO for possible refinement in collaboration with the original developers. The findings from the questionnaire suggest that $CLEO_{de}$ is seen as an appropriate system to evaluate PIs. $CLEO_{de}$ is a promising tool which may—in combination with already existing classification systems for drug-related problems—add qualitative aspects to quantitative information on PIs.

HP-PC002: Impact of drug reconciliation at discharge and communication between hospital and community pharmacists on drug-related problems: a randomized controlled trial

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Please specify your abstract type: Research abstract
Background and objective: Patients are at risk of drug-related problems (DRPs) at transition points during hospitalization. The Community pharmacist (CP) is often the first healthcare professional patients visit after discharge. CPs lack sufficient information about the patient and so they may be unable to identify problems in medications, which may lead to dispensing the wrong drugs or dosage, and/or giving wrong information. We aim to assess the impact of a complex intervention comprising of medication reconciliation performed at discharge by a hospital pharmacist (HP) with communication between the HP and CP on DRPs during the 7 days following discharge.
Setting and method: Cluster randomized crossover trial involving medical and surgery care units (each unit corresponding to a cluster) in French hospitals during two consecutive 14-day periods, randomly assigned as 'experimental'(E) or 'control' C (usual care) periods. During the experimental period, the HP performed a medication reconciliation that was communicated to the patient's CP.
Main outcome measures: The primary outcome was a composite outcome of any kind of DRP (prescription/dispensation, gap or patient) during the 7 days following discharge assessed at day seven post-discharge by phone from patient and CP. The secondary outcomes were 1/unplanned hospitalizations assessed by phone contact at day 35 after discharge and 2/the iatrogenic potential exposure scale from 0 to 3 for each patient established by a clinical team. Analysis was conducted in intention to treat.
Results: 22 hospitals corresponding to 48 clusters enrolled 1092 patients (536 E group v/s 548 C Group). No difference was observed on age, sex, autonomy, and number of drugs in home medication at admission and discharge. At day 7; 236 (45.6%) patients in E group had at least one DRP v/s 280 (52.6%) in C group (OR 0.77; IC 95% [0.61; 0.98] $p = 0.034$). Intervention was especially efficient for patient discharged from surgery unit (OR 0.64 IC 95% [0.43; 0.94]) and aged less than 75 years (OR 0.71 IC 95% [0.53; 0.94]. Although intervention decreased patient exposure to DRP with high iatrogenic potential (from 8.7 to 5.2% $p < 0.0006$), un-planned hospitalizations at day 35 weren't different between groups (5.8 vs. 4.5% $p = 0.50$).

Conclusion: Medication reconciliation associated to communication between hospital and community pharmacists is efficient to decrease patient exposure to DRP but not sufficient to decrease un-planed hospitalization.

HP-PC003: Clinical pharmacists bridging health care levels by medication reviews in primary care

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Nord-Trøndelag County is sparsely populated and many inhabitants live far from the hospital. Additionally, only half (12 of 23) of the municipalities have a local pharmacy. Traditionally, Namsos and Levanger Hospital Pharmacies have performed quality audits of the implementation of drug administration procedures in primary care units. Since 2013, a service where clinical pharmacists participate in multidisciplinary medication reviews in 19 municipalities throughout the county has been established. The objective of this poster is to describe the practical approach and design of the service.
Design: A descriptive report of an implemented clinical pharmacy service in primary care where clinical pharmacists, as part of multidisciplinary teams, perform medication reviews.
Results: Medication reviews are performed on patients admitted to nursing homes and patients in home care, receiving help with handling of their drugs. Primary care nurses prioritise patients (by selecting frail elderly with multiple co-morbidities and polypharmacy), usually five patients in each meeting. Prior to the review, nurses collect medical information using a checklist including; diagnosis, drug-related symptoms, standard laboratory tests and an updated medication list. The clinical pharmacist receives de-identified medical information by postal mail or e-mail before the meeting. Based on this information the pharmacist identifies possible drug-related problems (DRPs) and provides recommendations on how to solve them. This is performed in a structured approach according to the Integrated Medicine Management (IMM) model. Subsequently, the pharmacist visits the municipality and discusses the medication reviews in a multidisciplinary team meeting with nurses and physicians. In addition, the pharmacist gives lectures in a medication related topic (e.g. treatment of insomnia and anxiety, oral anticoagulants and cognitive side effects). Following the meeting, the pharmacist reports the DRPs and suggested interventions to the multidisciplinary team, for further follow-up. During 2015, totally 220 medication reviews were performed in 19 municipalities. In the same period, 25 lectures were given by the clinical pharmacists.
Conclusion: This clinical pharmacy service enables multidisciplinary medication reviews even in municipalities with limited health professionals and resources. As a part of multidisciplinary teams, the clinical pharmacists contribute with medical competence.

HP-PC004: Antimicrobial stewardship and daptomycin

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Please specify your abstract type: Research abstract
Background and objective: *Antimicrobial Stewardship* have clearly demonstrated their efficiency towards a more adequate use of antibiotics. Since 2014, the use of daptomycin, a "critical last resort antibiotic" has intensified in our hospital, occasionally outside the scope of its approved indications. This situation has led to the implementation of an *Antimicrobial Stewardship* and the drafting of local guidelines.

The aim of this study is to analyse the evolution and pertinence of daptomycin prescriptions, after distribution of these guidelines within our institution.
Setting and method: A monocentric prospective study was conducted between July 2015 and November 2015 in a 1500-bed University Hospital. Each daptomycin prescription recorded by pharmacy department was analysed by an infectious diseases specialist in the presence of the prescriber and considering local guidelines and the patient's clinical conditions.
Main outcome measures: The indicators chosen to determine prescription pertinence were: treatment indication, prescribed dose and other antibiotics associated with the daptomycin prescription.
Results: 20 daptomycin prescriptions were analysed. Observed indications were: sepsis (35%), infective endocarditis (25%), bone and joint infections (25%) and vascular prosthetic infections (10%). Identified pathogens were: MRSA (35%), methicillin-resistant coagulase-negative staphylococci (25%), methicillin-sensitive *Staphylococcus aureus* (10%), enterococci (10%) and methicillin-sensitive coagulase-negative staphylococci (5%). Daptomycin was prescribed as first-line treatment in 50% of cases. The mean dose was 7 mg/kg/day [3–10 mg/kg/day] for a mean duration of 17 days [2; 55 days]. Local guidelines were followed in 20% of cases. Daptomycin use was relevant for 70% of prescriptions. The irrelevant prescriptions triggered the modification or stoppage of antibiotic therapy in 50% of cases, respectively, generating an 18% decrease in consumption and an economy of over €6700 for our institution.
Conclusion: This study shows the efficiency of *Antimicrobial Stewardship* in adequately using antibiotics, limitating ecological impacts, improving patient care and decreasing healthcare costs. It also shows that guidelines alone are insufficient to ensure a proper use of antibiotics. Without a close prescription follow-up, constant reminders and sustainable evaluations, guidelines only affect a few prescribers. Within the context of an "antimicrobial crisis", further development of guidelines and *Antimicrobial Stewardship* is essential to fight increasing bacterial resistances and requires a close collaboration between all healthcare professionals including pharmacists.

HP-PC005: Perceptions on the clinical pharmacist's role in the multidisciplinary team

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Clinical pharmacy has over the last decades been introduced to Norwegian hospitals, and several quantitative studies have shown the efficiency of clinical pharmacists' contribution to the multidisciplinary teams. On the other hand, few qualitative studies have described how the different participants in the team perceive this collaboration. The objective of this study was to explore physicians' and clinical pharmacists' perceptions on the role of the clinical pharmacist in the multidisciplinary team.
Design: Semi-structured interviews with six physicians, and a focus group interview with one physician and three clinical pharmacists, were conducted from November 2012 to March 2013. The participants were based at three Norwegian hospitals. All interviews were audio-recorded, the focus group additionally videotaped. The

interviews were transcribed verbatim and data were analysed using systematic text condensation.
Results: Three major themes were identified: *Benefits, unrealised potential* and *criteria and barriers for success*. (1) Benefits described by physicians included increased patient safety, increased awareness on drugs, and an ease of workload. Drug interaction management was emphasized as one of the clinical pharmacists' most important work tasks, as well as being a resource for collaborating healthcare professions and to the patient himself. (2) The clinical pharmacists expressed that they had an unrealised potential and could contribute to a greater extent in the multidisciplinary team than they did already. They mentioned education towards physicians and nurses, contribution in treatment decision-making and patient counselling as examples for possible extended work tasks. (3) As criteria to succeed as a clinical pharmacist, physicians highlighted the importance of oral communication and physical presence on the wards. As barriers for integration in the team, the clinical pharmacists identified the physicians' lack of knowledge about the clinical pharmacists' skills as well as unclear expectations regarding their responsibilities.
Conclusion: Physicians agreed that the clinical pharmacist represent a valuable contribution to the multidisciplinary team, where patient safety and drug interaction management are highlighted as main benefits. Clinical pharmacists should to a greater extent educate healthcare professions in drug related topics and provide patient counselling. Continuous effort on making the clinical pharmacist a natural part of the multidisciplinary team is crucial for the development of clinical pharmacy. By gathering perceptions from the collaborating professions as well as educating them on what clinical pharmacists can provide, we can develop a multidisciplinary team that enhances patient safety.

HP-PC006: Assessment of dual antiplatelet therapy following acute coronary syndrome using GRACE and CRUSADE

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Mortality and morbidity benefits of dual antiplatelet therapy (DAPT) following acute coronary syndrome (ACS) have been unequivocally demonstrated in a large body of evidence. With the availability of more potent antiplatelet agents, balancing ischemic and bleeding risks to prevent adverse outcomes is an on-going challenge, in particular, recognising that patients with high bleeding risk were excluded from clinical trials. GRACE and CRUSADE scores stratify risk of mortality and in-hospital major bleeding post ACS respectively. These tools should be used to support antiplatelet choice in light of newer more potent agents that equally pose a greater risk of bleeding.
Design: GRACE and CRUSADE scores were calculated for patients presenting with ACS. Clopidogrel was recommended for patients with a high or very high CRUSADE score (greater bleeding risk). Ticagrelor was recommended for patients presenting with ST-elevation myocardial infarction (STEMI) or those with NSTEACS with a GRACE score of intermediate or above (greater ischemic risk) and a CRUSADE score of moderate or less (low bleeding risk). In either case, treatment was at the discretion of the clinician and patients received concomitant aspirin. A registry was collated of risk scores, diagnosis and choice of antiplatelet therapy.
Results: 1030 patients were included in the registry, of which 587 (57%) presented with STEMI and 443 (43%) presented with NSTEACS. 558 of 752 (74%) patients with a greater ischemic risk received ticagrelor as part of their DAPT regime. Advanced age, concomitant anticoagulation and those awaiting surgery were the most common reasons for patients with a greater ischemic risk to receive clopidogrel. 145 (14%) had a high or very high CRUSADE score. Of these, 130 (90%) received clopidogrel as part of their DAPT regime.
Conclusion: Risk stratification was streamlined using the data collection tool and useful to support choice of DAPT. European Society of Cardiology (ESC) guidance recommends use of established risk scores for prognosis and bleeding; however evidence to correlate to choice of DAPT is lacking. Outcome data is currently being reviewed and will provide further evidence to correlate choice of DAPT to GRACE and CRUSADE scores.

HP-PC007: Changes in antiretroviral treatment due to interactions in co-infected patients who initiate treatment for chronic hepatitis C virus

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: In Europe, approximately 25% of the patients with the human immunodeficiency virus (HIV) infection are co-infected with the hepatitis C virus (HCV). Treatment recommendations in HIV/HCV co-infected patients are identical to those in patients with HCV mono-infection. However, potential drug–drug interactions (DDIs) between antiretroviral agents and new direct-antiviral agents (DAAs) imply the need of a careful selection of the HCV treatment regimen.

The aim of the present study was to evaluate the need of a change in the antiretroviral therapy (ART) due to potential DDIs in patients with HIV/HCV co-infection who started treatment for HCV with new DAAs. We also assessed the effectiveness of HCV treatment 12 weeks after HCV treatment completion.
Design: We retrospectively registered clinical data about HCV and HIV management: HCV genotype, fibrosis METAVIR score, initial HCV viral load, HCV treatment and previous ART regimen. We recorded the changes in ART prior to starting HCV treatment and the reason of this switch (DDI, simplification or duplication of the therapy).
Results: Between February 2015 and January 2016, 50 HIV/HCV co-infected patients started HCV treatment with a DAAs regimen. Of them, 39 had advanced liver disease (fibrosis score: F3/F4) and 27 were infected with HCV genotype 1. Prior to starting HCV treatment, 29 patients needed a switch in ART regimen due to potential DDIs with DAAs. Simeprevir and the co-formulation ombitasvir/paritaprevir/ritonavir were the DAAs most frequently implicated in DDI with protease inhibitors or non-nucleoside reverse transcriptase inhibitors: 19/29 and 5/29, respectively.

Also, we observed some changes of ART due to other causes. Five switches occurred to adequate the regimen (discontinuation of ritonavir in candidates to take the co-formulation ombitasvir/paritaprevir/ritonavir or ART improvement to decrease pill burden). As for HCV treatment effectiveness, 42/50 (84%) patients achieved sustained viral response 12 weeks after therapy completion.
Conclusion: A large proportion of patients with HIV/HCV co-infection who initiate treatment with DAAs for HCV need to switch ART due to potential interactions that may impact on effectiveness and safety of both treatments. Additionally, some changes in ART treatment are made to facilitate therapeutic adherence.

These results highlight the need of a multidisciplinary approach in which interactions between ART and HCV treatments should be carefully assessed.

HP-PC008: Identification of high risk patients by clinical pharmacists: evaluation of 3 predictor scores

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Chronic diseases are a major issue for the health care system because they are associated with polymedication, iatrogenic event and medication error. To measure these risks, several scores exists. The aims of this study are to (1) evaluate and (2) compare three scores to estimate risk of rehospitalisation (8 Ps)[1], early mortality (Charlson)[2] and drug related problems (DRP)[3] to highlighted high risk patients in a population of medical unit.
Design: 49 clinical and therapeutic variables in 216 patients were collected through medical records and prescriptions by clinical pharmacists. Three scores were calculated during 2 months in six units (internal medicine, n = 30; nephrology, n = 35; geriatrics, n = 35; rheumatology, n = 45; cardiology, n = 54 and endocrinology, n = 29). The coefficient of correlation between the three scores were calculated by a Kendall test. Patients were considered at a high risk for rehospitalisation (8Ps > 2), early mortality (charlson > 5) and drug related problems (DRP ≥ 8)
Results: In the general population, the average age was 67.4 ± 18.1 years old and the sex ratio was 0.94. The average treatment used was 7.8 ± 4. Fifty-seven percent of our population had a 8Ps score >2 so a risk of rehospitalisation, the average Charlson score was at 4.7 ± 2.8 and 49% of population had a score between 5 and 9. The average score of DRP was 6.9 ± 2.5 and 34% of population had a score ≥8. Fifty-one patients had a high risk of re hospitalisation, early mortality and drug related problems (24% of our population). In total population the three tests were correlated ($p < 0.005$). Thereby, the correlation between age, polymedication and the three scores are significant. The subpopulation analysis (by medicine unit) showed a correlation between the three score except for nephology unit.
Conclusion: We have validated the correlation between these scores so we can choose one only to help in daily clinical practice to detected early at-risk patients for rehospitalisation, early mortality and drug related problem. Easiest to calculate is Charlson so can be used to improve monitoring patients.

References

1. Williams-et al, South-Med J.2014 Jul; 107(7):455–65
2. Charlson-et al, J-Chronic Dis.1987; 40(5):373–83
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Oral communication III: Hospital pharmacy and pharmaceutical care 2

HP-PC009: Target high risk patients of rehospitalisation, iatrogenic events and early mortality: who is at risk?

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: The potential impact of polymedication, iatrogenic events and medication error is a serious concern in hospitalized patients. Clinical pharmacists can limit these risks by identify high risk. The aim of this study are to identify in six medical units high risk patients by using three predictive scores of rehospitalisation (8 Ps)[1], early mortality (Charlson)[2] and Drug Related Problems (DRP)[3].
Design: 49 clinical and therapeutic variables in 216 patients were collected through medical records and prescriptions by clinical pharmacists. Scores were calculated during 2 months in six units (internal medicine, n = 30; nephrology, n = 35; geriatrics, n = 35; rheumatology, n = 45; cardiology, n = 54 and endocrinology, n = 29). The data were analysed by Mann and Whitney test for the continuous variables and Chi square test for the qualitative variables. The coefficient of correlation between the three scores were calculated by a Pearson test for normal distribution and by a Spearman test for non normal distribution. Patients were considered at a high risk for re-hospitalization (8Ps > 2), early mortality (Charlson > 5) and iatrogenic events (DRP ≥ 8).
Results: In the general population, the average age was 67.4 ± 18.1 years old and the sex ratio was 0.94. The average treatment used was 7.8 ± 4. Charlson scores were higher in geriatric unit (6.3 ± 1.8) follow by medical interne unit (5.7 ± 2.7). The 8Ps and DRP scores were higher in nephrology unit respectively 2.5 ± 0.9 and 9.1 ± 2.6 follow by internal medecine unit 2.2 ± 1.3 and 7.6 ± 2.7. On contrary the rheumatology unit presented the lower level for the three scores. 51 patients were considered at high risk for three scores, 33% (n = 17) in nephrology unit (almost 49% of unit), 20% (n = 10) in geriatric unit, 18% (n = 9) in internal medicine unit, 18% (n = 9) in cardiology unit, 6% (n = 3) in endocrinology unit and 6% (n = 3) in rheumatology unit.
Conclusion: Knowledge of the variables associated with these predictor scores could help clinical pharmacists to prioritise various medicine units and target those at risk. We identified especially three units at risk: nephrology, geriatric and internal medicine. Thanks to these results, clinical pharmacists can rapidly and efficiently target patients who present iatrogenic and/or re-hospitalization risks.

References

1. Williams-et al, South-Med J.2014 Jul;107(7):455–65
2. Charlson-et al, J-Chronic Dis.1987;40(5):373–83
3. Urbina-et al, Pharmacoepidemiol-Drug Saf.2014 Sep;23(9)

HP-PC010: Management of severe bleeding due to direct oral anticoagulants (DOACs): apixaban, dagibatran, rivaroxaban

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Ease of dosing and simplicity of monitoring make direct oral anticoagulants (DOACs) an attractive therapy. Prescriptions of apixaban, rivaroxaban and dabigatran have increased in our hospital since 2011. However, bleeding are still at risk with DOACs. We aimed to determine whether one of these molecules caused more haemorrhages than the others. We analysed compliance to local recommendations on the management of bleeding.

Design: A retrospective observational analysis was conducted in our hospital, based on medical records of patients presenting Atrial Fibrillation (AF) and treated by DOACs from January 2011 to May 2016. To identify patients hospitalized due to severe bleeding, we analysed Prothrombin Complex Concentrates (PCCs) and activated PCCs prescriptions, as well as pharmacovigilance declarations.
Results: 1328 patients were treated with DOACs: 763 with rivaroxaban (57.5%), 286 with dabigatran (21.5%) and 279 with apixaban (21%). Fifty-nine (4.4%) patients experienced at least one bleeding leading to hospitalization: 35 with rivaroxaban (4.6%), 16 with dagibatran (5.6%) and 8 with apixaban (2.9%).

Thirty-eight severe bleeding were identified (2.9%): 24 occurred with rivaroxaban (3.1%), 10 with dabigatran (3.5%) and 4 with apixaban (1.4%). They included 10 intracranial bleeding (26%) and 21 gastro-intestinal bleeding (55%). Seven haemorrhages resulted in hypovolemic shock (dabigatran:4, rivaroxaban:2, apixaban:1) and 2 of them were fatal (dabigatran:2).

Rates of bleeding ($p = 0.86$, χ^2 test) and of severe bleeding ($p = 0.85$, χ^2 test) were not statistically different for the three molecules.

In case of major haemorrhage, the recommended factor concentrate in our protocols differs between the anticoagulant. With dabigatran, the antidote idarucizumab (5 g, intravenously) should be administered, without waiting for plasma concentration results. With rivaroxaban, apixaban or unknown DOACs, PCC (30–50 units/kg) is indicated. In case of PCC failure, activated PCC (30–50 units/kg) is suggested. PCC, activated PCC or idarucizumab (2) were used in 15/38 patients (40%). In rivaroxaban and apixaban-related haemorrhages, 10 patients received activated PCC: two had a 20 UI/kg dose and one had a 60 UI/kg dose. Regarding dabigatran-related bleeding, one patient received PCC instead of idarucizumab. Compliance with local recommendations was 92% (35, $p > 0.003$, χ^2 test) 0.9 pharmacovigilance reports were issued.
Conclusion: Management of DOACs-associated severe bleeding in our hospital respects local protocols.

It should also be pointed out that patients with life threatening bleeding may benefit from PCC. However, the risk of thrombosis associated with PCC must be weighed against the risk of haemorrhage. Since specific antidotes are emerging, like idarucizumab or andexanet alpha, new guidelines for DOACs-related haemorrhage are expected.

HP-PC011: Where there is no pharmacist: doctors' and nurses' expectations on the implementation of clinical pharmacy services in rural Sweden

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: This project is part of a prospective quasi experimental proof-of-concept investigation of a clinical pharmacist intervention to reduce drug-related problems among people admitted to a ward in a rural hospital in Northern Sweden. The aim of this particular study is to explore doctors' and nurses' expectations of having a ward-based pharmacist providing clinical pharmacy services in a rural hospital.
Design: Eighteen face to face semi-structured interviews were conducted with a purposive sample of doctors and nurses working on the ward were the clinical pharmacy service was going to be implemented. Semi-structured interviews were digitally recorded, transcribed and analysed using thematic analysis.
Results: The majority of participants had limited experience or a vague idea of what pharmacists are able to do in a ward. Most participants described traditional roles such as inventory, drug distribution and dispensing. Most respondents were unaware of the pharmacists' knowledge, skills and competences. For some it was unclear how having a clinical pharmacist in the ward was going to impact on their workload this was particularly important for the nurses. Some doctors (mainly experienced) were concerned that having a pharmacist may mean losing or not gaining competence on drugs. For others it was unclear how the pharmacists' will work with patients or what clinical skills they have. However most participants were positive about the implementation of the new service.
Conclusion: This study provided a rare opportunity to explore the doctors' and nurses expectations of the role of clinical pharmacists before a clinical pharmacy service was implemented. The results showed that the participants' expectations of the clinical pharmacist role were unclear. To successfully implement clinical pharmacy services in a clinical pharmacy "naïve" setting; roles, clinical competence and responsibilities should be clearly described. Furthermore, it is important to focus on inter professional collaborations between doctors, nurses and pharmacists.

HP-PC012: Pharmacist prescribing in a hospital setting

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Please specify your abstract type: Research abstract
Background and objective: A study by Vella[1] concluded that clinical pharmacists were most willing to prescribe oral anticoagulants, antihypertensives and antidiabetic medication. The objectives were to compile and evaluate guidelines for pharmacist prescribing in hospitals, to study differences between pharmacist and physician prescribing, and to analyse pharmacists' perception on pharmacist prescribing.
Setting and method: Pharmacist prescribing guidelines and framework in the hospital setting were developed based on the collaborative drug therapy management model. Pharmacist prescribing guidelines for the use of oral anticoagulants and for the management of hypertension and diabetes mellitus were compiled. A case study for each scenario identified was designed and disseminated to an expert panel consisting of five pharmacists and four physicians to determine differences between pharmacist and physician prescribing. A questionnaire was developed to assess whether the developed pharmacist prescribing guidelines are well presented, practical for the hospital setting and contain adequate information, as well as to assess the pharmacists' perception on pharmacist prescribing. Subsequently, the pharmacist prescribing guidelines were disseminated to all ($N = 62$) hospital pharmacists working in local governmental hospitals, along with the same developed questionnaire.
Main outcome measures: Evaluation of pharmacist prescribing guidelines and perception of pharmacists on pharmacist prescribing and identification of differences between pharmacist and physician prescribing.
Results: No differences between pharmacist and physician prescribing for the management of diabetes mellitus and for the prescribing of oral anticoagulants were noted. With respect to hypertension, differences in drug therapy were attributed to misdiagnosis by two pharmacists and two physicians. When the correct diagnosis was established by the remaining five experts, similar treatment was prescribed. All experts agreed that the guidelines and framework proposed are well presented, contain adequate information and are

practical for the local hospital setting. Seven out of 9 experts agreed with pharmacist prescribing for the conditions identified. Pharmacists ($n = 31$) were more willing to prescribe antihypertensive and antidiabetic medication (87.1%) when compared to oral anticoagulants (64.5%). These values are higher than those obtained by Vella in 2014. The majority of pharmacists (87.1%) recommended that pharmacists should take up further studies to a Master or Doctorate level degree in a clinical aspect in order to be authorised to prescribe.
Conclusion: The developed framework for pharmacist prescribing and the guidelines developed for pharmacist prescribing of oral anticoagulants and pharmacotherapy of hypertension and diabetes mellitus were shown to be reliable and were accepted by pharmacists and physicians.

Reference

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HP-PC013: New patients care agreement in France: the case of valproic acid and derivates and mycophenolate mofetil—a retrospective study

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Please specify your abstract type: Research abstract
Background and objective: Valproic acid (VPA) and its derivates and mycophenolate mofetil (MMF) and mycophenolic acid used during pregnancy increase risk of congenital malformation and cognitive impairment. Thus, the French National Agency for Medicines and Health Products Safety (ANSM) decided to establish new conditions of prescription and dispensation of drugs containing VPA (may 2015) and MMF (April 2016). A signed care agreement and a co-prescription of contraceptives are now mandatory in the drug dispensation for reproductive-age adolescent girls and adult women. This study will describe the impact of these new guidelines on our practice. Our objective is to compare the VPA and MMF media coverage and the impact on the prescriptions.
Setting and method: We compared the mass communication between VPA and MMF on social media, webpages and journal article (public and professional journal) on Google and Googletrends in the first months around these new rules. We combined different keywords such as "accord de soins" and the drug name. In the same time, we collected and analysed VPA and MMF prescribing and dispensing data and compared it to the 2015 data for the first 6 months.
Main outcome measures:
Results: Just before the VPA rule, the VPA was presented in the general press as the new health scandal after benfluorex Mediator° with 100 google searches in March 2016 compared to 10 searches usually per month. Simple research combining keywords reveal always more than twice more webpages concerning VPA than MMF. At the same time, a patients association (Renaloo for renal failure) wrote to the ANSM to contest the new rule with the double contraception and without any consultation of patients association. In our daily practice we also faced some physician reluctant to sign this prescription agreement with patient (too many agreements already asked, decision of ANSM without any consultation of learned societies). The care agreements are kept in the patient records, a statement "care agreement signed" is reported in the electronic prescription of VPA and MMF. The overall consumption of MMF and VPA increase for respectively the first 2 and 3 months after rule implementation (from +122 to +326%) except for the Micropakin 500 mg. The 6 months MMF data will be presented for the final communication.
Conclusion: The media pressure and the new regulation have an impact on prescription trends. These new prescription and dispensing rules concerned two different contexts: pathology, media coverage, possible drug alternatives. We were faced to some difficulty in implementing the new guidelines, which reveals a certain reluctance of the prescribers or the patients represented by associations.

TDMP001: Vancomycin trough serum concentrations are frequently subtherapeutic in a population of critically ill patients: a prospective observational study

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Please specify your abstract type: Research abstract
Background and objective: Appropriate dosing of vancomycin is important to attain therapy targets, to avoid therapeutic failure and development of antimicrobial resistance. Our aim was to study the use of vancomycin in an Intensive Care Unit (ICU) population, with focus on attainment of therapeutic serum concentrations. The effect of therapeutic drug monitoring (TDM), creatinine clearance, use of guidelines, continuous renal replacement therapy (CRRT) and dose regimens were evaluated.
Setting and method: A prospective observational study was carried out in the ICUs at Oslo University Hospital. ICU patients who started vancomycin treatment were included and observed for 72 h (h) after initiation. The patients were divided in two groups; patients with continuous renal replacement therapy (CRRT) and patient with normal kidney function (non-CRRT). Trough vancomycin concentration were measured every 24, 48 and 72 and 24 h urine collection for calculation of creatinine clearance in the non-CRRT group was performed every day.
Main outcome measures: Target trough concentration was defined as 15–20 mg/L.
Results: 83 patients were included. The proportion of trough serum concentrations within therapeutic range were 21% at 24 h, 16% at 48 h and 33% at 72 h. In the non-CRRT group, there was a significant correlation between total vancomycin clearance and creatinine clearance. 17 patients with augmented renal clearance (creatinine clearance >130 mL/min) had lower serum trough concentrations, despite receiving higher loading and maintenance doses. 72% of the 83 patients did not receive the recommended loading dose (>25 mg/kg). 40 patients were on CRRT (48%). There was more than 40% significant reduction in total vancomycin clearance in the CRRT group. Doses were adjusted in 49% of the serum concentration measurements outside the therapeutic range.
Conclusion: Less than 35% of the critically ill patients attained therapeutic trough serum concentrations during the first 3 days of therapy. The patient subgroup with augmented renal clearance proposed the greatest challenge, as trough serum concentrations were frequently low despite higher doses of vancomycin. Increased dosing frequency may be necessary to obtain the trough level. These data show that a re-evaluation of current vancomycin dosing recommendations in critically ill patients is needed. This patient group has a large inter-individual variability in vancomycin clearance and special ICU treatment is also influencing vancomycin clearance. There is also room for improvement in adherence to TDM.

PE001: Statin use is associated with lower risk of epilepsy after ischemic stroke: a population-based retrospective cohort study

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Please specify your abstract type: Research abstract
Background and objective: Epilepsy after ischemic stroke may increase the risk of disability and affect patient's quality of life. Due to concerns of drug–drug interactions and adverse effects of antiepileptic drugs (AEDs), prophylactic AED treatment is not recommended in the guidelines. HMG-CoA reductase inhibitors (statins) have been found to possess neuroprotective and antithrombotic effects other than lipid lowering. However, the evidence for epilepsy prevention of statins in ischemic stroke is limited. This study aimed to examine the relationship between pre- and post- stroke statin use and the risk of post-stroke epilepsy (PSE).
Setting and method: In this retrospective cohort study, patients with new-onset ischemic stroke between 2004 and 2012 were identified from the National Health Insurance Research Database of Taiwan, with a maximum follow-up period of 3 years. Cox regression model with time-varying variable of post-stroke statin use was utilized to estimate the hazard ratio of PSE, while adjusting for pre-stroke statin use and other covariates. Cumulative dose of post-stroke statin use (in quartiles) among prior-to-stroke nonusers was also evaluated as a time-varying determinant to understand if a dose effect exists. Statins was further classified as lipophilic (atorvastatin, fluvastatin, lovastatin, pitavastatin and simvastatin) and hydrophilic (pravastatin and rosuvastatin) in the subgroup analysis.
Main outcome measures: The diagnosis of epilepsy after ischemic stroke.
Results: In this study, 20,858 patients with ischemic stroke were enrolled, with a median follow-up of 31.7 months. Among them, 954 (4.0%) patients developed PSE within 3 years after stroke, and more than half of them (67.0%) were diagnosed within 1 year. About 8.8% of patients were prior-to-stroke current statin users and 27.0% of prior-to-stroke nonusers initiated statin within 1 month after stroke. Statin use after stroke was associated with a reduced risk of PSE (adjusted hazard ratio [aHR] 0.55, 95% confidence interval [CI] 0.46–0.61, $p < 0.01$), but not for prior-to-stroke statin use (aHR 1.06, 95% CI 0.84–1.47, $p = 0.46$). A dose–response relationship was also observed, with a significantly decreased risk for high cumulative statin dose. Moreover, the risk of PSE was significantly lower regardless of statin lipophilicity.
Conclusion: This study found that use of statins after ischemic stroke is associated with a reduced risk of PSE regardless of lipophilicity. Further research is needed to understand the mechanism of its neuroprotective effect in this patient population.

PT001: Defining an international framework for pharmacy standards on oral anticoagulation

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: To design and characterise a framework of international pharmacy standards for pharmaceutical care application on oral anticoagulation for prevention of Atrial Fibrillation (AF) related strokes.
Design: Literature review (including existing international guidelines and quality measures) was conducted to characterise the standards and design an international framework for pharmaceutical practice application on oral anticoagulation for prevention of AF-related strokes. Expert opinions were sought through a Delphi method to reach consensus on the framework domains and standards.
Results: The framework consisted of twelve overarching standards, which were defined and grouped into four domains as follows; ([personal care package]:- communication with patients, support decision making process, education and counselling, adherence. [medicines optimisation]:- clinical review and therapy optimisation, initiation and control, maintenance, supply and transfer between care settings. [workforce]:- workforce planning, training and development, analysing information; and [governance]:- assurance of service provision) specific to oral anticoagulation in prevention of AF-related stroke. Each standard was also categorised within dimensions and supporting statements to describe what a quality pharmacy service should deliver. A total of forty-five dimensions and twelve statements were incorporated into the framework.
Conclusion: A clearly defined framework of international standards was developed as a clinical tool and quality assurance to optimise the delivery of care for oral anticoagulation in prevention of AF-related strokes. It will support pharmacists and their teams to develop their professional practice, improve services, and deliver safe and high quality patient care across all pharmacy settings.

Poster discussion forum I: Community pharmacy and public health

CP-PC004: Nurses' and pharmacists' learning experiences from participating in inter professional medication reviews in primary health care: a qualitative study

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Please specify your abstract type: Research abstract
Background and objective: Traditionally, drug prescription and follow up have been the sole responsibility of physicians. However, interprofessional medication reviews (IMRs) have been developed to prevent drug discrepancies and patient harm. What participating nurses and pharmacists learn from each other during IMR is poorly studied. The aim of this study was to investigate nurses' and pharmacists' perceived learning experience after participating in IMRs in primary health care for up to 2 years.
Setting and method: A qualitative study with semi-structured focus group interviews and telephone interviews with nurses and pharmacists with experience from IMRs in nursing homes and home based services. The data was analysed thematically by using systematic text condensation.

Main outcome measures: A qualitative method is useful when looking at objects from the perspective of how they are experienced.
Results: Sixteen nurses and four pharmacists were interviewed. The nurses' perception of the pharmacist changed from being a controller of drug management routines towards being a source of pharmacotherapy knowledge and a discussant partner of appropriate drug therapy in the elderly. The pharmacists became more aware of the nurses' crucial role of providing clinical information about the patient to enable individual advice. Increasingly the nurses learned to link the patient's symptoms of effect and side effect to the drugs prescribed. With time both professions jointly spoke of an increased awareness of the benefit of working as a team and the perception of contributing to better and more individual care.
Conclusion: IMRs in primary health care meet some challenges especially concerning how to ensure participation of all three professions and how to get thorough information about the patient. Possible solutions might be to use shared communication tools like Internet based communication programs and to introduce the patient as a participant at the IMRs.

CP-PC005: Dispensing of prescribed medicines in community pharmacies: part B—observations deviate from pharmacists' opinions

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Please specify your abstract type: Research abstract
Background and objective: International good pharmacy practice guidelines describe how pharmacists should counsel the patients about their medicines, offer additional services where needed, and intervene at drug related problems. Daily practice often differs from theory. This study aimed at illustrating the whole process of prescribed medicines dispensing in daily community pharmacy practice. Part B of the project focuses on pharmacists' opinions.
Setting and method: Community pharmacies in Basel, Switzerland, were invited in random order for study participation. One master student in pharmacy performed non-participant observations during 1 day at each included community pharmacy. At dispensing of prescribed medicines, patient data, content of counselling, communication style, and provision of further services (e.g. follow-up offer) were documented on a checklist with predefined themes. Interventions were documented systematically. A semi-structured interview on the pharmacists' opinions about the counselling, triggers, facilitators and barriers, and the documentation of interventions was conducted at each community pharmacy.
Main outcome measures: Counselling content at prescription dispensing by numbers and by pharmacists' opinions; barriers, facilitators, and triggers for counselling at prescription dispensing.
Results: In March and April 2016, 18 of 49 invited community pharmacies participated in the study. Out of 561 documented observation periods, 556 encounters were analysed (first prescription: 269/refill prescription: 287). Counselling was provided to 367 (66.0%) clients with an average of 2.9 (±3.1) themes per encounter. A total of 148 clients refused counselling. Themes most counselled at first and refill prescription dispensing were: drug intake (476/80), dosage (191/50), and administration (163/38). For the pharmacists (n = 18), most important themes to be discussed at first prescription dispensing were indication (11), administration (9), and anamnesis (8); for refill prescription dispensing they were adherence (9), therapy benefits (9), and adverse effects (7). The majority of pharmacists (13) felt that it was their obligation to ask questions about patients' health during the dispensing of prescription medicines and named trigger (e.g. patient knowledge gap, patient motivation, interactions), but one-third reported difficulties with it. Barriers were refusal by patients (13), communication problems (language, 7), lack of medical data (3), and lack of time (3).
Conclusion: A discrepancy in counselling content by observation compared to pharmacists' opinions was revealed. This might indicate that pharmacists are aware but hindered by barriers to practice according to good pharmacy practice guidelines.

CP-PC006: Access to patients' clinical healthcare records: inclusion for community pharmacists in NHS Tayside

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Please specify your abstract type: Research abstract
Background and objective: The 2020 Workforce Vision in Scotland envisages 'making more and better use of technology …to increase access to services and improve efficiency' across the healthcare interface. Services offered by community pharmacy remain limited by lack of shared access to patients' clinical information. In Scotland, every patient has a unique identifier, their CHI (community health index), which facilitates identification of/searching for patient records. The aim of this research was to explore the experiences of community pharmacists granted clinical portal access to patients' records.
Setting and method: From April 2015, community pharmacists across NHS Tayside (n = 21) who had completed technical and information governance training were invited to maintain a portal log of their experiences of using the clinical portal to access patient records. Each was asked to record when/why they considered accessing a patient's record and whether their information needs were met. Portal logs were subject to independent summative content analysis by two researchers. This study gained ethical approval from Robert Gordon University.
Main outcome measures: Not applicable.
Results: Clinical portal logs were received from most participating pharmacists (n = 18/21). Two were unavailable (moved to hospital setting; maternity leave). A third had not had occasion to access the clinical portal which he speculated was due to not working at weekends but also raised concerns about gaining patient consent. Frequency of seven identified themes provided a partial indication of balance of reasons for usage. Firstly (#1), to confirm a patient's prescription (n = 48), secondly (#2), for additional information (n = 46). Less frequently (#3), portal access was to check repeat medications (n = 23). Other reasons for access were (#4) to check hospital discharge (n = 21) followed by (#5) check on multi-compartment appliance aid status (n = 14) or (#6) check the Emergency Care Summary (n = 11). There were also instances (#7) when portal access was not found to be helpful (n = 16) so traditional offline routes were followed.
Conclusion: Preliminary findings indicate mainly positive experiences with no technical issues raised and community pharmacists' information needs largely met. Although limited to a small number of pharmacists in only one Health Board, findings support Scottish policy aims, including 'Prescription for Excellence.' Further work is underway around patients' perspectives of community pharmacist access.

CP-PC007: Eight criteria can detect visual alteration of medicines repackaged in Pharmis® punch cards

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Please specify your abstract type: Research abstract
Background and objective: Multicompartment Compliance Aids (MCAs) such as the multidrug punch cards Pharmis® are used to support patients in the daily management of their medication. Solid oral medicines are unpacked from their original packaging and repacked in MCAs although controversy exists about the stability of repackaged medicines. Different countries published contradictory lists of medicines not recommended for repackaging. We aimed to define and apply criteria able to assess visual alteration of medicines repackaged in MCAs.
Setting and method: Eight criteria describing physical alteration of tablets/capsules were retrieved from the WHO International Pharmacopoeia 2015: chipping, swelling, capping, rough surface, cracking, crushing under pressure, mottling, and discoloration. Absence of one criteria gives 1 point. A maximum score of 8 points can be obtained. Twenty-two critical medicines and three half tablets were repackaged in the multidrug punch cards Pharmis® and stored at accelerated conditions (40 °C/75% RH) for 4 weeks. Original blisters of medicines were stored at room temperature as control. Each tablet/capsule was visually inspected after 7, 14, 21 and 28 days.
Main outcome measures: Score according to eight criteria.
Results: After 4 weeks, 17 tablets/capsules including 2 of the half tablets showed no visual alteration and were identical to controls. A reduced score (3–7 points) was given to seven repackaged medicines and one half tablet within 4 weeks: Madopar® (3), Pravastatin Sandoz® (4), Carvedilol Mepha® (6), Plavix® (6), Pantoprazol Nycomed® (7), Adalat® CR (7). Swelling and rough surface were the most frequent. Chipping and capping were not observed.
Conclusion: Our eight visual criteria are able to detect physical alteration of repackaged solid oral medicines under stress conditions. In absence of reliable data we suggest to apply this simple quality control for repackaged medicines in pharmacy practice. Because chemical stability testing is not feasible in practice, pragmatic solutions are sought. Further studies are needed for storage at room temperature.

CP-PC008: Drug-related problems and symptom burden in nursing home residents

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Please specify your abstract type: Research abstract
Background and objective: Drug-related problems (DRP) are common in the elderly due to polymedication.

Community pharmacies supplying drugs to nursing homes may play an important role in detecting and solving DRP in nursing home residents.

This project aims to evaluate whether community pharmacists can enhance the medication safety of nursing home residents by solving DRP by means of a simple medication review (MR). Furthermore, the applicability of a new tool to detect symptoms as potential adverse drug reactions in elderly patients should be tested.
Setting and method: Nursing home residents at the minimum age of 65 years insured by AOK Rheinland/Hamburg and regularly taking at least five drugs per day were invited to participate. Pharmacists performed a MR based solely on the patients' medication data, including dosage regimens of the nursing home and self-medication data. The detected and solved DRP were counted. Additionally, a simple questionnaire (SYMPEL) was distributed to the patients periodically in order to assess their symptom burden.
Main outcome measures: Frequency and type of the patients' DRP as well as their symptom burden before and after the MR.
Results: After testing the feasibility of this intervention in a pilot study, 54 patients were included in the main study so far.
In average, the pharmacists identified two DRP per patient and reported to the responsible general practitioner (GP). As in the pilot study, most frequent DRP documented by pharmacists were drug–drug-interactions (34%). 29% of the pharmacists' recommendations were accepted by the GP. 46% of the patients took at least one drug considered as potentially inadequate in the elderly. Out of six different symptoms, patients reported dizziness and bruises most frequently.
Conclusion: Pharmacists can detect many DRP in nursing home residents by means of a simple MR. However, the full potential of this service to solve DRP can only be exploited if the cooperation with the GPs is improved.

PEC001: Patient access to medicines for rare diseases in Slovenia and other European countries

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Chair of Social Pharmacy, University of Ljubljana, Faculty of Pharmacy, Ljubljana, Slovenia

Please specify your abstract type: Research abstract
Background and objective: Medicines for rare diseases (RD) are costly and have limited efficacy evidence but they represent around 20% of all innovative medicines. Therefore, countries are facing challenges in providing patient access to them. The purpose of the study was to assess the patient access for Slovenia and compare it with 23 other European countries in the last decade.
Setting and method: The medicines for RD that obtained marketing approval between 2005 and 2014 via centralised procedure were included in the study based on the Orphanet list from January 2016. Using the quarterly IMS Health database, sales data were analysed for Slovenia and 21 other European Union countries, Norway and Switzerland. Patient access was assessed for each country and comparisons between the countries were made using the three main outcome measures.
Main outcome measures: The number of medicines for RD available; Time to first continuous use after marketing approval; Total pharmaceutical expenditure for medicines for RD in euros.
Results: Altogether, 125 medicines for RD were approved between 2005 and 2014. Complete sales data were available for 120 medicines which were included in the comparison. For Germany and the United Kingdom the continuous use of 102 (85%) and 94 (78%) was observed, respectively. The following Italy, France, Denmark and Sweden use 60–70% of all the medicines. In Slovenia, 66 (55%) medicines for RD were introduced. Germany and the United Kingdom times to first continuous use were the shortest (median time 1–3 months after marketing approval). Median times below 12 months were observed for Norway, Sweden, Austria, the Netherlands, France and Switzerland. Other countries were slower in enabling first continuous use (median time from 12 to 34 months). Germany, France, Switzerland had the largest pharmaceutical expenditure per inhabitant in 2014 (29.2, 25.0 and 24.0 euros/inhabitant) while Slovenia amounted to 18.5 euros/inhabitant.

Conclusion: In Slovenia more than a half of the medicines for RD approved in Europe are used which ranks it in the middle of all the countries in comparison. Comparing to the important European pharmaceutical markets like Germany, United Kingdom, France and Italy, Slovenia's median time to first continuous use is longer and pharmaceutical expenditure per inhabitant for these medicines is lower.

PEC002: Mapping of the DLQI scores to EQ-5D utility values using ordinal logistic regression and Monte Carlo simulations: is it plausible?

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Please specify your abstract type: Research abstract
Background and objective: Converting Dermatology Life Quality Index (DLQI) scores to generic measure data would allow utility calculations and enable cost-effective analysis. This would meet the needs of health technology assessment agencies (HTAs) such as NICE, who preferentially use the general health measure EQ-5D. The DLQI is a specialty-specific measure unlike the EQ-5D, a generic measure from which utility values can be derived. Often several measures are implemented in studies with increased cost and patient burden. Ordinal logistic regression (OLR) was used to develop a model to convert DLQI scores to EQ-5D based utility values for use in economic appraisal of medicines.
Setting and method: Data from 4010 patients were randomly divided into estimation and validation sets to fit and test the model. A series of ordinal logistic regressions were fitted in SPSS v22 for the five EQ-5D dimensions based on age, sex and all 10 individual items of the DLQI as predictors. The model produced three estimated probabilities per subject per EQ-5D domain. Using these estimated probabilities, a series of 10 Monte Carlo (MC) simulations were run for each subject resulting in predicted domain responses. From these, utility values were calculated and compared to actual patient values.
Main outcome measures: Conversion of DLQI scores to EQ-5D domain data
Results: There are conceptual overlaps between items of the DLQI and EQ-5D. The validation data set (which was not included in the creation of the model), demonstrated that the models were highly predictive compared to actual responses, except for minor differences for the pain/discomfort domain. For example, for the EQ-5D 'Mobility' domain, 1389 patients answered 'No' (predicted 1392) and 440 patients answered 'Some or Extreme' (predicted 437). We examined the model's latent variables, which also demonstrated high predictability at individual level. For example for the 'Usual Activities' domain the mean latent variable scores were −2.49, −1.62 and −0.86 for those responding 'No', 'Some' and 'Extreme' respectively, showing a clear increase in the scores with response. After excluding subjects with missing variable data there were 1769 patients in the estimation set and 1773 in the validation set. The model was shown to be highly predictive and repeated simulations demonstrated a stable model. The average predicted utility value for the entire validation set ranged from 0.742 to 0.753 across the 10 MC simulations compared to the actual average utility value of 0.754.
Conclusion: Using OLR, we have developed a method of mapping the disease-specific DLQI onto the EQ-5D: utility values may then be derived for population data sets, and possibly for individuals. The OLR technique could be used to convert data from other disease-specific quality-of-life measures to generic utility data for incorporation into cost-effective analyses, greatly enhancing the potential value of such information.

PT002: Dosage regimen optimization in paediatric patients on antihypertensive therapy

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Having to take medication during time in school may present certain discomfort for some children. Suboptimal dosing regimens (i.e. dosing more frequent than determined by drug's trough:peak ratio) can be prevented by a clinical pharmacist's overview and therapy optimization. The aim of the study was to review and evaluate dosage regiments in paediatric patients on antihypertensive therapy. Dosage regiments are defined as schedule of doses of a therapeutic agent per unit of time and the amount of a medicine to be given at specific time.
Design: Electronic health records (EHR) review, evaluation of actual dosage regiments against regiments recommended in SmPCs and clinical database (Uptodate®), a consecutive case series study.
Results: EHRs of 254 patients, admitted to or discharged from the Department of Nephrology of The Division of Paediatrics, UMCL in 2015 with suspected ICD-10 diagnoses from I10 to I15 were reviewed. 107 patients were excluded (diagnosis not confirmed or lifestyle-change disease management only). The remaining 147 patients (average age 15.7 years (range 3–20)) received daily on average 1.59 medications (range 1–4) in 2.06 individual doses (range 1–11). Most frequently used drugs were perindopril (N = 57), ramipril (N = 47), amlodipine (N = 34), bisoprolol (N = 32) and doxazosin (N = 13). 10 patients received *ex tempore* oral suspensions.

Dosage regimen was not optimized in 17% (N = 25) of the patients, among those 4% (N = 6) receiving one medication only and 13% (N = 19) receiving more than one medication where at least one was not optimized. Furthermore, 9% (N = 13) patients on stable-dosage therapy (no dosage change of either medication in last 6 months with satisfactory clinical outcomes) were eligible for fixed-dose combination medication.

With optimized dosage regimens patients would receive daily on average 1.51 medication (range 1–4) (-5%) in 1.76 individual doses (range 1–9) (−15%). The difference was statistically significant (95% CI, $p < 0.05$) in both cases.
Conclusion: Our data show that the majority of the paediatric patients on antihypertensive therapy (83%) received their medication in optimal dosage regimens. However, with an estimated every fifth patient not being on optimal dosage regimen, a multidisciplinary approach is crucial to assure that the individual patient achieves the best clinical, humanistic and economic therapy outcomes.

PH005: Polypharmacy management programmes in the elderly: a case study in Greece

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Polypharmacy management and medication adherence in the elderly are significant public health issues throughout the European Union (EU). SIMPATHY (Stimulating Innovation Management of Polypharmacy and Adherence in The Elderly) is a consortium of 10 organizations representing eight European countries, aiming at stimulating innovation around management of appropriate polypharmacy and adherence, ultimately providing tools for EU policy makers to develop and/or improve, implement and evaluate programs addressing these issues.
Design: A mixed-methods case study was carried out in Greece, to identify policies on the management of polypharmacy and adherence issues in the elderly. A desk review of the polypharmacy and adherence policies at the government, regional and institutional level has been completed. Key informant interviews were conducted with policymakers and health professionals responsible for developing and implementing strategies. Focus groups consisting of policymakers, clinicians and patients validated the research findings.
Results: Although e-prescription implementation is widespread ($\approx$98% coverage nationwide) and disease-specific guidelines have been developed, polypharmacy management is only associated with direct economic indicators. No formal policies or programmes are identified. Significant contributions are coming from different health professional organizations that have chosen to provide expanded services to their patients, aiming at optimising drug therapy and thus polypharmacy management and medication adherence in the elderly. Community pharmacists offer pharmaceutical care to patients, which includes management of prescribed medication, OTC remedies, vitamins and supplements and food-drug interactions. Hospital pharmacists in some state (public) hospitals review medication for inpatients and out-patients, communicate with prescribers and confirm the "benefit-no harm" principle in the prescribed medication (e.g. incompatibilities, side effects, 7-rights of medication). Medical doctors, mostly general practitioners and some specialized ones, usually in primary healthcare settings, keep health records of their patients and have an overview of all administered medication. However, key barriers still remain the lack of coordination of institutions and authorities and overlap of their responsibilities, healthcare workforce and infrastructure shortages and several cultural issues.
Conclusion: All initiatives to medication management and medicines optimisation are provided without directive from national policies or guidelines. Therefore, these activities rely on the goodwill of the health professionals to address pharmacotherapy and therefore polypharmacy management but they are not necessarily representative of what is happening nationwide. A national policy to implement the management of polypharmacy nationwide could mobilise the willingness of health professionals and ensure consistency of care. Development and implementation of this policy should build on the grassroots efforts currently underway in this area.

PH006: Clinical profile and treatment discontinuation in a tuberculosis control state programme in Brazil: preliminary results from SINAN database

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Please specify your abstract type: Research abstract
Background and objective: Challenges remain in tuberculosis (TB) control. Discontinuing treatment can leave patients infectious and contributes to the emergence of resistance. This study aimed to describe the clinical profile and cure and discontinuation rates of TB patients enrolled in the Pernambuco Tuberculosis Control Programme (PECT).
Setting and method: The study was conducted in three sites in Recife, Brazil, designated A (one polyclinic plus eight general practice units), B (one hospital for medium-complexity patients) and C (one hospital for high-complexity patients). Data were extracted from the Notifiable Diseases Information System (SINAN) for all PECT outpatients, from 01/2012 to 12/2014 (n = 440). Analysis was performed with the aid of Action for Excel; there is on-going analysis to further explore differences across sites. Ethical approval was granted.
Main outcome measures: Clinical form of the disease, HIV testing, new cases, cure and treatment discontinuation.
Results: Sociodemographic data were available for sites A and B only. Most patients were male (70%, n = 291), with age raging from 20 to 49 years old (60.5%, n = 252); most had a low education level (46%, n = 192) and low socioeconomic status (92%, n = 382). The most common clinical presentation was pulmonary TB. Most cases were new (78.4%, n = 345); recurrence and enrolment after discontinuation were respectively 5.9 and 10.9% (n = 26 and n = 48). With respect to HIV, 37.27% of patients were seronegative (n = 164); about a third (35%; n = 155) had not performed HIV test. Rates for cure were respectively 59.1% (n = 260), 28.95% (n = 128) and 16.6% (n = 73) in the sites A, B and C. Correspondent rates for treatment discontinuation were 21.2%(n = 93), 24.9% (n = 110), 4.3% (n = 19), respectively. TB-related mortality ranged from 0 in site C to 5.4% in site B.
Conclusion: Missed HIV tests may represent undetected tuberculosis/HIV coinfection. Site B presented the highest rates of intrapulmonary plus mixed TB forms, discontinuation of treatment and TB-related mortality; additionally, it had the lowest rate of enrolment after treatment discontinuation. Patients co-infected with TB and HIV are firstly referred to this site, which may explain this finding. Our findings may help managers allocating resources and assist clinical pharmacists in planning their interventions. Findings also suggest the need of more intensive interventions in TB patients, such as pharmaceutical care programmes.

PH007: How to provide pharmaceutical care in primary health care clinics in Iceland

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Please specify your abstract type: Research abstract
Background and objective: Pharmacists working in primary health clinics have various roles. Pharmaceutical care is one of them. How to provide this service varies across countries and settings. The most optimal way to provide pharmaceutical care is important to define when developing clinical pharmacy services in a new setting such as primary care practices. General practitioners are key stakeholders in this endeavour. The aim of this study was to find the most optimal approach to providing pharmacist-led pharmaceutical care in primary

health care clinics in Iceland in collaboration with general practitioners.
Setting and method: Action research provided the framework for this research. Data was collected from pharmaceutical care interventions with patients, field observations, field notes, and interviews with general practitioners over the period of the study. The study ran from September 2012 to June 2015. Three separate semi-structured in-depth interviews were conducted with five general practitioners from one primary health care clinic in Iceland at different time points throughout the study. Pharmacist-led pharmaceutical care was provided to patients (n = 125) before and between general practitioners' interviews. The study settings was a primary health care clinic in Reykjavik area and the patients' homes.
Main outcome measures: How to provide pharmaceutical care in collaboration with general practitioners in the Icelandic health care environment.
Results: Direct contact between pharmacists and general practitioners over short distances are essential to providing optimal pharmaceutical care services. Pharmacist's access to medical records is necessary even though face-to-face communication between pharmacist and patients are most effective in providing pharmaceutical care. Pharmacist-led clinical service was deemed most needed in dose dispensing polypharmacy patients. Patients require more information about drugs prescribed to them coupled with an accurate drug list with greater detail.
Conclusion: The most efficient collaboration when pharmacist and general practitioner is obtained when they work side by side at the primary health care clinic. When new services are developed it is vital to identify different requirements of the primary health care clinics to optimize the running of a clinical pharmacist service.

PH008: Accompaniment of patients treated with oral chemotherapy: a survey on patients' experience

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Antineoplastic agents taken orally are more and more used in cancer care. These medicines confer autonomy to patients. Although, they may cause adverse effects that can lead to treatment adherence issue, unjustified hospitalizations, or premature treatment interruption. Proper accompaniment of patient can prevent these issues. In order to define how to organize this accompaniment, we conducted a survey on patients' experience. The objective is to describe patients care pathway and identify their needs.
Design: A descriptive, qualitative, prospective, survey was conducted using self-administered questionnaires, in hospitals of Ile-de-France region. Inclusion criteria were: having being treated with oral neoplastic agents during minimum 2 months, age >18, solid tumor, no concomitant IV chemotherapy. Collected data were: patients' sociodemographic and clinical profile, their insight about different steps of care pathway (information, treatment delivery, follow up), their behaviours and interactions with healthcare professionals, and their overall opinion.
Results: 44 patients were recruited in six hospitals. Their sociodemographic and clinical characteristics were variable. 72% were treated with targeted therapy, 12% with cytotoxic agent, and 16% with endocrine therapy. Patients showed high satisfaction for given information at the beginning of the treatment. Principal source of information identified was the oncologist (100%). While the delivery of treatment, 40% of patients beneficiated of advices from the pharmacist. Accompaniment of patients during treatment seemed unequal, with: a frequency of visits with the oncologist ranging from less than 1–3 months; 36% of patients not knowing any telephone number they can call in case of worries or questions about their condition or treatment; 39% not remembering any particular accompaniment treatment (visits or calls from nurses or doctors for example). For adverse effects management, three principals actors were identified: oncologist (95%), general practitioner (52%) and pharmacist (31%). Regarding the use of oral chemotherapy, patient are satisfied with: it's comfort (93%); being more actively involved in their cancer care (90%); and state not having any anxiety taking chemotherapy home (95%). Asked openly about their concerned and needs three major concepts were identified: high concern about adverse effects, positive feedback about maintaining contact with health professionals between cures and difficulties of communication between health professionals.
Conclusion: There is a high satisfaction regarding oral chemotherapy and health professionals. The oncologist has a primordial place in patient pathway, whereas implication of pharmacist and general practitioner stays variable. Adverse effects are a major concern that needs proactive accompaniment. The variability of our results suggests that accompaniment must be flexible and adapted to the needs of each patients. The key to flexibility could be good coordination and communication between healthcare professionals.

PH009: General beliefs about medicines among independent elderly adults in Sweden: data from an RCT

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Please specify your abstract type: Research abstract
Background and objective: There is a need to improve prescription and use of medications by the elderly. The objective of a recent RCT was to investigate the effects of e-learning about medicines among elderly adults. A positive impact on the primary outcome measure, knowledge about medicines, is reported elsewhere. A secondary outcome measure, general beliefs about medicines, is reported below.
Setting and method: The study was a randomized controlled trial in elderly people (aged ≥65 years). Participants were recruited from patient associations and pensioners associations. Participants were randomized to either an intervention group that participated in the e-learning, i.e. internet modules with video and audio, or a control group that did not take part in the e-learning.
Post-intervention data was collected using paper-based questionnaires, completed within two weeks after agreeing to participate in the study. The General Beliefs about Medicines Questionnaire (BMQ-general), comprising the subscales necessity, harm and overuse, was used to elicit beliefs. Higher scores indicate stronger endorsement of scale constructs (range 4–20).
Main outcome measures: BMQ-general subscale scores.
Results: A total of 195 elderly people were included in the study, 96 in the intervention and 99 in the control group. The mean age in the total population was 74.5 years and 53% were women. Eleven percent did not use any prescribed drugs while 27% used more than five prescribed drugs. The patients' scores were very similar in the two groups for all three BMQ subscales. The median "Overuse" score was 12 (IQR 11–14) in the intervention group versus 13 (IQR 11–14) in the control group, the median "Harm" score was 10 (IQR 8–12) in both groups and the median "Necessity" score was 18 (IQR 16–19) in both groups. In the total population the most commonly expressed negative beliefs referred to overuse of drugs. 62.4% of respondents agreed with the statement "If doctors had more time they would prescribe fewer medicines", 43.4% stated "Doctors prescribe too many medicines", and 37.9% stated "Doctors place too much trust in medicines". A majority of the respondents agreed with the four items

on the "Necessity" scale. For example "Medicines help people to live a better life (96.9% agreed)".
Conclusion: The studied e-learning intervention was not shown to have any impact on general beliefs about medicines. Beliefs about medicines have been associated with a number of background variables which might explain why increased knowledge about medicines alone cannot change such beliefs. In general, respondents in the study had highly positive beliefs about the necessity of medicines. Nevertheless, the results indicate that overuse of medicines is regarded as a problem.

PH010: MAF-Plus: pharmacists' contributions to provision of financial assistance for medications

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: The Medication Assistance Fund Plus (MAF-Plus) is a government scheme introduced in Singapore in 2011 to provide financial assistance to needy patients who meet pre-set criteria based on means testing. Unlike previous schemes, MAF-Plus provides broader discretion to institutions when providing financial assistance. In our institution, pharmacists reviewed patients' case and medication histories, and filed recommendations to a multidisciplinary committee tasked with approving deserving MAF-Plus applications. The pharmacists' contributions to the committee, and the outcomes of the applications, are presented in this study.
Design: All MAF-Plus applications received between 1st October 2011 and 31st December 2015 were reviewed. Pharmacists' comments for each application, where provided, were noted, as well as the range of medicines applied for, review approval rates, and cumulative percentage of available funds utilised. The effect of a recent widening of the scheme's scope to include notable high-cost items was also evaluated.
Results: Between 2011 and 2015, 2001 MAF-Plus applications were reviewed, of which 1737 (86.8%) were approved. Of the 264 rejected applications, 145 (54.9%) were channelled to alternative financial assistance schemes on the recommendation of the pharmacists. The medicines most commonly applied for were intended for the treatment of cardiac (24.3%), respiratory (14.7%), and psychiatric (13.5%) conditions. Pharmacists' recommendations also led to a gradual expansion of our institution's list of pre-approved medicines—from 5 in 2011–2012 to 47 by end-2015. From 2014 onwards, pharmacists previewed increasing numbers of applications for high-cost medicines, particularly those for treatment of retroviral disease, hepatitis C, and rare diseases. Cumulative utilisation of MAF-Plus funds (inclusive of annual replenishment) rose from 3.3% in 2011–2012 to 38.8% by end-2015, representing an average year-on-year growth of 151.1%.
Conclusion: Using a process of judicious previewing of MAF-Plus applications, and recommendations to the MAF-Plus committee, pharmacists contributed to a high percentage of patients receiving financial assistance for medications. Despite a steep growth in the number of applications received between 2011 and 2015, this approach helped to prevent over-extension in fund utilisation. Pharmacists will likely be increasingly relied upon due to an anticipated rise in the number of applications for high-cost medicines.

PH011: Knowledge of medicines and perception of risk among adolescents

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Please specify your abstract type: Research abstract
Background and objective: Adolescents often treat themselves and take medications without parental supervision. Lack of experience and knowledge of medicines in this age group frequently leads to inappropriate use of medicines and adverse drug reactions. Data about the use of medicines among Slovak adolescents and their knowledge of medicines have not been studied yet.
Setting and method: For our study we used the questionnaire method. The questionnaire contained 23 multidimensional items with closed-ended and open-ended questions, which focused on the characteristics of the adolescentś health status, use of medicines, also in relation to parents and adolescentś knowledge and perception of medicineś risk. We distributed 930 validated questionnaires for adolescents aged from 12 to 18 at secondary schools in all regions of Slovakia. Response rate was 70.6%. 657 questionnaires were finally analysed. The differences in the distribution of categorical variables between groups were evaluated using the Chi square test. SAS 9.4. was used as statistical software.
Main outcome measures: To determine adolescentś knowledge of medicines in terms of efficacy, self-medication, safety of therapy and analyse which medicines are the most frequently used by adolescents. To compare adolescents with chronic disease and healthy ones from the perception of pharmacotherapy point of view.
Results: In the analysed group 40.8% (n = 268) of adolescents are treated for chronic disease. Mostly they suffer from allergy (25.0%, n = 67) and skin diseases (6.8%, n = 18). Adolescents with chronic disease use regularly prescription medicines (36.9%, n = 99, $p < 0.001$) and over the counter medicines (11.6%, n = 31, $p < 0.001$). This group of adolescents better accept the pharmacotherapy with parental supervision (33.2%, n = 89, $p = 0.0047$ vs. healthy adolescents) and they believe in effectiveness of prescription medicines (71.3%, n = 191, $p = 0.0226$ vs. healthy adolescents). Most frequently prescribed medicines were azithromycin, levocetirizine, ofloxacin and over the counter medicines were ibuprofen, paracetamol, ascorbic acid. We found out in all group of adolescents that 81.3% (n = 534) prefer self-medication without check-ups, 73.5% (n = 483) used drugs in the last 6 months without a prescription, 51.8% (n = 340) take over the counter medications independently without the supervision of parents, 14.9% (n = 154) buy medicines themselves in the pharmacy, 44.6% (n = 293) do not take medications as recommended, 56.6% (n = 372) believe that they have enough knowledge of medicines which they take, 51.4% (n = 338) resp. 49.6%, (n = 326) believe that prescription medicines resp. over the counter medicines are safe.
Conclusion: Questionnaire analysis pointed out that Slovak adolescents have not enough knowledge of medicines. The study provides new information in the field of risk perception and adolescentś knowledge of medicines in the Slovak Republic and highlights the areas that need to be studied in the future in terms of adolescentś education.

PH012: Cure and discontinuation of treatment in a tuberculosis control state programme in Brazil: insights from dispensing data

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Please specify your abstract type: Research abstract
Background and objective: The effectiveness of tuberculosis (TB) control programmes depends critically on patients completing appropriate treatment. This study aimed to outline the cure and discontinuation rates of patients enrolled in the Pernambuco Tuberculosis Control Program (PECT), based on dispensing data.
Setting and method: The study was carried out in three sites in Recife public health system, Brazil, designated A (one polyclinic plus eight general practice units), B (one hospital for medium-complexity patients) and C (one hospital for high-complexity patients). Data were collected between 07-11/2014, through reports from the stock management software for public pharmacies (Horus) for PECT outpatients. Reports corresponded to a total of 948 patients (232, 348 and 368 in sites A, B and C, respectively). Horus defines "cure" as medicines collection for three, six or nine consecutive months without interruption, depending on the treatment scheme; discontinuation is defined as non-sequential collection of medicines or treatment interruption for two consecutive months or more. Patients were assigned an "undetermined" status if treatment was ongoing. Data were inputted onto an Excel spreadsheet and checked for accuracy. Qui-squared test, Fisher's exact test and bootstrap analysis were performed with R statistical computing. Ethical approval was granted.
Main outcome measures: Cure and discontinuation rates for PECT outpatients.
Results: Demographic data are not available for the sample. Rates for cure were respectively 35.9% (83), 23.6% (82) and 31% (114) in the sites A, B and C, while rates for treatment discontinuation were 3.4% (8), 27.8% (97) and 9% (33), respectively. Discontinuation rates were significantly different among the sites A, B and C ($p < 0.05$). Bootstrap analysis showed that overall the proportion of patients with an "undetermined" status in each site did not significantly change these differences.
Conclusion: Only site A had an acceptable discontinuation rate, in light of the World Health Organization recommendations. This deserves attention as default treatment leaves patients infectious for longer, increases the risk of poor outcomes and fosters resistance to antibiotics. Pharmacists could use dispensing data to signal TB patients at-risk of discontinuation, and subsequently tailor interventions addressing its causes. Site B had the greater number of patients which discontinued treatment. Patients co-infected with TB and HIV are firstly referred to this site, which may explain this finding. Our findings suggest the need of more intensive interventions in patients co-infected with TB and HIV, such as pharmaceutical care programmes.

Poster discussion forum II: Hospital pharmacy and pharmaceutical care 1

HP-PC014: The effect of pharmacist intervention on medication reconciliation in the Emergency Department of a General Hospital

Pim Langendijk[*,1], Saskia Coenradie[1], Mariem Gam[1,2], Martine van Geest[1], Mark de Vries[3] on behalf of the working group of medication safety, Reinier de Graaf Group Hospitals, Delft, Netherlands

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Please specify your abstract type: Research abstract
Background and objective: Many efforts are done to organise good quality and safe pharmaceutical care. In general, the involvement of a hospital pharmacist or hospital pharmacy personnel in the process of medication reconciliation results in a reduction of the number of medication discrepancies. However, in case of emergency admissions this topic is still insufficiently studied. The introduction of good medication reconciliation on the emergency department (ER) requires firm logistical and organisational efforts. We investigated the effects of a drug reconciliation intervention by pharmacy personnel during emergency admissions in order to identify discrepancies between medication lists taken by ER physicians and by pharmacy personnel.
Setting and method: This observational, comparative, non-randomised intervention study was performed in 2011. We calculated that a population size of 65 patients was sufficient to perform reliable measurements. Inclusion criteria: all patients presented at the ER and admitted to a hospital ward <24 after presentation with usage of one or more prescription drugs. Exclusion criteria: age <18 years, residency outside the region Delftland, inability to undergo an oral interview, absence of a medication list of the public pharmacy (OZIS-list), decease of the patient during ER-stay and patients undergoing surgical procedures. Discrepancies between both medication lists taken by an ER physician or pharmacy technician were classified in four categories of increasing severity (1 = no discrepancy to 4 = clinical relevant discrepancy) using the index of the National Coordinating Council for Medication Error Reporting and Prevention (www.nccmerp.org). Discrepancies were categorised by a panel consisting of a pharmacy technician, a (senior) hospital pharmacist and a 6th year pharmacy student. Statistical analysis was carried out with a statistical software package (SPSS 18) using the Mann–Whitney U test and Chi Squares test.
Main outcome measures: During the intervention measurement we analysed the reconciliated medication by comparing the ER's physician's list with the list of the pharmacy technician after a medication verification interview. The number of discrepancies were measured and judged by the panel. Discrepancies were given a category 1, 2, 3 or 4 as defined.
Results: During the intervention measurement 768 patients were admitted to the ER. Sixty-five (65) patients (8.5%) met the in- and exclusion criteria. The number of medication discrepancies decreased significantly after intervention of the pharmacy technician by 52%, from 161 to 77 discrepancies. The average number of discrepancies per patient after intervention decreased by 68.0%, from average 2.5 to 0.8 discrepancies per patient.
Conclusion: Medication verification by pharmacy personnel in the ER reduces the number of medication discrepancies by half. Medication lists generated with a standard interview by pharmacy technicians in combination with an OZIS-list on admission of patients at the ER is more complete and accurate than the current method.

HP-PC015: Discharged patients: a problem for community pharmacists?

Lea Domenica Brühwiler[*,1,2], Kurt Eduard Hersberger[1], Monika Lutters[2]

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Please specify your abstract type: Research abstract
Background and objective: After a hospital stay, community pharmacists fill and validate discharge prescriptions. Up to now, Swiss community pharmacies do not receive any information besides the discharge prescription. However, based on Joint-WHO/FIP-Guidelines on Good Pharmacy Practice, the pharmacist should manage a patient's therapy and get access to clinical data (Role 2, function B and C). The aim of this study was to evaluate the current practice of

information transfer, as well as the role, needs, and objectives of pharmacists when they care for recently discharged patients.
Setting and method: A focus group was conducted with a sample of six community pharmacists from personal contacts to represent different characteristics. The focus group consisted of different questions and the recording was transcribed, fragmented and categorised.
Based on these results, a nationwide online-survey was created with the following questions: a) Responder's characteristics, b) number and origin of prescriptions, c) role fulfilment of the Joint-WHO/FIP-Guideline on Good Pharmacy Practice, rated with a 5-point Likert-scale, d) 30 information items derived from the focus group discussion grouped into four categories and evaluated for their availability and for their usefulness by Likert-scales, e) goals for discharge optimisation, f) additional comments. The questionnaire was piloted and translated forward and backward to French and Italian by native speakers. It was sent to all managers of pharmacies belonging to the Swiss Pharmacist's Association in summer 2015 (n = 1348).
Main outcome measures: Conclusions from focus group discussion and responses to questions a-f from the nationwide questionnaire.
Results: The focus group participants (47.3 ± 13.7 years, 50% female, 50% employees) emphasised the importance of an expanded information transfer, especially for medication changes, unclear prescriptions, and information about a patient's medication acquisition. They were concerned about their extensive workload of discharge prescriptions, and mentioned treatment continuity as one of their goals.

The questionnaire was answered by 194 pharmacists (response rate 14.4%, 49.7 ± 10.8 years, 50.5% female). There were 56.7% of responders who reported to fulfil their role (to manage a patient's therapy, function B) not satisfyingly. Unavailable but essential information were allergies and the specification of off-label use prescription. Unavailable although desired information were the reasons for therapy changes, indications, appointments, contact information, or compounding formulations. Concerning design and transfer, information should be written in a structured way but no clear preference for a transfer method was found. Goals of community pharmacists were: improved treatment continuity, patient safety, and pharmaceutical care.
Conclusion: Swiss community pharmacists rarely receive sufficient information on discharge prescriptions. Appropriate pharmaceutical care is therefore impeded. The knowledge and application of the findings enable directed optimisation of discharge.

HP-PC016: Patients attitude for using antipsychotic medication in the Norwegian early intervention in psychosis, tips 2 study

Rafal Yeisen[*,1], Stein Opjordsmoen[1,2,3], Inge Joa[1,4], Jan Olav Johannessen[1,4], Jone Bjørnestad[1] on behalf of Centre for Clinical Research in Psychosis, Psychiatric Division, Stavanger University Hospital, Stavanger, Norway

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Please specify your abstract type: Research abstract
Background and objective: Poor drug adherence in patients with psychosis leads to relapse, re-hospitalization, poor outcome and increased consumption of health services. Pharmacoclinical studies have demonstrated that the treatment response decreases with each relapse. It is estimated that 50% of patients suffering from chronic illness are not taking medication as prescribed after 6 months. The purpose of this study is to investigate which experiential factors that potentially might affect adherence with medication in adults with psychotic disorders.
Setting and method: In a descriptive qualitative sub-study in the ongoing Norwegian Early Intervention in Psychosis, TIPS 2 study, where twenty-first episode patients (7 male, 13 female) participated in semi-structured interviews 2 years after inclusion. They were still using or had used antipsychotics during the last 2 years. Data were analysed using interpretative phenomenological analysis.
Main outcome measures: Adherence to antipsychotics.
Results: The data suggested four main themes, reflecting the patients' subjective experiences and their impact on the desire to adhere to antipsychotics: (1) Admission experience as a psychotic's patient; (2) Information from healthcare staff; (3) Limited involvement in decision-making; (4) Attitude to antipsychotics.
Conclusion: A number of factors had a positive influence on adherence to antipsychotics. Pleasant admission/stay experiences, feeling that antipsychotics had therapeutic effects, mild or no side effects, and believing that antipsychotics are necessary and useful, were typical statements.

HP-PC017: Medication supply problems after hospital discharge and patients' and physicians' suggestions for optimisation

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Please specify your abstract type: Research abstract
Background and objective: The hospital-to-home transition is a vulnerable stage in a patient's care. Patients can experience problems with medication supply, which possibly lead to therapy interruptions. The objectives of this study were to investigate medication supply after discharge, and patients' and physicians' opinions about the current discharge process and possible optimisations.
Setting and method: A telephone interview was conducted with 100 discharged patients from the surgical and internal medical wards from the cantonal hospital in Baden (Switzerland). Inclusion criteria were: patients ≥50 years old, discharged home with a discharge prescription. Patients were called between the 2nd and 6th day after discharge and a piloted, structured interview was performed, consisting of questions on experiences and optimisations. Afterwards, semi-structured interviews were conducted with five physicians from the study hospital. Results from patient interviews and the general discharge process were discussed.
Main outcome measures: Proportion of filled prescription, frequency and type of supply problems including therapy interruptions. Opinions of physicians and patients on current discharge process and possible optimisations.
Results: Discharged patients were 65.6 ± 17.4 years old, 39% female, 53% from internal medicine, and 97% regularly visit the same pharmacy. Of the 100 interviewed patients, 23 have not filled their prescriptions yet and 77 had their prescription filled when they were called. Of these, 78% of them visited the pharmacy on the day of discharge, but it took up to the 6th day until all of them received their medication. Supply problems were encountered by 14 patients (18%), mainly because of the medication not being in stock in the community pharmacy. Only four patients experienced therapy interruptions, which took up to the 3rd day post-discharge. Patients discharged from internal medical wards had more supply problems compared to surgical wards (relative risk = 5.56, $p = 0.007$). Patients experiencing supply problems had statistically significant more medicines on a daily basis (8.0 ± 4.32 vs. 4.9 ± 3.04, $p = 0.010$). Physicians were

surprised about the late prescription filling and worried about the disease outcomes. However, interruptions were interpreted as unfrequent.

When asked if, in future, hospitals should transfer prescription to the community pharmacy prior to discharge, 71% of patients refused and physicians were undecided, mainly because of a questionable benefit. But both groups indicated that giving some bridging supply would be welcome.

Conclusion: This study showed that patients discharged from a Swiss hospital encounter supply problems, but therapy interruptions are seldom. Giving some bridging supply was preferred over an early information transfer by patients and physicians. Interventions should consider these opinions and focus on internal medicine patients with high number of medication.

HP-PC018: Is evidence-based medicine drug therapy well implemented after ST-segment elevation myocardial infarction in contemporary practice? A one-year follow-up study

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Please specify your abstract type: Research abstract

Background and objective: Adherence to secondary prevention evidence-based medical (EBM) therapies for patients with ST-segment elevation myocardial infarction (STEMI) is essential to reduce long-term rates of major adverse cardiovascular events. Current guidelines recommend the long-term use of low-dose aspirin, high-intensity statins, angiotensin-converting enzyme inhibitors (ACEI)/angiotensin receptor blockers (ARB) and beta-blockers (BB), in addition to $P2Y_{12}$ inhibitors for 1 year. We aimed to assess the adherence to secondary prevention EBM therapies from discharge to one-year follow-up among patients with STEMI undergoing primary percutaneous coronary intervention (PCI) in contemporary practice.

Setting and method: Observational single-centre study including consecutive patients with STEMI undergoing primary PCI in a tertiary hospital in Switzerland over a one-year period. Secondary prevention EBM therapies were assessed at discharge and at one-year follow-up.

Main outcome measures: Prescription of key secondary prevention EBM therapies (aspirin, $P2Y_{12}$ inhibitors, statins, ACEI/ARB and BB) from discharge to one-year follow-up after STEMI. BB was recommended only for patients with heart failure or left ventricular ejection fraction (LVEF) <40%.

Results: A total of 179 patients were included. EBM drug prescription at discharge was 99.4% for Aspirin (n = 178), 97.8% for $P2Y_{12}$ receptor inhibitor (n = 175), 97.2% for statin (n = 174), 93.9% for ACEI/ARB (n = 168) and 87.5% for BB (n = 28, among 32 patients with LVEF < 40%). Ticagrelor (84.6%) was the major $P2Y_{12}$ inhibitor prescribed. Overall, 25 EBM drugs were missing at discharge, with 13 of these missing drugs having no justification for no-prescription (contraindications, allergy or intolerance). At one-year follow-up (median 13.4 months, n = 156), aspirin, statins and ACEI/ARB prescription rates were 92.9% (n = 145), 92.3% (n = 144) and 82.1% (n = 128) respectively. 19 out of 23 patients (82.6%) with LVEF < 40% received a BB. Among patients treated with ticagrelor at discharge, 31 (23.5%) were receiving ticagrelor at follow-up, whereas 21 (15.9%) were switched to another $P2Y_{12}$ inhibitor. Among patients who discontinued ticagrelor (n = 80, 60.6%), duration of dual antiplatelet therapy was 12 months for 80% (n = 64) and discontinued prematurely (<1 year) for 15% (n = 12) patients. Reasons for ticagrelor early discontinuation or switch were not specified.

Conclusion: In a real-world cohort of patients with STEMI undergoing primary PCI, prescription of recommended secondary prevention medications at discharge is excellent. Adherence to EBM therapies at 1 year remains high with more than 80% of patients receiving all EBM drugs. Early discontinuation of dual antiplatelet therapy was observed in 15% of patients, whereas ticagrelor was switched for another $P2Y_{12}$ inhibitor in 15.9% of patients. These observations highlight key opportunities to improve longitudinal use of secondary prevention therapies after STEMI in routine clinical practice.

HP-PC019: Side effects' assessments of new targeted therapies by a clinical pharmacist in oncology outpatient clinic

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Please specify your abstract type: Research abstract

Background and objective: Targeted therapy and immunotherapy are new approaches in cancer treatment and show promising results. Although side effects are less common than traditional chemotherapies, certain ones such as pain, fatigue, nausea and vomiting can still be bothersome. In oncology outpatient clinics, side effects are monitored by oncology nurses; however due to high patient turnover and limited numbers of nurses, the assessment of side effects might not be performed adequately. Therefore, aim of this study was to determine side effects of immunotherapy and targeted therapy and to compare the severity assessment of side effects by clinical pharmacist and nurses.

Setting and method: The study was conducted in the Hacettepe University Oncology Hospital outpatient clinic. The patients who have been taking ipilimumab, nivolumab, pembrolizumab, bevacizumab, panitimumab or cetuximab during October 2015-March 2016 were included. The assessment of side effects were undertaken by a clinical pharmacist and nurses separately on each visit using the Common Terminology Criteria for Adverse Events version-2 toxicity assessment scale. An independent clinical pharmacist compared the side effects' assessments by pharmacist and nurses for analysis. Ethical approval was obtained from Hacettepe University Ethics Committee.

Main outcome measures: To compare the severity of side effects of targeted drug therapies which were assessed by a clinical pharmacist and nurses.

Results: During the study period 204 visits of 43 patients were evaluated. A total of 5508 side effects assessments were recorded. Among those assessments 909(16.5%) was assessed in different ranking by nurses and pharmacist. The differences in the number of assessments were mainly seen in criteria related to pain (n = 34; 51), sensory loss (n = 24; 59), fatigue (n = 114; 26), stress (n = 16; 28), insomnia (n = 18; 28) which was performed by nurses and pharmacist respectively. Other side effects detected only by clinical pharmacist were oedema, cough, gastrointestinal complaints (heartburn, cramp) and sensitivity of odour which require close monitoring and in-depth counselling by clinical pharmacist.

Conclusion: This study explores the differences in assessment of side effects by pharmacist and nurses in targeted therapies. Routine assessment of side effects between chemotherapy cycles might yield

to misinterpretation or inadequate assessment due to workload of outpatient clinic. Therefore, inter-professional interactions in outpatient clinics might close the communicational gaps and improve patient care.

HP-PC021: Implementation of clinical pharmacy in the acute psychiatric wards: improving quality of medical treatment across health care sectors

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: A study from 2011 shows that people with a mental disorder had a two- to threefold mortality compared with the general population in Denmark. Life style diseases are the major reason for the excess mortality, partly due to undertreatment of physical disease and well known side effects from medicines such as obesity, diabetes, and heart disease.

In May 2015, a clinical pharmacy service (CPS) was implemented in all acute psychiatric wards (APW) in The Capital Region as a part of a three-year project funded by the Danish Health Authorities. The objective is to illustrate how the implementation of clinical pharmacy in the APW in Copenhagen increases the focus on drug related problems, rational pharmacotherapy and side effects, increasing the quality of medical treatment and patient safety across health care sectors.
Design: Data was collected at the APW in Copenhagen which consists of three wards and has a total capacity of 39 beds. Inclusion criteria were patients to which two or more of the following apply:

- ≥65 years of age
- ≥6 drugs
- High risk drugs (clozapine, sertindole and opioids)
- Combination of antipsychotics and benzodiazepines
- Diagnosed with liver/kidney disease

The secondary inclusion criteria were all patients receiving ≥6 drugs as a single criterion.

To obtain a valid medication history and secure medication reconciliation, the pharmacist interviewed included patients. The patients were also asked about side effects, compliance, and perceived effects of treatment. A medication review was conducted based on the patient interview, screening for interactions in an interaction database, and consideration of biomedical data in order to evaluate if treatments should be adjusted, initiated or discontinued. The pharmacist's input was discussed with the doctor, as inputs are more likely to be considered if they are communicated orally. Finally, all inputs were documented in the patient's journal as a pharmacist note.

The Model for Improvement was used as a tool for implementing the CPS and is being used continuously for improving the service.
Results: Between May 26th 2015 and June 24th 2016, 2285 patients were screened at admission to the APW, of which 30.7% met the inclusion criteria (702 patients). In this period the pharmacist conducted 475 notes, indicating that 67.7% of the included patients were seen by the pharmacist. In April 2016, 30 patients were in average admitted with 8.3 drugs and 1.5 inconsistencies between the hospital's medication orders and the medications that the patient had been taking. Regarding patients who are discharged to community care shortly after admission, the pharmacist note is sent to their general practitioner for follow up.
Conclusion: Overall, the implementation of a CPS in the APW has been successful. Medication reconciliation ensures that the patient is provided with correct medicine at admission, transfer or discharge. By performing a thorough medication review based on a consultation with the patient, the service contributes to an increase in quality of medical treatment.

HP-PC022: Clinical pharmacist in operating room

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: The importance of the role of a clinical pharmacist resident in the operating room during 6 months, in a private hospital belonging to a group devoted to healthcare for over 70 years. The hospital is recognized as a reference centre of excellence of hospital care in Portugal. It has 145 inpatient beds, two surgical blocks with 9 rooms and 12 beds in the Intensive Care Unit.
The aim of the clinical pharmacist in the operating room is to ensure compliance with good clinical practice, safety and pharmacotherapeutic effectiveness, as well as optimization of drug costs.
Design:

1. Logistics restructuring of pharmaceutical services and the need of the physical presence of the pharmacist in the operating room.
2. Furthermore, the workstation of the pharmacist is moved to the operating room and the in-depth study of all medicines used in the operating room.
3. In compliance with the Joint Commission, definition, optimization and adjustment of drug stocks to the needs of the service itself. In close collaboration with the nursing staff, consumer kits were created for registration of drugs by type of surgery in order to facilitate registration and ensure billing efficiency. Control of the analgesic drug's dispensation circuit in hospitalized surgical patients that stay less than 24 h in the hospital. Ensure compliance with the project through which the Health Regulatory Authority evaluates several hospitals in the country, creating a national ranking among hospital specialties.
4. Clinical phase: Creation of prescription protocols by type of surgical intervention based on national clinical guidelines. Validate prescriptions in the intra-surgical block in compliance with antibiotic prophylaxis, antiemetic and thromboembolic, checking deviations in therapy according to good practice. Identify pharmacologic hypersensitivities of patients by consulting the clinical process and anaesthesiology records. Provide information on drugs, drug efficacy monitoring and adverse drug reactions in risk management platform. Check off label use of drugs.

Results: Of a total of 772 interventions, 360 relate to revenue optimization and 412 relate to clinical interventions. There was an increase of approximately 25% in billing. On what regards to clinical interventions, the majority of them showed deviations from good clinical practice.
Conclusion: The physical presence of a clinical pharmacist in the surgical block is essential as the prescription and administration of drugs is carried out simultaneously, allowing immediate therapy validation, in order to increase the safety and efficacy. The pharmacist

has the ability to interact with the multidisciplinary team, as well as monitoring the patient's clinical process, the pharmacotherapeutic profile and drug allergies, allowing the detection of any adverse drug reaction on-time. All these interventions are possible in the pre, intra and postoperative phases.

HP-PC023: ECG monitoring in patients with a treatment of psychotropic drugs: monitoring adherence to guidelines

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Several psychotropic drugs can induce QT-prolongation, which is a well-known risk factor for developing Torsade de Pointes (TdP) and sudden death. The clinical relevance of this side effect of psychotropic medication remains unclear, particularly for patients hospitalized in an acute hospital. Guidelines recommend the recording of an electrocardiogram (ECG) prior to treatment with psychotropic drugs at risk and after dose increases. To investigate the adherence to these guidelines, we assessed the frequency of ECG measurements for hospitalized patients on QT-prolonging psychotropic drugs.
Design: A retrospective evaluation was conducted on four psychiatric wards in a general hospital: two acute, short-term psychiatric units (ASP1 and ASP2), one addiction service unit (ASU) and one geriatric-psychiatric ward (GPW). Based on the AZERT classification, a list with QT-prolonging psychotropic drugs (psychotropic risk drug) was compiled. Adult patients who were admitted between September 1st 2014 and February 28th 2015 to a psychiatric ward and treated with minimal one psychotropic risk drug were included. Statistical analysis (R software) was performed on demographic factors, frequency of hospitalization, performed ECG's, QT(c) intervals and creatinine and potassium levels were registered.
Results: An ECG was performed in 24.6% (184/747) of the included patients (average age 54 years, 36.4% male). The prevalence of ECG monitoring was significantly different between the four psychiatric wards ($p < 2.2e^{-16}$): 66% (111/168) in the ASU population and 19% (29/153) in the geriatric population. The latter is very low despite multiple risk factors for developing QT-prolongation (average age 76 years, 72.4% female). Highly abnormal QT(c)-prolongation (>500 ms) occurred only in two patients (2/143).
Conclusion: Adherence to recommendations on performing an ECG in patients on QT-prolonging psychotropic drugs is very low. Recording an ECG should be encouraged, especially in patients with multiple risk factors for developing QT-prolongation. Further investigation on this subject in the clinical practice is recommended.

HP-PC024: Medication discrepancies can be reduced by a single phone call

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Please specify your abstract type: Research abstract
Background and objective: The Shared Medication Record (SMR) is used by health professionals, in all sectors of the health care systems in Denmark. SMR is used to give an overview of the patients medication, to dispense and to administrate medicine. However it is well-known that SMR is not properly updated by physicians. This can create a number of discrepancies between SMR and the patients current medication history (MH), which may result in medication errors during hospital admission and after discharge. To perform proper medication reconciliation (MR) a valid MH must be obtained, which should be based on at least two sources; one dispensing and one prescribing. Obtaining a precise MH is a demanding and time consuming task that is sometimes given low priority by physicians. The objective of this study was to show whether pharmacists can contribute in recording MH prior to admission and performing MR at admission.
Setting and method: MH conducted by phone prior to admission and MR on the day of admission, performed by pharmacists, on elective patients from the Departments of Vascular and Orthopedic surgery at Rigshospitalet, Copenhagen, Denmark, from January 2016 to June 2016 (19 weeks).
Main outcome measures: Number of discrepancies between SMR and MH.
Results: In total 340 patients were admitted. 261 (76.7%) were reached by phone prior to admission and a MH was obtained. A MR was conducted in 177 of the 261 patients (67.8%). Reasons for not conducting a MR were patients being admitted outside pharmacy opening hours or due to physicians conducting MR themselves. 141 out of the 177 patients (79.6%) had discrepancies between the obtained MH and SMR, averaging on 2.65 discrepancies pr. patient. Examples of discrepancies included incorrect dosage, missing prescriptions on current medication and existing prescriptions on non-current medication.
Conclusion: This study showed that pharmacists can contribute in recording MH prior to admission and conducting MR at admission. By having pharmacist obtaining a valid MH it was possible to conduct a MR, leading to discrepancies being detected and removed from SMR. Discrepancies that may otherwise, because of low priority given to MH and MR by physicians, have followed the patient through the entire hospitalisation and after discharge.

HP-PC025: Clinical pharmacists' discharge counselling and 6-month follow-up on medication changes and adherence

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Please specify your abstract type: Research abstract
Background and objective: Provision of medication education at discharge is crucial to ensure safe patient transition. Little is known to which extent optimised medication regimens change after discharge. The study aims were twofold: first, to describe the benefit of clinical pharmacists' discharge counselling by preventing medication-related problems (MRPs) and second, to survey changes in medication after discharge.
Setting and method: Clinical pharmacists' discharge counselling was performed as part of routine clinical pharmacy services on three surgical wards (i.e. cardio, trauma and maxillo-facial) in a large Austrian teaching hospital. MRPs were classified according to an adapted classification system[1]. One, three, and six-month telephone follow-up study in patients with at least one chronic-use medicine, using a structured questionnaire and Morisky Scale[2].
Main outcome measures:

Number and types of MRPs at discharge.
Number and types of changes in prescriptions.
Medication adherence after discharge.

Results: Counselling (av.(±SD) duration: 9 ± 4 min) was performed in 773 patients (57.9% female; av.(±SD) age: 51.7 (±21) years; av.(±SD) medicines at discharge: 5.4 (±3.9)). In 30% of patients MRPs were intercepted. The five most common MRPs (%) were: need for organisational support (30.5, e.g. proper prescriptions' writing), therapy-related discussions (14.6), untreated indications (12.8), errors in documentation (11.1), and medicines without an indication (9.7).

437 patients (56.5%) classified for study inclusion, of whom 157 (35.9%) consented to be followed-up and 113 (72%) provided data. Roughly 80% of patients report having received information about medicines at discharge, of which three-fourths remember being informed by the pharmacist. More then every second patient (54.7%) reported having received valuable new information.

Changes in chronic-use medicines occurred in 40.6, 42.4, and 34.5% of patients at 1-, 3-, and 6-month, respectively. At 6-month, in 27.4% of patients chronic-use medicines were newly prescribed, in 23.9% discontinued. Medical specialists initiated these changes in 72.8% of patients. One out of five patients couldn't recall the reasons for changes in medication. Nearly 30% of patients showed moderate to little medication adherence at 6-month. It did not significantly change during the follow-up period.

Conclusion: Clinical pharmacists' counselling prevents MRPs at the transition from hospital to home. Follow-up data show that changes occur in one out of three patients. Medication adherence remains stable, but generally needs to be improved.

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HP-PC026: Impact of the clinical pharmacist as a direct patient-care team member on prescription analysis

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Please specify your abstract type: Research abstract

Background and objective: Until 2013, prescription analysis was based in our hospital pharmacy. Clinical pharmacy has been deployed in care units since 2014. Many clinical pharmacy services were developed: medication reconciliation, patient's therapeutic education and counselling, and prescription analysis unit based. The purpose of this study is to assess the impact of the clinical pharmacist as a direct patient-care team member on prescription analysis.

Setting and method: We collected pharmaceutical interventions (PIs) of the first 6 months of 2013 and at the same period of the year 2015 in the neurology unit when the pharmacist was unit based. We studied and compared type of PIs (medication, drug related problem-DRP), rate of PIs acceptance and clinical impact. Focus was made on high alert risk medications and potentially inappropriate medications.

Main outcome measures: During 6 months, we collected 7019 medication prescriptions in 2013 and 6879 in 2015. Pharmacists carried out 51 PIs in 2013 versus 223 PIs in 2015, representing respectively 0.7 and 3.2% of medication prescriptions ($p < 0.001$). In 2013, 94% of PIs were accepted versus 55% in 2015 ($p > 0.05$). Regarding types of DRP, results were similar in 2013 and 2015. Non-respect of recommendations and overdosage were the most frequent drug related problems, representing respectively 20 and 30% of PIs. No interactions were detected in 2013 versus 11 in 2015. Surprisingly, errors of route of administration were more detected in 2013 than 2015. High risk medications concerned 29% of IPs in 2015 versus 33% of IPs in 2013 ($p > 0.05$), potentially inappropriate medications represented 4.5% in 2015 versus none in 2013. When prescription analysis was based in the pharmacy unit, 31% of DRP detected by the pharmacist had a potential clinical impact versus 59% when the pharmacist performed prescription analysis in the care unit ($p < 0.05$). Three DRP detected in 2015 had serious potential harm.

Results: Ward-based prescription analysis allowed detecting five more times DRP with a significant more important clinical impact than pharmacy unit based prescription analysis. The clinical pharmacist as a direct patient-care team member is more efficient in detecting serious potential harm. Indeed, the pharmacist has a greater knowledge of the patient's clinical condition. Nevertheless the global rate of acceptance of PIs was greater when the prescription analysis was based in the pharmacy unit even if the difference is not significant. But prescription analysis is more complex when performed in the care unit, taking account adherence of the patient, and potentially inappropriate medications resulting in much higher risk-taking by the ward-based pharmacist.

Conclusion: This study showed that unit based prescription analysis is the best way to detect drug related problem. It must be competed by medication reconciliation and medication review to improve medication safety process.

HP-PC027: QT-prolongation in an acute psychiatric setting: fact or fiction?

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Please specify your abstract type: Research abstract

Background and objective: Several psychotropic drugs can induce QT-prolongation, which is a well-known risk factor for developing Torsade de Pointes (TdP) and sudden death. The clinical relevance of this side effect of psychotropic medication remains unclear, especially in patients hospitalized in an acute hospital. To interpret the clinical importance of psychotropic drug induced QT-prolongation, we investigated the prevalence of these electrocardiographic changes.

Setting and method: A prospective study was conducted on four psychiatric wards in a general hospital: two acute, short-term psychiatric units (ASP1 and ASP2), one addiction service unit (ASU) and one geriatric-psychiatric ward (GPW). All adult patients admitted between October 1st 2015 and March 15th 2016 on a psychiatric ward were eligible for inclusion. At admission, an ECG (ECG0) was performed and creatinine and potassium levels were measured. A second ECG (ECG1) was performed at least 7 days after the start of a psychotropic drug associated with a risk of QT-prolongation. QTc-prolongation was defined as 470 ms for males and 480 ms for females. Clinically relevant QTc-prolongation was defined as ≥500 ms. Statistical analysis (R software) was done as appropriate.

Main outcome measures: Prevalence of psychotropic drug induced QTc-changes and correlating factors.

Results: 268 patients (mean age 55 years, 59%female) were enrolled in the analysis. In 85 patients, an ECG1 was performed. QTc_{0+1} were prolonged in 2.3%(5/220) of females and 3.7%(5/136) of males. No clinical relevant prolongation (≥500 ms) was registered. Higher QTc intervals were measured in the geriatric population. 28.5%(36/126) of all measured QTc were situated between [$450 \geq QTc_{0+1} \leq 500$ ms] in GPW versus 9.4%(22/233) in the other units. Significant difference in QTc-changes was associated with sex ($p = 0.02246$). There was no correlation assessed between QTc-prolongation and age, number of psychotropic drugs or a specific single psychotropic drug ($p > 0.05$).

Conclusion: In this study QTc-prolongation due to psychotropic drugs is less common than previously described. ECG monitoring may be unnecessary in the follow up of patients without risk factors

and could reduce hospital and community costs. However, considering the potential harm associated with TdP, QT-prolongation should be avoided. We recommend recording an ECG before the start of a QT-prolonging psychotropic drug in risk patients: patients with a chronic alcohol or drug addiction, a cardiac history, on concomitant therapy with at least two QT-prolonging psychotropic drugs, or geriatric patients (>65 years).

HP-PC028: Implementation of medication reconciliation

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: A correct and accurate medication list should accompany patients at transitions in care from one setting to another, including admission to hospital. Complete information on drug use is a prerequisite for all hospital treatment, whereas incomplete information represents a potential patient safety risk. Medication reconciliation is defined by the World Health Organization (WHO) as "…the formal process in which health care professionals partner with patients to ensure accurate and complete medication information transfer at interfaces of care." The objective of this study was to investigate the quality of the medication history obtained for admitted patients. Furthermore, measures to improve the quality of medication histories, i.e. implementation of medication reconciliation, were initiated.
Design: The study included patients admitted to the internal medicine ward. A comprehensive medication history was determined by performing a standardized patient interview and/or by using relevant sources of information. The primary endpoint was discrepancies between the medication history obtained on admission and the one determined prospectively by a clinical pharmacist. The clinical relevance of the discrepancies was not determined, but sorted according to six major categories, such as: medication not in chart, but patient reports using (omission) and medication in chart, but patient reports not using (commission). Further on, in order to minimize the risk of discrepancies, it was focused on implementation of medication reconciliation. A campaign was initiated, where a clinical pharmacist held information meetings regarding the medication reconciliation procedure. For the next 9 weeks, the degree of medication reconciliation was recorded. To spur the degree of medication reconciliation, each ward's weekly numbers were published and the ward with the highest degree of medication reconciliation won a prize.
Results: Among the 74 patients included, a total of 120 discrepancies were revealed. In summary, 50 patients had at least one discrepancy in their medication history, resulting in discrepancies in the medication lists of 68% of the included patients. At the start of the study, the level of medication reconciliation varied among the wards (23–54%), while at the end of the study the levels were increased (75–92%).
Conclusion: All the included wards improved their level of medication reconciliation during the study period.

HP-PC029: Detection and management of potential herb–drug interactions during HCV treatment

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: New treatments for HCV infection have improved the sustained viral response in all HCV genotypes.

However, these new combinations have potential drug–drug and herb–drug interactions which can affect the safety and effectiveness of the treatment. In our clinical practice, the clinical pharmacist provides patient education about direct acting antiviral drugs (DAA) based-regimens, promotes medication adherence and manages potential interactions with HCV treatment.

The aim of the present study was to determine the prevalence of use of herbal products in the patients on HCV treatment, and to describe the potential hepatotoxicity of the herbal products and their interactions with HCV treatment.
Design: We included all adult patients on DAA treatment for HCV who were dispensed drugs from 01/09/2014 to 31/12/2015. We retrospectively recorded demographic data (age and gender), clinical data related to HCV infection (HCV genotype, fibrosis stage, DAA regimen and treatment outcomes) and type of herbal products consumed. We then assessed the presence of herb–drug interactions and the potential hepatotoxicity of herbal products.
Results: We obtained data from 359 patients on DAA-based treatment for HCV. The prevalence of consumption of herbal products prior to starting the treatment was 20.61% (74/359). The most consumed herbal products were (prevalence > 10% among herbal products users): milk thistle, green tea, chamomile, valerian, pennyroyal, boldo and artichoke. We detected four herbal products with potential hepatotoxic effects according to the literature: milk thistle, green tea, pennyroyal and aloe vera. The prevalence of consumption of these hepatotoxic plants among herbal products consumers were, respectively: 21.62, 17.57, 13.51 and 5.41%. We detected herb–drug interactions or potential for hepatotoxicity in 47 out of 74 patients who consumed herbal products. The management of these potential interactions consisted of stopping the herbal product before starting the HCV treatment.
Conclusion: The consumption of herbal products in our HCV patients was frequent. The management of potential interactions was conservative, recommending to stop herbal products. Clinical pharmacists have an important role in the counselling, detection and management of potential herb–drug interactions and herbal products-related hepatotoxicity.

Poster discussion forum III: Hospital pharmacy and pharmaceutical care 2

HP-PC030: Comparative effectiveness between original and similar intravenous iron sucrose preparations in haemodialysis patients

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Please specify your abstract type: Research abstract
Background and objective: Anaemia is a common comorbidity of chronic kidney disease. Intravenous (IV) iron is used when oral iron formulation became insufficient or to reduce the use of erythropoiesis-stimulating agents (ESAs) in haemodialysis (HD) patients. The lack of generic group for IV iron sucrose (IS) preparations leads to a controversial issue about their clinical effectiveness. In this study, we evaluated the effectiveness of original IS compared to IS similar (ISS) in HD patients.
Setting and method: A retrospective monocentric observational cohort study was conducted from 01/09/2014 to 31/08/2015, in a stable HD population to compare IS and ISS. The follow-up periods

lasted 24 weeks and were separated by a one-month wash-out period. Original IS and ISS were administered respectively during the first (P1) and the second (P2) periods. The comparisons were performed using the paired Student's t test or the paired Wilcoxon test for continuous data and the Fisher's exact test for categorical data.
Main outcome measures: The main endpoint was the difference in haemoglobin (Hb) levels between P1 and P2 per patient. Anaemia parameters (serum iron, serum ferritin, transferrin saturation ratio), the number of transfused patients, the doses of IV IS and the doses of erythropoiesis stimulating agents (ESAs) were compared before and after the switch from IS to ISS, as secondary endpoints.
Results: A total of 105 patients were included. There was no significant difference in mean Hb value between P1 and P2 (6.78 ± 0.63 mmol/L versus 6.79 ± 0.59 mmol/L $p = 0.97$). Anaemia parameters were significantly different between P1 and P2 (mean serum ferritin, serum transferrin and transferrin saturation ratio) with $p < 0.0001$, except to the mean serum iron. The mean monthly dose of IV iron per patient and the mean dose of ESAs were respectively in P1 and in P2: 248.31 ± 159.18 mg versus 259.74 ± 158.92 mg ($p = 0.39$) and 0.46 ± 0.50UI/kg/week versus 0.59 ± 0.60UI/kg/week ($p = 0.005$). Transfusions occurred less frequently in P1 than in P2 ($p = 0.02$).
Conclusion: This study showed that ISS was as effective as original IS regarding Hb levels. However anaemia parameters appeared to be in favour of IS; the mean dose of ESAs seemed to be higher after switching from IS to ISS. These outcomes should be further explored using prospective comparative clinical studies.

HP-PC031: Intrathecal chemotherapy: who know what?

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Please specify your abstract type: Research abstract
Background and objective: The pharmacy residents are sometimes up to deliver chemotherapy when they are on night or week-end duty at the hospital. A dispensation's error (delivery of Metoject® (methotrexate) for intrathecal (IT) injection whereas it doesn't have the indication for this use), led us to test the pharmacy residents' knowledges about the IT access in order to underscore the points to be improved. The final aim of this work is to secure the pharmaceutical care of the patient 24 h a day, 7 days a week.
Setting and method: An online and anonymous survey of 14 questions was sent to the 35 residents of our area. It was composed of three parts: specific general information, questions about the chemotherapy specifically (indication, maximum dose and volumes, molecules used), illustrated questions about real situation for the dispensation on duty. The answers were collected over a two weeks period.
Main outcome measures: We studied the rate of good answers in global and by respondent.
Results: Twenty-five residents answered the survey, among them 60% never achieved any internship in a centralized Unit of Reconstitution of Chemotherapy (URC). All the levels of internship are represented: 1st year (n = 4), 2nd year (n = 10), 3rd year (n = 7) and 4th year (n = 4). Only 32% know where a medicine is injected intrathecally on the spinal column, 64% know on which level of the meninges. Three residents think that a nurse can inject intrathecally. They also had to select the molecules which can be injected by this access: 20% answered vincristine, 8% vinblastine, 4% bortezomib; despite these three molecules are mortals if they are injected intrathecally. The majority know the indication of the IT chemotherapy: prevention and treatment of cancers' meningeal localizations. Sixty percent do not know that several molecules can be injected for the same patient in the same time. The maximum dose of methotrexate is known for half of the respondents, but only 28% for the cytarabine'one. Only 3 residents out of 25 know that 10 ml is the maximum volume allowed to be injected for an adult. Six residents would have delivered Metoject® 15 mg in pre syringe filled if a doctor had asked for an IT during a night. Lastly, there are only two people who know that Aracytine® (cytarabine) 100 mg must be reconstituted with sodium chloride for IT use and not with the provided solvent containing benzylic alcohol. The score of the residents having already done an internship in an URC is 8.4/14 compared with 6.3/14 for those who never did. The respective scores per year of internship are 6.2 (1st year), 6.4 (2nd year), 7.4 (3rd year) and 7.9 (4th year).
Conclusion: Results and answers have been presented in a meeting and sent to the residents. We initially note many gaps in knowledge. The residents who already worked in an URC and the elders got better results. All the residents could be on duty at the hospital and all must be formed. A second session will be organized in a month to evaluate the formation's impact. It also has been presented to the assistants during an interactive lesson. This formation is essential to guarantee the dispensation of the adequate product and a secured medical care of the patient.

HP-PC032: Adherence is not correlated to the number of treatment nor daily dose in a population of patients with endocrinologic diseases

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Patient adherence to prescribed medications is crucial for reaching metabolic control goal. To better understand the impact of polypharmacy on medication adherence, we undertook a detailed survey of medication use among patients with endocrinologic diseases. The aim of this study was to determine medication adherence in a cohort of patients with endocrinologic diseases and to test the hypothesis that adherence decreases with increased number of medicines prescribed.
Design: We conducted structured interviews to determine self-reported adherence of patient on a scale of 0 (high) to 4 (low observance) (SRAP-4) and a measurement using Morisky medication adherence scales (MMAS-4). Demographic and medication information were collected from medical record. For statistical analysis, Mann-Whiney U-test for continuous variables, with Chi square for categorical variables and Kendall test for correlation were used.
Results: Our cohort included 149 patients, 52% were women and 76% were diabetic (65% suffering from type 2 diabetes). The mean age was 56 ± 14 years, the average number of medication was 7.3 ± 4.1. 53 (36%) patients were not able to estimate their adherence. Patients reported SRAP-4 scale with an average of 1.1 ± 0.9, this estimation was significantly higher than MMAS-4 with an average of 0.9 ± 0.9 ($p < 0.05$). The proportion of adherence level were identical between SRAP-4 and MMAS-4 with respectively 51 and 60% of high, 45 and 35% of medium and 4 and 5% of low adherence. A significand correlation between SRAP-4 and MMAS-4 scales ($r^2 = 0.58$, $p < 0.0001$) was found. However no correlation between adherence scale and number of treatment ($r^2 = 0.0001$ for MMAS-4 and 0.01 for SRAP-4 scale) nor number of daily doses ($r^2 = 0.0011$ for MMAS-4 and 0.016 for SRAP-4 scale). On the 1080 medications, 11% presented difficulties with observance. Cardiovascular (34.5%),

diabetes (25.9%) and psychiatric (13.8%) treatment are the three most involved drug classes in nonadherence.
Conclusion: In this cohort, patients reported high medication adherence. We highlighted a correlation between SRAP-4 and MMAS-4 scales. Surprisingly, we didn't find correlation between adherence scales and number of treatment or dose by day. The next step of this work will be the identification of risk factor of non-adherence using logistic regression analysis.

HP-PC033: The office of access to healthcare: how to optimize secured access to treatments?

Claire Chatron, Adeline Flatres, Claudine Hecquard, Guillaume Saint-Lorant*, Alexandra Muzard

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Please specify your abstract type: Research abstract
Background and objective: Office of Access to Healthcare (OAH) is an organization which offers a medical and social coverage to people who can't access to care and to medication because of the absence of social welfare, living conditions, or financial difficulties. Medications are free dispensed thanks to retrocession activity in hospitals pharmacies.

The aim of this study is to analyse this activity and to improve communication with patients and access to treatments by an adapted pharmaceutical interview.
Setting and method: This study includes all dispensations of year 2015. In order to get medications in our hospital, a social worker and the patient come at the hospital's pharmacy. One people of retrocession team (four assistants, two externs, two residents and two pharmacists) dispenses necessary drugs to the patient according to hospital drug formulary and operating protocol. A switch or a special order can be purposed if the drug is not available. Then, we give the patient a Medication Management Plan (MMP) to explain him how to take his treatment at home. Retrocession team filled a quiz about this activity and ways to improve it.
Main outcome measures: The main topics included in the quiz and evaluated were: dispensation organization, English talking, feeling during the interview and evaluation of the MMP.
Results: Three hundreds and ten patients were admitted in OAH 2015. These patients come mainly from the Eastern Europe and do not speak French in most of cases. Social workers, who can help for communication, are not always present because these patients can come during on-call duty. Quiz results showed that weak points occurred during the interview: explanation of the MMP, languages barriers, mention " if needed " not understood by the patient. Explanation of the order for a particular drug was difficult to operate too. MMP were only drafted in French which was not convenient for foreign people. However, modalities of dispensation were well understood by the retrocession team.

Following quiz results, MMP was translated into English by the retrocession team. Mentions " if needed ", " number of maximum tablet a day: … ", "your medication is in order, thank you for coming to look for this treatment back to the hospital on … ", " … is the same as …, prescribed by your doctor on your medication list " have been added and translated. Results of the study and new MMP will be presented to the pharmaceutical team and to social workers in staff. An index card for "Communication in English with a patient" has also been drafted. It contains sentences meadow drafted in English.
Conclusion: Access quality health care service is important to achieve health equity and to increase the quality of everyone's life. These documents improve communication with patients and by the way their understanding about their treatment. The use and the impact of these documents on well understanding will be soon evaluated with social workers and patients.

HP-PC034: Improve the medication in an associated to general hospital nursing home

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: In order to improve the medication reconciliation and to implement training programs for the medical team in an associated to general hospital nursing (ASNH) home we measured the discrepancies between pharmacy registered treatments (PRT) and medical prescriptions (MP), and we analysed potentially inappropriate prescriptions according to "American Geriatrics Society 2015 Beers Criteria" and "STOPP-START 2014 criteria.
Design: Retrospective observational study that included 143 patients admitted in the ASNH. The "Consensus Document on Terminology and Classification in Medication Reconciliation" was considered for discrepancy classification. Data collected: Discrepancies between MP and PRT. In 84 patients from the original group of 143, we reviewed potentially severe drug interactions, potentially inappropriate MP and drug classes to avoid in older adults and medications to be used with caution in older adults (according to STOPP-START2014 and BEERS 2015). All data were registered, measured and analysed in Excel®.
Results: 143 patients and a total of 1487 MP were reviewed. 367 discrepancies (24.7%) were found between the medical order and the PRT, those discrepancies included errors of omission in PRT (11.2%), absence of discontinuation of medication (8.3%), incorrect dosage (5.2%). Potentially moderate to severe interactions: the most frequent drug groups were proton pump inhibitors (PPIs) (12.9%), benzodiazepines (BZDs) (9.7%), oral hypoglycemiants (9.7%), other groups with frequency over 5%, oral antihistaminic, statines, low molecular weight heparine (LMWH), laxatives, calcium salts and iron salts. 176 STOPP criteria were identified that affected to 440 MP and the distribution was as follows: laxative combinations (40.5%), long term PPIs (15.5%), CNS depressants combinations (11.4%), long half life BZDs combinations (10.9%), aspirin incorrect drug strength (9.1%) and other groups with lower frequencies, NSAIDS and prokinetics. START criteria: 12 being all of them by omission of the drug at the time of admission. BEERs 2015 criteria: 90 prescriptions in the "avoid prescription in adults" group of which corresponded largely to concomitantly CNS depressants and long term use of PPIs in no risk patients.
Conclusion: The difficult working conditions, the excessive workload and the high staff turnover, where doctors have a patient ratio over 100/1, make difficult to update treatments according to patient daily needs. A clear communication problem between the hospital pharmacy and the ASNH prescribers exists due to lack of infrastructures, and it has been demonstrated with the high percentage of discrepancy, that implies an important logistic problem (not a safety problem) since the nurse team works directly with the original medical orders. The analysis of prescriptions showed the need for updating the medical knowledge. The high volume of STOP and BEERs criteria and lack of doctors time made impossible the individual acting upon each patient, so short summaries of continuous training related to most frequent problems have been designed.

HP-CE001: A film as a tool for patient education before and after liver transplant

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Our French University Hospital is one of the most active centre for liver transplant (100 transplants annually). Various professionals are involved in the graft patient care and education. Much information and education sessions are exempted before and after the transplant. The objective of this work was to realize a short movie for patients (1) To get them ready for transplant (2) To give the key messages to support their transplant (3) To make family understanding the process and to promote the life behaviour changes.
Design: Three members of the pharmaceutical team with nurses-led care coordination and a surgeon wrote the scenario. We requested two directors for 3 days of shooting. We defined the key points for the patient and places to film, and fixed the duration (7–12 min). The scenario was validated by the chief of the liver transplant unit and nurses-led care coordination. After the 3 days of film shooting, we selected sequences.
Results: The movie was a succession of six parts. (1) A surgeon explained to a patient why he would have a liver transplant. (2) A nurse-led care coordination clarified planning exams before liver transplant. (3) Clinical research associate explained the registration entry software on the transplant list. (4) A nurse-led care coordination animated a collective session of therapeutic education. (5) A pharmacist explained anti-rejection and immunosuppression principle. (6) A dietician talked about infection risk and dietary changes associated with graft. (7) Two posttransplant patients (2.5 and 16 months from liver transplant) testified about their experience with liver transplant. The movie has been burned onto cds, put on flash-drives and will be uploaded on the internet. Because of the international origin of our patients, the video will be subtitled at least in English. The video will be broadcast to hospitals which do not transplant patients and refer them to our hospital.

Since the medical team was involved in a collaborative project, the making of the video has permitted to strengthen the cohesion. Indeed, this work would not succeed if everybody did not express himself. Patients understood the interest to testify about their lived experience with the liver transplant, because they wished to have such information when they were waiting for the graft.
Conclusion: This movie is very useful for patients and families who are looking for information before and after liver transplant. It is a tool to get them into condition patients. This video presents the advantage of being personalized (local and caregivers that the patient will encounter are filmed). Furthermore, it maintains a dynamic involvement of the pharmacy (already well established with clinical pharmacy, patient education and medication reconciliation) in the liver transplant unit. The making of the film has been an opportunity to bind the members of the team together, by valuing the work of everyone. The film could be screened if this abstract is selected for an oral communication.

HP-CE002: New healthcare teaching practices to improve medication management: preliminary results from the IMPALA project

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Numerous procedures on medication management at Oslo University Hospital aim to minimize the risk of medication-related errors. Error reports and observations show great variation in the use of these procedures, primarily due to difficulties in their implementation and maintenance. Our aim was to assess the effect of a novel teaching strategy, the IMPALA project, on doctors and nurses compliance with the medication management procedures.
Design: The project was carried out at 12 general medicine wards at Oslo University Hospital for a period of 6 weeks at each ward. Assessment of medication-related error reports yielded the following areas of focus: (I) correct medication prescription, (II) specification of doses for medications given on an "as required"-basis, (III) double control of medication dosing, (IV) correct and documented generic substitution. Weekly presentations by pharmacist(s), lasting for a maximum of 15 min, were given to doctors and nurses as part of daily ward routines. This was repeated over 4 weeks. Data on medication-management procedure compliance were recorded before the start of the intervention, during and after each intervention period. The results were presented and made available to both leaders and employees throughout the project period both as an incentive to improvement and as a motivation factor for continued effort.
Results: There was a marked increase in medication-management procedure compliance among the nurses, especially after the second week of intervention. The most marked increase was shown for double control. Increase in medication-management procedure compliance was also present among the doctors, but was less prominent. The data presented gave an extra motivational kick according to the participants. The leaders and the employees stated that the IMPALA strategy was easy to follow and gave results without much organizational effort.
Conclusion: Fifteen minutes presentations given by a pharmacist(s) as part of daily ward routines, combined with presentation of results demonstrated considerable improvement in medication-management procedure compliance.

TDMP002: Evolution analysis of vancomycin concentrations during the antibiotic treatment

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Please specify your abstract type: Research abstract
Background and objective: High unexpected serum vancomycin concentrations (SVCs) were observed in patients without impaired renal function during the therapeutic drug monitoring (TDM) in our pharmacokinetic service. The aim of this study was to analyse the evolution of the SVCs and its relationship with the markers of renal function.
Setting and method: Retrospective study conducted at a University Hospital with a follow-up period of 3 months. Only adult patients having at least two TDM were selected.

Trough SVCS were measured by CMIA (Architect I-1000 analyser, Abbott®) and fitted to a two-compartment model by using Bayesian analysis (PKS®, Abbott).

Clinical and demographic data and daily dose, as well as timings of vancomycin administration and of blood sample collection were accurately recorded.

SPSS®, version 22.0 was used to compare data from both TDM by Student t-test (parametric data) and Wilcoxon (nonparametric data).
Main outcome measures: Concentration-to-dose ratio (CDR: trough concentration *1000/daily dose); glomerular filtration rates (GFr) estimated by Cockroft-Gault formula; measured and predicted SVCs levels.
Results: 30 adult patients were included (females: 20%); median age 68 [35–93] years).The first and the second TDM were carried out after

1.5 [0.5–4.0] and 3 [1.5–6.5] days from the beginning of the treatment, respectively.

In the first TDM, no difference was found between the measured concentrations (11.93 (5.07) μg/mL) and those predicted (12.22 (5.58) mg/L. However, predictions were less accurate in the second TDM and predicted concentrations were significantly higher SVCs (15.96 (4.32) mg/L vs. 12.88 (3.70) mg/mL, $p < 0.05$).

The median CDR in the second TDM was significantly higher than that calculated in the first one (6.2[2.2–13.6] L −1 vs. 9.6[3.3–20.2] L-1; $p < 0.05$), indicating a lower clearance and a drug accumulation. However, no statistically significant differences in the glomerular filtration rates were found (114 [30–230] mL/min vs. 107 [42–244] mL/min) in the first and second TDM, respectively.

Conclusion: Although the markers of renal function did not change during the treatment, a decrease in vancomycin clearance was observed.

The pharmacokinetic model does not accurately predict evolution of the SVCs over the treatment.

The introduction of covariates such as the length of treatment or the cumulative dose in the pharmacokinetic model could improve its predictive performance.

TDMP003: Integrating pharmacogenomic to clinical pharmacy: about a case of voriconazole

Laura Beaumier[*,1], Sébastien Chanoine[1,2], Elodie Gautier[2,3], Hélène Pluchart[1], Benoit Allenet[1,2,4], Boubou Camara[5], Xavier Fonrose[3], Christophe Pison[2,5], Pierrick Bedouch[1,2,4]

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: Genetic polymorphism or major physiological changes have to be considered in patient therapeutic management. Clinical pharmacists have a role to evaluate and optimize the appropriateness and effectiveness of patient's medications. We report here the impact of the clinical pharmacist and his collaboration with the clinical pharmacologist in the therapeutic management of a patient suffered from anorexia nervosa, a psychiatric disorder leading to body composition change that may influence drug pharmacokinetics and efficacy.

Design: Case report.

Results: The patient was a 35-year old woman hospitalized for chronic pulmonary aspergillosis previously treated by voriconazole, posaconazole and itraconazole. Her medical history included anorexia nervosa since 1997 with a body mass index of 9.8 kg m^{-2}, pulmonary tuberculosis in 2011 with relapse in 2013, and chronic pulmonary aspergillosis since 2014. At admission, a treatment by oral voriconazole at 100 mg/12 h was introduced. The trough concentration of voriconazole at steady state was <0.1 mg/L (therapeutic range 1–4 mg/L) despite taking drug on empty stomach. Although the voriconazole dosage increased in 200 mg/12 h, the trough concentration did not increase significantly (0.2 mg/L). We hypothesized anorexia led to a significant mucosal atrophy and accordingly, a significant decrease in intestinal absorption surface which is a major determinant of the level of drug absorbed. Thus, a switch from oral to intravenous route was performed (voriconazole 200 mg/12 h). According to subtherapeutic voriconazole concentrations (trough concentration: 0.2 mg/L) despite the use of intravenous route, we decided to perform genotyping to look for mutations of cytochromes P450 3A4*22, 2C19*2 and 2C19*17, particularly implicated in voriconazole metabolism. The presence of an ultrarapid metabolizer genotype (17* allelic variant of the 2C19 isoenzyme) in our patient should lead to increase drug dosage from 50 to 75%. Finally, the patient was treated by intravenous voriconazole at 7 mg/kg/12 h (i.e., increase by 75%). The maximum concentration performed 24 h after IV route initiation was at 2.8 mg/L, suggesting a better efficacy.

Conclusion: This case report highlights the potential complexity of therapeutic management in some patients given anatomical and functional changes or genetic polymorphism, which can affect drug efficacy. Clinical pharmacists in collaboration with clinical pharmacologists have to be able to help physicians in this type of situations.

TDMP004: Posaconazole enteric-coated tablets versus posaconazole oral suspension in lung transplant patients: what are the consequences on immunosuppressive therapy?

Sebastien Chanoine[1,2], Elodie Gautier-Veyret[3,4], Hélène Pluchart[2], Christophe Pison[3,5], Françoise Stanke-Labesque[3,4], Pierrick Bedouch[*,1,2]

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Please specify your abstract type: Research abstract

Background and objective: Posaconazole (PCZ) is widely used for invasive fungal infections as prophylactic, pre-emptive or curative therapy in lung transplantation. Recently, a new formulation of PCZ has been available in enteric-coated tablets. This new formulation improves PCZ bioavailability, as compared to the oral suspension, which leads to increase PCZ plasma trough concentrations (C_{min}) in haematological patients. No data related to PCZ exposure and its effects on tacrolimus (TAC), an immunosuppressant with narrow therapeutic index widely used, exists in lung transplantation. We aimed to assess the consequences of the treatment by PCZ enteric-coated tablets on PCZ and TAC exposure in lung transplant patients.

Setting and method: A single-centre retrospective study was conducted among lung transplant patients receiving TAC and either enteric-coated PCZ or both galenic forms.

Main outcome measures: PCZ and TAC exposure were estimated by the measurement of C_{min}. To overcome the influence of dose (D), C_{min} were adjusted on dose (C_{min}/D) for both PCZ and TAC. A spearman test (nonparametric distribution) was performed to assess the correlation between PCZ C_{min}/D and TAC C_{min}/D.

Results: Eighteen lung transplant patients (median age [Q1; Q3] = 48.5 [34.7; 57.4] years; 50% female) were included between June 2015 and March 2016. Eight patients received only PCZ enteric-coated tablets. PCZ enteric-coated tablets were associated to an increase in PCZ C_{min}/D as compared to oral suspension (0.008 ± 0.006 L^{-1} vs. 0.001 ± 0.001 L^{-1}, $p < 0.0001$). Overall, PCZ therapy initiation led to an increase in TAC C_{min}/D (0.002 ± 0.001 L^{-1} before initiation vs. 0.008 ± 0.007 L^{-1} after initiation, $p = 0.02$). TAC C_{min}/D was significantly higher with PCZ enteric-coated tablets, as compared to PCZ oral suspension (0.004 ± 0.004 L^{-1} vs. 0.009 ± 0.006 L^{-1}, $p < 0.0001$). A weak correlation was observed between PCZ C_{min}/D and TAC C_{min}/D, independently to PCZ galenic form ($r = 0.37$, $p = 0.0001$ with PCZ enteric-coated tablets and $r = 0.33$, $p = 0.02$ with PCZ oral suspension).

Conclusion: This pilot study in lung transplantation confirms the better bioavailability of PCZ enteric-coated tablets as compared to oral suspension. Our results show a more important increase in TAC exposure with PCZ enteric-coated tablets compared to PCZ oral suspension, suggesting a concentration-dependent CYP450 3A4 inhibitor effect of PCZ. These findings are of interest in clinical

practice to monitor transplant patients treated by the new formulation of PCZ. Further analyses, including the consideration of confounders, will be conducted.

PE002: Case report: suspected relationship between agranulocytosis and treatment with apixaban

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Within 8 months, two patients receiving apixaban developed agranulocytosis. Based on temporal and clinical plausibility as well as published literature, the objective was to determine the causal relationship between agranulocytosis and apixaban.
Design: Description of two agranulocytosis cases reported in our hospital.
Results: First case is an 89 years old male, admitted to the neurology unit (D0) for ischemic stroke. At admission, blood count showed no abnormalities. Four days after admission, treatment administered consisted in: dextrose 5% infusion IV, sodic heparin IV, acetaminophen, atorvastatin, metoprolol. Neutrophils count was normal (5.6 G/l). Heparin was stopped at D9 and replaced with apixaban according to following dose regimen 2.5 mg twice a day. At D15, patient presented with hyperleukocytosis (neutrophils count 15 G/l) and high CRP (109 mg/l). Thus, a cytobacteriological urine test was performed. At D17, patient presented with hypothermia followed by hyperthermia related to acute sepsis. Blood count showed agranulocytosis (neutrophils count 0.45 G/l). Broad spectrum antibiotherapy was started (ceftriaxone and gentamycin). Despite treatment, death of patient occurred at D17. The suspected cause of death was septic shock added to severe febrile neutropenia. Following haemocultures confirmed sepsis (*E. coli*) possibly originating from urinary tract infection.

Second patient is a 76 years old male, admitted to the cardiology unit (D0) for bronchopneumopathy associated with tachycardia and atrial fibrillation. A treatment with heparin was immediately started in association with patient usual treatment (bisoprolol, valsartan, rosuvastatin, hydrochlorothiazide and manidipine). In addition, broad spectrum IV antibiotherapy was started with ceftriaxone and spiramycine followed at D7 by an oral treatment with cefixime and spiramycine until D12. Heparin was replaced by apixaban at D1 (2.5 mg twice daily). Antihypertensive treatment was adapted throughout patient's stay. Patient presented neutropenia at D15 (neutrophils count 0.8 G/L), followed by agranulocytosis at D19 (neutrophils count 0.42 G/l) when it was decided to replace treatment with apixaban by fluindione. The following day, neutrophils count was about 0.28 G/l and patient received filgrastim. A myelogram showed a possible peripheral neutropenia. In the absence of other confounding factors (HIV, HBV, HCV, CMV), an iatrogenic agranulocytosis related to apixaban was suspected.
Conclusion: Causal association with heparin is unlikely as neutropenia is not an adverse drug reaction known included in the SmPC of this drug having a well-established safety profile. Since the two patients were taking their usual treatment for a significant period of time, a causal relationship is deemed unlikely. Temporal and clinical plausibility seem to indicate a possible relationship between agranulocytosis and apixaban. As this medicine has been recently approved, this might explain why no case has been reported in the literature and the absence of agranulocytosis as an adverse drug reaction of apixaban.

PE003: Estimating acceptability of oral antibiotics in children using prescription data

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Please specify your abstract type: Research abstract
Background and objective: Taste is tightly connected to children's acceptability of medicines. Two ways to overcome lack of acceptability are to administer solid formulations which are easier to taste mask and change to better tasting medicines. Dicloxacillin is an antibiotic known for its unpalatability, and taste studies suggest that this might jeopardize its adherence. The aim of this study was to explore if prescription data can be used to estimate acceptability of antibiotics among children on a population level using dicloxacillin as an example drug. The research questions were: When comparing dicloxacillin with other antibiotics commonly used in children, (1) is there a difference in the age of conversion from liquid to solid formulation and (2) is there a difference in re-prescription rates on day 1 and 2 after the initial prescription?
Setting and method: We included all initial prescriptions of oral dicloxacillin, phenoxymethylpenicillin, amoxicillin and erythromycin for children 0–12 years registered in the Norwegian Prescription Database (NorPD) 2005–2007 due to dicloxacillin mixture being discontinued from the Norwegian market in 2007. The age of conversion was defined as the age where half of the children were prescribed liquids and the other half prescribed solid formulations. Re-prescription rates were defined as re-prescriptions of a different antibiotic or formulation on day 1 and 2 after the initial prescription, divided by the total number of prescriptions.
Main outcome measures: Age of conversion and re-prescription rates of dicloxacillin compared with other common antibiotics.
Results: The age of conversion for dicloxacillin was 4.5 years, compared to 7 years for other common antibiotics. The average re-prescription rate for dicloxacillin was 8.2% for children 0–6 years and 1.8% % for children 7–12 years. The highest re-prescription rate of 13.3% was found in 2-year olds. Corresponding numbers were 2.1, 1.8 and 2.3% for common antibiotics.
Conclusion: The lower age of conversion from liquid to solid formulation and higher re-prescription rate of dicloxacillin mixture compared to common antibiotics indicates that prescription data can be used to identify antibiotics with low acceptability for children 0–12 years. Further studies are needed to investigate if this also holds true for other antibiotics.

PE004: Consumption of pharmaceuticals for ADHD in the Nordic Countries

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Please specify your abstract type: Research abstract
Background and objective: Attention Deficit/Hyperactivity Disorder (ADHD) or hyperkinetic disorders (HKF) is among the most common mental disorders in children, and may persist through adolescence into adulthood. Pharmacotherapy used for treating the disorders also has potential for misuse/abuse. The aim was to describe the prevalence and magnitude of use of stimulant drugs and atomoxetine, and compare consumption in the Nordic countries.

Setting and method: A descriptive pharmacoepidemiological study from the ~ 26 million inhabitants of the five Nordic countries in the period 2004–2014. Data were collected from national prescription registers, public drug reports and by correspondence with public health institutions. Population data were obtained from official statistical databases or by correspondence with public health institutions.
Main outcome measures: trend over time, comparison between countries, type of pharmaceutical, gender, age, comparability of data.
Results: The annual consumption has been increasing from 2004 to 2014, both in volume and prevalence of use. Denmark had the largest increase in volume, from 0.6 to 8.2 DDD/1000 inhabitants/day. Sweden had the highest increase in prevalence of use over the period, from 1.6 to 8.6 users/1000 inhabitants.

Iceland had the largest consumption of ADHD medications in 2014, 21.9 DDD/1000 inhabitants/day. Prevalence data was not available for Iceland but Sweden was highest in prevalence of use among the other countries in 2014: 8.6 users/1000 inhabitants. Males aged 10–14 years had the largest volume and prevalence of use in 2014, but females' consumption had been increasing faster both in terms of numbers of users (~ 1.5 × faster) and in volume (~2× faster) than men's consumption.
Conclusion: Variation in consumption is considerable and cannot be explained by diagnostic and prescription guidelines, as these are similar in the five countries. Consumption has been increasing fast in the period in all the countries, and faster for women than for men, although men still consume larger volumes than women, and are more frequent users.

PE005: Metoclopramide and neurological adverse drug reactions: a disproportionality analysis of Vigibase

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Please specify your abstract type: Research abstract
Background and objective: In 2009 and 2013, regulatory bodies in USA (FDA) and Europe (EMA), issued warnings on use of metoclopramide due to an increased risk for serious adverse drug reactions (ADR), especially neurological ADRs. EMA recommended that metoclopramide only should be prescribed for up to 5 days while FDA concluded that treatment longer than 12 weeks should be avoided.

Metoclopramide is commonly used to treat nausea and vomiting in pregnancy (NVP) and deficient breast milk production (10 days course). EMA did not make any recommendations concerning use during pregnancy and lactation.

The objective of this study is to assess the disproportionality of reporting of ADR from Metoclopramide, with special emphasis on neurological ADRs and women in reproductive age.
Setting and method: Data from WHOs Global ADR database Vigibase® for the time period November 1967 to May 2016 was used. The measure of disproportionality of reporting calculated was the Proportional Reporting Ratio (PRR), and 95% confidence intervals (CI). Analyses were performed according to gender and age. Time-to-onset of ADR was calculated.
Main outcome measures: Proportional Reporting Ratio (PRR)
Results: Vigibase contains over 13 million ADR reports. Metoclopramide is a suspected/interacting drug in 47 407 of the reports, most common (72%) are neurological ADRs. The majority (84%) of the metoclopramide ADRs occurred within the first 3 days of use. A total of 65% of the reports was received the last 5 years (2011–2015). The reporting of neurological ADRs was higher for metoclopramide than other medications in Vigibase. Women in reproductive age (18–44 years) reported higher proportion of neurological ADRs (PRR = 3.0, 95% CI 2.9–3.0, n = 4533) than women 45 + years (PRR = 2.5, 95% CI 2.4–2.5, n = 3057) but a similar proportion as men 18–44 years (PRR = 3.1, 95% CI 3.0–3.2, n = 1823).
Conclusion: There is a 2.5 to three fold higher proportion of all reports regarding neurological ADRs for metoclopramide than for other drugs. Patients initiating treatment with metoclopramide should be informed about risks of ADRs and that most ADRs occur within 3 days, and instructed to contact health care personnel and stop treatment if ADRs occur.

PE006: Hospitalization in intensive care unit for self-induced drug intoxication

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Self-induced drug intoxications (SIDI) are one of the most frequent reasons of hospitalization in emergency service (1%) with around 4–5/1000 inhabitants and represent around 6% of admissions in intensive care unit (ICU). It is the most frequently used method of suicide attempts (SA) and the leading cause of hospitalization for young people under 30. The main objective of our study was to analyse, stratify and pharmaceutically map the different SIDI identified in our ICU.
Design: This is a prospective study over 20 months, including all ICU patients following SIDI from June 2014 to January 2016. We have collected psychiatric history and previous SA by SIDI, usual treatment, state of consciousness, incriminating drugs, drug classes stratified according to the clinical severity score IGSII, evolution, transfer in a specialized centre and average cost of stay.
Results: Ninety-two cases were reported, representing 6% of ICU admissions. The average hospital stay was 3 days for an average cost of 3396.5€. This amount is low compared with the average cost of all stays gone through the ICU for the period (14,957€). Ninety percent of patients had a psychiatric history and 48% a previous SA. The usual treatment was involved in 77% of SIDI. Half of the patients arrived conscious with an average of severity score IGSII of 35/163, 88 being the highest found for a patient who had swallowed simultaneously pregabalin and nitrazepam. Clinical severity of these patients is less than that found on average for all patients in the ICU in this period (59/163). Eighty-seven percent had a favorable evolution. Only one death was observed after ingestion of propranolol. Fifty-six and a half percent of patients were then hospitalized in a specialized centre. The great family of psychotropic is the most frequent with benzodiazepines 70%, neuroleptics 36%, antidepressants 31.5% and antiepileptic 17.5%. The main drugs involved are oxazepam 16%, alprazolam 15%, cyamemazine 14%, bromazepam 13% and quetiapine 8%. Antihypertensives then arrive and represent 14% of SIDI. The stratification of severity scores does not appear to show significant differences between drug classes, nor between mono or polydrug ingestions.
Conclusion: SA by drug ingestion are very common and are often linked to risky behaviours. For these epidemiological and economic findings, it is necessary to continue and develop prevention strategies avoiding the appearance of intoxication (primary), limiting the consequences (secondary), and reducing the risk of recurrence (tertiary).

PE007: The value of quality of life assessment in monitoring the efficacy of interventions in psoriasis and the role of minimal clinically important difference in interpretation of scores: a systematic review

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Please specify your abstract type: Research abstract
Background and objective: Interpretation of quality of life scores to render them meaningful to aid clinical decision-making is an ongoing challenge. Interventions often result in statistically significant quality of life (QoL) improvement, but may not reach the threshold of clinical importance. The minimal clinically important difference (MCID) is the minimal score change of relevance clinically. The aim of this systematic review was to assess the impact on quality of life of topical, systemic and biologic treatments for psoriasis in randomised controlled trials (RCTs).
Setting and method: PRISMA guidelines were followed. All available articles describing RCTs of therapies for psoriasis that included QoL measurements published up to November 2014 were identified. Six databases were examined with 388 search terms. Abstracts of articles were reviewed independently by two assessors: a third adjudicator resolved any opinion differences. Risk of bias was assessed using the *JADAD scale*.
Main outcome measures: Reporting of the use of QoL endpoints and impact of interventions in psoriasis.
Results: Of 3597 screened article abstracts, 329 articles were selected for detailed review: 100 trials met the eligibility criteria, describing research on a total of 33,215 patients. Reports of psoriasis interventions that fulfilled inclusion criteria have gradually increased over time: 1998–2004 = 12, 2005–2009 = 33, and 2010–2014 = 55. Of these 100 trials, 37 reported MCID; 32 were for DLQI, 10 for SF-36 and six for EQ-5D. Where DLQI score changes were reported, 115 of 142 'study arms' met the 4-point MCID. Biologic interventions commonly attained DLQI MCID: 91.2% (83 of 91 study arms). The MCID was attained by 77.8% (14 of 18) of topical, and 52.4% (11 of 21) of systemic treatment arms. Where changes in SF-36 Mental Component Summary (MCS) scores were extractable, 52.2% (24 of 46) 'study arms' met the 3-point MCID, including 58.3% (21 of 36) of biologic interventions. For Physical Component Summary (PCS) scores, 50% (24 of 48) of 'study arms' met the MCID including 60.5% (23 of 38) of biologic interventions. Only 25% (1 of 4) of systemic and no topical treatments met the MCID for both MCS and PCS domains of SF-36.
Conclusion: The findings of this study indicate that there is an increasing recognition of the value of QoL assessment in monitoring the efficacy of interventions in psoriasis. MCID values enhance the clinical meaningfulness of QoL scores, particularly if data is correlated with clinical efficacy. It appears that there is a need for guidelines to standardise the use of health-related QoL instruments in RCTs of treatments for psoriasis as well as reporting of their results. This would further improve the quality of evidence and its utility in clinical practice.

Posters

CP-CE002: Effect of treating sleep apnoea on other co-morbidities

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Please specify your abstract type: Research abstract
Background and objective: Obstructive sleep apnoea (OSA) involves multiple episodes of upper airway collapse during sleep. Studies have shown that OSA leads to the development of other co-morbidities including hypertension and diabetes which manifest in metabolic syndrome. The study aimed (1) to evaluate the relationship between the use of different therapeutic agents and the severity of OSA, and (2) to determine the effects of commonly used medications on Continuous Positive Airway Pressure (CPAP).
Setting and method: Patient medical records ($N = 2688$) of 183 patients, that underwent sleep studies between the years 2009 and 2013 were collected over an eight-month period from the Sleep Laboratory Department at Mater Dei Hospital using a random sampling technique. Data collected included body mass index, gender, age, Epworth sleepiness score (ESS), drug history, apnoea hypopnoea index (AHI) and CPAP therapy prescription. Likelihood ratio Chi square test, Paired samples t-test and Multinomial logistic regression were the statistical tests used for data analysis.
Main outcome measures: Assessment of the drug history in response to OSA control using the ESS and AHI scores.
Results: One hundred and seventy (92.9%) patients of the 183 patients (131 males, 52 females) were diagnosed with OSA. Forty-five (24.6%), 43 (23.5%) and 82 (44.8%) patients suffered from mild, moderate and severe OSA respectively. Patients had a mean age of 54 years. Angiotensin II receptor antagonists (ARBs) (p-value = 0.022), sulphonylureas (p-value = 0.050), insulin therapy (p-value = 0.040) and non-benzodiazepine sedating agents (p-value = 0.037) were found to be associated with the presence of OSA. A decline in the use of the ARBs (p-value = 0.000), Angiotensin converting Enzyme Inhibitors (p-value = 0.000) and non-benzodiazepine hypnotics (p-value = 0.001) was observed over the study year period. Reduction in the CPAP therapy benefit was detected with the use of Histamine (H_1) antagonists (p-value = 0.015), β-adrenergic blocking agents (p-value = 0.001) and antiplatelets (p-value = 0.003).
Conclusion: It is confirmed that hypertension and diabetes mellitus type II are the main co-morbidities associated with the presence of OSA. Reduction in the use of certain therapeutic agents is observed secondary to CPAP therapy use. Patients using specific drugs have been identified as being at risk of a reduced CPAP therapy benefit.

CP-CE003: The new sources to improve the knowledge level of pharmacist

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Please specify your abstract type: Research abstract
Background and objective: People are using increasingly more common of social networks such as Facebook, Twitter and YouTube for different purposes. Many people are using these networks with the aim of getting information and knowledge sharing. There are many groups that pharmacist is a member in social networks at Turkey. The largest of these groups has 14,000 members. Pharmacists are shared common problems, information and experiences in these groups. But the accuracy of the information shared on social networks are not always conclusive. The study aim to evaluate the impact of social network information sharing in the knowledge and attitude of pharmacists.
Setting and method: Clinical pharmacy group has been created to share information on Facebook. 2400 pharmacist joined this clinical pharmacy group. The group was fed by information which include new drugs, FDA alerts, adverse event and case report and also drug related problems during the 6 months. Pharmacists were assigned in two major groups, group A active pharmacist who becomes a member of our clinical pharmacy group, share and discuss information through the network and group B who is not a member. A knowledge measurement survey (AMS) was given to both of them.
Main outcome measures: Acknowledge measurement survey (AMS) was developed and the difference in the score was used to evaluate the difference between the two study groups.
Results: 142 pharmacists participated in the study, 34.50% of the participants were a member of our Facebook group and 65.49% of participants were not. 4.9% of the participants have doctoral degree or student, 15.4% have master degree or student, 32% have bachelor degree from 4 year-pharmacy faculty, 47.1% have bachelor degree from 5 year-pharmacy faculty. The education level distribution between the two groups was not statistically significant. While 63.64% of the AMS questions were answered correctly in the member group only 44.09% were answered correctly in the non-member group.
Conclusion: The study emphasizes the importance of social network in providing the accurate and fastest information for the daily use of the pharmacists, there is a significant difference in knowledge between the pharmacist who join, share and discuss information on the social network and the one who do not join.

CP-CE004: Impacts of a community pharmacy practice experiences on student professionalism

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Please specify your abstract type: Research abstract
Background and objective: Professionalism is valued globally and pharmacy schools are expected to nurture competent practitioners to better serve the public with humanity attitudes and behaviours.
The study aims: (1) to understand possible differences in professionalism between pharmacy students and potential community pharmacist preceptors, and (2) to evaluate student changes in professionalism upon completing the community pharmacy practice experiences (CPPE) at the end of the third (P3) year.
Setting and method: A modified Chisholm's Pharmacy Professionalism Instrument (18-item, 10-point Likert scale) was administered to P3 students, pre-CPPE and hopefully post-CPPE in September, and community pharmacist practitioners who participated in a two-day preceptor training workshop. Participants also provided their significance ratings toward ten traits, namely altruism, accountability, excellence, duty, honor and integrity, respect for others, communication, ethics, humanism, and teamwork.
Main outcome measures: Differences or changes in Chisholm professionalism scores.
Results: Thirty-two students and fifty pharmacists participated in the survey. Honor and integrity (8.9 ± 1.5) and communication (9.2 ± 1.1) were recognized by students (31.3%) and pharmacists (23.5%), respectively, as the most significant trait. Humanism was rated the lowest in both groups (students, 8.2 ± 1.9; pharmacists, 8.1 ± 1.9). The 18-item professionalism scores ranged from 6.6 ± 1.6 ("*I do not expect anything in return when I help someone.*") to 9.3 ± 0.9 ("*I am respectful to individuals who have different backgrounds than mine.*") in the student group; whereas 8.1 ± 1.9 ("*I do not expect anything in return when I help someone.*") to 9.5 ± 1.1 ("*It is wrong to cheat to achieve higher rewards (i.e., grades, money).*") in the pharmacist group. In general, pharmacists' professionalism scores were higher and, in certain items, statistically significant differences were achieved.
Conclusion: Professionalism might grow with professional competency and practice experiences as demonstrated by potential pharmacist preceptors. Upon completion of CPPE, students could probably exhibit gains in professionalism. More investigations are still underway.

CP-CE005: Benzodiazepines in detention: the key role of the pharmacist to reduce addiction and misuse

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: In France, a significant consumption of Benzodiazepines (BZD) is observed in prisons. They are widely used during incarceration to treat or prevent anxiety and insomnia. Furthermore, it is known that, an important traffic exists with these drugs because of the releasing properties of BZD in case of misuse. Based on these observations, the pharmacist has set up a plan to improve the use of BZD in prison.

The purpose of the study was to evaluate the impact of these measures after 1 year of implementation.
Design: In January 2015, we shared with physicians in a meeting to explain our plan for a better use of BZD and to set up new rules of prescription in prison:

- Regularly reducing the dose to limit drug tolerance
- Promoting the use of long half-life molecules which allow reducing addiction and misuse
- Advising sedatives anti-histaminics to treat insomnia
- Providing information to patients about addictives risks of BZD on the TV Channel

Then, we compared the consumption of every BZD in use in the prison during the five last years to evaluate the impact of these measures. To express our results, we converted the different BZD into Equivalent Diazepam (ED) using the Ashton Manual.
Results: 300 Patients had a chronic treatment in our prison in 2015. Between 2011 and 2014, the mean consumption of BZD was around 38 mg ED/patient/day whereas in 2015 we observed a significant reduction of BZD consumption (about 31 mg ED/patient/day). Last year, the consumption of Oxazepam, a short half-life BZD decreased of 25%. Simultaneously, the use of Anti-histaminics H1 increases: Hydroxyzin consumption increased by 22%.
Conclusion: We have really observed changes in BZD prescriptions since the implementation of these new recommendations.

Simultaneously we are coping with the misuse of opioid maintenance treatments.

CP-PC009: Drug interactions inducing torsade de pointes: what are the alternatives?

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Some drug combinations (described in thesaurus of national agency of drug) are contraindicated because they appear to increase the risk of torsade de pointes. The aim of this work is to standardize our pharmacists' intervention and to propose guidelines for doctors and pharmacists, depending on the situation and drugs, to limit these combinations and to reduce this risk at our hospital centre (1105 beds).
Design: A prospective survey was realized over a period of 5 months to identify the drug combinations prescribed in medical prescription software, from the National drug agency thesaurus, that might be inducing torsade de pointes. A multidisciplinary staff was then constituted composed of a cardiologist, a geriatrician, a paediatrician, an anaesthesiologist, a psychiatrist and pharmacists to identify the different situations and to establish guidelines.
Results: From the survey 18 drug combinations were found to be contraindicated due to increased risk of inducing torsade de pointes on a list 415 interventions realized by pharmacists. The work group identified three drugs with a therapeutic alternative: Hydroxyzine, Domperidone, Escitalopram, the other drugs can't be switched because they are vital or have no alternative. The work group decided to maintain Hydroxyzine but only on premedication and child anxiety, to eject Domperidone from our therapeutic index and substitute it with Metoclopramide or Metopimazine, to not initialize Escitalopram but to keep it if the patient has no have others risk factors associated or no contraindication. If the patient has a contraindication with a risk factor the doctor could prescribe other SSRI. In addition, pharmacists alert doctors about the risk of torsade de pointes on medical prescription software if some contraindications are identified.
Conclusion: The contraindications identified must not be underestimated. This work allows identification of torsadogenic drugs commonly prescribed and provides guidance for doctors and pharmacists regarding drug combinations. The collective decision will be disseminated to sensitize all the doctors in the establishment. Some treatments could not be substituted despite the contraindication; these must be retained but with clinical monitoring.

CP-PC010: Unused medicines returned to community pharmacy: an analysis of medication waste and possibilities for redispensing

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Please specify your abstract type: Research abstract
Background and objective: Unused medicines represent possible avoidable healthcare expenditures and threaten the environment. Decreasing medication waste is warranted and the redispensing of unused medicines might be an option to reduce this waste. The aim of this study is to determine the proportion of returned medicines that is considered as medication waste, and the proportion of medicines that is eligible for redispensing.
Setting and method: We conducted a cross-sectional study in 41 Dutch community pharmacies. Individuals returning medicines during five consecutive working days were asked to complete a questionnaire on characteristics of the medicine and reasons for returning. Medicines were considered as unnecessary waste if the leftover medicines could have been prevented. Medicines were defined as potentially eligible for redispensing if the package was unopened, undamaged and the expiry date was at least 6 months after the moment of returning. The economic value was calculated using Dutch medicine prices. Descriptive statistics were used.
Main outcome measures: The proportion of returned medicines that is considered as medication waste and the proportion that met the criteria for redispensing.
Results: Data from 279 persons returning 759 medicines to the community pharmacies was collected. On average, an individually returned medicine had a median value of €1.75. The tree most expensive medicines were methylphenidate 54 mg, €180.00, ketensin 20 mg, €196.56 and ondansetron 16 mg, €482.80. 300 (39.5%) returned medicines were considered as unnecessary waste. 145 medicines of all returned medicines could potentially be redispensed (19.1%), with a median value of €4.56 per individual returned medicine. Within the group of medicines that were eligible for redispensing, the main reason for returning the medicine was the decease of the patient (30.3%).
Conclusion: A substantial proportion of medication waste in the community pharmacy could have been prevented. Unused medicines in the community pharmacy are generally of low economic value, making it unlikely that the costs that pharmacies will make with the redispensing of unused medicines will be covered. Therefore, other actions to decrease medication waste in the community pharmacy, such as preventing that too much medicines are dispensed, should be considered.

CP-PC011: Guidance on use of inhalation-devices: variation in the pharmacies' treatment of patients

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Please specify your abstract type: Research abstract
Background and objective: Flaws in usage technique for inhalation-medicines is common, as much as half of the users may need some correction measures, to get the active substances down to the lungs and provide the intended effect. Inadequate compliance, especially for regular-use preventive medications, is common. Good guidance in pharmacies enhances correct use of medicines. The new Norwegian Pharmaceuticals Policy (Legemiddelmeldingen) from 2015 opened up for paid cognitive services, leading to the first such service being implemented in March 2016. The service can contribute to a more correct use of the medicines and, as a consequence, lead to better control of the symptoms for patients with asthma or COPD.

Our objective was to map the variation in pharmacies' handling of an inquiry regarding lack of effect of an inhalation-medicine. The study was done prior to the implementation of the standardized service "Inhalation-guidance" in Norwegian pharmacies.
Setting and method: Simulated patient (mystery shopper) visits in 100 pharmacies in Oslo, Akershus and Buskerud in November/December 2015. The mystery shopper expressed just having started to use an inhaler because of her asthma, but not experiencing effect. Structured data collection sheets were used to register the handling immediately after the visit.

Main outcome measures: Scoring of the quality and contents of the information based on the products' patient information leaflets.
Results: The issue of inhalation-technique was mentioned in 74 of the pharmacies, whereof 18 asked the "patient" to show their inhalation-technique, in order to correct and advice and 32 used an inhaler or demo-inhaler as an aid in the guidance. Going through the instructions or watching a video-demonstration with the simulated patient also occurred, or referring the patient to read the instructions and/or watch the video-demonstration on his own. Half of the pharmacies discussed the difference between use for preventive treatment of asthma and inhaler that is being used for treatment of attacks. Sixty-five pharmacies gave no information about the importance of regular use of the preventive treatment.
Conclusion: There was considerable variation in how the pharmacies guided, which indicates a potential for improvement. The new guidance-service, implemented in Norwegian pharmacies in March 2016, will contribute to better guidance.

CP-PC012: Tobacco addiction in Portugal: outcomes of a pharmaceutical care programme

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Please specify your abstract type: Research abstract
Background and objective: In Portugal, tobacco addiction was responsible for over 12,000 deaths in 2013 (11% of the total deaths). The community pharmacist's contribution to control this public health problem is insufficiently documented.
The aim of this study is to assess the contribution of the community pharmacist for smoking cessation.
Setting and method: A retrospective and longitudinal study of a convenience sample of patients integrating quit tobacco consultations, as part of a pharmaceutical care programme implemented by an outsourced pharmacist was performed at several community pharmacies. The smokers, aged 18 or over, were invited to join the programme. Patients signed an informed consent and were submitted to a comprehensive approach by face-to-face consultations and telephone contacts. Richmond and Fagerström tests were used to evaluate motivation and nicotine dependence, respectively. The therapeutic plan (pharmacotherapy and behavioural counselling) was personalised to each smoker. The quit rates were evaluated by patient self-report and confirmed by carbon monoxide measurements. The continuous variables are expressed as mean ± standard error of the mean.
Main outcome measures: Quit rates at 1, 3, 6 and 12 months.
Results: Between January 2009 and June 2016, 87 smokers joined the programme, 22 dropouts (25.3%). The remaining 65 smokers, 40 (61.5%) were male, with mean age of 48.4 ± 1.91 years. On average, each smoker consumed 21.0 ± 1.53 cigarettes per day. The mean age of initial tobacco use was 15.8 ± 0.51 years with 31.4 ± 1.98 years of consumption. About 70% reported moderate or high motivation and 60% medium or high dependence. A total of 315 consultations were held and, on average, each patient received 7.3 ± 0.82 interventions. All smokers received non-pharmacological interventions (e.g. motivational approach) and 61 (93.8%) also accepted pharmacological interventions, usually nicotine replacement products. The quit day was achieved by 50 patients (57.5%). A month after quit date, 41 patients were abstinent (41.7%). The number reduced to 32 after 3 months (36.8%), to 27 after 6 months (31.0%) and to 19 after 1 year (21.8%). These data upgrade and are consistent with our previously published results (2014).
Conclusion: The smoking cessation consultation in the scope of a pharmaceutical care programme in community pharmacy seems to effectively contribute to the reduction of tobacco addiction in Portugal.

CP-PC013: Patient counselling at dispensing of oral anticancer drugs in European countries from the pharmacists' perspective

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Please specify your abstract type: Research abstract
Background and objective: The number of oral anticancer drugs (OADs) available on the market grows constantly. Consequently the number of patients, which have to manage the complex treatment with OADs at home is increasing. The pharmacists present an important member of healthcare team, since they are dispensing OADs to the patients, which need a high quality information at that crucial moment. Therefore, our aim was to evaluate pharmacists perceived confidence and needs for specific continuing education in connection to OADs dispensing in European countries.
Setting and method: We used an electronic mailing approach and a standardized online survey to ask practicing pharmacists in European countries about their experience with dispensing of OADs.
Main outcome measures: frequency of patient counselling and fields of counselling, assessment of knowledge and skills.
Results: The frequency of patient counselling varied widely in participating countries between "never" and "more than 80%" at initial fill of an OAD. At following refills the frequency of counselling was generally even lower. Counselling mostly encompassed directions of use, the proper use of antiemetics and side effects. However many pharmacists stated, that they do not feel comfortable counselling patients of OADs (25%) and even more acknowledged that they were uncomfortable with managing patients' side effects (20%). On the other hand only 45% of pharmacists believed, that they have received adequate knowledge of OADs through undergraduate program, continuing education (CE) events and professional practice. Many of pharmacists (70%) have not attended any of CE events related to oncology in last 2 years. Pharmacists' responses differed little between the countries.
Conclusion: The proportion of pharmacists who regularly counsel their patients on OADs is insufficient in view of importance of the patients' needs to manage their therapy at home. However the pharmacists seems to be aware of their knowledge deficits and educational needs. The field of OADs needs better coverage in under- and post-graduate education. The number of CEs has to be increased in order to improve the knowledge and skills in the areas of OADs counselling.

CP-PC014: Self-care among diabetes patients interviewed at Norwegian pharmacies

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Please specify your abstract type: Research abstract
Background and objective: Treatment guidelines for diabetes recommend that patients are well-informed about their disease, treatments and treatment goals, e.g. glycosylated haemoglobin (HbA1c). The objective was to describe diabetes patients' self-monitoring of blood glucose (SMBG) and potential need of guidance.

Setting and method: During their pharmacy practice, 53 Norwegian pharmacy students interviewed diabetes patients. Questionnaire data on demographics, 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 results.
Main outcome measures: 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) and 321 had type-2-diabetes (T2D). There was no 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. Among 436 patients practicing SMBG, 24% were self-taught, while health personnel had taught 62%. Most patients (75%) never controlled their glucometer, 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 37%. The multiple logistic regression analysis suggest that higher measurement frequency and higher age is associated with increased likeliness of achieving treatment goals.
Conclusion: 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, particularly in patients with T2D.

CP-PC015: PRACTISE: PhaRmAcist-led CogniTIve Services in Europe: survey protocol and pilot study

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: In 2015, the International Pharmaceutical Federation collected data of remuneration models for community and hospital pharmacy and identified large variations between remuneration models and highlighted that the focus is largely on products and not on cognitive services.

The aim of the study is to map the remuneration models of different pharmacist-led cognitive services in primary care across Europe, with a special interest on medication reviews and to update a prior survey by Bulajeva (Bulajeva A et al. Medication review practices in European countries. Res Social Adm Pharm 2014;10:731–40.).

The definition of terms is pivotal for such a European survey to avoid results based on pseudoconceptions. Hereafter we present the development of the survey and we will present first results from pilot tests.
Design: Pharmacist-led cognitive services were selected based on a previous study by our group and by searching the literature, official government websites, the PCNE wiki and arising links.

The definitions of the terms of these services were based on searches in the MeSH Browser, MEDLINE and Google Scholar. Additionally, a search in grey literature and in the Internet was conducted to find appropriate foundation for the formulation of the definitions.

The questionnaire will consist, of a first part about the remuneration of the pharmacist-led cognitive services. The focus is on country-specific differences in remuneration and the different levels of supply across Europe. The second part of the survey is about the different types of medication review services with a focus on e.g. the implementation level, addressed issues, eligibility criteria.

This survey will have a cross-sectional study design with an online questionnaire specific for invited participants across Europe. To achieve the best quality of answers we will send this survey to at least two researchers with references in pharmacy practice, in each European country (purposive sample). The answers from each country will be checked for discrepancies and these potential discrepancies will be solved by a discussion with the responders.
Results: By the end of the pre-pilot phase, 22 different pharmacist-led cognitive services were identified and the correlating definitions of the terms were developed.
Conclusion: At the time of submission the pre-pilot phase has been finished and the pilot will start July 2016.

CP-PC016: Medication adherence and health outcomes among COPD patients in Slovenia

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Please specify your abstract type: Research abstract
Background and objective: Medication adherence is one of the key aspects in assuring optimal health outcomes in majority of chronic diseases. The aim of the study was to evaluate COPD patients' medication adherence in Slovenia and its association with health outcomes.
Setting and method: Patients were recruited by community pharmacists at the time of dispensing medication for COPD. Medication adherence was evaluated by using Morisky Medication Adherence Scale (MMAS-8). Patients who scored ≤6 points, 6.25–7.75 points and 8 points were regarded to have poor, moderate and good adherence, respectively. Quality of life was evaluated by Saint George's Respiratory Questionnaire (SGRQ) and the impact of disease by COPD Assessment Test (CAT). The study was conducted in September 2014 and February 2015. The association between potential predictors and COPD impact or quality of life was estimated using multiple linear regression in IBM SPSS Statistics version 23.
Main outcome measures: Medication adherence rate (MMAS-8), quality of life (SGRQ Total score) and impact of disease (CAT score).
Results: Of 65 patients, majority were men (68%) with mean age 70 years. In average, patients were prescribed 2.5 medicines for COPD and 3.8 medicines for other diseases. Good, moderate and low adherence to COPD medication regimens was found in 53.4, 32.8 and 13.8% of patients, respectively. Mean CAT scores and SGRQ scores were 17.3 (range 3–34) and 41.3 (range 2–79), respectively. Thirty-eight percent of patients experienced an exacerbation in the past year. Linear regression showed no statistically significant association between medication adherence and quality of life or COPD impact on patient. Factors that statistically significantly predicted patients' quality of life were exacerbation in the past year, education level and number of concomitant medicines for other diseases. The latter was found to be the only factor associated with COPD impact.
Conclusion: The study showed half of the COPD patients to be optimally adherent to their treatment and only a small proportion of patients not taking their medicines regularly. Due to the nature of the disease medication adherence does not seem to play the most important role in assuring optimal health outcomes in COPD patients.

CP-PC017: Medication and transfer of information in an intermediate care unit compared to a short-term care unit

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Intermediate care units (IMCU) are designed to serve patients in need of more advanced medical care than the ordinary nursing home units can provide.
The aim of this study was to see; (1) how medication information follows patients in and out of ICMU and nursing home short-term-care units (STCU) (2) the type and amount of drug related problems (DRP), focusing inappropriate drugs, and (3) if there are differences between the ICMU and STCU in drug use and DRPs.
Design: Patients ≥65 years old admitted and submitted at the IMCU or STCU in the study period (10 weeks) were included. Transfer of medication information were evaluated and given a score. The clinical pharmacist provided medication reconciliation upon admission, medication review and monitoring, and presented identified DRPs and a suggestion for solving the problem, to the multidisciplinary team. Inappropriate drugs, identified by screening tools (STOPP/NorGep), and systematic medication reviews, were recorded.
Results: 14 patients from IMCU and five from STCU were included. A hospital discharge summary including medical history followed mostly all patients. The score of the medication history was 7.5 points out of 16. By submission from either IMCU or STCU, the score was 8.6. Systematic drug review identified 3.9 DRP in the IMCU and 2.0 in the STCU. IMCU patients used 9.5 drugs, STCU patients 10. In the ICU, 14% of the identified DRPs was inappropriate drugs, none in the STCU. The clinical pharmacist in the multidisciplinary team presented 92% of the identified DRPs. The doctors agreed in 80% of the suggestions for solution, and started immediate changes in 43%.
Conclusion: A hospital discharge summary followed the patients, but the medical history part needs improvement. Although few patients, the results suggest that IMCU patients had more complicated medication and more inappropriate drugs than STCU patients did. Clinical pharmacist in a multidisciplinary team provides useful contribution to identify, solve and prevent clinical relevant DRPs, including inappropriate drugs.

CP-PC018: Feasibilty of Goal Attainment Scales during medication review: an interim analysis of the DREAMeR study

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Please specify your abstract type: Research abstract
Background and objective: Lack of clinical effects of medication review on health-related quality of life of older people may be due to insufficient focus on health-related complaints. Goal Attainment Scales (GAS) are an instrument to formulate specific health-related goals. The objective of this early process—evaluation of the DREAMeR-study (Drug use Reconsidered in the Elderly using goal Attainment scales during Medication Review) is to investigate if pharmacists are able to formulate GAS during a medication review of older people with polypharmacy.
Setting and method: Older patients aged 70 years or older using 7 or more medicines are included in this study. Half of the patients were randomized into the intervention group, where they received a medication review. During the patient interview, the pharmacist formulated GAS in concordance with the patient. Recommendations were made to reach these goals in collaboration with the GP.
Main outcome measures: number of performed medication reviews, total number of formulated GAS and the three most frequent types of GAS.
Results: Until now 453 patients have been included in the DREAMeR study (60% of the target). Half of them (220) were randomized into the intervention group. By now 179 (81%) of these patients have received a patient interview. 143 goal attainment scales were formulated yet. The number of GAS ranged from 0 to 3 per patient. The four most frequent GAS were: polypharmacy—reducing the number of medicines (28), reducing pain (23), increasing mobility (16), reducing fatigue (15).
Conclusion: GAS seem to be a feasible approach during medication review that increased focus on patient's needs and health-related complaints.

CP-PC019: Oral transmucosal fentanyl citrate: a regional survey of dispensing practices in community pharmacy

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Oral Transmucosal Fentanyl Citrate (OTFC) is an opioid analgesic indicated for management of breakthrough cancer pain in patients with malignancies who are already receiving and who are tolerant to opioid therapy for their underlying persistent cancer pain. OTFC are usually use off-label prescription, especially in noncancer patients or patients without opioid maintenance treatment. This practice can expose to iatrogenic risks, lack of efficacy, abuse and addiction. The Observatory of Drugs, Medical Devices and Therapeutic Innovation of Upper Normandy, conducted a study to assess the knowledge of pharmacists on these medications and assess dispensing practices (pharmaceutical analysis and advice to patients).
Design: Between June and September 2015, two quizzes were sent to the 1344 pharmacists and 512 pharmacies in Upper Normandy: one included questions of knowledge and general practice, the other assess dispensing practices of OTFC prescriptions received at the counter, regarding indication, dosage and associated opioid medication.
Results: Of the 93 pharmacists who participate in the survey, 21% know the all of the 7 OFTC specialties, 46% of them confuse transdermal and transmucosal fentanyl specialties. Indication, dosage, titration methods and the main interest of OFTC are known by 52, 43, 18 and 71% of them. Only 30% have dispensed OFTC more than 10 times over the past 12 months, 28% never have. They already have dispensed OFTC in noncancer patients (45%) or without opioid maintenance treatment (36%). They consider not know enough about these drugs to be able to provide the necessary advice to patient (57%) and would like specific training on OFTC (89%). Of the 21 analyzed prescriptions, only 24% are consistent with the marketing authorization: OTFC medicines are prescribing in noncancer patient (52%) and/or dosage is higher than four units per day (24%) and/or there is no prescribed opioid maintenance treatment (24%). Only two prescriptions have been discussed with the prescriber, and all were approved and dispensed.
Conclusion: OTFC specialties are occasionally dispensed and often misunderstanding by pharmacists. A good knowledge of OTFC is necessary to achieve the pharmaceutical analysis and provided appropriate advice to patients, in order to guarantee the good use of these medicines. Support tools for dispensation, recalling indication,

dosage forms and strenghts, dosage, dose titration, methods of administration and patient advices for the 7 specialties marketed in France, are being developed.

CP-PC020: Implication of community pharmacist in orthostatic hypotension: example of EUPHORIA study

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Please specify your abstract type: Research abstract

Background and objective: Many studies have demonstrated a correlation between the Orthostatic Hypotension (OH) and the risk of falls, syncope and cardiovascular mortality. Community pharmacists (CP) are exposed to the risk of OH and the drugs dispensing that can be avoided by a well conducted pharmacist counselling. The main objective of this study was to evaluate the feasibility of a pharmaceutical counselling with the research of a OH by a test in patient with high risk.

Setting and method: Prospective observational study conducting in 47 community pharmacy by CP or students from January to June 2016. Patients were consenting adults and treated with at least one antihypertensive drug. The OH was diagnosed by measuring the systolic and diastolic blood pressure at time 0, 1 and 3 min after move from a sitting position to a standing one, with the a blood pressure device cuff or carry handle.

Main outcome measures: Patient's co-morbidities, adherence to treatment [according to Gired 's scale], occurrence of vertigo particular during a change of position and drugs prescribed were collected. Prevalence of HO identified by CP and prevalence of symptomatic HO. In case of positive test results OH were transmitted to the physician to reassess antihypertensive therapy.

Results: 668 patients were included among the 47 CP. The population characteristics was: average age 70 years [29; 95], sex ratio male/female: 42/58, drugs taking daily average 7, adherence to treatment was good for 64% of patients, minor not observing 32% and not observing 3%. The comorbidities were: 97% hypertension, 41% dyslipidemia, 20% diabetes and 9% of heart failure. OH prevalence measured in this sample was 15.9 and 11.9% of them was symptomatic. 49.5% of positive tests were transmitted to the physician and 6.4% of antihypertensive therapy were changed.

Conclusion: The OH in ambulatory patients treated with antihypertensive drug is frequent. The pharmacy may have a role in identifying the OH in these patients in order to reassess their antihypertensive drug and decrease the risk of complications. Multivariate analysis is underway to determine the epidemiology of antihypertensive drug involved in OH.

CP-PC021: Dispensing of prescribed medicines in community pharmacies: part A—observed counselling, interventions and services

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Please specify your abstract type: Research abstract

Background and objective: This observation project aimed at illustrating the whole process of prescribed medicines dispensing in daily community pharmacy practice. Part A of the project focuses on counselling activities, interventions, and services.

Setting and method: Community pharmacies in Basel, Switzerland, were invited in random order for study participation. One master student in pharmacy performed non-participant observations during 1 day at each included community pharmacy. At dispensing of prescribed medicines, patient characteristics, counselling content, and services were documented on a checklist with predefined themes. The interventions were documented systematically. For the comparison of first versus refill prescription and factors influencing counselling, Chi-Quadrat and Mann–Whitney U tests were used for statistical evaluation.

Main outcome measures: Frequency and nature of counselled themes, interventions and services. Factors influencing counselling on themes.

Results: In March/April 2016, 18 of 49 invited community pharmacies participated in the study. Out of 561 documented observation periods, 556 encounters were analysed (first prescription:269; refill prescription:287). Patients mostly received counselling personally (451, 81%), were regular clients (523, 94.1%) and on average 53.8 years old. Counselling was provided to 367 (66.0%) clients on 2.9 ± 3.1 themes per encounter (first 4.9 ± 3.0; refill 1.0 ± 1.7, $p < 0.001$). The encounter lasted 4.5 ± 3 min (5.2; 3.9, $p < 0.001$). Pharmacy staff mainly counselled about drug intake (465; 73), dosage (188; 46), and administration (152; 36) and provided a label (189; 55). However, some patients refused counselling ($n = 148$, 26.6%). Significantly more counselling was provided with a first prescriptions versus refill, new versus regular clients, prescriptions filled by carers versus patient, and by elderly versus younger patients. Frequency of counselling varied also significantly between pharmacies and within the pharmacy staff. During 144 encounters, 203 interventions were documented (intervention rate 25.9%). The most frequent interventions were drug substitution ($n = 132$), dose adjustment ($n = 57$), and clarification of information ($n = 48$). Common services were reconstitution of suspension ($n = 7$), provision in advance for continuing supply ($n = 26$), and follow up offers ($n = 3$).

Conclusion: The observation of the dispensing process in community pharmacies revealed a broad range of tasks performed by the pharmacy and identified several variables likely to influence the counselling. In addition, pharmacy activities could be pictured by the documentation of pharmaceutical interventions.

CP-PC022: Clinical impact of medication reconciliation at admission in a cardiac surgery unit

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: Medication reconciliation (MR) is a multidisciplinary process to correct medication errors resulting from miscommunicated information at transitions of care. Development of this activity is essential but it is hindered by the time required for its implementation. We must carefully choose which services can develop this activity. As it was recently introduced in cardiac surgery unit, this study aims to evaluate impact of this process to hospital admission (severity of potential harm of medication error intercepted) and to determine the relevance of this activity in this unit.

Design: Prospective study conducted from January 2016 to April 2016. The data is recorded in an EXCEL table, filled after each MR. There are five items: patient's age, best possible medication histories (BPMH), implementation period of the MR, inadvertent discrepancies

(IDs) and clinical impact. To assess the severity of IDs, a scoring method was used (Doerper et al. 2015) with the cooperation of surgeon and pharmacist.

Results: Eighty-two patients (mean age 68 ± 8 years old) were included in the study, which represents 52% of the patients hospitalized in this service. The mean number of drugs per patient was 6 ± 3. The BPMH were obtained within 24 h to 72 h of admission to hospital.

A total of 34 IDs were detected, with a mean of 0.41 IDs per patient. The most frequent type of IDs was omission (52%, n = 16), error of dose (39%, n = 12). The three most common classes involved in IDs were hypolipaemic drug (n = 9), antidiabetic drugs (n = 6) and the drugs for acid related disorders (n = 4). The mean of IDs per patient (0.41) as well as the percentage of patients affected by a IDs (32%) are less important in cardiac surgery than those observed in other services of the institution and in the literature.

About clinical impact, 31% of patients presented with IDs considered as minor, 44% significant and 25% major. Among the major IDs, none was evaluated as critical or catastrophic. In our study, this process remains retroactive.

Conclusion: One of challenge experienced when implementing MR process in hospitals is demonstrating its clinical impact. In order to address this concern, we found that the little IDs with a serious clinical impact in this unit. MR is an interesting process to detect drug errors. To optimize our study we will improve our organization in order to be closer to the patient and to strengthen the doctor-pharmacist collaboration.

CP-PC023: Identification of potential medication problems in patients starting with multidose drug dispensing: a case–control study

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Please specify your abstract type: Research abstract

Background and objective: Special packaging like multidose drug dispensing (MDD) may optimize medication use in patients with a decreased ability to manage their own medication. However, it remains unclear how a 'decreased ability to manage medication' is defined. The objective of this study is to assess potential medication problems that contribute to a decreased ability to manage medication in patients starting with MDD compared to patients who use manually-dispensed drugs.

Setting and method: Patients starting with MDD (cases) and patients using manually-dispensed drugs (controls) were interviewed in 45 community pharmacies. Questions to assess potential medication problems covered three domains; medication adherence (12), practical management issues (12) and medication knowledge (2). Every potential medication problem was scored with one point. Cognition was assessed with the Mini-Cog and frailty with the Groningen Frailty Index (GFI).

Main outcome measures: Mean scores of potential medication problems on the domains medication adherence, practical management issues and medication knowledge.

Results: 188 patients starting with MDD and 230 patients using manually-dispensed drugs were interviewed. Patients starting with MDD scored more potential medication problems on all domains: adherence 5.5 versus 1.7, practical management issues 3.7 versus 2.1, medication knowledge 1.1 versus 0.3. On the three domains together, patients starting with MDD scored 10.2 [9.6–10.9] potential medication problems compared to 4.1 [3.7–4.6] for patients with manually-dispensed drugs. Forty-two percent of the patients starting with MDD might be cognitive impaired and 63% was classified as frail compared to 20 and 27% respectively of the patients using manually-dispensed drugs.

Conclusion: Patients starting with MDD reported significantly more potential problems on three domains that may contribute to a decreased ability to manage their medication.

CP-PC024: Fifteen key questions to assess patient knowledge on new oral anticoagulants

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Please specify your abstract type: Research abstract

Background and objective: Knowledge on new oral anticoagulants (NOACs) is crucial for their safe and effective use. Validated tools that assess patient knowledge exist for vitamin K antagonists, but not for NOACs. We aimed to identify which questions are relevant for patient knowledge on NOACs.

Setting and method: Based on a systematic literature search, 45 questions were compiled for the assessment of NOACs knowledge. Key questions were selected through three rounds of ranking by an expert panel (four physicians, four pharmacists, four nurses). Round 1 (online survey; importance): The 45 questions grouped into the nine educational topics of Wofford,adapted for NOAC (Disease, Mode of action, Risk–benefit, Adherence, Accessing healthcare professionals, Diet/life-style, Lab-monitoring, Medication interactions, Self-care) were to be rated as important/not important and educational topics were to be ranked according to decreasing importance. Round 2 (online survey; relevance): The questions were to be ranked according to decreasing relevance. Round 3 (focus group): number of questions was reduced by voting.

Main outcome measures: Ranking of educational topics and questions (1 = most important/relevant) in March/April 2016.

Results: Experts ranked Adherence (2.2 ± 0.9) as the most important topic, followed by Risk–benefit (3.0 ± 1.6), Disease (3.7 ± 2.7), Accessing healthcare professionals (4.1 ± 2.0), Self-care (5.3 ± 2.6), Lab-monitoring (5.6 ± 1.6), Medication interactions (6.5 ± 1.8), Diet/life-style (7.3 ± 0.9) and Mode of action (7.8 ± 1.5). One question was judged as unimportant by all experts. Out of the remaining 44 questions, 10 (22.7%) were selected as relevant for basic knowledge, 7 (15.9%) were combined into four questions and one new question was generated. A total of 15 key questions remained after the focus group discussion.

Conclusion: A multiprofessional expert panel was able to select key questions retrieved from literature and ensured content validity. The selected questions will be compiled into a tool to assess patient knowledge on NOACs.

CP-PC025: Retrospective analysis of medicines use review in Slovenia

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Please specify your abstract type: Research abstract

Background and objective: Medicines use review (MUR) was defined by the Slovene Chamber of Pharmacies in December 2014 and an education program was set to assure pharmacists competencies. In June 2015 the first pharmacists were certified and implemented the service in the community pharmacies. Additionally, an online database was established to collect MUR reports and provide feedback on pharmacists' performance. The aim of the study was to evaluate identified drug related problems (DRP) as well as pharmacists' interventions from MUR documentation.
Setting and method: A preliminary retrospective analysis of documentation for MUR services provided in the first year after implementation was performed. DRPs were classified using a Slovenian DRP classification system, which is based on the PCNE classification V 6.2 [1]. Data were analysed with descriptive statistics measures.
Main outcome measures: Number and type of identified DRP and pharmacists' intervention.
Results: A preliminary analysis was performed on 129 MUR cases, performed by 11 certified pharmacists. In total 258 DRPs were identified: 116 (44.96%) manifested and 142 (55.04%) potential. Patient had on average two DRPs, however 11 patients had none. Main risk factor for potential DRPs was inappropriate use of medicines. Adverse drug events (ADEs) presented 50.86% of manifested DRPs; the main risk factor was again inappropriate use. In two cases ADEs happened due to an allergic reaction. 29 different medicines were the cause of ADEs; mainly statins resulting in muscles pain and sleeplessness. Another frequently manifested DRP was insufficient effectiveness of treatment. Drug interactions were risk factors in 12 cases of manifested DRPs, mainly in connection with antidepressants: serotonin syndrome due to escitalopram, bleedings in concurrent use of escitalopram and ginkgo, sleepiness, etc. Pharmacist intervened independently in 74.4% of cases; 57 times recommendations were given to physicians. However, in 92.6% of cases the outcome of intervention is unknown.
Conclusion: The preliminary results of the first MUR cases points to a high number of identified manifested DRPs. However, the knowledge of intervention outcomes is lacking and therefore more attention has to be put on establishing adequate follow up on this issue.

Reference

1. Horvat N, Kos M. Development and validation of the Slovenian drug-related problem classification system based on the PCNE classification V 6.2. Int J Clin Pharm. 2016 Jun 2. [Epub ahead of print]

CP-PC026: Implementation of medicines use review in Slovenia: pharmacist's perspective

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Please specify your abstract type: Research abstract
Background and objective: Medicines use review (MUR) was defined by the Slovene Chamber of Pharmacies in December 2014. Official definition represented harmonisation of several similar activities that have already been performed in Slovenian pharmacies and also provided an educational program to assure pharmacists competencies. In May 2015 the first 18 pharmacists were certified and implemented the service in the community pharmacies. Therefore, the aim of the research was to get an insight into the implementation of MUR in Slovenia from the perspective of the first community pharmacists that provide the service in practice.
Setting and method: A focus group with seven community pharmacists, that provide MUR in practice, was run in February 2016. Guided discussion included three main themes: the development and assurance of competencies, experience with the provision of service in practice and the future of the service. The discussion was voice recorded and analysed with the NVivo 11. Written consent from included participants was obtained.
Main outcome measures: Views, challenges and opportunities for the medicines use review service in Slovenia.
Results: In total 364 themes were identified and organized in three main categories: competencies for quality provision of MUR, MUR's recognisability and organizational aspects of MUR provision. Participants emphasized broad knowledge in pharmacotherapy is pharmacists' key competence and advantage in performing MUR when compared with other healthcare professions. Recognisability of MUR among other health care professions as well as participants' work environments is low. Hence a comprehensive approach in marketing of the service is needed. Positive patient's feedbacks were reported, however persuading patients to attend MUR presented a challenge. Another barrier was the time to perform MUR, which could be overcome by suitable work organization and special time intended for MUR.
Conclusion: Participants of the focus panel had positive experience with the development of competencies and implementation of the service in the practice. Several challenges were presented connected with the recognition of the service by patients, physicians and health care payer. They strongly believe that continuing professional development forms the base for quality of the service in the future.

CP-PC027: Evaluation of rational antibiotic dispensing in the community pharmacy setting: a simulated patient study

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Please specify your abstract type: Research abstract
Background and objective: In the present study, it is aimed to evaluate rationale antibiotic dispensing without prescription in the community pharmacy setting; this will be done by using a simulated patient methods.
Setting and method: This study was conducted in Malatya, located in the east part of Turkey. The simulated patient visited the community pharmacies to meet the pharmacist, posing as the husband of a patient with acute uncomplicated rhinosinusitis. The simulated patient was trained regarding the standard information to be provided by the researchers and informed about the privacy of all information that would be gathered during the present study. The sample size was sixty-seven pharmacies, with a confidence interval of 95% and error of margin of 10%. The study was conducted over a total of 70 pharmacies. All the pharmacies were listed alphabetically and were randomly selected and allocated random numbers by a computer-based program.
Main outcome measures: After each community pharmacy was visited, the simulated patient filled the check list which had been drawn up for the purpose of the present study. Due to ethical concerns, no audio or video records were used during the study. Any suggested medications were not purchased from the community pharmacy.
Results: Of the total community pharmacies that were visited 55.7% of them had female pharmacists and 44.3% were run by male pharmacists. The mean number of questions asked by pharmacists to the simulated patient was 3.17 ± 1.65. Only eleven pharmacists did not

suggest any medication for the simulated patient. However, thirty-two (45.7%) pharmacists recommended various medication regimens, including antibiotics. Of them, 67.1% referred the simulated patient to a physician.

Conclusion: In conclusion, it was observed that dispensing antibiotics without prescription was still high, pharmacists did not take comprehensive medical or medication history from patients, and pharmacists provided insufficient medication information to the patient regarding suggested medications at community pharmacy setting. To avoid irrational antibiotic dispensing, it is essential to educate both health care providers and the general population. Although dispensing antibiotics without prescription is illegal in some countries, it is necessary to actualize new regulations to avoid antibiotic dispensing without prescription.

CP-PC028: Medication adherence in hypertensive patients: a community pharmacy—based single evaluation

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Please specify your abstract type: Research abstract

Background and objective: The medication adherence is an important part of active (as well as passive) attitude of a patient to the disease treatment. It represents the level of keeping the treating procedure as well as the recommendations of doctors, pharmacists and other healthcare professionals. This study deals with the adherence in patients with hypertension. The hypertensive patients are a substantial part of patients, daily visiting the community pharmacy to pick their prescriptions. These patients represent group of patients with typical asymptomatic disease. This means that they do not take the medicines or use them according to their own will. The result of their non-adherence could lead to later complications.

The aim of the study was to evaluate the level of adherence and its relation to the clinical outcome—the blood pressure in hypertensive patients.

Setting and method: The methodology was based on a single anonymous questionnaire survey combined with the blood pressure measuring in a community pharmacy in Slovakia. The modified Morisky 4-item medication adherence tool was used in this study.

Main outcome measures: The results of medication adherence were evaluated as follows: 3–4 points = full adherence, 2 points = partial adherence and 0–1 = non-adherence. Each participant should use at least one antihypertensive agent and fulfil the anonymous questionnaire in the community pharmacy. The pharmacist measured the blood pressure in each participant twice, within the interval of 10 min and used the average value in data sheet.

Results: The research included 150 hypertensive patients (55.33% females and 44.67% males). The results showed that almost 46% of the respondents were non-adherent to the prescribed pharmacotherapy (57.98% of those were males and 42.02% were females). The group of partially adherent patients consisted of 35.33% of the respondents (66.04% of those were female). Only 18.67% respondents were fully adherent according to modified Morisky score (67.86% of those were women).

Fully adherent patients reached an average blood pressure 117.393/76.464 mmHg; partially adherent hypertensive patients recorded an average blood pressure 124.162/80.623 mmHg; and in the non-adherent patients has been observed the average blood pressure 154.116/95.319 mmHg.

Conclusion: The results showed an alarming situation, and confirm the published data. Non-adherent patients could not goal the good clinical outcomes. This leads to adding of another medications, raising the risk of interactions and adverse drug reactions, complications of undertreated disease, and finally, to pharmacotherapy costs increasing.

CP-PC029: Medication adherence in patients using antidepressants: a community pharmacy survey

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Please specify your abstract type: Research abstract

Background and objective: In psychology, depression is a mental state characterized by feelings of sadness, dejection, inner tension and indecision. In psychiatry, the depression is defined as a severe mental affective disorder which paralyzes clarity of thought, psychomotorics, sleep cycle and raises pessimistic and depressing emotions often lead to pathological changes of personality. During treatment of depression is often needed psychotherapy and pharmacotherapy as well.

Using of antidepressants requires the sufficient level of medication adherence in patients. Non-adherence to antidepressant medication significantly contributes to the undertreatment of depression in primary care populations.

The aim of this study was to evaluate the level of medication adherence to antidepressants to better understand the socio-behavioural factors associated with non-adherence.

Setting and method: The anonymous, face-to-face questionnaire survey was set in the community pharmacy in Slovakia. Questionnaire obtained questions on socio-behavioural factors and adherence tool—modified 8-item Morisky score (mMMAS-8).

Main outcome measures: Respondents were 150 patients (39 males, 111 females) using at least one antidepressant. The results were evaluated as follows: 8 points = full adherence, 6–7 points = partial adherence and 0–5 = non-adherence. Results were evaluated in relation to socio-behavioural factors.

Results: Average level of the medication adherence in our group was 5113, which means the line between partial and full adherence. The results showed non-significant higher medication adherence level in males (5179) compared to females (5090). The highest level of medication adherence (5367) has been shown in patients 45–64 years old, the lowest average adherence level (non-adherence) was observed in patients up to 24 years old (4656). Patient living in the city were more adherent to their medication (5127) compared to patients living in countryside (5083). The highest level of the partial medication adherence has been shown in secondary educated patients (5344). Partial adherence level was higher in patients with monthly income over 1000 € (5750) compared to non-adherent patients with monthly income up to 300€ (4878). In patients using no other medications, only antidepressant, we have observed the highest partial adherence (5219).

Conclusion: Our survey showed the partial antidepressant medication adherence levels in our study group. Poor adherence results in low stabilization of clinical state in patient, in using more types of therapy and in increasing costs. There might be very important role of the community pharmacists and other health care professionals to improve the medication adherence and persistence through counselling and education patients on importance and need of antidepressant medication.

CP-PC030: The evaluation of elderly patients' medication profile at community pharmacy setting

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Please specify your abstract type: Research abstract

Background and objective: The aim of the present study was to investigate the frequency of potentially inappropriate medications and measure medication regimen complexity in elderly patients at community pharmacy setting.

Setting and method: This study was conducted in four community pharmacies from February 20, 2016 to May 20, 2016 (2 days/a week) among elderly patients (≥65 years old) who used at least one medication, came to community pharmacy for any purpose and accepted to participate this study. Demographic characteristics, medical history and prescription and non-prescription medication data of patients have been collected.

Main outcome measures: Potentially inappropriate medications (PIMs) were determined by the 2015 Beers criteria (1) and medication regimen complexity was assessed by using the Medication Regimen Complexity Index (MRCI) (2). Five and more medication usage has been defined as polypharmacy.

Results: A hundred and two elderly subjects (74.5 ± 6.0; 65 male) were included in this study. Of them, 89.2% had two and more chronic diseases. The most common chronic diseases determined in study population were cardiovascular diseases (especially hypertension), diabetes and hyperlipidaemia. The polypharmacy has been defined in 77.5% of them. The mean of MRCI per elderly patient was 12.5 ± 7.0. One or more PIMs use was observed in seventy-four elderly subjects (72.5%). Of all elderly subjects, 59.8% were dispensed one and more medicines with a potential for drug-disease/syndrome interaction. PIMs use was more frequently determined in patients with polypharmacy (78.5 vs. 52.2%, $p < 0.05$). The total score of MRCI was significantly increased with elevated number of PIMs ($r = 0.304$, $p < 0.01$).

Conclusion: This study highlights a significant association between utilization of PIMs and both polypharmacy and higher total score of MRCI in elderly patients. Pharmacists could be evaluated utilization of PIMs in especially elderly patients with used five or more medications and/or higher total score of MRCI.

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CP-PC031: Determination of medication adherence in hypertensive patients in Turkey and North Cyprus

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Please specify your abstract type: Research abstract

Background and objective: Hypertension is a chronic disease which requires adherence to medication regimens to reduce the risks of cardiovascular disease, stroke and other chronic condition. The aim of this study is to determine the medication adherence of hypertensive patients by using a 13-item short form of the Medication Adherence Self-Efficacy Scale-Short Form (MASES-SF).

Setting and method: 150 adult patients, who are receiving medication for hypertension at least 1 year, were included in this study. The study was conducted at two community pharmacies in Mersin, Turkey and Nicosia, North Cyprus. Short-Form of Medication Adherence Self-Efficacy Scale was revised and validated in Turkish by Hacıhasanoğlu et al. in 2012 was used for this study.

Main outcome measures: Adherence scores of patients with antihypertensive medications.

Results: 150 patients (75 of them from Mersin and 75 patients were form Nicosia) were involved in this study. The mean age of participants was 52.2 ± 12.04. Almost half of participants (48.6%) were female. 52.0% of patients had less education level (primary or secondary school) and 78.7% of them were married. Majority of participants have diabetes mellitus (44.0%). Mean adherence scores were found to be high in patients who are living in Mersin, Turkey ($p < 0.05$). The adherence rate of female patients was higher than the male patients. There were no correlations between age, duration of treatment and adherence scores ($p > 0.05$).

Conclusion: According to the answers given to 13 questions by hypertensive patients who participated in the study, it is obvious that the level of adherence scores was moderate. Based on these findings, as we observed in the literature, it is recommended that hypertensive patients should be well educated by pharmacists so that the levels of adherence score could be increased.

CP-PC032: Drug use in nursing homes: compliance between diagnosis, indication and drug use

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Please specify your abstract type: Research abstract

Background and objective: Nursing home patients with multimorbidity often use multiple drugs simultaneously, which makes these patients more susceptible to adverse drug events. Several studies have pointed to a need to increase the quality of prescribing to this population. To achieve this there is a need for reliable information about patients' diagnosis, and what is recorded as the drug's indication in different electronical and handwritten health records.

The aim of this study was to examine the registered diagnoses, and indications for drug use in nursing home patients. We also wanted to study the extent to which diagnoses are untreated with drugs, as well as the extent to which drugs have a registered indication for use and a suitable recorded diagnosis.

Setting and method: Data was collected for 70 long-term patients, on average 83 years old, and 66% females from four nursing homes in Tromsø municipality, Norway. We retrieved information about patients' diagnoses and indication for drug use from the electronic health record and written drug charts. Two pharmacists conducted the linkage between the reported diagnoses and drug use.

Main outcome measures: Percentage of untreated diagnoses and the percentage of drugs with a registered indication for use.

Results: As considered by the pharmacists, 70% of the registered diagnoses was untreated with drugs. Dementia, gout and osteoporosis were the most commonly untreated diagnoses with, 97, 60 and 57%, respectively. In comparison, the indication for use listed on the patients' drug charts was reported for 82% of the drugs. The drugs

with the highest percentage of recorded indications were acetylcysteine (n = 15), oxycodone (n = 14) and zopiclone (n = 11), where 100, 93 and 90% had a listed indication, respectively.
Conclusion: A high percentage of nursing home patients' diagnoses seem to be untreated. However, most drugs that patients received were listed with indication for use in the drug charts. To increase quality of drug prescribing, one should put emphasis on improving the recorded information in electronical health records.

CP-PC033: Personal changes in drug regimen: dangerous for health system?

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Please specify your abstract type: Research abstract
Background and objective: Patient compliance is a key factor for a successful treatment and lack of it is the main reason for predicting treatment failure. In multiple researches patient adherence is determined to be as low as 50%. Therefore it is important to identify the reasons of patients not following their drug regimen.
Objective. To analyse the patient comprehension of their drug regimen depending on the duration of hypertension and received treatment.
Setting and method: During the period from December 2015 to March 2016 a quantitative survey was conducted to include respondents who have been diagnosed with arterial hypertension and whose regimen includes at least one fixed dose combination drug.
Main outcome measures: In an anonymous survey data was collected about their demographic information, co-morbidity, other prescribed medication, intake regime, the average blood pressure during treatment, and patient's assessment of the prescribed therapy. Collected data was analysed with SPSS.
Results: The study included 103 participants, most of whom (64.1%) were women. Participants average age was 62.5 ± 12.5 years and the median arterial hypertension duration was 8 (5; 16) years. The study participants, who sometimes consciously adjusted dosing regimen, observed arterial hypertension for a longer period of time compared to the group, which follows the prescribed regimen according to their doctor's recommendation, respectively, 10 (6; 28) vs. 8 (4; 15); $p = 0.110$. Group of respondents (n = 16) receiving ≥3 prescription drugs, more often deliberately adjusted treatment regimen compared to respondents (n = 8) treated with ≤2 prescription drugs, respectively 26.7 versus 18.6%; $p = 0.310$. Respondents who deliberately adjusted drug were more often not satisfied with the number of long-term daily use of tablets (n = 13) compared to the group (n = 11), which had to intake fewer tablets every day, respectively, 54.2 versus 45.8%; $p = 0.005$.
Conclusion: Arterial hypertension duration was associated with more frequent conscious adjustment of therapy without consulting a doctor. More individual prescriptions (≥3) and an increase in the number of tablets per day at the same time also increases the risk of patients deliberately changing their dosing regimen. Long-term drug users should receive additional attention during pharmaceutical care process to their respective treatment schedule in order to promote proper use of medication.

CP-PC034: Accompanying diabetes patients in the pharmacy: the gliptin parcours

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Please specify your abstract type: Research abstract
Background and objective: Diabetes is a health issue and real burden for 1 in 6 Belgians. Better adherence to the treatment could potentially reduce complications, decrease morbidity and mortality, and have a beneficial economic impact due to fewer consultations and hospitalizations.
Setting and method: A one-year program was started in 370 Belgian pharmacies to accompany diabetes patients taking DPP-4 inhibitors and encourage them to be compliant with their treatment. This study concerns 270 of these pharmacies, all part of the same cooperative group. All pharmacists received prior training in motivational techniques and reviewed the bases of diabetes therapy with an e-learning program. Materials developed for the patients included brochures on diabetes and its treatment, nutritional advice, physical exercise, foot care and tips and tricks for diabetics.
Main outcome measures: The impact on pharmacological adherence was measured using mMPR and PDC. Two control groups were included: a historical control group and a group of patients that were not included in the project. Non-pharmacological adherence was assessed using questionnaires.
Results: In the subgroup of 270 pharmacies, 495 patients were included in the program. By the end of April 2016, only 44 of them had completed the program; 78 patients came only once to the pharmacy. They either stopped their treatment after one prescription, or were occasional clients. Adherence rates were found to be high in all groups (5.7–9.1% of patients with mMPR ≤ 80%). Only for the PDC, a statistically significant difference was measured between the intervention and control group (135.37 vs. 129.22%; $P = 0.015$). No other statistically significant impact was measured (neither pharmacological, nor non-pharmacological).
Conclusion: Adherence was very high in all groups. The underlying reasons still need to be investigated (choice of adherence measure, healthy user effect, etc.). However, both patients and pharmacists were very pleased with this type of program. This new role of the pharmacist will definitely be more developed in the future.

CP-PC035: The impact of pharmaceutical care interventions on the effective and safe use of oral anticoagulants: a systematic review

Naomi Susannah Wartenberg[*,1], Nikki L. Damen[2], Kurt E. Hersberger[3], Sotiris Antoniou[4], Silas Rydant[5], Isabelle Arnet[3], Bart J. F. van den Bemt[1,6], On behalf of International Pharmacists for Anticoagulation Care Taskforce (iPACT)

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Please specify your abstract type: Research abstract
Background and objective: Oral anticoagulants (OAC) have a beneficial effect on the long term survival of patients with atrial fibrillation and venous thromboembolism. However OACs have also side effects such as bleeding, especially when used inappropriately. Pharmaceutical care interventions aim to optimize medicines use and improve patient health outcomes. The literature lacks a review on the impact of Pharmaceutical Care interventions in patients using OAC. Therefore, we systematically assessed the impact of Pharmaceutical Care interventions on the effective and safe use of OAC compared to usual care.
Setting and method: A systematic review was performed in PubMed and Embase with synonyms/detailed specifications of the terms oral

anticoagulants and pharmaceutical care. Studies were eligible if (1) a Pharmaceutical Care intervention was compared with usual care in patients using OAC and (2) the article was written in English, Dutch, German, French, Italian or Spanish. The percentage of time during which patients had their INR value within target values (time in therapeutic range (TTR)) and adverse events were retrieved. The data were categorized by type of intervention.
Main outcome measures: TTR, number of adverse events.
Results: Of the 11,171 titles/abstracts screened, 125 articles were included. Studies with a statistically significant higher TTR in the Pharmaceutical Care group applied pharmacogenetic dosing (4 out of 7 studies), patient education (3 out of 5 studies), shared care programme (1 study), anticoagulation management service (13 out of 19 studies), self-testing (8 out of 10 studies), and medical training (1 study) as interventions. Studies applying clinical rules (1 study) and medical training (1 study) had an significantly decreased incidence of adverse events compared to usual care.
Conclusion: Several Pharmaceutical Care interventions have a substantial impact on the effective and safe use of oral anticoagulants as demonstrated by a greater TTR and few adverse events.

DI001: Development of an interactive platform to work and speed up the decision-making process of a pharmacy and therapeutics (P&T) committee

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Please specify your abstract type: Research abstract
Background and objective: In 2015 the Andalusian Government makes a resolution to reorganize all the different committees, among them P&T (law SA 0081/04, April 2015). It was motivate for the need to sort the instruments for URM, including professional participation, and on the basis of the clinical management unit, and reduce variability in decisions.

The P&T or "multidisciplinary Commission Rational Use of Medicines" is constituted by 13 people: one hospital medical director (president), head of pharmacy (secretary), and three directors of Healthcare centre, three directors of department of specialities, one epidemiology, one hospital pharmacy, one primary care pharmacy and one paediatric.

Because some of these members are far between them, and normally dose not have too much time, we create an online platform to work, discuss and download all the necessary documents.
Setting and method: We used the facilities of the Andalusian Agency for Healthcare Quality (www.acsa.junta-andalucia.es), and as a base the law of the administrative decision. We have organized a session to discuss methodology with the participation of all members.
Main outcome measures: Number of meeting and number of internal discussion emails. Drug or protocol decisions. Design of the platform.
Results: The design platform consists of five tabs: (1) has the member information, position, telephone and address, (2) Email forum, following a subject line, (3) a place for meeting requests and then hang up the meeting minutes. (4) a tool allows you to upload documents to the portal (5) a search engine. Two sessions are schedules and total of 28 mails. We have 4 of 13 members who have never participated online. At this moment we have adopted two decisions.
Conclusion: It is an online experience of one Andalusian P&T Committees, the low turnout makes go slower than expected, therefore physical meetings are necessary in this moment. We are working how to get more participation and involve in the project the committee members.

DI002: Informational needs about medication of patients with liver cirrhosis

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Please specify your abstract type: Research abstract
Background and objective: Liver cirrhosis can have a major impact on drug metabolism, requiring evaluation of drug safety and dosage in individual patients. Currently, there are no guidelines on safe prescribing for medications in patients with liver cirrhosis, and these patients have many questions about safety and side effects of medication.

The objective of this study is to explore the patient's needs on information about medication.
Setting and method: Qualitative, semi-structured interviews were performed in 28 patients with a (history of) liver cirrhosis. The patients were approached through an item in the newsletter of de Dutch Association of Liver Patients. Topics in the interview guide were preferences about information about medication, side effects, safety, drug dosage, and how patients preferred to receive this information. Interviews were audiotaped and transcribed verbatim. Interviews were analysed using thematic content analysis.
Main outcome measures: The experiences and needs of patients with liver cirrhosis concerning information about medication.
Results: Patients indicated they had received sufficient information about the indication, possible drug–drug interactions and the duration of treatment. They preferred (more) information about how medications work, what adverse drug reactions could be expected and practical aspects concerning intake of medication. Informational needs were related to questions 'how to act': patients with more informational needs took a more active role in responsibility for their own medication management. Patients needed information to know what to do, e.g. in case of adverse drug reactions or when a dosage was forgotten. The doctor and internet were the preferred sources of information: doctors because of the personal contact and internet because of the accessibility. Facilitating factors were 'taking time' in healthcare provider-patient contact and 'everyday language' for texts on the internet and in package leaflets. A combination of verbal information by the healthcare professional and written information was preferred.
Conclusion: Patients with liver cirrhosis need information about medication to take an active role in their drug management.

DI003: Working together to promote the appropriate use of insulin: an overview of the different actions carried out in a university hospital

Margaux Delforge[*,1], Marie Marchand[1], Olaia Irazusta[1], Sophie Lefevre[1], Patrice Massip[1], Philippe Cestac[1], Eve-Marie Duplin[1], Blandine Juillard-Condat[1]

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Due to its common use, insulin is often considered as a harmless medication by lots of health professionals while an overdose can lead to dramatic consequences and death.

Between January 2014 and June 2016, in our university hospital, 6% (7 out of 121) of the declared adverse drug events have involved

insulin: 2 were caused by prescription errors and 5 by administration errors.

All were discovered after the medicines have been administered but thankfully none had serious consequences.

The British National Health Service (NHS) and the French Medication Safety National Agency (ANSM) made a list of "never events": avoidable events which should never happen and misadministration of insulin is among them.

The objective was to increase patient safety in the hospital by setting different actions to promote and improve the appropriate use of insulin and warn health professionals about the real dangers of this medicine.

Design: Different actors participated in the implementation of these actions: The Commission for Medicines and Medical Devices (which is composed by doctors and pharmacists) directed a group made by physicians and clinical pharmacists from the department of cardiological and metabolic diseases'.

Results: In addition of the usual analysis of any adverse event linked to medication declared in the hospital, several actions were set up:

- A didactic document summarizing all the "sensitive" steps during the prescription, stocking, dispensation and administration of insulin has made the front page of the hospital's intranet and was also diffused throughout the establishment.
- A chart resuming all the different insulins commercialized in France has also been diffused. It contains their types, durations and onsets of action, conditions of storage and pictures of their packaging.
- The 49 computerized protocols involving insulin are going to be reviewed in order to lower their numbers and harmonize their content.
- A revision of the list of insulins available at the hospital is in progress to reduce their number and avoid any confusion between the different products.
- An evaluation of insulin's computerized prescription practices will be made via a data request.

Conclusion: This topic about insulin shows a greater willingness to secure the medication circuit in the hospital. Other action plans such as this one will be set up involving other medications among the never-events list. Meanwhile, the commission for medicines and medical devices pursues its actions of promoting the appropriate use of medication.

DI004: Eye drops' equivalence chart: a simple tool to facilitate drug substitutions and conformity with the hospital formulary

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: One of the hospital pharmacist tasks is to suggest substitutions to ensure conformity of medical prescription with the hospital formulary. Indeed, when an eye drop isn't available at the hospital, there is a specific supply circuit which has to remain exceptional: it's ordered directly to the pharmaceutical wholesaler.

In this context, ophthalmologists and clinical pharmacists created a table proposing therapeutic equivalencies with eye drops available at the hospital. After approval by the Commission for Medicines and Medical Devices, this tool has been diffused within the establishment via the intranet website since the beginning of 2013 to the medical and paramedical staff.

The purpose of the study is to evaluate professional practices concerning the use of the eye drops' equivalence chart.

Design: In the study, we compared eye drops' orders made to the pharmaceutical wholesaler before and after the table's diffusion, thus between January 2012 and December 2015.

For each order, we used the table available at this time to determine if equivalencies could have been proposed or not. If so, we identified the hospital ward and the pharmaceutical specialty. Market changes have also been considered.

Results: We noticed a decreased frequency of eye-drops ordered despite available equivalencies: 52% in 2012 (before the table's diffusion), 25% in 2013 (after its diffusion), 33% in 2014 and 33% in 2015.

Prisons units are responsible of 95% of these orders: they have the lowest rates of substitutions. Their most ordered pharmaceutical specialties are ophthalmic glaucoma agents: 46% Ganfort® (bimatoprost 0.3 mg/mL/timolol 0.5%), 20% Xalacom® (latanoprost + timolol 0.5%), 23% Azopt® (brinzolamide) for which the authorized substitutions are for the first two specialties: Monoprost® (latanoprost) + Ophtim® (timolol 0.5%) and for the third: Dorzolamide®.

Conclusion: Equivalence table diffusion throughout the hospital has facilitated and improved the prescription and substitution of eye-drops. Orders of pharmaceutical specialties despite authorized equivalencies available have declined by half. Probably for practical reasons regarding long-term treatments, prison units make less substitutions but an awareness campaign will be carried out to reduce these rates.

DI005: Effectiveness and quality evaluation of leaflet on compounded medicines

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Please specify your abstract type: Research abstract

Background and objective: The patient's education and information is a mean to reduce medicine misuse and it can be performed with support of a leaflet or informative material about medicines. In Brazil, there is a lack in regulation about this type of informative material to compounded medicines. The aim of this study was to evaluate the quality and effectiveness of leaflets developed to compounded medicines' users through knowledge's level and medicine treatment adherence.

Setting and method: Analytical and quantitative study; 3 month prospective study through interviews, at time zero (T0) and after 30 days (T1) in a University Pharmacy in Goiás, Brasil; Fisher's Exact Test to measure effectiveness; Ethics Committee number 008/12.

Main outcome measures: Categorization into high adherence and low adherence by Morisky Test; categorization into sufficient, regular or insufficient knowledge about medicine prescription; perceptions and suggestions about delivered leaflet in medicine dispensing process.

Results: Of 52 patients (82.7% female, mean = 48.7 years), 93.5% considered as relevant the leaflet's content, as well 88.5% of them kept it and 67.4% of them read it. Suggestions of 16.1% included a desire in increase font size, more emphasis on drug interactions and images. There was a predominance of regular knowledge in both analysed times (48.4% e 38.7%), however there was a decrease in high adherence to medicine treatment (19.2–7.7%). Among patients who read the leaflet, no statistically significant association was found on these two variables at T0 and T1 ($p = 0.24$ and $p = 0.84$, respectively). Knowledge about "administration schedules" showed a significant improvement after intervention ($p = 0.02$). 61.3% of

patients considered that there was no need to obtain more information.
Conclusion: This study demonstrates the evaluated leaflets had relevance to patients and demonstrate clinical relevance. However was not observed statistically significance. This highlights the need of using different ways to measure the effectiveness of an informative material to promote rational use of medicines and depth studies and stimulation of greater attention from the health professionals to the topic.

DI006: Chlormethine gel: effectiveness and tolerance to treat mycosis fungoides

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: To determine the effectiveness and tolerance of chlormethine gel in treating mycosis fungoides.
Design: Mycosis fungoides is the most common form of cutaneous T-cell lymphoma (MF-CTCL). Early stages (Ia and Ib) can be controlled by skin-directed therapies such as chlormethine and carmustine. These drugs which are solutions for injection are usually used for skin application. Chlormethine or mechlorethamine gel is an alkylating agent representing an alternative for previously treated patients diagnosed with MF-CTCL, in case of therapeutic failure and intolerance, or in case of chlormethine and carmustine solutions supply disruption.

A retrospective observational analysis was conducted based on medical records of all patients treated by chlormethine gel in our hospital from the first of July to the first of September 2015. The following data were collected with an excel table: Body Surface Area or BSA affected by disease, location of the lesions, therapeutic management, effectiveness and treatment tolerance.
Results: Fourteen patients (7 women, 7 men, mean age 55 [min 33; max 84]) were treated with chlormethine gel in our hospital. Twelve (86%) were treated three times per week, 2 (14%) once a day.

Before treatment by Chlormethine gel, 4 (29%) patients were treated by dermocorticoids, 4 (29%) by dermocorticoids and phototherapy, and 1 (7%) by Bexarotene, all of them stopped their treatment on account of inefficacity. One (7%) patient was treated by Carmustine and dermocorticoid, and 3 (21%) by only carmustin, all of them stopped it because of supply disruption. One (7%) patient received it in first line therapy.

Ten (71%) patients showed a response (partial or complete), one (7%) experienced a stabilization of his disease. Before treatment with topical chlormethine, seven patients (50%) had an involved BSA $> 10\%$ and four of them (57.1%) experienced adverse effects. Seven patients (50%) had an involved BSA $<10\%$ and three of them had (42.9%) side effects.

A total of seven patients (50%) presented at least one adverse effect. Five patients (36%) stopped the treatment on account of adverse effects; two of them (14%) interrupted it temporarily. Reported side effects were: irritant dermatitis and erosive toxicity (5), rash (2) and telangiectasia (2).
Conclusion: Our results indicate that chlormethine gel can be effective to treat mycosis fungoides. However, it involves side effects that seems to be more frequent than those observed with chlormethine solution (used for skin application). Indeed, the French National Authority for Health reports 28% of adverse effects for chlormethine solution versus 50% in our study for chlormethine gel.

Moreover, telangiectasia was never documented with chlormethine. This significant number of side effects of chlormethine gel can be explained by the gel formulation which induces patients to apply more product, especially in patients with plaques affecting more than 10% of the BSA. It is important to explain to patients to apply a thin film of chlormethine gel to involved skin areas and allow the skin to dry completely.

DI007: Review of aprepitant drug interactions with antiemetic and intravenous anticancer agents

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Aprepitant, a neurokinin-1 receptor antagonist, prevents nausea and vomiting due to high and moderate emetogenic chemotherapy in combination with other antiemetic agents. It induces cytochrome P450 (CYP) 2C9 and moderately inhibits CYP3A4. Drug–drug interaction could occur with intravenous anticancer or antiemetic drugs metabolised by these isoenzymes. It may lead to adverse effects or loss in efficacy. Regarding recent international antiemetic guidelines, emergence of new intravenous chemotherapy and lack of bibliographic data, a report on aprepitant interactions is performed in oncology. The aim of this study is to review pharmacokinetic interactions with aprepitant in order to prevent potential toxic effects of intravenous anticancer or antiemetic agents and provide the best patient care.
Design: Anticancer and antiemetic agents metabolised by CYP3A4 and 2C9 were identified. Pharmacokinetic literature review was performed using Medline® database and laboratory data. Clinical assessment and non-aprepitant pharmacokinetic studies were excluded. A table was established to summarize data.
Results: Ten intravenous anticancer agents used in oncology are identified as CYP3A4 substrates. Pharmacokinetic assessments are achieved for docetaxel, cyclophosphamide, vinorelbine, irinotecan and trabectedin. Studies dealing with the five other drugs are strictly clinical assessments. Among the different pharmacokinetic studies, only trabectedin showed relevant interaction with aprepitant. In this association, aprepitant dose needs to be adjusted. CYP2C9 catalyses the cyclophosphamide activation pathway with minor contribution. However, it would have few repercussions on cyclophosphamide pharmacokinetic. Corticosteroids and 5 hydroxytryptamine type 3 (5HT-3) receptor antagonists are also metabolised by CYP3A4. Aprepitant significantly increases corticosteroid plasma concentrations. In this case, corticosteroid dose adjustment should be applied. Furthermore, no interaction has been found with 5HT-3 receptor antagonist.
Conclusion: Regardless of the emetogenic level of anticancer agents, all drugs have been studied because of theirs potential combinations. Two relevant pharmacokinetic interactions have been demonstrated leading to dose adjustment recommendation. Corticosteroids doses, in association with aprepitant, should be reduced one-fourth for intravenous form and one half for oral form. Aprepitant first dose should be decreased to 80 mg when it is co-administrated with trabectedin. These two results lead us to re-evaluate our prescription practices.

DI008: Patient safety in the use of non-steroidal anti-inflammatory drugs (NSAIDs)

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Please specify your abstract type: Research abstract

Background and objective: NSAIDs are associated with serious adverse reactions which in turn are responsible for significant risks of morbidity and mortality. The aims of this project is to identify risks involved in NSAID administration including over-usage and significant drug interactions, and to analyse occurrence of side-effects. The trends of NSAID prescribing by physicians and pharmacists are also determined.
Setting and method: A pharmacy from each electoral district was chosen by stratified sampling. A sample population (N = 100) was obtained from 13 pharmacies in Malta. Data was collected through the completion of questionnaires carried out by the patients. The trends of NSAID prescribing were determined by another questionnaire directed to 49 pharmacists and physicians that was available online.
Main outcome measures: Use of NSAIDs by patients and prescribing trends.
Results: Back pain (n = 19), muscular pain (n = 13), headache (n = 12) and arthritic pain (n = 10) accounted for the most frequent use of NSAIDs. Diclofenac accounted for the most commonly administered NSAID, taken by 58 of the patients, of which 48 use the 50 mg dose. Chronic disorders of symptoms experienced by the patients included hypertension (n = 24), heartburn (n = 22), dyspepsia (n = 21), asthma (n = 4) and a history of *Helicobacter pylori* infection (n = 2). Other disorders suffered by single individuals include epilepsy, Crohn's disease and renal dysfunction.

More than half of the respondents (n = 55) admitted to self-prescribing regardless the fact that the majority of NSAIDs are prescription-only medications.

Epigastric pain (64.6%), stomach ulcers or GI bleeding (30.6%) and elevated blood pressure (29.8%) were the most common side-effects that pharmacists and physicians come across. NSAIDs were frequently found to be co-administered with antihypertensives (68.1%) and SSRIs (37%) regardless of their significant risks of interacting with NSAIDs. 75.5% of the pharmacists and doctors believe that NSAIDs are being over-used and 95.9% state that closer monitoring of NSAID adverse effects is necessary.
Conclusion: The risk involved with NSAID administration due to over-usage and drug interactions is identified, and healthcare professionals are aware of this risk.

DI010: Evaluation of proton pump inhibitors prescriptions in a geriatric department

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Please specify your abstract type: Research abstract
Background and objective: Proton pump inhibitors (PPI) are widely prescribed in hospital while their long-term use may be responsible of many potentially serious long-term side effects (hypomagnesemia, neutropenia, gastric cancer) and drug interactions (PPI are inhibitors of CYP2C19).

The objective of this study was to assess the appropriateness of PPI prescriptions in a geriatric department in order to optimize their conditions of prescriptions.
Setting and method: This prospective study involved patients hospitalized between January 2016 and April 2016 in a geriatric department. The accordance of the prescriptions with the marketing authorization indications and the French guidelines[1] was analysed. Data collection was done using a table Excel.
Main outcome measures: Collected information were related to patients (age, sex) and PPI prescriptions (active substance, administration route, dosage, duration of therapy, therapy indication and reassessment of PPI therapy).
Results: Ninety-one patients were included: SR: 0.3, mean age: 87.3 years [78; 102]. PPI therapy prevalence over the period was 38%.

The PPI were prescribed in the geriatric department in 33 patients (mostly esomeprazole) whereas 58 patients had PPI therapy (mostly esomeprazole) at the admission, for more than 2 years in 42 patients. Oral route was the most frequent one (n = 86).

89 PPI were administered once a day and only three PPI were administered in the morning.

40% of PPI prescriptions were considered unjustified; the indications were prevention of haemorrhage with antiplatelet therapy (n = 19), prevention of haemorrhage with corticoid (n = 4), prevention of haemorrhage with anti-vitamin K (n = 3), dyspeptic disorders (n = 2), gastralgy (n = 4) and others reasons (n = 4). 60% of PPI prescriptions were considered relevant.

The reassessment of IPP therapy (n = 25) lead to prescribe another dosage (n = 9), to stop therapy (n = 11) or no change (n = 5).
Conclusion: The study showed that the majority of IPP prescriptions were not in accordance with French guidelines. Limiting the prescription to the indications, reassessing the therapy or respecting the therapy duration should reduce the risk of long term side effects and the economic burden of PPI in a long term use.
1. Les inhibiteurs de la pompe à protons chez l'adulte-Haute Autorité de Santé-2009

DI011: Effectiveness and safety of high dose of tigecycline

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: To evaluate the effectiveness and safety of the use of high dose of tigecycline (200 mg followed by 100 mg every 12 h) a tertiary care hospital.
Design: Retrospective observational study. Period: January to December 2015. Inclusion criteria: Episodes use of tigecycline (200 mg followed by 100 mg every 12 h. Exclusion criteria: Time less than 4 days treatment. Data source: Corporate Program stories electronic health.
Results: We identified 24 episodes in 23 patients (15 men, mean age: 71 years (23–88)). Treatment was directed to multidrug-resistant organism infection in 11 cases (seven *Klebsiella pneumoniae* OXA-48, two *Enterobacter cloacae*, two *Enterococcus faecium* and one methicillin resistant *Staphylococcus aureus*. In one episode they coincided *E. cloacae* and *E. faecium*). In 14 cases had severe sepsis or septic shock (seven abdominal focus, six respiratory focus and one unknown focus). The median number of days of treatment was 12 (4–119).

Tigecycline was administered as monotherapy in three cases, bitherapy 13 and triple combination therapy in 13. The antibiotics were associated were: beta-lactam (11), aminoglycosides (10), quinolones (3) colistin (three, two Inhaled cases), cotrimoxazole (1) and vancomycin (1). In 13 episodes produced clinical and/or microbiological resolution and 7 antibiotics are rotated by progression picture or lack of improvement, death occurred in three cases and 1 was suspended on suspicion of hepatotoxicity. Among the seven episodes of Klebsiella pneumoniae OXA-48 infection there were four pneumonias, three with favourable evolution and one patient died, two bacteraemia, both with resolution clinical and microbiological, and one urinary tract infection resolved. Among the 14 episodes in severe/septic shock were five cures, six cases of antibiotic rotation progression or lack of improvement and three deaths while patients receiving therapy tigecycline. 2 patients showed an adverse effect possibly related to therapy tigecycline: 1 diarrhoea after 15 days of treatment and 1case of liver toxicity after 4 days of tigecycline and piperacillin-tazobactam which led to their withdrawal.

Conclusion: Tigecycline has been used in double dose defined in data sheet especially in situations of severe sepsis or septic shock and infection multiresistant microorganisms. The effectiveness is conditioned by the clinical situation patient, being worse in severe/septic shock sepsis. Tigecycline high dose was well tolerated and there was only a case of stopping the medication for suspected damage hepatic.

DI012: Wikipedia and medicines: who edits medicine articles on the English Wikipedia?

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Please specify your abstract type: Research abstract
Background and objective: The medical profession and pharmacists are divided on the usability of Wikipedia for looking up health information. Nevertheless Wikipedia is widely used, more than half of US physicians and 94 percent of all medical students use Wikipedia as a source of health-related information. There is a potential for incorrect and biased information being added by the pharmaceutical industry. The aim of this project was to examine who edits Wikipedia articles on medicines and to investigate whether the pharmaceutical industry edits these articles.
Setting and method: Two different groups of articles has been examined; the top ten bestselling medicines (substances) in the world in 2014 and the ten most recently approved medicines on the European market (until December 2014). The top ten medicines were selected from a consultancy report by EvaluatePharma/EP Vantage. The ten most recently approved medicines (new substances) were found on the European Medicines Agency webpage.
We queried the English Wikipedia on 11 January 2015 and information from the edit history and the editors' user information were extracted. Unregistered editors were checked using a WHOIS service. For the new medicines all editors were checked, while for the bestselling medicines large edits and initial edits was checked.
Main outcome measures: Edits suspected of being made by the pharmaceutical industry.
Results: *Ten bestselling medicines:* There are many users editing these articles and/or watching them, limiting the risk of misinformation from the industry. There was no indication that the pharmaceutical industry had edited any of the articles.
Ten most recent medicines: No article existed for dasabuvir. for the nine other substances there were relatively few editors and watchers. In four out of the nine articles we found evidence of edits from the pharmaceutical industry. These edits, were done by registered editors with very few edits except for the medicine in question and they had made large additions to the articles sometimes even before the medicine was marketed.
Conclusion: The pharmaceutical industry seems to edit articles about medicines on English Wikipedia however we found no evidence of harmful edits and bestselling medicines have many editors monitoring the quality of articles.

DI013: Information about repackaged medications: implications on patient safety

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Please specify your abstract type: Research abstract
Background and objective: The pharmaceutical professional service of the Monitored Dosage Systems (MDS) tries to improve the adherence of the patients to the treatment. The aim was to analyse the relevance of the repackaging of the most sold medicines in our country being used by patients included in the MDS professional service and to determine the information discrepancies according to the source used by the pharmacist.
Setting and method: Cross-sectional descriptive study. Community pharmacy and healthcare institutions. All the patients included in the pharmaceutical professional service of MDS on June 1, 2016. Data source: Patients' records in the professional service, database of medicines ranked by sales in units in our country to December 2015 (400 medicines), information sources on medicines: (1) vademecum of medicines and (2) the centre of drug information of our agency of medicines.
Main outcome measures: Number of institutionalized and ambulatory patients included in the professional service of the MDS and demographic characteristics, sum of different repackaged medicines belonging to the studied patients, analysis of the repackaged medicines of major use, number of discrepancies on the repackaging of the medicines according to the information source.
Results: 88 patients were included in the professional service of the MDS. 67 of them were institutionalized (average age: 39.9 years, 65.7% men, 76.1% polymedicated defined as using $\geq$4 prescribed chronic medicines) and the remaining 21 were ambulatory (average age: 76.8 years, 57.1% women, 23.7% polymedicated). 130 different medicines prescribed in the institutionalized patients were taken into account, 29 of them included in the sales ranking in our country. According to the first source, 18 of 29 medicines were eligible for repackaging, 6 medicines could be repackaged according to the laboratory manufacturer and the 5 remaining ones could not be repackaged. According to the second source, 21 of 29 medicines could be repackaged, and the 8 remaining ones could not. 128 different medicines prescribed in the ambulatory patients were taken into account, 37 of them included in the sales ranking in our country. According to the first source, 27 of 37 medicines could be repackaged, 8 medicines would depend on the laboratory manufacturer and the 2 remaining ones could not be repackaged. According to the second source, 27 of 37 medicines could be repackaged, and the 10 remaining ones must remain in the original package. Discrepancies were observed in the information for 8 (27.6%) and 14 (37.8%) medicines in institutionalized and ambulatory patients, respectively, based on the sources used.
Conclusion: A considerable number of discrepancies in the information on the relevance of the repackaging of medications in the MDS were found between two analysed sources. These findings have already improved the quality of this professional service. It would be necessary to alert the pharmacist of the existence of the above mentioned discrepancies to be able to prevent errors from occurring at the time of repackaging the medicines in the MDS and, thus, increasing patient safety.

HP-CE003: Introducing a clinical pharmacy practice experience into pharmacy education curriculum for students of Turkey and Northern Cyprus

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Please specify your abstract type: Research abstract
Background and objective: Despite the global advances of pharmacy practice and subsequently pharmacy education, students experience insufficient opportunities to practice the activities, tasks and processes essential to deliver pharmaceutical care.

Objective: to describe the development, implementation, and assessment of a clinical pharmacy practice (CPP) experience course in internal medicine, cardiovascular, respiratory clinics and drug information centre that is newly integrated into pharmacy curriculum at a university in North Cyprus.
Setting and method: A 8 weeks structured pharmacy practice experience was designed for fifth year students. Student competence was assessed using formative OSCEs and summative written exams before and after the course, and mapped in eight main CPP competences.

The course utilized a wide variety of Learning and practical activities including rounds participation, morning case reports, interdisciplinary activities, carrying interventions, role-play, direct patient care, Formal case presentations, journal clubs and answering drug queries. Competencies tested and strengthened include: taking medication history, response to the symptoms, pharmacotherapy knowledge application, comprehensive patient assessment, data interpretation using evidence-based approach, public health counselling, drug related problems management, patient counselling and communication skills. Student perceptions and experience was assessed using semi-structured group interview and a questionnaire.
Main outcome measures: Student scores in OSCE; student's perceptions.
Results: student reported that the course met pre-set objectives with substantial learning in different areas of CPP. Students scored best in communication skills ($83.4 \pm 1.74\%$), public health promotion ($76.6 \pm 2.32\%$) and patient counselling ($68.0 \pm 2.74\%$) than in resolution of DRPs ($49.0 \pm 4.33\%$) and pharmacotherapy application ($49.0 \pm 3.37\%$), while they significantly enhanced in DI manipulation ($88.1 \pm 2.6\%$) compared to baseline assessment ($33.1 \pm 2.41\%$)($p = 0.0038$).
Conclusion: The course provided a rich experiential learning environment rather than just theoretical knowledge of clinical pharmacy. Students well perceived the course structure assessment and knowledge attained. This could be implemented in other faculties of pharmacy through Turkey.

HP-CE004: Clinical pharmacists and clinical pharmacologists: colleagues or opponents?

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Clinical pharmacy and clinical pharmacology have many similar aspects. Both areas present professionals who have groundings in drug therapy principles and who aim to optimize the efficacy and safety of therapies for patient's benefits. However, there are clear distinctions. Clinical pharmacologists are in general doctors with an additional education in clinical pharmacology. Many of these are prescribers of drugs in practice but are in usual connected to academic parts responsible for education and research. They belong to a well-recognized but small sub-specialty of medicine. In contrast, clinical pharmacists are part of a much greater group of professionals working in most hospitals in developed countries. While the former one is restricted and subordinate to distributing the drugs requested by the medical prescribers, the role of the pharmacist has increasingly developed to encircle monitoring outcomes of medicine treatment and report management, patient safety and budgetary responsibilities. Pharmacists are currently capable to take on prescribing responsibilities in developed countries and have been actively involved in collaboration in practice of prescribing with doctors. They also take on a great part in education related to rational prescribing that was once thought the area of the clinical pharmacologist. Given the difference in size of the two areas there is understandably increasing confusion in the minds of managers in health services as to the continuing role and identity of clinical pharmacology. This may illuminate, in part, the diminishing in numbers and visibility of clinical pharmacologists in certain countries. In fact, some might see the continuous development of clinical pharmacy as a direct danger to the viability and future existence of the specialty of clinical pharmacology. However, clinical pharmacy and clinical pharmacology working synergistically would serve for the well-being of the public.
Design: .
Results: .
Conclusion: .

HP-CE005: Assessment of patients' skills with hereditary angioedema

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Hereditary angioedema (HAE) is a rare disease characterized by episodic attacks of swelling which can be life-threatening. Treatment for HAE involves prophylaxis and management of acute attacks. The objective of this study was to evaluate patients' knowledge of their disease and their treatment.
Design: A questionnaire about the disease and drug treatment has been implemented. It was distributed to patients through either a pharmacist during patients stay at the hospital, or the French Association des Malades Souffrant d'Angioedèmes (AMSAO). Answers were collected by electronic or conventional mail.
Results: 39 patients completed the questionnaire. The average patients age is 25.8 ± 27.2 years. All of those interviewed could name their disease. For 23% of patients, the crisis happened unpredictably but in most cases a triggering factor was described, such as stress (21%), fatigue (18%) or an emotional shock (17%). Oedema were located mainly in extremities (31%), abdomen (19%), ENT sphere (12%) or face (11%). 17 patients (43%) reported having more than 12 crisis each year (eligible to prophylaxis), among them, 5 patients (13%) said they had no preventive treatment. All patients knew the difference between prophylactic and curative treatment of crisis. Among the 38 patients receiving treatment for crisis, 16 were able to define which treatment to be used depending on the intensity and location of the crisis. The majority of patients used Icatibant during a crisis, but the most frequently cited prophylaxis treatments were Tranexamic acid (38%) and Danazol (35%). For injectable drugs to treat acute episodes, Icatibant (subcutaneous) and C1 esterase inhibitor (intravenous) were self-administrated respectively in 79 and 8% of patients.
Conclusion: This study showed that patients generally knew their disease and its treatment. However, they are insufficiently informed on drugs to be used according to the clinical situation and especially intravenous self-administration. Therefore, it seems necessary to increase pharmacist involvement in patient's information about therapeutic strategy and drugs routes of administration. This for a major objective: an optimal self-care in a skilled patient.

HP-CE006: Implementation and evaluation of a hospital-city link on oral anticoagulants

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Hospital pharmaceutical educations (HPE) on patients with oral anticoagulant (OA) can improve their overall management by providing skills on proper use. An ambulatory monitoring is necessary to ensure good compliance and understanding of the treatment. Our study aimed at the establishment of HPE for patients with OA, the establishment of a hospital-city link in Burgundy, and an evaluation of the expectations of ambulatory health professionals (AHP).
Design: The development of HPE has been performed in our centre for patients with OA and assessed between May and September 2015. In order to ensure continuity in their support, patients then received a binding document to the attending physician, pharmacist and nursing home stating the treatment and acquired skills. A satisfaction survey, with anonymous electronic questionnaire circulated by the representative boards evaluating the expectations of AHP, took place in order to improve and make the programme more attractive.
Results: Two hundred and ninety-one patients could benefit from HPE and 252 came out with an OA. One hundred and forty-three answers were collected: 38 officinal pharmacists and 105 nurses. Ninety-seven percent of AHP have judged relevant the following stated security goals: the name of the drug, its use, its risks and to be able to inform all AHP. "Associated pathologies and treatments," "the last coagulation test" and "potential factors for non-adherence" seem necessary for the binding document. More than 90% of participants found that this action will facilitate the establishment of pharmaceutical anticoagulant educations in cities, the dialogue around the OA with the doctor, patient's compliance and will secure the treatment.
Conclusion: HPE certainly help patients. Its implementation for patients with OA in our hospital has generated a real interest. The addition of an ambulatory link allows continuing at best their support. The questionnaire has also allowed us to know the opinions of AHP involved and some improvements to the binding document may have been done.

HP-CE007: Impact of the deployment of a pharmacy team in cardiology units on securisation of medical prescription and patient therapeutic education

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Deployment of pharmacist directly in clinical services is a new priority of French health authority also we decided to integrate a pharmacy team in cardiology units. Two objectives are determined: secure and optimize prescriptions and provide therapeutic education to patients who need it.
Design: This work is an observational, prospective and monocentric study realised in cardiology units (79 beds) between November 2015 and June 2016. 1 senior pharmacist, 1 junior pharmacist, 7 student pharmacists and 1 pharmacy technician are involved in the deployment. Activities executed in the unit were: medication reconciliation, pharmaceutic interventions, exit interview with drug management plans conducted by pharmacist and therapeutic education in official education program (individual session and group session).
Results: 1640 patients received medication reconciliation a the admission. 180 medication errors have been detected by this way. Omissions were the most errors found (65%). In the same time, while the hospitalisation 344 pharmaceutical interventions were formulated and 96.6% were accepted by physicians. Concerning, therapeutic education 311 patients received an interview with drug management plans and 104 patients were integrated in the official education program (34 patients in individual sessions and 70 in group session).
Conclusion: The deployment is a complete success. The pharmacy team was quickly integrated in cardiology units and patients were totally satisfied of this action. The next objective will be to demonstrate that therapeutic education dispense by pharmacist can decrease re-hospitalisation of patients with cardiovascular diseases.

HP-CE008: Pharmacist intervention in multidisciplinary tasking of cancer patients

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Please specify your abstract type: Research abstract
Background and objective: Cancer is a multi-faceted condition requiring a multidisciplinary approach when treating patients, thus professionals must understand their contribution as well as that of others. The objective of this study was to identify professional tasks perceived by other healthcare professionals as the responsibility of the oncology pharmacist.
Setting and method: The study took place within Sir Anthony Mamo oncology centre, Malta. A questionnaire developed by Dohler et al[1] was distributed to healthcare professionals. This consisted of a list of tasks which take place within this setting and contains three categories; "Patient Education and Counselling", "Drug Related Problems" and "Authorisation of Medication". Participants were asked to associate the task to the profession by determining whether each profession had the main responsibility for undertaking the task, a supportive responsibility, or whether they should not be involved at all. Data was analysed using SPSS® version 22. The Chi squared test was used to assess any significant association between categorical variables.
Main outcome measures: Perception of the oncology pharmacist's role by healthcare professionals.
Results: From a total of 84 completed questionnaires, it was found that for tasks listed as "Patient Education and Counselling", 18% were considered as the pharmacists' main responsibility, whereas 42% were believed to be supportive roles. Main tasks included educating the patient regarding which medication to avoid during their treatment. For tasks listed as "Drug Related Problems", 20 and 45% of tasks were found to include pharmacists as having main and supportive roles respectively. Supportive tasks included dose calculation of anti-tumour therapy required per patient. In the "Authorisation of Medication" category pharmacists' main roles carried a total of 13% and supportive that of 50% of the total number of tasks. This included ordering anti-tumour medication.

Further analysis of data revealed that years of experience did not have a significant association with results obtained (p-value = 0.074); however physicians, pharmacists and allied healthcare professionals were found to involve the pharmacist most extensively (p-value = 0.000).
Conclusion: Tasks associated with the pharmacist were representative of the current role they possess within the oncology setting; however this association was limited to professionals having a close working relationship with pharmacists. This may be due to the lack of

an established multidisciplinary team approach within this scenario thus limiting the perception of the oncology pharmacist's contribution. An implemented multidisciplinary team may improve communication between the professionals involved and optimises patient care.

Reference

1. Dohler N, Jaehde U, Schaefer M. Integrating the Pharmacist into Cancer Medication Management [dissertation]. University of Bonn; 2011

HP-CE009: Monitoring adherence tool for patients treated with DAAs for HCV: is it effective?

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Direct acting antivirals (DAAs) have become elective treatment in Italy for patients with chronic hepatitis C virus (HCV) with advanced fibrosis. As compliance to HCV treatment is challenging, a combined approach between Pharmacists and Hepatologists has been endorsed to manage these treatments. When DAAs are dispensed at the Hospital Pharmacy counter, patients are informed by a Pharmacist about all issues related to treatment and a "Patient Information Leaflet" is given out consisting of medication information and a compliance diary. The diary, filled in daily by the patient with medication administration and ADRs, is returned to the Pharmacy monthly. The objective is to determine the efficacy of the monitoring tool.
Design: Fifty-nine patients received the monitoring tool (February 2015-June 2016). Data collected: demographic characteristics, treatment regimen, drug dispensing, adherence and ADRs.
Results: Thirty-seven patients (63%) returned the monitoring tool to the Pharmacy. Patients' characteristics: 19 females (51%); mean age 65 ± 10.21 years (63 ± 10.15 years total population). The data show that women were more willing to fill in the compliance diary compared to men (86% females; 49% males) and the mean age was higher showing that younger patients were less compliant. Treatments ± ribavirin: sofosbuvir (12 patients with diary/14 total), ombitasvir/paritaprevir/ritonavir + dasabuvir (10/12), sofosbuvir/ledipasvir (11/20), sofosbuvir + simeprevir (1/5), ombitasvir/paritaprevir/ritonavir (1/4), sofosbuvir + daclatasvir (1/3) and simeprevir + IFN (1/1). Patients treated with ombitasvir/paritaprevir/ritonavir + dasabuvir (83%) were the most adherent while those treated with sofosbuvir/ledipasvir (55%) the least. Since the latter treatment has the least complex regimen compared to the other medications, the low compliance to the monitoring tool is less important. Therapeutic adherence is high (99%) however two administration errors were identified (4-day treatment interruption and double dosing). ADRs were reported by 16 patients (48%). The most frequent side effects were: headache, fatigue and nausea. Unknown ADRs such as epistaxis and hyperglycaemia were observed.
Conclusion: Despite not all patients returned the diary, the tool has been shown to be a crucial element in raising awareness about compliance and ADRs. Through a multidisciplinary approach, Pharmacists' expertise has contributed to improve the management of patients' treatment achieving better therapeutic adherence.

HP-CE010: Improving efficiency in hypoglycemic therapy for a sustained public healthcare

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Please specify your abstract type: Research abstract
Background and objective: In type 2 diabetes, second anti-hyperglycaemic agent after metformin should be chosen considering efficacy, side effects, weight, hypoglycaemia risk, patient preferences but also cost, as it should be insulin therapy in types 1 and 2. The Andalusian Public HealthCare has developed two evidence-based indicators in diabetes to measure compliance between different Areas and doctors, and to promote a more cost-efficient prescription. In this study we describe the strategies to improve compliance with these indicators in an Internal Medicine (IM) Unit.
Setting and method: Retrospective observational study that measures the prescription percentage of two quality indicators before and after an educational program consisting of clinical sessions, meetings with the head of the IM team and/or meetings with medical and management direction. Doctors also should be informed on their results every 2 months. The prescription rates were measured in January 2015, when program was starting, and 1 year after. Prescribing data were obtained from the computerized pharmacy records of reimbursed drugs Program (Microstrategy®) of all members who belonged to the IM team at least 1 month during the time studied.
Main outcome measures: Percentage of oral antidiabetics (OA) considered as first-line drugs (gliclazide, glipizide and glimepiride) prescribed versus total of OA prescribed, and percentage of premixed and biphasic insulins versus total insulins (excluding rapid-acting) prescribed. Number of clinical sessions, meetings and submitted reports.
Results: Three clinical sessions were given by clinicians and a pharmacist to the MI Team (8 doctors), plus two meetings were held between the pharmacist, Chief Doctor and Medical Director. Reports were sent to doctors in 100% of possible periods. First selection OA (gliclazide, glipizide and glimepiride) prescription rate was 7.59% at the beginning and increased to 28.74% 1 year later and the percentage of premixed and biphasic insulin rose from 13.27 to 39.54% at the end of the study.
Conclusion: Due to an of educational prescribing program based on clinical evidence guidelines, prescription of oral antidiabetics and insulin therapy was improved in terms of efficiency in an Internal Medicine Unit. This has resulted in a significant reduction of cost per treatment, what is important for the sustainability of the public HealthCare.

HP-CE011: Evidence based indicators and compliance by an orthopaedics and traumatology unit

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Please specify your abstract type: Research abstract
Background and objective: When an NSAID needs to be prescribed, the selection should be based on the assessment of the individual risk

factors, including gastrointestinal, renal and cardiovascular risks. Regarding fracture prevention, cost-effectiveness is the key to first-line drugs choice. The Andalusian Public HealthCare has developed two evidence-based indicators related to Bone and Joint pathologies, to measure compliance between different Areas and doctors to these indicators and therefore its unequal application of clinical guidelines. In this study we describe the strategies to improve compliance with these indicators in an Orthopaedics and Traumatology (O&T) Unit.

Setting and method: Retrospective observational study that measures the prescription percentage of two quality indicators before and after an educational program consisting of clinical sessions, meetings with the head of the O&T team and/or meetings with Medical and Management direction. Doctors also should be informed on their results every 2 months. The prescription rates were measured in January 2015, when program was starting, and 1 year after. Prescribing data were obtained from the computerized pharmacy records of reimbursed drugs Program (Microstrategy®) of all members who belonged to the O&T team at least 1 month during the time studied.

Main outcome measures: Percentage of NSAIDs considered as first-line drugs (naproxen and ibuprofen) prescribed versus total of NSAIDs prescribed, and percentage of alendronate versus total of drugs approved for fracture prevention. Number of clinical sessions, meetings and submitted reports.

Results: Two clinical sessions were given by a pharmacist to the O&T Team (9 doctors), plus two meetings were held between the pharmacist, Chief Doctor and Medical Director. Reports were sent to doctors in 100% of possible periods. Naproxen and Ibuprofen prescription rate was 17.16% at the beginning and increased to 47.98% 1 year later and the percentage of alendronate prescribed rose from 7.87 to 32.05% at the end of this period.

Conclusion: Due to an of educational program, the prescription of NSAIDs and drugs for fracture prevention is now more in line with the Clinical Guidelines in the Orthopaedics and Traumatology Unit, what means an improvement in safety and cost-efficiency in our HealthCare Area.

HP-CE012: Pharmaceutical analysis: tool for patients' secured access to treatments

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Please specify your abstract type: Research abstract

Background and objective: Hospitals must insure patients' access to safe treatments. Computerized pharmaceutical analysis is made every day by pharmacy residents framed by pharmacists. After clinical and biological datas collection with software Crossway® (Maincare), pharmaceutical interventions (PI) are transmitted to doctors with Pharma® (Computer Engineering). The way of transmitting PI depends on risk's and emergency's degrees (by computer, by phone or during medical round). Then, individual dispensation is made twice-daily.

The aim of the study is to analyse from a qualitative and quantitative point of view the pharmacy resident's activity in pneumology service.

Setting and method: The study included all the daily prescriptions of three units of pneumology from January to April 2016. PI and data were extracted from the software Pharma® and collected in a summary Excel® table: nature of potential errors, nature of the proposals offered by residents, way of transmitting PI, and rate of PIs' acceptance.

Main outcome measures: Potential errors are collected by following the validated and standardized criterions of French Society of Clinical Pharmacy.

Results: Over 4 months, 7968 lines of prescriptions from 412 patients aged 67 years old (median [28–85]) were evaluated. Sex ratio (M/F) was 1.46. One hundred and two medication problems have been found: overdose (21.6%), contraindication (IC) (20.7%), under dosage (7.8%), wrong rhythm of administration (7.8%), forgotten treatment (7.8%), dose unit error (5.9%), antibiotic indication missing (5.9%), drug not listed in the hospital formulary (4.9%), potassemie unchecked (4.9%), dose unadapted to renal function (4.9%) or to INR (2.9%), treatment not indicated (1.9%), wrong administration route (0.98%), antibiotic unreevaluated (0.98%), redundancy (0.98%). The proposals made to the doctors were: stopping treatment (25.5%), posology adaptation (19.6%), substitution (19.6%), dose unit modification (7.8%), adding information about the indication (6.7%), treatment renewal (6.7%), administration modalities changing (4.9%), biological monitoring (3.9%), therapeutical monitoring (2.9%), antibiotic treatment reevaluation (2.94%). All PI were made by informatical way. All medicinal classes were found in this study. Hydroxyzine, cyamemazine and escitalopram were often found in contraindication errors. They are involved in cardiac disorders with QT extension.

PIs' acceptance rate was 82%.

Conclusion: This study shows the importance of pharmaceutical analysis on the quality of access to healthcare. The statement of PI allows us to identify the most frequent errors, warn and prevent doctors from these potentials errors by proposing solutions. The rate of acceptance is high which means that doctors agree with our proposals. Pharmacists' implication in clinical pharmacy activities and their participation to medical rounds will improve this activity and by the way optimization of the management of the patient.

HP-CE013: Proton pumps inhibitors (PPIs) or the rout of their prescriptions?

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: PPIs consumption is largely practiced in Europe, because of their excellent tolerance in short time, and their misuse with regard to indications, dosage and treatment duration (In 2007, France was the 2nd,PPI consumer in EU). The result is drug iatrogenic disease and unjustified expenses in health insurance.

Objectives: Assess the PPIs consumption and appreciate conformity according to the latest recommendations for relevant prescriptions of PPIs.

Design: Prospective study via an audit (model created internally), every hospitalized patients with a PPIs prescription, in two hospitals, on a given day. Data collected through the patient's medical record.

Prescriptions conformity defined, by taking account of indication level (1: approved by the MA (marketing authorization), 2: non-valid but certified by international publications or learned society, 3: non-valid without scientific proofs, 4: non-indicated), dosage and treatment duration.

Analysed situations with no conformity (inappropriate dosage despite conform indication, treatment duration unjustified and PPIs prescribed in wrong indications (3 and 4).

Results: 172 patients have PPIs prescriptions (78 male, 25 £ 99 years] among 325 patients (53%).

45% PPIs prescriptions began during the hospitalization.

53 (30%) of the PPIs prescriptions are in accordance with the experiment (indication + dosage +treatment duration), as well in

community than in hospitals. Details: indication level 1 (92.5%), indication level 2—GI bleedings—(7.5%).

119 of the PPIs prescription aren't in accordance. Details: treatment duration (6%), dosage (3%), indication level 3—prevention of iatrogenic bleeding risk without NSAIDs prescription-(75%), indication level 4 (16%). Regarding level 3 indications, PPIs are always taken with anticoagulant and/or platelet aggregation inhibitors and/or corticoid.

Conclusion: The part of PPIs prescriptions in this study is high. The majority of non-conformity is caused by PPIs prescribed with an indication level 3.

The improvement program will involve feeding back PPIs' good use, to educate physicians (junior and senior) about the relevant PPIs prescription and give advice in complex situations (indication 3 and 4). In collaboration with prescribers, shutdown protocol of PPIs, prescribed in long term, could be implemented in order to avoid the acid rebound effect after brutal treatment discontinuation.

HP-CE014: Impact of a self-management program on inflammatory bowel disease patient in a university hospital

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Inflammatory bowel disease (IBD) is a group of chronic inflammatory diseases that affects the colon and the small intestine. Crohn's disease and ulcerative colitis are the principal types of IBD and involve severe diarrhoea, pain, fatigue and weight loss. IBD affects young adult with an increasing annual incidence (2.5 million concerned people in Europe). Patients with IBD are affected by somatic or psychosocial problems and patient education may contribute to their well-being. Since September 2010, individual educational sessions have been set up and since September 2015, collective educational sessions. These sessions have been developed to improve patient's understanding of treatment options and medical adherence. The aim of this study was to demonstrate that a therapeutic education program (TEP) could have a significant effect on IBD patient's skills with regards to their disease.
Design: After individual education sessions with a nurse, a group education session was introduced for outpatients with IBD. The collective session include approximately six to ten patients and is organized in a half day workshops (about disease and treatment) conducted by a multidisciplinary team. The workshops were performed by an education nurse, two hospital gastroenterologists, two hospital pharmacists and a community pharmacist. These sessions were wrapped up by a short satisfaction and knowledge questionnaires.
Results: In total, 141 IBD outpatients participated to the educational program, 112 patients with Crohn's disease and 29 patients with ulcerative colitis (52.5% male; median age: 39). For the individual educational sessions, two competence questionnaires were performed about anti- tumour necrosis factor alpha (TNFα) therapy: one about general knowledge, another one about self-administration subcutaneous injection. 43 patients completed these questionnaires. For the collective educational session, the competence questionnaire developed consisting of six questions covering few items: disease, symptoms, treatment and complications. 14 patients completed this questionnaire. After the questionnaire, each participant received a summary document about drugs, side effects, therapeutic and medical advice.
Conclusion: The patient education program contributes to the improvement of self-management skills when it comes to IBD. Pharmacists joining medical specialists and nurses provided pharmaceutical care with a positive impact on compliance, which is a determining factor for the success of the treatment and the quality of life in patients living with an IBD. This program will be continued and a new program for teenagers is to be established as well.

HP-CE015: Desensitization study of paclitaxel and carboplatin drug in the ovary tumor protocol in Cuf Descobertas Hospital

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: The hospital pharmacy should be an integral part of the multidisciplinary team and implement strategies that meet the patient's needs. Pharmacy, in oncological area, is in constant renewal. José de Mello Saúde uses paclitaxel/carboplatin protocol as first line in ovarian tumor.

Although the antineoplastic agents are essential for the treatment of cancer, they can also cause hypersensitivity reactions, which may carry serious consequences.

Both immunoallergologist and oncologist create a desensitization protocol, which allows the reintroduction of the drug with greater security. The desensitization protocols involves the gradual administration of small quantities of the drug, resulting in a refractory period of the white blood cells (mastocytes) and a lower production of cytokines until the dose has been totally administrated.
Objective: To evaluate the efficacy of methods used to prevent and treat hypersensitivity reactions of carboplatin and paclitaxel, in order to carry on the treatment.
Design: A retrospective review of the patient files was performed in the Day Hospital between 2014 and 2016. We included only patients with moderate to severe immediate hypersensitivity reactions ($\leq$24 h) receiving carboplatin and paclitaxel.

The desensitization protocol Brigham and Women's Hospital was applied using three solutions with increasing concentrations (dilution 1: 100, 1:10 and 1:1) in twelve successive steps for about 6 h.
Results: In the period 2014–2016 were desensitized five patients with platinum group drugs, carboplatin (n = 4) and paclitaxel (n = 2) and the total elapsed six desensitization. Almost all patients reached the scheduled daily dose, except a patient, which suspended the desensitization program for disease progression.
Conclusion: The desensitization protocol allowed the successful reintroduction of antineoplastic drugs in patients with a history of hypersensitivity reactions, in order to treat the disease.

HP-CE016: An experience of medication reconciliation in two general hospitals: what impact?

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Please specify your abstract type: Research abstract
Background and objective: In the context of harmonization of clinical pharmacy activities within our region, a common medication reconciliation project was developed between two general hospitals. The objectives of this study were to initiate, a common medication reconciliation activity in the two hospitals, to analyse the results, and to communicate to all professionals in the area.
Setting and method: A working group composed of pharmacists of each hospital was formed to develop analytical documents. A 3-month prospective study was conducted in two general hospitals: in the first one, in an emergency department, and the other one, in a medicine department. Patients included in the study were either elderly and/or had polypharmacy and/or were hospitalized for iatrogenic reason. At

the point of admission and discharge for each patient, the pharmacist has completed a conciliation record, and has detected potential discrepancy. Unintentional discrepancies were reviewed and corrected by doctors. At the discharge, medication changes were sent to general practitioner and community pharmacies. A satisfaction survey about this process was sent to 39 healthcare professionals (GP, pharmacist and nurses). A medication reconciliation's workshop was organized for a hundred healthcare professionals in the area.

Main outcome measures: At the point of admission, the conciliation record included the list of patient's home medication, admission medical orders, and the types of discrepancies. At the discharge, drugs prescribed were compared to admission medical orders. The satisfaction survey included seven questions to assess the process.

Results: During the study period, 35 patients were included corresponding to 351 prescription lines. Reconciliation process required about 47 min per patient. We identified at admission 33 unintentional discrepancies. The most common unintentional discrepancy was the omission of medication (61%). 25% concerned Alimentary tract and metabolism group. At the discharge, no discrepancies were found; the process required 35 min per patient.41% of healthcare professionals answered to our satisfaction survey to date. 100% are satisfied and believe that the process of medication reconciliation secures the patient medicinal treatment.56 healthcare professionals were present at the medication reconciliation's workshop, indicating an interest in the process.

Conclusion: In this experience of medication reconciliation, due to unintentional discrepancies observed, we had better implement this activity in the two general hospitals. A pharmacist devoted to this activity will be hire in each hospital. This relevant practice is well accepted by clinician. Thus, we will improve communication with GP and community pharmacies.

HP-CE017: Use of a specific therapeutic patient education programme in sickle cell disease: the OMCA* method with the "Malles des Savoirs®**"

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: The sickle cell disease (SCD) is a genetic, chronic disease, paroxystic in its unpredictable and polymorphic acute events. This most frequent genetic illness in the world is a major public health concern in French overseas territories. Haute Autorité de Santé (HAS) recommendations for the care of SCD advocate the development of therapeutic patient education (TPE). In Martinique (French West Indies), we consider the population of patients with SCD in 1500 among which 1000 are followed in the Adults Sickle Cell Centre (ASCC). One of the actions carried out by the ASCC of our hospital is the TPE.

The objective is to set up an original (because specific in the SCD) TPE method, which enables the patient to live better with his disease on a daily basis, by teaching him and his family to recognize prematurely certain complications.

Design: We analysed needs from the outcomes of a national French survey has which one participated Martinique and retained the following themes: the red blood cell, the genetic transmission, the main symptoms, the role of the water, the medicinal treatments and the questions of everyday life. We chose the innovative educational tools called the "Malles des Savoirs®**", a set of unusual experiments, accessories and models, which, by using a method of active pedagogy "OMCA*: Observer, Manipuler, Comprendre, Agir ***", value the learner by offering to him to manipulate and to experiment by himself.

Results: In 2016, 24 healthcare professionals (doctors, pharmacists, nurses) and a president of patients with SCD Association followed one week of formation in the OMCA* method for the animation of six workshops for 10–15 teenagers and adults. Every "Malle des Savoirs®**" contains the necessary material for the animation and a Guide of the organizer, including, for every tackled issue, a generic introduction, a presentation of the themes, the index cards of educational animations proposing the activities and one time of synthesis grouping the approaches concepts. The interactive manipulation allows the appropriation of the discoveries become then long-lasting experiences. A final evaluation allows to spot the problems met by learners to understand, to analyse the difficulties and to proceed to the useful adaptations during the next activity.

Conclusion: This tool, playful and perfectly adapted to the SCD, engages, accompanies and helps patients in the construction of their own knowledges to return them actors of their disease.

In 2017, we shall estimate the impact of the development of this specific TPE programme of the patient with SCD.

* CALAO Formation, RoFSED (Réseau Ouest Francilien de Soins aux Drépanocytaires).

** Suitcases of the Knowledges.

*** "To Observe, to Manipulate, to Understand, to Act".

HP-CE018: Frequency of unintentional discrepancies at discharge from hospital: a systematic review

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Please specify your abstract type: Research abstract

Background and objective: To investigate the frequencies and clinical relevance of unintentional medication discrepancies, between preadmission medication lists and discharge medication lists, at discharge from hospital. A discrepancy is considered unintentional if there is no documentation explaining the intent of the medication change or if it is unintentional according to the prescribing physician.

Setting and method: Systematic literature review.

Main outcome measures: Frequency of unintentional medication discrepancies per patient and per medication; frequency of clinically relevant medication discrepancies.

Results: Of the patients included 14–88% experienced at least one unintentional medication discrepancy. Of the medications used by the patients, 3–50% were involved in unintentional medication discrepancies. Of unintentional medication discrepancies found in five studies, 15–58% were clinically relevant.

Conclusion: The review documented a high frequency of medication discrepancies, of which many were clinically relevant. Ensuring sufficient communication of correct and complete medication information in transitions of care is a process which should be better implemented, to enhance patient safety.

HP-CE019: Frequency of undocumented medication errors at discharge from hospital: an observational study

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Please specify your abstract type: Research abstract
Background and objective: To investigate the frequency of medication changes not documented in the discharge letter, at discharge from hospital, for both regular, as needed and over-the-counter medications, supplements and herbal remedies (OTC). Secondary, differences between variables and patients with undocumented medication changes were investigated.
Setting and method: The patients included were all part of the intervention groups from an intervention study, conducted by one of the authors (TG), from April 2013 to December 2014. The best possible discharge medication list was compared against the medication list in the discharge letter and any discrepancy between the two lists was noted, taking into account the text in the discharge summary.
Main outcome measures: The proportion of patients affected by at least one undocumented medication change at discharge and proportion of medications with undocumented changes. The proportion of patients was compared using a test according to gender, age, number of preadmission/discharge medications and length of hospital stay.
Results: Two hundred patients were included in the study. The proportion of patients experiencing at least one undocumented medication change for the three subgroups: regular medications; as needed; OTC, were 78, 65 and 55% respectively. The proportion of medications involved in undocumented changes for the three subgroups were 34, 71 and 77% respectively. The proportion of patients experiencing undocumented medication changes was significantly higher in patients with more than five regular medications at admission, ($p < 0.001$) and at discharge ($p < 0.001$). In both regular and as needed medications, the proportion of patients experiencing undocumented medication changes was higher in patients hospitalized longer than 2 days ($p < 0.001$ and $p: < 0.05$ respectively). For OTC, the rate of patients experiencing undocumented medication changes, was higher in females ($p: < 0.05$).
Conclusion: A high proportion of patients are affected by at least one undocumented medication change and many medications are involved in undocumented changes. Correct and complete medication information at admission and discharge may resolve many of these errors, ensuring patent safety at transitions of care.

HP-CE020: Participation in courses at learning and mastery centre and the impact on patients' beliefs about medicines

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Patients with chronic diseases are referred to Learning and Mastery centre (LMC) where the main objective is to support patients to cope with chronic diseases. Education about the disease(s) (by a physician) and the medication treatment (by a clinical pharmacist) are important elements of these courses. Little is known about how the participation at LMC influences the patients' beliefs about medicines.
Design: Patients ≥18 years participating at a 2 days course at LMC regarding acute coronary disease or atrial fibrillation were included in the period September 2014- December 2015.

The patients filled out 'Beliefs about Medicines Questionnaire'(BMQ) before and immediately after the course, and also 3 months after the course to evaluate their concern (BMQ-concern) and necessity (BMQ-necessity) of their cardiovascular medications. The BMQ scores were dichotomized at scale midpoint (scale 1–5) to evaluate high and low concern and necessity, and these scores were combined to calculate the 'ambivalence'and 'acceptance', 'sceptical', and 'indifferent'rate to medications, and also the mean scores of the BMQ were calculated.
Results: Fifty patients were included, mean age 65 years, 14% were women, using a mean of 3.5 cardiovascular drugs taken regularly. Fifty-eight percent of the patients had high concern prior to the course, whereas 37 and 60% had high concern immediately after and 3 months after the course, respectively. Ninety-nine percent of the patients assessed their medication as highly necessary before the course, 100% immediately after, and 97% 3 months after the course.

The mean score for BMQ-necessity was 3.82 (SD 0.64) prior to course and 3.88 (0.56) and 3.78 (0.69) immediately after and 3 months after the course, respectively. The corresponding scores for BMQ-concern were 2.58 (0.78), 2.39 (0.72), and 2.57 (0.77), respectively.

The proportions of patients classified to be 'accepting'were 40, 63, and 43% at the three time points, respectively, and the corresponding numbers for patients classified as 'ambivalent'were 56, 38, and 60%, respectively.
Conclusion: The LMC course had an immediate positive influence on the patients' concern about their medicines and on 'acceptance'. However, the effect seems not to persist over time. A closer follow-up could be discussed.

HP-CE021: Tell me your "narratives" and I tell you what kind of pharmacist you are: narratives as a tool for better understand and improve pharmacist profession

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Please specify your abstract type: Research abstract
Background and objective: The Narrative-Based Medicine was intended primarily for health care professionals, and the use of narratives can be applied in any settings to better understand the meaning of own profession, to rediscover/strengthen the motivation to work as a team. The Italian Society of Hospital Pharmacist (SIFO) promotes a qualitative study aimed at getting the real picture of pharmacist's role within the National Health System (NHS), the interaction with other health professionals and patients through the *narratives* of under specialization pharmacists (UI) and pharmacists already working in the NHS (HP). These data can be further investigated to increase the perceived value/role of the pharmacist.
Setting and method: SIFO HPs and UIs joining the National Pharmacy School Specialization Network were invited to participate. All pharmacists participating to the study were given a semi-structure interview. The methodology was developed within the conceptual framework of the Grounded Theory (GT) a research methodology that arises in the context of qualitative research. GT is a systematic methodology involving the construction of theory grounded in data systematically gathered and analysed.
Main outcome measures: Analysis of *Narratives. Narratives* were analysed according to the classifications of Kleinman, Frank and Launer and Robinson together with Transitional Analysis (TA).
Results: A total number of 31 *narratives* were collected (16 UPs and 15 HPs). *Narratives* from both group of participants show the need of strengthening the professional identity already in the early years of the pharmacy curriculum and more effectively during the years of

specialization as well as the need of being educated to deliver patient-centred care as members of an interdisciplinary team.
Conclusion: This is the first step of a study that also includes patient's contribution to the definition of pharmacist's professional identity.

HP-CE023: Impact of pharmaceutical counselling on cancer patients' information desire and treatment satisfaction

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Please specify your abstract type: Research abstract
Background and objective: Appropriately educating onco-/haematological patients is a prerequisite to improve patient empowerment, satisfaction and outcomes. Objective: to quantify patients' information need and satisfaction on cancer drug therapy and how this can be improved by clinical pharmacist's counselling. Additionally, the pharmacist's impact on therapy quality and costs is assessed.
Setting and method: Setting: prospective, randomised study in the ambulatory (26 beds) and in-hospital onco-/haematology unit (34 beds) in a tertiary hospital. Inclusion criteria: adult patients on intravenous or oral cancer therapy, with informed consent. Methods: All patients were asked to complete standardised surveys (*Extent of Information Desired,* EID; *Patient Satisfaction with Cancer Treatment Education,* PS-CaTE and *Cancer Satisfaction of Treatment Questionnaire*, CTSQ) on three occasions (at the start of a new therapy, during the second cycle and after 3 months). Patients in the intervention group received additional counselling by a clinical pharmacist including medication reconciliation and review. Control patients received standard of care (information on drug therapy was provided by the onco-/haematologist, followed by limited administration instructions by nursing staff).
Main outcome measures: patient information desire and satisfaction on cancer treatment
Results: 83 patients were included over a period of 6 months (control ($n = 43$); intervention ($n = 40$)). No significant differences were found between contact moments or patient groups for EID, PS-CaTE and CTSQ-scores. However, scores for PS-CaTE on medication side effects were positively correlated with contact moment ($r_s = 0.198$; $P = 0.022$). Multiple linear regression analysis showed a similar trend ($B = 0.207$; $P = 0.101$). Patients receiving first-line therapy ($B = 0.270$; $P < 0.001$) and ambulatory patients ($B = 0.027$; $P = 0.018$) were more satisfied on treatment education. The clinical pharmacist documented more drugs than were recorded in the patient file (8 vs. 4.9 drugs/patient; $P < 0.001$). On average, each patient required two pharmacist's interventions per occasion. Intervention acceptance rate on drug related problems was high (72%). During the study, interventions shifted from therapy adjustments towards advice on supportive measures (1st contact: 12%; 3rd contact: 41%). Improved medication stock control on the ward led to a savings of €36,890.
Conclusion: The clinical pharmacist can play an important role on the onco-/haematological ward, leading to improved drug reconciliation, patient counselling and cost savings. Hospitalised patients and patients receiving salvage therapy appear to have higher educational needs, making them possibly overlooked target groups. Finally, pharmaceutical counselling should be repeated and primarily focused on side-effect management to have a meaningful impact on patient satisfaction.

HP-PC035: Perceptions of Quebec and French hospital pharmacists about biosimilar interchangeability

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Please specify your abstract type: Research abstract
Background and objective: Europe is ahead of the USA and Canada on approval, regulatory and marketing aspects of biosimilars. However, there is still uncertainty about interchangeability and substitution of biosimilars. The aim of the study is to assess pharmacists' perceptions about biosimilar interchangeability.
Setting and method: A cross-sectional study was carried out in June-July 2016. Hospital pharmacists from Quebec and France were invited to respond to an online survey of nine questions (Surveymonkey®, Palo Alto, CA, USA). The survey focuses on pharmacist's exposition to biosimilars (general knowledge, dispensing) and their perceptions about biosimilar interchangeability. A 5-item Likert scale was used to answer to 15 statements based on key issues about biosimilar interchangeability.
Main outcome measures: Levels of agreement on biosimilar interchangeability key issues.
Results: A total of 229 pharmacists responded (62% in Quebec vs. 38% in France). The global response rate is: 27% (23% Quebec vs. 34% France) ($N = 229/880$). 64% attended at least to one conference on biosimilars (57 vs. 74%). 36% had already dispensed biosimilars (7 vs. 81%). More than 95% of the pharmacists knew that: biosimilars can cause immunogenicity, clinical studies are requested for their approval, automatic substitution is not permitted. 43% considered that post-marketing surveillance for biosimilars should be reinforced. Pharmacists considered that biosimilars are cheaper than the reference product (89 vs. 75%). There was no difference between the level of agreement of French and Quebec pharmacists for the 15 statements. Pharmacists agree that a list of biosimilar and interchangeable biologic products is necessary (85 vs. 77%), using the international non-proprietary name to prescribe a biological product can create confusion between the reference product and its biosimilar (60 vs. 55%), pharmacists should check if patients already experienced an immunogenic reaction before dispensing a biological product (82 vs. 70%). Pharmacists disagree that a biosimilar can be used for all the indications of the reference product (53 vs. 46%).
Conclusion: Perceptions of Quebec and French hospital pharmacists about biosimilar interchangeability issues are very similar. This study highlights the need to deal with the lack of clarity of national guidances. Clinical studies on biosimilar interchangeability must be conducted in the future to help pharmacists and physicians to take clear-headed decisions.

HP-PC036: Drug narcotic status: impact on practices in paediatric French hospitals

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Please specify your abstract type: Research abstract

Background and objective: Analgesics are essential drugs in hospitals and especially in emergency units. Medical and nurse staffs are used to the narcotic status of opioids. For some drugs, a regulatory change to narcotic status can discourage their use. For others, it could limit their access particularly in developing countries; that's why WHO did not recommend ketamine to be placed under international control (http://www.who.int/medicines/access/controlled-substances/recommends_against_ick/en/). Yet, the French Drug Agency has recently considered to register drugs containing ketamine as narcotics. The aim of this study was to assess the impact of this possible regulatory change on the pharmaceutical and medical practices in some paediatric French hospitals.
Setting and method: The survey was conducted in January–February 2016 in four Parisian paediatric hospitals: four pharmacies, Paediatric Neurology and Anaesthesia departments, Intensive Care Units and Pain Management Services.
Main outcome measures: Pharmacists, clinicians, health managers and nurses were interviewed, using a standardized questionnaire with closed and opened questions, on the drug circuit including ordering, storage, distribution, prescription, administration and destruction.
Results: All the 20 health professionals (five pharmacists, ten clinicians, five nurses) indicate that the change to narcotic status would not preclude the use of an analgesic drug. They consider that the pharmaceutical aspects (dispensation, storage and transport, etc.) are not limiting, provided that clinical usefulness is demonstrated: short action onset allowing rapid efficacy, short duration of action allowing the replacement by another drugs if needed, and moderate clinical monitoring. Change to narcotic status was rather seen as advantageous since allowing better traceability, use and prescription.

Half of the pharmacies (n = 2/4) had a computerized register of narcotics and 80% of care units (n = 4/5) had a drug staffing in addition to nominative prescriptions, which was used in all care services. The drugs were kept into secured rooms. None of the emergency units (n = 0/5) had a computerized secured cabinet.
Conclusion: According to this survey, narcotic status is not a limiting factor for a drug use in paediatric hospitals, when its clinical usefulness is clearly demonstrated.

To promote its use, it is important to inform medical and nurse staffs and include it into care protocols. Beyond the nominative prescription, implementation staffing is a key step.

HP-PC038: Assessment of port-catheter complications in cancer patients: impact of clinical pharmacist care

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Please specify your abstract type: Research abstract
Background and objective: Port-A-Cath is an implanted venous access device most commonly used for frequent or continuous chemotherapy administration. However, the procedure and its subsequent maintenance are not free of complications and requires additional intervention by the clinical pharmacist who can provide further patient care to make a positive impact on.
To assess the effective provision of appropriate patient counselling offered by a clinical pharmacist on reducing Port-A-Cath related-complications in cancer patients.
Setting and method: A controlled prospective observational study carried out on 110 patients newly diagnosed with cancer eligible for chemotherapy administration at the oncology unit. Assessment of Port-A-Cath related-complications were assessed at regular schedule of chemotherapeutic protocols administration.
Main outcome measures: To assess, reduce and solve Port-A-Cath related-complications.
Results: The most significant Port-A-Cath related complications were skin rash 55.5% ($p < 0.05$) with occurrence in males (n = 40) and females (n = 21), skin erythema 5.5% with equal occurrence in both genders, followed by skin discharge 1.8% with also equal occurrence in both genders. A high occurrence of skin rash 88.2% occurred among diabetic cancer patients. A significant improvement in Port-A-Cath related complications after the provision of patient counselling by the clinical pharmacist was observed as skin rash (3.6%), skin discharge (0.9%), and skin erythema (0.9%).
Conclusion: Results of this study pointed out the essential role of clinical pharmacist in argumenting patient care and improving Port-A-Cath related-complications in cancer patients.

HP-PC039: The effect of medication review in elderly inpatients: the prospective study "FARMACHECK"

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Please specify your abstract type: Research abstract
Background and objective: Polytherapy, frequently used in the elderly, is associated to an increased risk of potential drug–drug interactions (pDDIs) and adverse drug reactions (ADRs). Literature demonstrated that medication reconciliation and medication review performed by hospital pharmacists are correlated to drug related problems (DRPs). Aim: to define a structured and feasible model where hospital pharmacists support clinicians identifying DRPs and promote the safe use of medicines.
Setting and method: Prospective, feasibility study conducted in four internal medicine wards of a hospital in Northern Italy. Inpatients (≥65 years old, treated with ≥5 drugs) were consecutively included; the recognition/reconciliation process was performed by pharmacists in order to identify changes between prescription profile at home and during the admission (active principles, dose, administration route). These changes were classified as intentional documented discrepancies (ID), not documented (IND), not intentional (NI). Prescriptions during the first 24-hours of hospitalisation were analysed to retrieve DRPs (DDIs, inappropriate medications for elderly, off-label, over/under dosage, duplications, ADRs) then discussed with clinicians. Based on literature, referring almost 1 DRP in 70% of patients, a sample size of 50 patients should allow an estimate of DRP rate over 50% (need of intervention) with a 80% power and a confidence interval of 95% (software STATA version 12.0).
Main outcome measures: Rate and type of: discrepancies, DRPs at admission and discharge, pharmacists consultations accepted by clinicians.
Results: Ad interim results are presented. Between October/2015-February/2016, 30 inpatients (16 male, 85.4 mean age) were included. Overall, patients were admitted with 257 drugs used at home and 240 prescribed during the first 24-hours; pharmacists retrieved 99 discrepancies (45%ID, 52%IND, 3%NI) and 118 DRPs, of which 57% DDIs, 1% off-label, 3% overdoses, 3% duplications, 30% inappropriate drugs, 6% not notified ADRs. The 70% of DRPs was known to clinicians and 52% considered clinically relevant for the patients.

After pharmacist interventions, 18 drugs were withdrawn, for 48 DDIs a monitoring of biochemical parameters was decided, 4 drugs were changed and 1 dosage was reduced. The 52% of suggestions was accepted by physicians.
Conclusion: A more structured procedure involving actively hospital pharmacists in wards enhance the safer use of medicines.

HP-PC040: Factors contributing to antihypertensive medication intolerance (MI-HTN)

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Please specify your abstract type: Research abstract
Background and objective: Hypertension is a major risk factor for cardiovascular morbidity and mortality worldwide, for which management is based on two principal, complementary approaches—lifestyle modification and lifelong treatment with antihypertensive medication. Adherence to hypertension therapy is a major public health challenge, despite the availability of multiple classes of antihypertensive agents.

Factors contributing to non-adherence are multifactorial and include intolerances to drugs at standard doses that result in therapy discontinuation.

Medication intolerance (MI-HTN) refers to patients who experience adverse drug reactions (ADRs) to at least one antihypertensive medication, without a known immunological mechanism and the need to discontinue them.

We sought to determine factors associated with MI-HTN and to identify patients' beliefs and concerns about their antihypertensive treatment and medication in general.
Setting and method: A cross sectional survey consisting of self-reported questionnaires including Beliefs about Medicines Questionnaire (BMQ), Perceived Sensitivity to Medication (PSM) and Quality of Life was undertaken in an unselected patients attending a Hypertension Centre of Excellence out-patient clinic based in London.
Main outcome measures: To determine factors associated with MI-HTN and the impact of health beliefs and self-reported perceived sensitivity to medications on MI-HTN and BP control. Chi squared tests for comparisons between cases/controls and multiple logistic regression analysis were used for statistical analysis.
Results: 102 participants were included, of which 46 (45%) participants had MI-HTN. Two-thirds were female ($p = 0.002$) with a mean age of 70 ± 10 years (p 0.001), of whom 67.4% had uncontrolled hypertension ($p = 0.063$). Calcium channel blockers were the most commonly reported intolerance by drug class followed by diuretics. Being female and age >60 were statistically associated with a greater likelihood of reporting medicines intolerance ($p < 0.05$). Patients who believed that medicines are harmful were >5-times more likely to report MI-HTN ($p = 0.009$) and 4-times more likely to have uncontrolled BP (>140/90 mmHg) ($p = 0.024$). Patients with high self-*perceived sensitivity to medication* was 4-times more prone to MI-HTN ($p = 0.007$).
Conclusion: Our findings suggests the need for greater focus on behavioural change interventions to both improve patients' perception of the necessity to persist with lifelong antihypertensive medication and allay concerns regarding harmful effects of drugs may help with long term control of hypertension.

HP-PC041: Drug–drug interactions identified for cardiac transplant recipients

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Please specify your abstract type: Research abstract
Background and objective: Today, the number of medical problems in heart transplant recipients has increased due to aging and complications common to immunosuppressive drugs. The co-existence or emergence of other disease states such as renal dysfunction, infection, diabetes, obesity, hypertension, hyperlipidaemia, malignancies, and osteoporosis necessitates the use of other medications. The use of these medications in combination with immunosuppressive agents increases the risk of drug–drug interactions. The aim of this study is to identify the frequency and significance of drug–drug interactions for the patients who received cardiac transplantation.
Setting and method: This retrospective study was conducted at a cardiovascular specialty hospital. All patients who received cardiac transplantation from the same surgery team between 2009 and 2014 (6 years) were included in the study. All data were collected from the medical records of the patients. Only the most recent prescription before discharge was analysed for the presence and significance of drug–drug interactions. Drug–drug interactions were checked using Micromedex(R) Interaction Checker.
Main outcome measures: Main outcome measures were the frequency and significance of drug–drug interactions.
Results: A total of 58 patients met the inclusion criteria and 58 prescriptions were analysed. Each prescription contained an average of 11 drugs. A total of 529 drug–drug interactions were identified: 51.8% was classified as moderate; 43.4% as major and 3.7% as contraindicated. Almost half of all interactions (n = 271) included immunosuppressive agents (59.4% was classified as moderate; 35.4% as major and 4.8% as contraindicated).
Conclusion: Cardiac transplant recipients were found to have a high number of drug–drug interactions. In order to advise on these interactions which increase with poly-pharmacy, drugs with narrow therapeutic index or drugs that require intensive monitoring, it is recommended to include a transplantation pharmacist in the transplantation team.

HP-PC042: Impact of patient education on glycemic control, medication knowledge level and medication adherence of patients with type 2 diabetes

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Please specify your abstract type: Research abstract
Background and objective: The aim of our study was to assess the impact of patient education provided by the pharmacist on gylcemic control, medication knowledge level and medication adherence of patients with type 2 diabetes. Patients who were diagnosed with type 2 diabetes for at least one-year time and were receiving at least one antidiabetic medication, attending to the outpatient diabetes clinic for

the control visit were informed about the study and invited to participate in the study. Patients who gave their informed consent were included in the study.
Setting and method: The setting is a diabetes outpatient clinic of a state hospital. The medication knowledge levels, medication adherence scores, fasting blood glucose levels, HbA1c levels and blood pressure of the patients were measured before pharmacist's education. After provision of standard information and individualized patient education all these parameters were measured again after 3 months-time and the impact of the education was assessed.
Main outcome measures: Main outcome measures are change in the clinical parameters (HbA1c; fasting blood glucose; blood pressure), as well as improvements in medication knowledge and adherence levels.
Results: The study was conducted on 54 patients who met the inclusion criteria; none of the patients were lost to follow-up. Majority (83%) of the patients was female and the mean age was 53.7 years. Pharmacist intervention resulted in positive outcomes at all clinical parameters. Systolic blood pressure decreased by 6 mmHg, while diastolic blood pressure decreased by 1.76 mmHg ($p < 0.05$). HbA1c level decreased by 0.39% (from 6.94 to 6.55%; $p < 0.05$) and fasting blood glucose level by 7.1 mg/dL ($p > 0.05$). On the other hand, the number of patients reaching the blood pressure goal increased from 36 to 46; and those reaching to HbA1c goal increased from 23 to 32 ($p < 0.05$ for all). Similarly, the medication knowledge level [usual range 0–8] increased from 4.43 to 5.82 ($p < 0.001$); and the medication adherence score [usual range 0–4] increased from 3.4 to 3.09 ($p < 0.001$).
Conclusion: It can be concluded that pharmacist's contribution results in positive outcomes in glycaemic control and management of co-morbid conditions of type 2 diabetic patients by improving medication knowledge and adherence levels of the patients. Pharmacists should take active role in management of chronic diseases.

HP-PC043: Impact of a pharmaceutical care program on glycemic control, medication knowledge and medication adherence levels of type 2 diabetic patients residing at a nursing home

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Please specify your abstract type: Research abstract
Background and objective: The aim of our study was to assess the impact of pharmaceutical care provided by the pharmacist on glycaemic control, medication knowledge level and medication adherence of patients with type 2 diabetes residing at a nursing home.
Setting and method: This prospective cohort study was conducted in a state nursing home (Darülacaze Nursing Home) in Istanbul, Turkey on 39 patients who completed the whole study.

All the patients received pharmaceutical care provided by the pharmacist. This pharmaceutical care program was held for 3 months. It consisted of an initial visit, followed by 5 "care and control" visits and a final control visit; each visit was held at two-week time intervals.

At the initial visit, demographic and general clinical data were collected and medication knowledge and medication adherence levels of the patients were also assessed.

Pharmaceutical care needs were identified for each patient and recommendations addressing these issues were structured. Education regarding the medications of the patients was provided in both verbal and written forms using the standard patient education leaflets prepared by the pharmacist. At each visit pharmaceutical care needs are assessed and pharmaceutical care is tailored accordingly.
Main outcome measures: Main outcome measures are change in the clinical parameters (HbA1c; fasting blood glucose), as well as improvements in medication knowledge and adherence levels.
Results: Majority (74%) of the patients was male and the mean age was 68.8 years. Pharmacist intervention resulted in positive outcomes regarding HbA1c levels. HbA1c level decreased by 0.35% (from 7.02 to 6.67%; $p < 0.05$) and fasting blood glucose level by 11 mg/dL ($p > 0.05$). Similarly, the medication knowledge level [usual range 0–8] increased from 2.67 to 5.44 ($p < 0.001$); and the medication adherence score [usual range 0–4] increased from 2.9 to 3.28 ($p < 0.01$).
Conclusion: It can be concluded that pharmacist's contribution results in positive outcomes in glycaemic control of type 2 diabetic patients by improving medication knowledge and adherence levels of the patients. Pharmacists should take active role in management of type 2 diabetes at the nursing home setting.

HP-PC044: Haemoglobin variability influenced by erythropoesis stimulating agents in predialysis

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Please specify your abstract type: Research abstract
Background and objective: Haemoglobin variability is related to mortality and morbidity in haemodialysis, renal transplantation and pre-dialysis patients. Some demographic, haematological and pharmacological variables may affect Hb variability. But there are some controversies about the influences of different erythropoiesis stimulating agents (ESA).The objective of this study is to determine the influence of different ESA on haemoglobin variability in pre-dialysis patients.
Setting and method: We conducted a prospective observational study with chronic kidney disease patients recruited from outpatients of Nephrology Department of a Tertiary University Hospital (from January 2011 to June 2012). Exclusion criteria were: stage I and II, not treated with ESA, haemodialysis, peritoneal dialysis, renal transplantation, thalassemia, and deficit of glucose-6-phosphate dehydrogenase .
Main outcome measures: Patients included were treated with ESA in maintenance phase (stable 6 months prior).Hb variability was calculated by standard deviation (SD) and residual standard deviation (residual SD) of Hb levels. Statistical analysis was performed with SPSS 15.0 (SPSS Inc, Chicago). Observation period was 18 months and data were recorded from the clinical records.
Results: We included 229 patients (109 females, 70.44 years of mean age, mean BMI of 28.29 kg/m^2)0.78, 120 and 31 were on stage III, IV and V respectively. 95% of patients had hypertension, 88% dislipaemia and 44% diabetes. 23 received EPO beta, 149 darbepoetin alpha and 57 CERA. No significant differences were detected with different ESA used ($p > 0.05$).Regimens influenced Hb variability. Approximately ESA regime once a week had a median SD or residual SD double if compares with once a month ($p = 0.000$).High ESA doses (>80 mcg of darbepoetin alpha) not achieve more Hb

variability than low doses (<40mcg). If patients changes the agent they registered more Hb variability even with SD ($p = 0.003$) or residual SD ($p = 0.000$).
Conclusion: ESA therapeutic regime may affect Hb variability. This may be correlated with frequency of administration doses. Type and dose of ESA are not associated to Hb variability.

HP-PC045: Effectivity of treatment of direct antiviral agents in the hepatitis C treatment

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Please specify your abstract type: Research abstract
Background and objective: According to available studies, new direct antiviral agents DAA have succeeded in eliminate viral replication between 85 and 100% of patients infected with hepatitis C, depending on the degree of illness. The aim of our study is to assess the rapid viral response and viral load at the end of treatment.
Setting and method: Retrospective observational study. We included mono-infected patients with virus hepatitis C, who began treatment with DAA in January-December 2015 period.
Main outcome measures: Demographic data were collected: age, sex, previous treatment (yes/no), response to previous treatment, genotype, degree of fibrosis, presence or absence of cirrhosis, baseline viral load, DAA received, duration of treatment, viral load (VL) in the week 4 and at end of treatment.
Results: Thirty-five patients started DAAs treatment, 26 men and 9 women, mean age 56 years; 18 patients were not previously treated, 13 did not respond to previous treatments and 2 had not tolerated previous treatment.

Genotype G1a: six patients with G1b: 19 with G3: 8 and G4: one patient.

Without the presence of cirrhosis 11 patients with compensated cirrhosis and decompensated 22 2. Degree of liver fibrosis F4: 24 patients, F3 and F2 only 10 patients 1 paciente.

The average initial CV was 2.474.813, 971UI/ml.

Percentage of patients receiving AAD:

sofosbuvir/Daclatasvir (2) 5.7%, sofosbuvir/Daclatasvir/ribavirin (2) 5.7%, sofosbuvir/Simeprevir (4) 11.4%, sofosbuvir/ledipasvir (6) 17.1%, sofosbuvir/ledipasvir/ribavirin (3) 8.5%, dasabuvir/ombitasvir/paritaprevir/ritonavir (2) 5.7%, dasabuvir/ombitasvir/paritaprevir/ritonavir/ribavirin (14) 40% ombitasvir/paritaprevir/ritonavir/ribavirin (1) 2.8%, sofosbuvir/ribavirin (1) 2.8%.

Viral load at week 4 was <15 IU/ml in 32 patients and at the end of treatment 33.
Conclusion: The results of rapid viral response at end of treatment were similar to those obtained in studies published to date. Due to its recent access to these treatments it is necessary to continue monitoring these patients to assess virologic sustained response at 24 weeks after end of treatment.

HP-PC046: Medication reconciliation process in a patient fragile of high-risk

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Please specify your abstract type: Research abstract
Background and objective: Fragile patients are considered those vulnerable patients with a certain degree of complexity in their care (polypharmacy, multi-pathological, palliative and/or residents in social and healthcare institutions). To ensure their continuity of care and safety in the use of drugs we applied a medication reconciliation process at admission, transition of care and/or hospital discharge.
Objective: To analyse the results of the medication reconciliation process of a fragile patient.
Setting and method: We developed a list of current medication with the following sources of information: medical history, clinical databases and information provided by the patient (interview). Clinical case: 95-year-old woman admitted through emergency department due to severe dyspnoea. No known drug allergy. Background: heart failure, chronic hypertension, hypercholesterolemia, hyperthyroidism, hyperuricemia, gouty arthritis, chronic kidney disease and cognitive impairment by Alzheimer disease. Exploration and complementary tests: echocardiogram and analytical control. Clinical judgment: Acute decompensated heart failure. Acute myocardial infarction. Prerenal acute kidney injury.
Main outcome measures: Medication reconciliation made at admission with the detection of discrepancies and deprescribing criteria at hospital discharge.
Results: Fragile patient (high-risk) with 13 medicines as home treatment. Patient was hemodynamically stable during the hospital stay. 9 discrepancies were detected between the prescribed medication and the home treatment. Discrepancies justified (7): five by omission of medication (two new clinical situation, two therapeutic exchanges to adapt to the pharmacotherapy guide and one wrong drug) and two beginning of medication. Discrepancies unjustified (2): by omission of medication. To Discharge: One antiplatelet therapy was. After the comprehensive review, we made the following recommendations of deprescription: suspend one non-steroidal anti-inflammatory drug-NSAID (by risk of bleeding in association with concomitant antiplatelet and antidepressant therapy) and one benzodiazepine (Central Nervous System-CNS side effects); Modify treatment: reduce doses of diuretics (blood pressure lowering effect). Pharmacotherapeutic recommendations were accepted.
Conclusion: Detection of discrepancies in the medication reconciliation and deprescription process are effective and safe strategies that allow optimization of pharmacotherapy in fragile patients. The use of drugs such as NSAIDs (gastrolesive effect), the combination of drugs with CNS side effects and hypotensive action (associated with falls) in elderly patients constitute situations of risk that should be reviewed in fragile patients, as an essential part of the clinical evaluation.

HP-PC047: How can pharmacists be part of the clinical team and optimize drug treatment when there are no positions for pharmacists in the hospital?

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: There are no positions for clinical pharmacists at the hospital, so we are dependent on projects to be able to show how pharmacists can contribute in the clinical team. Our aim in this project was to introduce pharmaceutical knowledge by implementing medication reconciliation and medication review in different hospital wards. We wanted to show that many patients have discrepancies in their medication lists during hospital stay and that some of the drugs or doses given can cause drug related problems for the patient. Our final goal was to get the physicians to be more aware of these issues when treating their patients.
Design: The method used was based on the two first parts of the Integrated Medicines Management. The pharmacist conducted a

standardized drug interview with patients who prior to admission were responsible for their own drugs. For patients who could not be interviewed or were not responsible for administering their own drugs, a current medication list from relevant care level was obtained. The medication lists obtained were compared to the documentation in the patient's drug chart and discrepancies communicated to the physician. During the hospital stay, a medication review and monitoring was also conducted by the pharmacist. Results were presented to the patients physician and discussed.

Results: A total of 129 patients were included and of these 63% had $\geq$1 discrepancy identified by the process. The most frequent type of discrepancy was the use of a drug that was not registered on admission (omission discrepancies). Other discrepancies were wrong dose, dosage or formulation and registration of a drug the patient didn't use. Drug-related problems were discovered in 61% of the patients and the most frequent were use of anticholinergic drugs in elderly, interactions, lack of treatment and monitoring and too high doses regarding kidney function. Many of the detected drug related problems results in change in medication, other times the physician addresses the problem to the GP. The physicians were surprised of the high numbers of discrepancies in medication lists and drug related problems discovered. Almost all the physicians considered that the pharmacist could be an important part of the treatment team and they wanted the participation of the pharmacist to be permanent.

Conclusion: The project led to increased awareness of the importance of medication reconciliation and medication review and showed the importance of pharmaceutical knowledge in the treatment team. Unfortunately this was not sufficient to create positions for pharmacists in our hospital. New projects will focus on pharmacists teaching interns to improve the reconciliation at admission.

HP-PC048: Assessment of fluoroquinolones prescriptions at the Toulouse University Hospital emergency department: further promote adequate prescriptions

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: We aimed to assess the quality of fluoroquinolones (FQ) prescriptions at the Toulouse University Hospital emergency department as part of significant increase in consumption.

Design: Retrospective mono-centric study of FQ prescriptions written to adult patients managed at the emergency department (February 29th, 2016–March 6th, 2016). A pair consisting of a biologist pharmacist and a clinical pharmacist has analysed them using tools provided by the Centre de Coordination de Lutte Contre les Infections Nosocomiales (CCLIN). Various criteria (pertinence of prescription, choice of antibiotic, dosage, duration of treatment, method of administration…) were faced with the guidelines issued by the Société de Pathologie Infectieuse de Langue Française (SPILF).

Results: About 1229 files were examined, 17 contained FQ prescriptions for systemic use. The most frequently prescribed antibiotic was Ofloxacin (59%) and the most frequent indications were urinary tract infections (47%). Among the 17 prescriptions of FQ, the establishment of FQ was justified in 71% of cases and the antibiotic chosen was always the most suitable. Nonconformities of dosage and/or treatment time were found in a quarter of cases. Overall, 47% did comply with guidelines. The prescriptions, due to the particularity of emergency were still permormed probabilistic. However, a reassessment of them was scheduled for two-third of outpatients.

Conclusion: This study highlights the conformity of less than half of the prescriptions. This demonstrates that there are still actions to ensure the accuracy of FQ prescriptions. And it is in this sense that this audit should be registered under the impetus of the Committee on anti-infectives. It will raise awareness among doctors in the proper use of this family of antibiotics.

HP-PC049: Hemodialysis: a practical guide for hospital pharmacists in the CHU of Poitiers, towards European-wide harmonization?

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: The number of persons suffering from end-stage renal disease (ESRD) is growing worldwide, mainly due to the aging of the population. ESRD incidence has been increasing by 3–7% per year for 10 years. It is estimated that worldwide, more than 1.5 million patients with established renal failure are being treated with haemodialysis (HD). Water for haemodialysis must meet the physicochemical and bacteriological compliance standards defined by the European Pharmacopoeia. As a medicine, this water is placed under the responsibility of hospital pharmacists.

Addressed to hospital pharmacists, this methodology guide will enable them not only to validate controls of haemodialysis water as well as drug prescriptions for dialysis patients, but also to familiarize themselves with the best currently existing dialysis techniques and medical devices.

We have tried to simplify and synthesize existing circulars and guidelines so as to render them more readily understandable for the pharmacist in charge of a haemodialysis service, and thereby help to ensure optimally safe treatment of haemodialysis patients.

Design: The themes developed in this guide are:

- a review of the different existing dialysis techniques,
- a review of the different sampling points for controls of HD water,
- a review of the physicochemical and bacteriological standards of these controls according to the latest recommendations of the European Pharmacopeia, and of appropriate conduct for exceeding established thresholds,
- a review of the main international recommendations with regard to clinical signs of chronic kidney disease: anaemia, mineral and bone disorders (CKD-MBD), high blood pressure.
- a review of the various medical devices used in haemodialysis and haemodiafiltration.

Results: The recommendations of good practices summarized in this guide are integrated perfectly adapted to the concept of quality assurance and its role in the accreditation process. They are focused on improving patient safety by harmonizing pharmaceutical haemodialysis practices in different dialysis centres.

Conclusion: These types of recommendations may be transposable to other pharmaceutical fields and/or be used as a training tool for pharmacy students or young pharmacy school graduates. The format of this guide makes it convenient, easy to use every day. It will be revised regularly to ensure the sustainability of quality plans.

HP-PC050: Analysis of treatment changes for patients with multiple sclerosis

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Please specify your abstract type: Research abstract
Background and objective: Due to the necessity to improve the quality of life of patients with multiple sclerosis (MS), as well as the increased incidence of the disease, new treatments have been developed, most of them, new oral therapies (1). The objectives were to analyse the reasons of treatment change to a new oral medication, to compare the side-effects caused by different therapies, and to study the chosen oral medication according to patient characteristics.
Setting and method: The study occurred in a University Hospital, specifically, in the ambulatory care unit. It was a cross-sectional, descriptive study. Subjects were patients with MS receiving chronic treatment for years or months, who changed their treatment during 2015. Data was collected from the distribution program and clinical record of patients. Statistical descriptive analysis of collected data was performed.
Main outcome measures: Previous treatments of patients for MS, reason of the treatment change, new treatments, side-effects and their frequencies related to the previous treatment, which led patients to a treatment modification.
Results: 55 patients changed their treatment during 2015 (average age: 41.6 ± 10.6, women: 69.1%). Medications that showed a higher discontinuation rate were Interferon β1a (50.9%), Interferon β1b (21.8%) and glatiramer acetate (14.6%). Oral treatments that stood out for their increased administration were teriflunomide (45.5%) and dimethyl fumarate (36.4%). Regarding the reasons of treatment change, the most noteworthy cause was the change to an oral administration due to the systemic side-effects (50.9%), followed by local side-effects (18.2%), lack of response (18.2%), other side-effects that lead to a non-oral treatment (10.9%), and the completion of recommended time of treatment (1.8%). The most frequent side-effects caused by Interferon β1a were flu-like symptoms, while in the case of Interferon β1b and glatiramer acetate were skin reactions in the injection area. A potential relationship between age and the choice of new treatment was observed; teriflunomide was mainly selected for older patients while dimethyl fumarate for younger patients, keeping in mind the side-effects described for these new therapies.
Conclusion: The main reason of treatment modification was the change to an oral administration, and the most significant side effects observed were skin reactions in the injection area and flu-like symptoms. More data are needed about the long term side-effects of the new oral treatments to become a standard of care and the role of pharmacists is crucial.

Reference

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HP-PC051: Promotion and optimization of care in HIV infected patients with comorbidities, including cancer

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Combination antiretroviral therapy (cART) has strongly improved disease control in HIV-infected patients. However, aging and comorbidities are becoming a major problem in this group of patients. Most HIV-infected patients are treated with five or more medications, and harms by polypharmacy increase proportionally with number of medications. Possible risks include: poor medication adherence and consequently inefficient care, increased risk of drug interactions and adverse events, with prolonged hospitalization. The problem is worsened when patients are of non-native language and so their comprehension and adherence to drug therapy can be very poor, compromising efficacy. The HIVIG Study is designed to evaluate the impact of the interventions promoted by the clinical pharmacist in the optimization and comprehension to personal drug therapy, favouring compliance, in a cohort of patients, HIV infected with comorbidities like cancer; the cohort includes a high number of non-native Italian language individuals.
Design: HIVIG is a randomised, parallel groups clinical trial. In April 2016 the study protocol was approved by the local Ethical Committee, Aviano. The project is scheduled to start in autumn 2016. Main objective: evaluation of the impact of a series of tools—"drug therapy setting interventions" (DTSIs) applied by the clinical pharmacist on a cohort pf HIV-infected patients with comorbidities, afferent for care at CRO Aviano. The treatment arm will be submitted to DTSIs. DTSIs interventions (treatment group) consist in: motivational interview, sharing and delivery of printed, explanatory material in the patient's native language, reconciliation of patients medications at hospital admission and at discharge; identification of potential risks due to drug–drug interactions; monitoring of compliance to drug therapy, and finally detection of adverse drug reactions (ADRs) occurring in the course of care. The control group will undergo only to scheduled standard medical visits at CRO.
Results: We expect to recruit a total 350 patients for a 24-months period of follow-up. Statistical analysis will be performed by intention-to-treat and by protocol. At CRO Aviano, the Italian Cooperative Group on AIDS and Tumors (GICAT) has studied malignancies in HIV-positive patients since 1986 and has a leading role for studies conducted in Italy (Vaccher, 2014)
Conclusion: Previous collected data from the previous trial performed at CRO Aviano (Target-Vig), showed a positive impact in the optimization of individual drug therapy and in the reporting of ADRs. HIV has an enormous impact on life of infected patients and represents a priority issue for the entire community. We consider the method of DTSI, combined with a close monitoring of patients by means of telephonic motivational interviews, the best added value performed by the profile of the clinical pharmacist in optimizing drug therapy and personal awareness about medicines.

HP-PC052: Impact of pharmaceutical care in psychiatry: a review of literature

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Please specify your abstract type: Research abstract
Background and objective: The World Health Organization reports that "one in four people in the world will be affected by mental or neurological disorders at some point in their lives. Around 450 million people currently suffer from such conditions, placing mental

disorders among the leading causes of ill-health and disability worldwide». To review the evidences published about the roles and the impact of pharmacists in psychiatry.
Setting and method: Literature review. A literature search was conducted using Pubmed and the following terms: pharmacists, clinical pharmacy, pharmaceutical services, pharmaceutical care, pharmacy, mental illness and psychiatry from January 1st 1990 until June 14th 2016. Manual search was also conducted using selected articles. The selection of articles was based on abstracts. Selected articles were reviewed, analysed and entered in Impactpharmacie.org website according a standard operating procedure. Relevant key data were extracted for each article including the type and the description of pharmaceutical interventions and descriptive and outcomes indicators with their results. No statistical analysis was conducted.
Main outcome measures: Proportion of outcome indicators associated to pharmaceutical interventions with a positive impact in psychiatry.
Results: A total of 62 articles were included. Described pharmaceutical interventions included patient-pharmacist relationship (7), medication reconciliation (26), patient care needs assessment (25), drug therapy assessment (74), patient follow-up (61), interdisciplinary work (26), knowledge transfer (104), competencies maintenance (2). The impact of pharmacists interventions was studied using a total of 369 indicators from which 146 (40%) had outcome measures. Of these 146 outcome indicators, 68 (47%) were positive, 77 neutral and 1 negative (knowledge transfer strategy). Positive impacts of pharmaceutical interventions were identified in the following areas: morbidity (24), patient adherence (11), patients or clinicians satisfaction (7), side effects management (2), medication errors prevention (2), mortality (2) and others (20).
Conclusion: The role and the impact of pharmacists have been studied in psychiatry and mental illness and 47% of outcome indicators used in these studies show a positive impact of pharmaceutical interventions. Pharmacists should pay attention to these evidences to improve their practice with patients facing mental illness.

HP-PC053: Impact of pharmaceutical care in cancer: a review of literature

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Please specify your abstract type: Research abstract
Background and objective: The World Health Organization reports that 8.2 million people die each year from cancer, an estimated 13% of all deaths worldwide and that there is a 70% increase in new cases of cancer expected over the next two decades. To review the evidences published about the roles and the impact of pharmacists in cancer.
Setting and method: Literature review. A literature search was conducted using PubMed and the following terms: pharmacists, clinical pharmacy, pharmaceutical services, pharmaceutical care, pharmacy, neoplasms from January 1st 1990 until June 20th 2016. Manual search was also conducted using selected articles. The selection of articles was based on abstracts. Selected articles were reviewed, analysed and entered in Impactpharmacie.org website according a standard operating procedure. Relevant key data were extracted for each article including the type and the description of pharmaceutical interventions as well as descriptive and outcomes indicators with their results. No statistical analysis was conducted.
Main outcome measures: Proportion of outcome indicators associated to pharmaceutical interventions with a positive impact in cancer.
Results: A total of 42 articles were included. Described pharmaceutical interventions included patient-pharmacist relationship (6), patient care needs assessment (76), drug therapy assessment (84), drug compounding/dispensing (1), patient follow-up (93), interdisciplinary work (15), knowledge transfer (39). The impact of pharmacists interventions was studied using a total of 274 indicators from which 112 (41%) had outcome measures. Of these 112 outcomes indicators, 98 (88%) were positive, 13 (12%) neutral and 1 (1%) negative. Positive impacts of pharmaceutical interventions were identified in the following areas: morbidity (59), patient adherence (2), patients or clinicians' satisfaction (3), side effects management (8), medication errors prevention (7), mortality (0), costs (2) and others (17).
Conclusion: The role and the impact of pharmacists have been studied in cancer and 88% of outcome indicators used in these studies show a positive impact of pharmaceutical interventions. Pharmacists should pay attention to these evidences to improve their practice, contribute to prevention or insure treatment of patients with cancer.

HP-PC054: Impact of pharmaceutical care in myocardial infarction: a review of literature

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Please specify your abstract type: Research abstract
Background and objective: The World Health Organization reports that there are 32.4 million myocardial infarctions and strokes worldwide every year. Patients with previous myocardial infarction and stroke are at risk of further events and complications. To review the evidences published about the roles and the impact of pharmacists in myocardial infarction (MI).
Setting and method: Literature review. A literature search was conducted using Pubmed and the following terms: pharmacists, clinical pharmacy, pharmaceutical services, pharmaceutical care, pharmacy, myocardial infarction, acute coronary syndrome from January 1st 1990 until June 14th 2016. Manual search was also conducted using selected articles. The selection of articles was based on abstracts. Selected articles were reviewed, analysed and entered in Impactpharmacie.org website according a standard operating procedure. Relevant key data were extracted for each article including the type and the description of pharmaceutical interventions and descriptive and outcomes indicators with their results. No statistical analysis was conducted.
Main outcome measures: Proportion of outcome indicators associated to pharmaceutical interventions with a positive impact in myocardial infarction.
Results: A total of 35 articles were included. Described pharmaceutical interventions included patient-pharmacist relationship (11), medication reconciliation (39), patient care needs assessment (2), drug therapy assessment (102), drug compounding/dispensing (8), patient follow-up (51), interdisciplinary work (60), knowledge transfer (52). The impact of pharmacists interventions was studied using a total of 177 indicators from which 107 (61%) had outcome

measures. Of these 107 outcome indicators, 49 (46%) were positive, 56 (52%) neutral and 2 (2%) negative. Positive impacts of pharmaceutical interventions were identified in the following areas: morbidity (8), patient adherence (10), side effects management (1), mortality (5) and others (21).

Conclusion: The role and the impact of pharmacists have been studied in myocardial infarction and 46% of outcome indicators used in these studies show a positive impact of pharmaceutical interventions. Pharmacists should pay attention to these evidences to improve their practice, contribute to prevention or insure treatment of patients with potential or found myocardial infarction.

HP-PC055: Impact of pharmaceutical care in vaccination: a review of literature

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Please specify your abstract type: Research abstract

Background and objective: The World Health Organization reports that "Immunization is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine and a proven tool for controlling and eliminating life-threatening infectious diseases and is estimated to avert between 2 and 3 million deaths each year. It is one of the most cost-effective health investments, with proven strategies that make it accessible to even the most hard-to-reach and vulnerable populations». To review the evidences published about the roles and the impact of pharmacists in vaccination.

Setting and method: Literature review. A literature search was conducted using Pubmed and the following terms: pharmacists, clinical pharmacy, pharmaceutical services, pharmaceutical care, pharmacy, vaccination and immunization from January 1st 1990 until July 5th 2016. Manual search was also conducted using selected articles. The selection of articles was based on abstracts. Selected articles were reviewed, analysed and entered in Impactpharmacie.org website according a standard operating procedure. Relevant key data were extracted for each article including the type and the description of pharmaceutical interventions and descriptive and outcomes indicators with their results. No statistical analysis was conducted.

Main outcome measures: Proportion of outcome indicators associated to pharmaceutical interventions with a positive impact in vaccination.

Results: A total of 43 articles were included. Described pharmaceutical interventions included patient-pharmacist relationship (37), medication reconciliation (19), patient care needs assessment (37), drug therapy assessment (26), patient follow-up (39), interdisciplinary work (11), knowledge transfer (47), competencies maintenance (1). The impact of pharmacists interventions was studied using a total of 212 indicators from which 81 (38%) had outcome measures. Of these 81 outcome indicators, 65 (80%) were positive, 15 (19%) neutral and 1 negative. Positive impacts of pharmaceutical interventions were identified in the following areas: cost (3), errors (2), morbidity (21), patient adherence (14), patients or clinicians satisfaction (3) and others (22).

Conclusion: The role and the impact of pharmacists have been studied in vaccination and 80% of outcome indicators used in these studies show a positive impact of pharmaceutical interventions. Pharmacists should pay attention to these evidences to improve their practice.

HP-PC056: Is nursing care plan (NCP) an efficient tool for clinical pharmacist to evaluate bedside drug administration? Feedback from a post-acute care and rehabilitation service

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: Evaluating the appropriateness and effectiveness of the patient's medications by analysing prescriptions is pharmacist side work. Bedside drug administration and computerised drug administration traceability (CDAT) in nursing care plan (NCP) are nurse's one. However, in order to check adherence, efficiency and tolerance of a drug, pharmacist has to ensure that the patient takes the medication appropriately. Therefor NCP could be a useful tool.

The aim of this study is to evaluate the effectiveness of CDAT, and if not, define causes of divergences with real life situation.

Design:

- Comparison between unused drugs remained in individual patients' seven daily pill dispensers (considered as not taken) which come back from the evaluated service to the pharmacy, and their CDAT status completed by nurses (taken, not taken or no status)
- Two recorded data, each collecting a three-week period, separated by a period of discussion with nurses: first results presentation, analysis of divergences by taking into account their feedbacks, and actions to raise their awareness about the importance of CDAT.
- Pill dispensers' CDAT is correct only if all returned drugs' status in NCP is "not taken".

Results: During the first period (n = 112 pill dispensers), 29.5% of pill dispensers had an incorrect CDAT status. On average, 1.4 drug per pill dispenser didn't have an appropriate status in NCP (taken or no status).

Major causes of divergences were the lack of time and insufficient human resources, the fact that they often are interrupted in the middle of this task, a software which isn't "user-friendly" and a deficit of information about the issue.

Corrective actions were implemented, prior to the second recorded data period, targeting human factor of divergences (oral and written reminders about CDAT with didactic memorandum on computers).

After awareness actions, results (n = 110) were 23.6 and 1.5 respectively.

Conclusion: Efforts about CDAT have been done but not enough to observe a significantly improvement in short terms. NCP's level of reliability is not optimal yet and still dependent on nurses' practices. This study allowed us to strengthen the relationship between clinical service and pharmacy, and opens the way for further works particularly through corrective actions targeting material and organizational causes of divergences.

HP-PC057: Economic impact of clinical pharmacy unit in a pediatric hospital in the public health system

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Please specify your abstract type: Research abstract
Background and objective: Pharmaceutical interventions can increase and improve the safety and efficacy of pharmacological treatments of patients and results in direct cost savings. This has not yet been evaluated in Chile. We are assessing the economic impact of this clinical pharmacy unit by reviewing and analyzing both pharmaceutical interventions (PI) and its relationship with direct cost savings.
Setting and method: Review and analysis of computer records PI; selection of interventions associated with high cost drugs and evaluated in terms of direct cost savings. Retrospective study of 8 months in a pediatric hospital in the Chilean Public Health System.
Main outcome measures: Categorization and analysis of PI. Estimation of net cost savings of the clinical pharmacy unit.
Results: Of 1516 PI in 330 patients (4.6 PI per patient), 47% (n = 709) were classified as therapeutic, 41% (n = 629) for safety, and 12% (n = 178) education. 27% (n = 411) were for adjustment or the maintenance of a dose, 24% (n = 367) adjustments for plasmatic levels, 14% (n = 216) education in the use of the drug and 12% (n = 177) an adjustment of drug administration. Antimicrobial drugs 52% (n = 757), antineoplastic 23% (n = 353), and immunomodulatory 8% (n = 119) were the largest number of interventions. Oncology units 30% (n = 487), bone marrow transplantation 23% (n = 328) and intensive care unit 19% (n = 285) were the services with the largest number of records. 90 PI (5.9%) were associated with direct cost savings (DCS) of US$ 185.522, generating a net cost savings (NCS) of US$ 136.892, calculated from the difference between the DCS and spending clinical pharmacy unit US$ 48.630 (132 weekly hours, time value US$ 12).
Conclusion: Pharmaceutical interventions, mainly adjustments or modified treatments, are associated with direct cost savings in the overall treatment of patients. This has had a positive economic impact on the hospital, as it reduced medical expenses and contributed to the safety and effectiveness of medications.

HP-PC058: Proper use of broad spectrum antibiotics in the hospital: results of a one day survey in a teaching hospital

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: In 2015, our teaching hospital has participated to a worldwide survey (Global Point Prevalence survey (Global-PPS)) aimed to explore antimicrobial consumption and resistance in hospitals. Because broad spectrum antibiotics have to be followed with the attention of resistance prevention, we focused our analysis on these antibiotics in our hospital (carbapenems, piperacillin/tazobactam and amoxicillin/clavulanic acid).
Design: The survey was performed by pharmaceutical team (senior and resident) with help of microbiologists and referring physicians. All wards of the hospital were included. Hospitalized patients treated with antimicrobial agent (J01, J02, J04A, P01AB, A07, J05AH, P01B from the ATC classification) prescribed at 8 a.m. on the day of the survey, were involved. From those who were treated by carbapenems, PIP/TAZ or AMX AC, following data were collected: age, gender, weight, doses, indications (probabilistic? documented? and if documented microbiological data), and mention of stop/review date of prescription.
Results: The survey was carried out from April to June 2015 in 51 wards. Among the 1435 patients included, 369 patients (25.7%) were treated with antimicrobial agents.114 patients (30.9%) were treated with broad spectrum antibiotics: 53 (14.1%) with AMX-AC, 47 with PIP-TZ, 6 with Imipenem and 8 with meropenem. The mean age of patients was 60.5 ± 17.7 and the weight was 67.9 ± 13.9 kg. Their prescriptions were concentrated in three types of wards: 24 (21.1%) in ICU, 47 (41.2%) in medicine, 43 (37.7%) in surgery. Moreover, we observe that BSA were used to treat 33 (28.9%) community acquired infections, 54 (47.4%) nosocomial infections, 6 (5.2%) used as medical prophylaxis, or surgical prophylaxis (N = 19, 16.7%). In relation to the type of treatment: 66 were empirical treatment (including 25 prophylaxes) and 48 were targeted treatments (3 bacteraemia, 5 joint and bones infections, 1 cardiovascular system infection, 12 urinary tract infections, 10 lower respiratory tract infections, 10 skin and soft tissues infections and 7 others infections). Finally, 23 extended spectrum beta-lactamase (ESBL) producing Enterobacteriaceae and 1 third generation cephalosporin resistant Enterobacteriaceae non-ESBL producing were targeted by BSA regimen.
Conclusion: In this survey, use of BSA is globally compliant to French guidelines and we identified no improper prescription: multidrug resistant bacteria infections, several diseases and empirical treatments with limited duration of regimen. This shows that control of the proper use of antibiotics especially those with a broad spectrum is efficient in our hospital and has to be continued. This has been made possible due to a multidisciplinary approach including physicians, bacteriologists and pharmacists.

HP-PC059: Proper use of sulfamethoxazole and trimethoprim combination: results of a one day survey in a French teaching hospital

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: In 2015, our teaching hospital has participated to a worldwide survey (Global Point Prevalence survey (Global-PPS)) aimed to explore antimicrobial consumption and resistance in hospitals. From these results, we observed that sulfamethoxazole/trimethoprim (TMP/SMX) was largely prescribed in our hospital. We focused then our analysis on these results with the attention of check of its proper use.
Design: The survey was performed by pharmaceutical team (senior and resident) with help of microbiologists and referring physicians. All wards of the hospital were included. Hospitalized patients treated with antimicrobial agent (J01, J02, J04A, P01AB, A07, J05AH, P01B from the ATC classification) prescribed at 8 a.m. on the day of the survey, were involved. From those who were treated by TMP/SMX, following data were collected: age, gender, weight, doses, and indications (probabilistic? documented? and if documented microbiological data), and mention of stop/review date of prescription.
Results: The survey was carried out from April to June 2015 in 51 wards. Among the 1435 patients included, 369 patients (25.7%) were treated with antimicrobial agents of which 58 with TMP/SMX (15.7%) distributed as followed: 6 in Intensive Care Unit, 14 in Surgical ward and 38 in medical ward (including 12 in haematology-oncology and 5 in transplant department) The mean age of the

population was 58.8 ± 12.3 and the weight was 67.9 ± 13.9 kg). Only 7 of them correspond to documented infections including two pyelonephritis with *Escherichia coli*, three bones and joints infectious diseases with *Staphylococcus* sp, one hepatic abscess with *Escherichia coli* and one pneumocystis *with Pneumocystis carinii*. The 51 others were prescribed as empirical treatment of which, 46 patients received TMP/SMX as antibiotic prophylaxis against pneumocystis jirovecii including post-transplant (n = 20), cancer treatment (n = 15), HIV with CD4 < 200 mm^3 (n = 5), autoimmune disease (n = 4) and unknown (n = 2).The mean posology in MP was 370.7 ± 161.4 mg and dosing regimens were 1 pill per day or three times a week. In the case of post-transplant treatment, the mean duration of treatment with TMP/SMX was 104.3 ± 172.0 days.
Conclusion: We notice the proper use of TMP/SMX in all indications and the great proportion of use in MP due to the hospital activity which corresponds to a great activity of organ transplants, haematology-oncology, infectious diseases and internal medicine. However, the disparity of regimen and durations leads to the needing of specific guidelines in our hospital.

HP-PC060: Benzodiazepines and frail elderly people: optimization proposals in a geriatric day-hospital

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Please specify your abstract type: Research abstract
Background and objective: In France, benzodiazepine (BZD) is frequently prescribed in elderly people (EP). Long-term efficacy is often questioned, and treatment has to be regularly re-examined, especially in EP. In our Geriatric day-hospital for assessment of frailty, a multidisciplinary team evaluates the patients and gives them preventative measures against the loss of autonomy. Medication evaluation is part of these measures. The aim of our study was to evaluate the impact of a standardized intervention on the optimization of BZD treatment.
Setting and method: After a short interview and the delivery of an information booklet about BZD, patients were proposed an optimization of their BZD treatment (dosage reduction, occasional medication, switch to a short half-life BZD, or total discontinuation). Patients were followed up monthly by a phone-interview over a 6-months period.
Main outcome measures: The main outcome measure was the prevalence of BZD optimized treatments after a 6 months follow-up.
Results: 18 patients were included. Among them, 50% have been taking a BZD for more than 10 years, and 29% were prescribed a long half-life BZD, which can be qualified as inappropriate in EP. 50% of the subjects were frail and 44% pre-frail according to the Fried criteria. At the end of the study, 33% of the patients had their BZD treatments optimized, including 17% of total discontinuation.
Conclusion: In frail or pre-frail elderly population, a standardized intervention can be useful to improve BZD treatment. An extension to this intervention would be the creation of an organisation tasked with routinely monitoring the patients withdrawal over a 6 month period.

HP-PC061: Rituximab use in systemic lupus erythematosus (SLE): a 2 years retrospective analysis

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Rituximab (RTX) is prescribed for off-label active refractory SLE. Randomized clinical studies did not succeed to prove efficacy of RTX in SLE but on the contrary, previous open-label trials described successfully treatment of patients with SLE. In a French national reference centre for SLE, RTX is rarely dispensed to hospital patients. The aim of our study was to analyse RTX's conditions of use in SLE in this reference centre since 2013.
Design: Following data were collected from each patient who received RTX for SLE since 2013: number of lines before RTX, number of cycles, co-medications, adverse events and clinical improvement based on general condition after 6 month regimen.
Results: Only 13 patients with refractory SLE treated with RTX were included in the study between 2013 and 2015. Treatment was started 10 years after SLE diagnosis with four lines treatments before RTX introduction. 54% (N = 7) patients received one cycle of RTX, 31% (N = 4) received two cycles and 15% (N = 2) three cycles. All patients received 1 g of RTX 2 weeks apart. RTX was prescribed in association with at least one immunosuppressive drug (38%) or prednisone (92% patients) or hydroxychloroquine (85%). At 6 months after rituximab regimen, clinical assessment showed eight patients with clinical improvement, three patients with clinical deterioration and two patients with stable disease. No allergic reaction during perfusion was observed but one patient developed a serious infection 2 months after perfusion that required hospitalization. Among those who were successfully treated, dosage of combined regimens was decreased of 54% in six patients. 2 patients with clinical deterioration after 6 months were switched to BLM.
Conclusion: Since 2012, belimumab (BLM) is licensed for still highly active systemic lupus erythematosus (SLE) in spite of standard of care therapy and has become an alternative to RTX. But RTX is still prescribed especially when belimumab is contraindicated and allows to decrease dose of IS combined treatments minimizing long term side effects. Further studies are needed to evaluate long term efficacy and tolerance. Pharmaceutical control is useful to check proper use of RTX in SLE.

HP-PC062: Medication reconciliation at hospital admission in surgical services in a tertiary hospital

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Please specify your abstract type: Research abstract
Background and objective: Medication reconciliation (MR) is a strategy for reducing medication discrepancies, morbidities and improving patient safety. Transitions through different levels of care contribute to medication discrepancies caused by lack of time to make a good clinical history and communication. The purpose of this study is to examine discrepancies discovered in medication lists by Pharmacist in surgical services (Traumatology, General Surgery and Urology), consider their clinical relevance and the importance of pharmaceutical interventions.
Setting and method: This prospective study was conducted in surgical services consisting of 100 beds of a tertiary hospital during 2015. MR by Pharmacist was done from Monday to Friday for all patients who were ≥65 years old and ≥5 drugs. The Pharmacist, within the 24 h of the patient's admission, obtains the preadmission chronic treatment by interviewing the patient or the patient's family/caregiver, or from the patient's medical chart and primary care records. This is compared with the treatment prescribed in hospital.

All of the discrepancies detected (dose, regimen, route of administration or omission) are discussed with the attending physician to determine the clinical relevance.
Main outcome measures: Total discrepancies (intended and unintended). Unintended discrepancies were classified in omission of medication, different dosage/route of administration/regimen, different medication, not indicated medication and duplications.
Results: A total of 5111 discrepancies were registered for all 1297 patients. Discrepancies were found in 1178 (90.81%) patients with an average of 4.42 per patient affected. 39 discrepancies were intended and 5072 were unintended. Unintended discrepancies were classified in: omission of medication = 4771 (94.06%), different dosage/route of administration/regimen = 211 (4.16%), different medication = 43 (0.85%), not indicated medication = 40 (0.79%), duplications = 7 (0.14%) The average discrepancies per patient was higher in Urology (5.03) than General Surgery (4.46) and Traumatology (3.77).
Conclusion: The presence of a pharmacist in surgical services seems to reduce medication discrepancies that can lead to serious discomfort or patients' clinical deterioration which can be avoided. Therefore, MR is a strategy that reduces morbidities and improves patients' safety.

HP-PC063: Sodium-glucose cotransporter-2 (SGLT2) inhibitors: improving glycaemic control in patients with type 2 diabetes mellitus (T2DM)

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Please specify your abstract type: Research abstract
Background and objective: SGLT2 inhibitors, have been shown to improve glycaemic control, stabilize insulin dosing and mitigate insulin-associated weight gain in patients whose type 2 diabetes mellitus (T2DM) was inadequately controlled. The objective is to evaluate the real-world efficacy and safety of adding iSGLT-2 therapy in inadequately controlled patients with oral antidiabetic drugs and with or without insulin therapy.
Setting and method: This observational study assessed the efficacy and safety of SGLT-2 inhibitors used as add-on therapy in a group of 45 T2DM patients from a community endocrinology practice from January 2015 to April 2016.
Main outcome measures: Primary endpoint was HbA1c mean change from baseline at 15 months. Secondary endpoints included change in body weight, other glycaemic parameters, and percentage of patients reporting adverse effects of therapy.
Results: A total of 45 patients met all the study criteria. 60% with oral antidiabetic drugs, 11.1% with oral antidiabetic drugs and basal insulin regimens, 11.11% with basal-bolus insulin therapy and 17.8% with oral antidiabetic drugs and basal-bolus insulin therapy.Baseline patient characteristics were as follows: average age, 60.2 ± 9.7 years; mean duration of T2DM, 11.3 ± 8.3 years; 80% male; baseline body mass index (BMI), 32.76 ± 4.96 kg/m (2); mean baseline HbA1c, 9.17 ± 2.02%; systolic BP 143.67 ± 15.46 mmHg and diastolic BP 80.44 ± 10.16 mmHg. Mean duration of SGLT2 inhibitors 7.42 ± 4.22 months.

HbA1c and weight were significantly reduced by 1.36 ± 1.79%, $p < 0.000$ and 3.21 ± 3.52 kg, $p < 0.000$, respectively; systolic BP (12.91 ± 10.57 mmHg, $p < 0.000$), diastolic BP (6.39 ± 7.34 mmHg $p < 0.000$) and triglycerides (45.58 ± 115.65 mg/dl, $p < 0.011$).Genital- and urinary tract infections were reported by 6.7% patients. Any diabetic ketoacidosis case was reported.
Conclusion: SGLT-2 Inhibitors added to other oral antidiabetic drugs or insulin in patients with uncontrolled T2DM significantly improved glycaemic control, reduced weight, blood pressure and triglycerides, and was generally well tolerated. In conclusion, SGLT-2 inhibitors, appears to be an important addition to the therapeutic options for the management of type 2 diabetes, particularly when used as add-on therapy.

HP-PC064: Cardiotropic drugs following bariatric surgery: a literature review

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Please specify your abstract type: Research abstract
Background and objective: Restrictive or malabsorptive bariatric surgery procedures may impact on drugs pharmacokinetics (PK). Patients who undergo bariatric surgery are often polymedicated, with cardiovascular diseases as frequent comorbidities. Variations in cardiovascular drug PK may have dramatic effect on patients (1). Treatment safety takes part of the decision to undergo bariatric surgery. During multidisciplinary team meetings, the clinical pharmacist must rely on guidelines to limit drug-induced iatrogenesis. This review aims at assessing influence of bariatric surgery on the clinical impact and PK of cardiotropic drugs so as to document pharmacists' notifications.
Setting and method: Literature review on Medline—1946 to may 2016—with terms: cardiovascular drugs AND bariatric surgery OR malabsorption syndrome. Related articles were reviewed.
Main outcome measures: Pharmacokinetic or pharmacodynamic data and clinical impact of cardiotropic drugs.
Results: A total of 924 titles, and abstracts when necessary, were screened for eligibility. After reviewing process, 15 studies were included: nine concerning digoxin, five beta-blockers (BB) and one amiodarone. Published studies varied in methodology: five case report, seven case control and three cohort studies. Studies reported variations of digoxin plasmatic concentrations among 22 patients versus 66, suggesting liquid oral form are preferred. No clinical event was notified. More the BB is liposoluble (propranolol), the higher the toxicity is, such as heart rate and blood pressure decreasing, with potential fatal outcomes. A case of amiodarone-induced hyperthyroidism is described after bariatric procedure showing an increase plasma concentration adjusted to weight.
Conclusion: While the impact on narrow therapeutic range drugs is documented, others cardiotropic drugs may cause serious patient injury justifying their monitoring. Therefore, risk must be identified for all patients undergoing bariatric surgery to setting up closely therapeutic monitoring. Further studies are still expected to lead to recommendations about posology and treatment withdrawal to improve patient safety.

Reference

1. Love JN, Howell JM, Litovitz TL, Klein-Schwartz W. Acute beta blocker overdose: factors associated with the development of cardiovascular morbidity. J Toxicol Clin Toxicol. 2000;38(3): 275–81.

HP-PC065: Use of compliance aid devices in psychiatric patients

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Please specify your abstract type: Research abstract
Background and objective: The issue of non-compliance to prescribed medical treatment has been reported to be a crucial problem in psychiatric outpatients. The aims of this study were to assess the extent of non-compliance in a cohort of psychiatric outpatients in Malta and to investigate the applicability of using a 7-Day Multi-Dose pill box in terms of practicality, ease of use and impact on compliance within this patient group.
Setting and method: The study was conducted at Mount Carmel Hospital, a psychiatric hospital in Malta. Twenty outpatients were recruited by convenience sampling. The study was divided into two phases. During Phase 1, patient compliance was assessed using the Medication Adherence Rating Scale (MARS) survey and patients were administered Part A of a questionnaire entitled 'Assessment of the 7-Day Multi Dose pill box'. This questionnaire evaluated the patients' opinion regarding the 7-Day Multi Dose pill box before and after its use. In Phase 2, the chosen patients were given a demonstration on how to use the 7-Day Multi Dose pill box and the device was given to them to use at home for one week. After one week, Part B of the questionnaire was completed and compliance was re-assessed using MARS .
Main outcome measures: Evaluation of adherence before and after use of the compliance aid device.
Results: Of the 20 patients recruited, 9 were male and 11 were female. The mean age was 46 years (range 33–70) and the mean number of daily medications 6 (range 3–16). Upon initial scoring using MARS, 15 patients were adherent and 5 patients were non-adherent. A higher adherence was observed in patients taking 5 or more medications daily. Ten patients accepted to move on to Phase 2 of the study and took the device home to use for one week. Out of these 10 patients, 4 felt that the way they take their medication improved following use of the device and 7 out of 10 patients would consider buying the device since they found it practical and easy to use. Statistical analysis of MARS score before and after use of the device showed no significant improvement in compliance ($p > 0.05$). There was no significant association between level of adherence and type of psychiatric condition ($p > 0.05$). Furthermore, results did not indicate increased adherence in patients who have a carer in-charge of their medication administration or in patients using a compliance aid device ($p > 0.05$).
Conclusion: The use of a compliance aid device in psychiatric patients is challenging due to difficulty in establishing patient communication and motivation. The pharmacist is in a position to identify patients who would benefit from the compliance aid device.

HP-PC066: Evaluation of the use of enoxaparin in a pediatric hospital

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Enoxaparin, a low molecular weight heparin, is the most prescribed anticoagulation treatment in paediatric indications. However, the marketing authorization mentions that due to the lack of data, the use of enoxaparin is not recommended to children nor anyone weighing less than 40 kg. Thus, expert recommendations described specific dosage for the paediatric use: we aimed to compare these with our hospital practices.
Design: We carried out a retrospective evaluation of low dosages of enoxaparin (2000 IU) from electronic prescriptions over 2015, focusing on patients weighing less than 40 kg and over 2 month old. Dosage, duration, therapeutic indication and biological monitoring were collected, as well as age and weight of each patient. Prescriptions were systematically compared to the expert recommendations of the American College of Chest Physicians.
Results: We included 66 patients, among whom 53% were boys ($n = 35$). On average, they were 7.7 year old (4 month to 21 year old) and weighed 23 kg (2.8–39.5 kg). Most of therapeutic indications were preventive ones: in nephrotic syndrome context (29%), lymphoblastic leukaemia (17%), surgical context (25%) or other (17%). Enoxaparin was also prescribed in curative treatment of thrombus (12%). The average dose was 68 IU/kg/day for preventive indications (PI) and 240 IU/kg/day for curative ones (CI) whereas the expert recommendations suggest respectively 100 and 200 IU/kg/day. Sixty-four of medical prescriptions had a dosage which differs from more than 20% with recommendations (69% of the PI and 25% of the CI). Twelve patients had a biological monitoring of anti-Xa level (9% of patients with PI and 100% of patients with CI). An average of 4.6 days was needed to achieve a proper anti-Xa level. 46% of anti-Xa levels executed were under the target area.
Conclusion: Expert paediatric recommendations differ from adult ones regarding the dose of preventive enoxaparin. Indeed, the dose adjustment may be crucial for low weights. Nevertheless we showed that prescribing practices are perfectible even in a paediatric hospital. Moreover, the large proportion of anti-Xa levels measured under the target area suggests that it may be useful to monitor it even for preventive dosages.

HP-PC067: Direct antiviral agents for HCV: the role of the pharmacist in optimising clinical outcome and economic impact

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Please specify your abstract type: Research abstract
Background and objective: Direct acting antivirals (DAAs) have dramatically changed the treatment of chronic hepatitis C virus (HCV) infection. Although DAA regimens are characterized by very high rates of sustained virological response (SVR) even in advanced cases, enthusiasm has been dampened by their high cost. Furthermore, final data regarding routine medical practice are still limited and real world data are required. A multidisciplinary approach between Pharmacists and Haepatologists has been endorsed regarding cost-effective treatment selection, appropriateness of medication prescribing and post-treatment monitoring. The objective is to determine the impact of this approach measuring the Pharmacists' interventions.
Setting and method: Data regarding patients starting DAA treatment between February 2015 and June 2016 were collected prospectively including: demographic characteristics, regimen prescribed, treatment dispensed, virological response and Pharmacists' interventions.
Main outcome measures: Rate of Pharmacists' interventions classified as treatment adjustments for clinical and economic purposes.
Results: Patients' characteristics: 37 males (63%), mean (SD) age 63 (10.15) years, 33 genotype 1 (56%) e 51 advanced fibrosis F4 (86%). Thirty-one patients (53%) had no previous treatment. Treatments ± ribavirin were: sofosbuvir (14 pts), sofosbuvir + simeprevir (5),

sofosbuvir + daclatasvir (3), sofosbuvir/ledipasvir (20), ombitasvir/paritaprevir/ritonavir (4), ombitasvir/paritaprevir/ritonavir + dasabuvir (12), simeprevir + IFN (1). Twenty-six patients (44%) were treated for 24 weeks (12 week pay-back policy). Twenty Pharmacists' interventions were carried out with an acceptance rate of 80%. The interventions included treatment adjustments due to drug interactions (4), inappropriate treatment according to genotype (2), duration of treatment (5) and switch to a more cost-effective therapy (9). Seven Pharmacists' interventions concerning treatment switch were applied (78%) resulting in a cost saving of €102,102.7. All assessable patients (28) have a negative serum HCV RNA 12 weeks after the end of treatment (SVR = 100%) while 1 patient died during follow-up (due to the disease).

Conclusion: The Hospital Pharmacist, as an active member of the multidisciplinary team, has an essential role in guaranteeing optimal care for HCV patients at the best cost. Monitoring has also shown to be fundamental to evaluate the real world effectiveness of these drugs approved with surrogate endpoints.

HP-PC068: Are hospital pharmaceutical staff educated on the criticality of thermosensitive drugs?

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Please specify your abstract type: Research abstract

Background and objective: In the use of thermosensitive drugs, the safety of patient care involves compliance with allowed temperatures. Having the right information at time of care is essential.

The aim of this study is to assess, within a French University Hospital, pharmaceutical staff knowledge on the criticality of thermosensitive drugs and to educate them accordingly, including associated patient risks.

Setting and method: An assessment of knowledge using a questionnaire was led in January 2016 among pharmaceutical staff in a 1500-bed Hospital (11 pharmacists, 14 pharmacy residents, 28 pharmacy technicians). Evaluation criteria were: storage temperature of refrigerated drugs and frozen drugs, thermosensitive drug retention period after removal from the refrigerator, highest risk situation for a thermosensitive drug ($T > 8$ °C or $T < 2$ °C) and action to be taken during a temperature excursion.

Main outcome measures: To determine shortcomings in the management of thermosensitive drugs in order to adapt appropriate tools.

Results: 43 completed questionnaires were collected. Collected questionnaires included 12% from pharmacists (n = 5), 23% from pharmacy residents (n = 10) and 65% from pharmacy technicians (n = 28). Regulatory variations in storage temperatures of refrigerated and frozen drugs are known in respectively 79 and 32% of cases. 3% of pharmaceutical staff are aware of thermosensitive drug retention periods after removal from the refrigerator and 51% of the highest risk situation for a thermosensitive drug ($T < 2$ °C). The measures to adopt during a temperature excursion are understood in 84% of cases.

Conclusion: This study highlights the lack of knowledge on the management and criticality of thermosensitive drugs and the lack of information available to pharmaceutical staff. Dissemination of data and questionnaire reponses have been beneficial for the pharmacy department and have reduced inequalities in available information among pharmaceutical staff. Subsequent to the study, thermosensitive drug management procedures have been revised. The deployment of this questionnaire is continuing via the University Hospital intranet in order to train all health professionals in good patient care.

HP-PC069: Temocillin use in a French University Hospital: what role in current therapeutic arsenal?

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Please specify your abstract type: Research abstract

Background and objective: Temocillin is a beta-lactam antibiotic exclusively active against Gram-negative pathogens. Its use can avoid that of broad spectrum antibiotics, such as carbapenems, for the treatment of infections due to extended-spectrum beta-lactamase producing enterobacteriaceae. However, the absence of recommendations by learned societies on temocillin use could lead to misuse and the emergence of resistance.

The aim of this study is to identify the role of temocillin in a French University Hospital arsenal in order to limit ecological risks.

Setting and method: A retrospective study was conducted in a 1500-bed University Hospital. All adult patients having received at least 2 days of treatment between June 2015 and April 2016 were included. Data collected for the study were: age, sex, treatment indication (type of infection, identified pathogen, dosage and treatment duration), previous antibiotics and therapeutic outcomes.

Main outcome measures: The indicators chosen were: treatment indication, prescribed dose and treatment duration.

Results: Two patients were included. In July 2015, temocillin was used in a 47 year old female as first-line treatment of intraperitoneal haematoma infection due to multiresistant *Klebsiella pneumoniae*. Prescribed at a dose of 2 g twice daily by an infectious diseases specialist, treatment was continued at the same dose for up 3 weeks with therapeutic success.

In August 2015, temocillin was used in a 59 year old male for the treatment of bacteraemia due to multiresistant *Enterobacter aerogenes*. Previously treated by imipenem/cilastatin, temocillin was prescribed as second-line treatment at a dose of 2 g twice daily by an infectious diseases specialist. Treatment was continued at the same dose for up 6 weeks with therapeutic success.

Conclusion: The dissemination of antibiotic resistance among Gram-negative enterobacteriaceae continues to be an increasing threat for healthcare worldwide. Within this context, temocillin could be an interesting alternative. Determining the role of temocillin in a therapeutic arsenal is essential. Our hospital considers temocillin as a "critical antibiotic" although its use is not exclusively limited to the New Drug Application. Therefore, temocillin prescriptions are monitored permanently by infectious diseases specialists, microbiologists and pharmacists in order to improve the good use of this antibiotic and to optimise patient safety.

HP-PC070: How can pharmacists enhance equality of information on the management of drinkable solutions?

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Please specify your abstract type: Research abstract

Background and objective: Drinkable solutions are more susceptible to deterioration and can lead to a potential risk for patient care. Having the right information at time of care is essential.

The aim of this study is to assess nursing staff knowledge in a French University Hospital on the management of drinkable solutions to elaborate tools to help health professionals and to enhance equality of information in order to optimise patient care.

Setting and method: An assessment of practice using a questionnaire was conducted in May 2016 among a share of the nursing staff in a

1500-bed University Hospital. Evaluation criteria were: knowledge on the self-life after opening, information inquired on the medicine bottle after opening (date of opening, date of expiry) and provision within the care unit of any information on the management of drinkable solutions (date of expiry after opening, storage temperature).
Main outcome measures: To determine shortcomings in the management of drinkable solutions in order to adapt appropriate tools.
Results: 133 completed questionnaires were collected. 20% of nursing staff replied that the period-after-opening is the same for all of drinkable solutions. This period is estimated at 1 month in 21% of cases, 2 weeks in 10% of cases and 7 days in 8% of cases. 58% of nursing staff do not know how to store drinkable solutions after opening. The date of opening or the date of expiry after opening are specified on the medicine bottle in respectively 77 and 3% of cases. Only 11% of nursing staff have tools pertaining to the management of drinkable solutions.

These observations led the pharmacy to create and distribute appropriate tools. Storage methods for the drinkable solutions available in our hospital were collected directly from pharmaceutical laboratories. This information has been made available to nursing staff via drug control software (Pharma®, Computer Engineering, Paris).
Conclusion: This study highlights the lack of knowledge on the management of drinkable solutions and the lack of information available to nursing staff. In our hospital, the dissemination of appropriate data reduced inequalities in available information between care units. Data will soon be integrated within the drug prescription software (Mc KESSON USV2®, Crossway, San Francisco) in order to homogeneously train all health professionals in good patient care.

HP-PC071: Impact of a clinical pharmacist in an orthopaedic surgery care: medication reconciliation of 325 patients

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Medication reconciliation (MR) is a process which allows prevention of iatrogenic injuries during patient's hospitalisation and transfers. Since 2013, a clinical pharmacist has been integrated into the orthopaedic surgery care. He has performed MR at patients' admission. The aim of this study was to evaluate the impact of medication reconciliation performed by a clinical pharmacist.
Design: A prospective monocentric study was conducted on patients admitted in an orthopaedic surgery care (elective or unplanned surgery), during 3 months. The clinical pharmacist established the Best Possible Medication History (BPMH) from at least three sources of information (including patient interview when possible). Then, it was compared to the Admission Medication Order (AMO) (from anaesthetists when elective or orthopaedists when unplanned). Unintended Medication Discrepancies (UMD) detected were discussed with prescribers in order to be corrected. Epidemiological data, number and type of UMD, therapeutic classes involved and the percentage of corrected UMD were collected and their potential clinical impact was assessed.
Results: In this study, 325 patients were included during 3 months. Elective surgeries were concerned in 72% of the cases. At least one UMD was identified in 158 patients (49%) (median age: 77.1 years old; male/female ratio: 0.65). Of these, 133 (84%) were older than 65 years old. Finally, 406 UMD were detected, being 2.6 by patient. Main therapeutic classes concerned cardiovascular system (31%), nervous system (20%) and digestive system (18%). Of the 406 UMD detected by MR, there were 55% of omissions, 27% of inappropriate dosing and 13% of renewal prescriptions stopped by the patient. Finally, 87% of UMD were corrected. Of these 406 UMD, 2% were major errors (i.e. causing potential harm), 39% were significant errors (i.e. monitoring or intervention potentially required to preclude harm) and 59% were minor errors (i.e. without potential harm to the patient).
Conclusion: Medication reconciliation process performed by a clinical pharmacist allows detection and correction of UMD on half of patients in surgery care particularly on elderly patients. The high proportion of UMD can be explained by the multiplicity of actors involved in medication management. Health Information Technology could help to focus MR on patients at high-risk of adverse drug events.

HP-PC072: Monotherapy or dual therapy with Darunavir/cobicistat in HIV patients: preliminary study of efficacy and safety of this new coformulation

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Please specify your abstract type: Research abstract
Background and objective: Darunavir plus Ritonavir (DRV/r) have shown optimized results in simplification strategies (monotherapy (MT) or dual therapy (DT)) for selected HIV + in randomized clinical trials and real life experience. Recent introduction of one pill DRV plus cobicistat co-formulation (DRV/c) may be particularly suited for both MT/DT allowing once daily administration optimizing dosage and adherence. The objective of our study is to evaluate efficacy and security of DRV/c in MT and DT.
Setting and method: All HIV + adults with antiretroviral change to DRV/c in MT/DT at a reference hospital in the Northwest of Spain were included in this retrospective study. A statistical analysis was performed using the SPSS v.19.software.
Main outcome measures: Epidemiological, clinical, antiretroviral regimen, serum creatinine, lipids and inmunovirological data (RNA-HIV and lymphocytes CD4) were compared previous and after change to DRV/c.
Results: 71 HIV treatment-experienced patients have received DRV/c in DT (27) or MT (44). 76.1% were men with a mean age of 48 years. Main risk factors were: 45.1% heterosexual, 28.2% MSM, 18.3% injection drug users, 2.8% mother-to-child transmission, 1.4% transfusion in haemophiliac patient and 4.2% unknown. CDC category distribution was 64.8% A, 4.2% B, 28.2% C and 2.8% unknown. Overall mean nadir CD4 counts were 196.7 ± 115.1cells/mcL. Mean time since DRV/c prescription to discontinuation or until analysis was 182.5 days [range 61–296]. 86.4% DRV/c MT were prescribed to patients with prior DRV/r MT in order to simplify treatment and the mean time of the duration of these prior therapies were 3.1 years. In case of DT, 66.7% were prescribed on patients with prior DRV/r + 3TC with a mean duration of 1.3 years. Serum creatinine increases (1.03 vs. 1.08; $p < 0.001$) and CD4 decrease (714.1 vs. 663.3; $p = 0.031$) when patients move to DRV/c. No significant change in the other analytical parameters and all patients maintained undetectable. 2 patients discontinue DRV/c due to intolerance and inability to swallow in each case.

Conclusion: This preliminary study concludes that DRV/c in MT or DT is efficacy (no viral rebound) and safety. Although an increase in creatinine was observed, it would not be considered clinically significant. Of note, lymphocytes decreased significantly and it will be important closely monitored to check that maintain effectiveness during the follow up.

HP-PC073: Developing clinical pharmacy in emergency department setting up a medication reconciliation process

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: In Emergency Department (ED), if a Drug Related Problem (DRP) happens at the patient admission, the risk is the error remains until discharge. One part of DRP may be avoided with using Medication Reconciliation (MR). The objective of this study was to evaluate the feasibility of setting up a Medication History (MH) of patients in ED in an acceptable lap of time before they were transferred in another unit or discharged.
Design: A 6 months prospective study was conducted in ED in a university hospital in France. Two junior pharmacists coached by a senior pharmacist, after a 2 months training for MR, were in charge of the data and MH collection. For all patients, we collected age, MH according to number of sources, discrepancies identified, adherence to treatment (according to the social security questionnaire), type of sources. MH were established according to community pharmacies, patients, previous electronic patient files, prescription sheets, patient's family, packs of pills and to the general practitioner (GP). For patients from Long Term Care Facilities (LTCF), the MH was established only by communication with the LTCF. Then, the current prescription was compared with the home medication regimen. MH and discrepancies (omitting medication, incorrect dose, ambiguous name) were recorded in the electronic patient files to be available during hospitalization. Because ED does not have a pharmaceutical review of prescriptions, only major discrepancies were transmitted to physicians.
Results: We collected 1426 MH (187 from LTCF), with a sex ratio of 1.0 and a medium age of 74.5 years old. It represented an average of 9.5 MH per day or 19 min per MH. Among patients who did not come from LTCF, sources used by pharmacy students were patient's community pharmacy (967, 78% of cases), patient (890, 72%), previous electronic patient file (769, 62%), prescription sheets (634, 51%), call to GP (80, 6.5%), GP mail (78, 6.3%), patient's family (47, 3.8%), packs of pills (29, 2.3%), community nurse (26, 2.1%). Finally, 683 patients (48%) had been hospitalized, others were discharged.
We analysed MH for 1099 patients: at least one DRP occurred for 599 patients (55%). Among 386 patients, 150 (39%) had an immediate pharmaceutical intervention because of the risk due to discrepancy. Among 203 patients who did not come from LTCF and who could communicate, 162 were good adherent to treatment (80%).
Conclusion: This study highlights the great interest of the MH by pharmacists at ED, which avoids many DRP. The presence of pharmacists in ED contributes to maintain a safe environment for medication and to assist prescribers in the continuity of treatment between home and hospital. Spending 20 min by MH, we identify one DRP every 11 min. Nevertheless, it could be benefit to develop this activity because of the satisfaction of the emergency physicians. Currently, MR is the first step to develop clinical pharmacy in the ED.

HP-PC074: Vitamin D supplementation in patients with head and neck cancer after surgery

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Please specify your abstract type: Research abstract
Background and objective: Emerging evidence in the literature suggests a high prevalence of suboptimal vitamin D (vitD) and an association between lower serum levels and higher mortality in cancer. The objective of this study was to quantify vitD deficiency in patients after surgery for head and neck cancer, and to determine the effect of one cholecalciferol intramuscular dose.
Setting and method: Intervention study with a follow-up period of 5 months (November 2015–February 2016) performed on patients followed by the Nutrition Support Unit after surgery for head and neck cancer.

Demographic and physiopatological data, including admission diagnosis, age, gender, calcium, magnesium and phosphate were collected. Nutrition screening by CONUT index was carried out. A single intramuscular dose of 200.000 UI cholecalciferol (Vitamine D3 BON®) was administered to vitD-deficient patients and serum 25-hidroxy-vitamin D (s25OHD) records after the administration, including Primary Carés records after discharge, were evaluated (Reference Range 30–70 ng/mL).
Main outcome measures: s25OHD (<20 ng/mL: deficiency; 20–31 ng/mL: insufficiency; ≥32 ng/mL: sufficiency).
Results: Data from 25 patients with a mean (SD) age of 63.8 (14.8) years were collected (males: 92%). The admission diagnosis was laryngeal squamosis cell carcinoma (n = 14), glottis carcinoma (n = 6) and nasopharynx, tongue and skull base cancer (n = 5).

At baseline, 1, 17 and 7 patients were considered have high, medium and low risk of malnutrition, respectively. The mean (SD) serum 25OHD was 8.46 (5.68) ng/mL (Deficiency: 24 patients; Insufficiency: 1 patient).

Despite the role of vitD in mineral balance, calcium, magnesium and phosphate mean (SD) serum levels were between the normal range 9.15 (0.36) mg/dL, 2.08 (0.22) mg/dL, and 2.49 (0.89) mg/dL, respectively.

17 s25OHD records were available 1 week after the administration (Mean (SD) = 21.46 (13.79) ng/mL). 7 and 4 patients still showed deficiency and insufficiency, respectively.

Primary Care's records from 3 patients were available after discharge (30.2, 36.5 and 52.5 ng/mL).
Conclusion: Poor nutritional status and high prevalence of suboptimal vitD in patients with head and neck cancer were found.
A single dose of intramuscular cholecalciferol slowly raises s25OHD. Follow-up after discharge is essential to evaluate the achievement of the therapeutic objective.

HP-PC075: Broad spectrum antifungal combination therapies in hospital: retrospective analysis of 3 years of prescriptions

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Please specify your abstract type: Research abstract
Background and objective: Nowadays, the antifungal combination therapy is not approved in France and literature data have not shown a real benefice of these combinations (Marr 2015). However, broad spectrum antifungal combination therapies are sometimes prescribed in our hospital. This work discusses these prescriptions over the past 3 years: patients characteristics and indications.

Setting and method: This is a descriptive retrospective study. It took place in a teaching hospital. Antifungal broad spectrum therapies (liposomal amphotericin B, caspofungin, micafungin, posaconazole, voriconazole) used between 1st January 2013 and 31st December 2015 were included.
Main outcome measures: Indications, type of combination and patients specifications were analysed.
Results: Only 19 patients (1.9% over all patients receiving antifungal therapy; n = 19/977) received an antifungal combination therapy during the study period. Majority of patients presented risk factors: 31% of patients had an organ transplant (n = 6), 53% suffered from malignant blood disorders (four acute myeloid leukaemia, two chronic lymphoid leukemia, one non-Hodgkin's lymphoma, one Hodgkin's lymphoma and two refractory anaemia with excessive blast), 11% suffered from solid cancer (one lung cancer and one breast cancer) and 5% suffered from chronic obstructive bronchopneumopathy (n = 1). Antifungal combination therapy was used against invasive aspergillosis in 68% of cases (n = 13) among which complications such as brain and cardiac impairment were found in 32% of patients (n = 6). The six remaining patients (32%) were co-infected with candidiasis for three patients and mucomycosis for three patients. Voriconazole was logically the most used in combination, and just one patient received oral form. It was in majority prescribed with caspofungin (38%, n = 8) and intravenous liposomal amphotericin B (33%; n = 7). Combination including liposomal amphotericin B and caspofungin (n = 3, 14%) or posaconazole with liposomal amphotericin B (n = 1) were found in our study. Five patients deceased during the hospitalization of the fungal infection (26%) which shows the gravity of these cases. Majority of patients (>50%) was treated less than 10 days with these combinations.
Conclusion: This retrospective study shows that patients who received antifungal combination therapy were mostly immunocompromised, co-infected or experienced a severe infection with severity factors. The antifungal combination was in majority initiated because monotherapy failed to cure the patient. All prescriptions were discussed with a mycologist who tried to shorter the combination treatment duration. This multidisciplinary approach is a major key in the process of these type of treatments.

HP-PC076: Use of and follow-up of posaconazole tablets (broad spectrum antifungal) in a teaching hospital

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Please specify your abstract type: Research abstract
Background and objective: Because of its broad spectrum and the risk of resistance mutation, delivery of posaconazole is nominative and controlled by hospital pharmacists. The aim of this work was to describe the use and pharmaceutical follow-up of posaconazole tablets over a 7-months period.
Setting and method: This is a descriptive retrospective study over a 7-months period from November 2015 to May 2016 in a teaching hospital. All patients who received posaconazole tablets were included.
Main outcome measures: Indications and dosage were reported.
Results: 23 patients were included in the study. Posaconazole tablets were used for: fungal invasive infection prophylaxis in case of stem cell transplantation (52%; n = 12), fungal invasive infection prophylaxis if a chemotherapy was started to treat a chronic myeloid leukaemia or a myelodysplasic syndrome (26%; n = 6); treatment of invasive aspergillosis (13%; n = 3); mycetoma (5%; n = 1); zygomycosis or mucormycosis while patient had renal impairment (5%; n = 1). All of these indications were approved for posaconazole (marketing authorization and local guidelines). Only 10 patients (43%) received a loading dose (300 milligrams twice a day) as recommended in approval authorization. Posaconazole blood levels were monitored by pharmacologists: 70% of patients (n = 16) did not need dosage modulation which shows that variability is not so important. But three patients did not have any assay to monitor posaconazole blood concentration. 1 patient received a loading dose and was switched to intravenous voriconazole after ICU transfer. 3 patients needed increase and/or reduction dose to obtain optimal posaconazole blood levels.
Conclusion: This study describes the use and the follow-up of posaconazole tablets during the first months after its approval in Europe. All indications are approved for posaconazole but this analysis shows that pharmacist have to remind the necessity of a loading dose. Dosage can be adjusted according to assays results.

HP-PC077: Medication reconciliation in emergency department: development of a prioritizing model

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Please specify your abstract type: Research abstract
Background and objective: Due to the acute, hectic environment in a fast-paced work-flow emergency department (ED) it is a challenge to verify the correct and updated medication list for the admitted patients. When performing medication reconciliation (MR) in this environment, these challenge has to be taken into account and prioritizing patients for MR could be necessary.

The objective of this study was to identify risk factors correlated to clinical relevant medication discrepancies (crMDs) among patients admitted to ED, and based on these revealed risk factors, develop a model for prioritizing patients for MR in the fast-paced work-flow at the ED.
Setting and method: 276 patients continuously included at the ED, Diakonhjemmet Hospital (DH), Oslo, Norway. Trained pharmacists and emergency nurse conducted MR. Patient specific factors and revealed crMDs, between hospital admission records and information about prehospital medication use, were recorded. Binary linear regression was used to identify risk factors correlated to crMDs. The prioritizing model was built using statics and clinical experiences.
Main outcome measures: What risk factors is correlated to crMDs and how precisely do the prioritizing model classify the patients as high- and low-risk patients.
Results: 62% of the patients had ≥1 crMD. The following were identified as risk factors correlated to crMD and were suitable for inclusion in the prioritizing model; gender (woman), age (≥60), ≥1 admission to hospital last 12 months, admission causes; surgical, malfunction, cancer. The model correctly classified 76.1% of the patients with crMDs as high risk. Further, 23.9% of the patients with crMDs were classified by the model as low-risk patients (false negatives). The model classified 27.1% of the patients who did not have a crMD as high-risk patients (false positives).
Conclusion: The prioritizing model developed can be helpful in identifying what patients are at increased risk of having crMDs in the fast-paced work-flow at the ED. Identifying these patients will result in using the resources available in the ED in the most efficient manner and utilizing the full potential of the MR method. As a consequence of this, patient safety would be increased.

HP-PC078: Intravenous potassium chloride: quick audit of prescribers knowledge and recommendations regarding safe practice and proper usage

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Our hospital has established methods that try to ensure the safe use of High Alert Medications. Intravenous potassium chloride (KCl) was the subject of preventive measures: separation of different dosages (KCl 7.46% vials reserved for paediatric services and KCl 10% vials reserved for adult services); creation of an advice record for doctors and nurses; specific labelling of storage areas; double-check the prescription and administration. The objective of this study was to evaluate the knowledge of the safe use of intravenous KCl by prescribers.
Design: Multiple-choice questions were developed for prescribing recommendations established by our hospital with the collaboration of the doctor who is Chairman of the Central Committee of vigilance and risk associated with care (CVRIS). A link to the online survey was sent by email to 85 physicians practicing in 14 departments (eight paediatric services and six adult services). The results were extracted and interpreted in Excel®.
Results: 57% of physicians responded to the survey (17 medicine residents, 32 hospital doctors). In paediatric services, 93% of doctors know that only the KCl 7.46% should be used. 87% know the unit of prescription to be used (mmol/kg or mEq/kg), and 90% know that the maximum recommended infusion rate is 0.5 mmol/kg/hour (or 1 mmol/kg/h in recovery unit). In adult services, the recommended maximum rate of infusion (1 g/h) is known to all prescribers, but only 56% know that the concentration of KCl must be less than 4 g/L. 74% of paediatric doctors say that their KCl prescriptions are checked by a second doctor, but the answers in the same service area are sometimes contradictory. In adult services, only 6% of physicians say that the prescriptions are double-checked. The information brochure available on the intranet of the hospital is known by 16% of prescribers.

The response rate of physicians to the survey was satisfactory. Therefore, the recommendations are rather well known by prescribers, except the value of the maximum concentration of infusion for adults. The results of this audit were returned to the doctors, accompanied by a reminder stating the need to double-check the prescription and the existence of advice records on the website of the hospital.
Conclusion: This audit is an approach to increase the safety of the use of High Alert Medications. It will be completed a second time, by an evaluation of prescriptions collected and the storage conditions of potassium chloride in the care units.

HP-PC079: Stop taking off the blister packs of solid form drugs in prison

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Please specify your abstract type: Research abstract
Background and objective: Data listed behind each unit dose of a primary packaging of a pharmaceutical product are essential for a safe identification for the patient. However, the last medical services of the Lausanne University Hospital where nurses remove the solid form drugs (SFD) from their blisters when they prepare in advance the week container were in the Vaud's prisons.
The aims of the study were:

Part 1. Describing the medication of inmates
Part 2. Classifying the SFD blisters
Part 3. Conducting a pilot phase to stop the removal of blisters
Setting and method: From February to June 2015 in the medical wards of the five prisons of Vaud.

Part 1. Analysis of data from billing database.

Part 2. Assessment of essential data for safe identification of SFD unit doses. Classification of SFD using traffic lights colours based on data on blisters.

Part 3. Studying barriers to change the way of preparation by reviewing literature, interviewing nurses, direct observation. Starting the revised procedure.
Main outcome measures: Part 1. Number of inmates with at least one treatment; number of drugs per inmate; top three of all prescriptions and percentage of psychotropics.

Part 2. Essential data needed on blisters determined; percentages of SFD classified with traffic lights colours.

Part 3. Major barriers identified and evaluated before launching the change.
Results: Part 1. 669/872 inmates (76.7%) had at least one drug. The average number of drugs per inmate was 3.7 ± 2.8 (max: 17). Out of 2459 prescriptions, the top three involved paracetamol (194), quetiapine (173) and ibuprofen (124) and 978 were psychotropics (39.8%).

Part 2. The four data identified as essential: brand name, dosage [mg], batch number, expiration date. The SFD unit doses were classified as green when the blister included four data, yellow with two or three and red with less than two. Of the 273 SFD in cupboards, 90 were green (33%), 57 yellow (21%) and 126 red (46%); an infovigilance was sent to each manufacturers.

Part 3. Potential barriers identified: trays' sizes and space in drug's cupboards; preparation time to cut *versus* to remove the blisters; risks of self/hetero-aggression with pre-cut blisters; drugs packaged in bulk; multidose liquid medications.

Using containers larger than is usual was rarely necessary; space in cupboards was sufficient. The preparation time gradually decreased during the study. Ingestion or aggression with pre-cut blisters was considered as limited, based on literature and experiences of two others prisons (Geneva; Lyon). For bulk SFD and multidose liquid drugs: proposals to the pharmacy to store some alternatives blistered SFD; blistering expensive bulked drugs; availability of the entire package delivered to inmates.

The pilot phase was initiated in May 2015.
Conclusion: A majority of inmates takes a drug treatment. Half of SFD unit dose is identifiable (trade name and dosage) but an effort from manufacturers would better secure the drug supply chain. The study of the barriers helped to further implement the pilot phase. Since early 2016, none of the five prisons medical wards are removing the blisters and no incident was reported.

HP-PC080: Analysis of the indication of parenteral nutrition prescription

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Please specify your abstract type: Research abstract
Background and objective: Nowadays it is well known the importance of parenteral nutrition (PN) in the treatment of patients. Its use is not without risks such as infection, extravasation, catheter displacement, etc. In order to increase the benefit/risk profile it is

necessary to know when nutrition is necessary and if the prescription is correct.
Setting and method: Descriptive retrospective study, we analyse PN requested to the Pharmacy Service in April of 2015. The catalogue of nutritions evaluated is divided into peripheral (1400 kcal, 1920 ml) and central administration: S-1 (1900 kcal, 2053 ml), S-2 (2300 kcal, 2566 ml), S-2 reduced volume (1600 kcal, 1477 ml), Stress (2380 kcal, 2666 ml) and Stress reduced volume (2200 kcal, 1970 ml).
The data were obtained from the nutrition module software SIAS and medical history of each patient. The suitability of the NP was evaluated according the protocol for prescribing enteral and parenteral of the Spanish Society of Parenteral and Enteral Nutrition (SENPE).
Main outcome measures: The variables were: type of nutrition, duration and indication.
Results: In the mentioned period 115 patients received NP, 82 (71.3%) was peripheral and 33 (28.7%) by central line. 776 nutritions were dispensed, 453(58.4%) peripheral, 113 (14.5%) S-2.67(8.7%) Stress, 61(7.8%) S-1.42(5.4%) S- 2 reduced volume and 40(5.2%) Stress reduced volume. Regarding the duration of prescription peripheral NP was kept an average of 5 days while the central line was 6 days.
Of the total patients, 97 (84.3%) received nutrition being indicated while 18 (15.7%) received unjustified use (approximately half of these patients were prescribed parenteral nutrition after suffering a stroke). Among the situations that justify its use include: surgery due to neoplasms (24.5%), liver disease and biliary tract (17.3%), acute pancreatitis (15.3%), digestive (4.1%) bleeding and paralytic ileus (4.1%).
Conclusion: We can observe a clear dominance of the peripheral line and an average duration is around 5 days in peripheral and central line, that data is consistent with the clinical practice guidelines. Regarding the indication most prescriptions were appropriate, increasing the benefit of this action.

HP-PC081: Use of nefopam in epileptic patients: a misuse of contraindication by clinical pharmacists

Hélène Dewaele*, Laura Foucault, Marion Collignon, Emmanuel Cirot, Anne-Laure Raso, Xavier Pourrat

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Please specify your abstract type: Research abstract
Background and objective: Nefopam is a widely used antalgic in hospital. Its use is contraindicated in the epileptic patient as it results in lowering the epileptogen threshold and is likely to trigger epileptic seizures. The clinical pharmacist should systematically warn the prescriber against this contraindication when analysing prescriptions. Following the onset in our establishment of an epileptic condition in a patient treated with nefopam, who had not been subject to any pharmaceutical intervention (PI), we set about analysing the validation practices regarding this contraindication and possibly implementing actions designed to improve those practices.
Setting and method: Retrospective collection over a period of 17 months of prescriptions for patients hospitalized in 210 hospital beds with clinical pharmacy service (associating med-reconciliation, checking prescription according to medical file and participation to medical rounds): orthopaedic surgery, hepatic-gastro-enterology, general surgery, liver transplant and chest surgery.
Records of patients with nefopam prescription associated to medication belonging to the therapeutic class of antiepileptics were consulted with a view to finding cases of epilepsy. The pharmaceutical alerts were extracted from the pharmaceutical software.
Main outcome measures: Number of epileptic patients treated with nefopam, number of pharmaceutical interventions issued when prescribing nefopam in epileptic patients.
Results: The study focused on 11,252 patients. 3980 (35.4%) of them were prescribed nefopam, and 143 (1.3%) of them were prescribed nefopam associated to medication belonging to the therapeutic class of antiepileptics. After analysis of the patients' records has shown that 55 of them were really epileptic. Only 29 PI's were effected (52.3% of problematic prescriptions), and 25 (86%) of them had an immediate prescription change. 77.8% (14/18) of the patients have a PI in medicine services compared to 40.5 (15/37) in surgery services ($p < 0.01$).
Conclusion: The results of this study show that 47% of the contraindications related to the use of nefopam in epileptic patients are not reported to the prescriber. These results will be presented to our pharmacists so they can take them into account. Subsequently a new study will be conducted to measure the relevance and efficiency of this program.

HP-PC082: Impact of medication reconciliation at hospital admission on prescription review by pharmacists

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Medication reconciliation (MR) has been demonstrated to reduce drug-related problems in inpatients. In our university hospital, MR has been performed for 200 beds for 10 years at the same time as prescriptions review.
The aim of this study was to assess the impact of MR on pharmaceutical interventions (PI) during prescriptions review.
Design: A 6-month prospective study in orthopaedic surgery, hepato-gastro-enterology, general surgery, liver transplant and chest surgery was conducted. During medication review all PIs were collected and those related to MR (RPI) were identified. Thereafter for each patient we collected age, type of hospitalization unit (med or surgery) and for PIs the drug associated and its acceptance by the medical team.
Results: During the study 4756 patients had a daily prescription review. 1576 patients (33%) had at least one drug-related problem. 928 lines of prescriptions were mentioned to have at least one RPI. RPI represent 33% of drug-related problems. 697 (75%) discrepancies were corrected by prescribers.

The age of the patient was significantly different between patients with RPI (mean age: 70 years old) and with PI (mean age: 65 years old; $p < 0.05$).

The type of unit did impact the percentage of prescriptions with drug-related problems (medicine: 46.8; surgery: 66.8; $p < 0.01$), the rate of corrected PI (medicine:75%, surgery: 61%, $p < 0.01$), but did not impact the rate of corrected RPI ($p = 0.49$). In surgery units the rate of corrected RPI (967/1571) is significantly higher than corrected PI (601/804; $p < 0.001$).

Medicines belonging to the four classes of: digestive and metabolism system, blood and blood flow, cardiovascular system, neurological system represent more than 75% of all the medication concerned by a resolved PI or RPI. The proportion of medicines from the digestive and metabolism class is the only class among those four that is not significantly different between resolved PI and RPI.
Conclusion: MR highlights a large number of discrepancies in inpatients. A modification of prescriptions due to MR occurs in 10% of the patients. In surgery units, these RPI are more frequently taken into account than drug-related problem warned by PIs.
Indentifying patients for whom MR has the bigger impact could help us to reinforce our actions.

HP-PC083: Correlation of pharmacotherapy with biochemistry parameters in patients with diabetes mellitus

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Please specify your abstract type: Research abstract
Background and objective: Diabetes is very frequently causing cardiovascular complications, thus impairing various systems and organs. Therapy for these multiple conditions has to be revised and improved constantly. The aim of this closed retrospective study lead in Bucharest Emergency Clinical Hospital was the assessment of some of the diabetes mellitus (DM) complications and the related medication.
Setting and method: Data was collected from cardiology, neurology, gastroenterology, internal medicine wards from Bucharest Emergency Clinical Hospital. Only patients diagnosed with type 2 DM were included in the study. There were analysed 105 records from patients aged 36–89 of whom 65 were men, following the presence, signalling and monitoring of diabetic nephropathy and arteriopathy.
Main outcome measures: We investigated the relationship between diagnosis and/or biochemical signs of kidney disease (serum urea, serum creatinine levels), diagnosis of arteriopathy, and the drug therapy administered in the respective cases. We also assessed the sex and age distribution of the patients diagnosed with diabetes mellitus and facing at least one of its complications.
Results: Kidney disease, as a DM complication, was present in 30% of cases, patients aged 55–89, of whom 57% were men. 53 patients received diuretic treatment, 5 of them being given hydrochlorothiazide, contraindicated in DM because of its hyperglycaemia-inducing effect.

Of the 105 patients, 36 had high serum urea levels (>50 mg/dL), 39 had high levels of serum creatinine (>1.2 mg/dl), and 26 presented risen levels for both, but only 16 were also diagnosed with kidney disease. 9 patients with kidney disease were given furosemide, known for altering the renal function.

Circulatory failure was found in 10% of the patients, aged 61–80 and 6% of subjects, aged 62–79, had both diabetic complications.
Conclusion: The present study emphasizes the role of the clinical pharmacist in adapting the medication of the diabetic patient, an inappropriate pharmacotherapy worsening DM complications. This is essential especially for elders, where polypathology and polymedication lead to a significant increase of DM complications risk.

HP-PC084: Epileptic seizure after treatment with thiocolchicoside: discussion about a case report

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Thiocolchicoside is a semisynthetic derivate of naturally occurring colchicoside, which is largely used in humans as a centrally acting muscle relaxant. This compound also has anti-inflammatory and analgesic effects.
The objective of this work is to report a recent case of serious adverse effect of thiocolchicoside occurring in context post traumatic brain damage without sequalae.
Design: A 28-year-old woman suffered from headaches and neck pain since 5 days, she was treated with thiocolchicoside. She took 8 mg in the evening and 8 mg the next morning. Five generalized tonic–clonic seizures, without recovery of normal consciousness between seizures, have occurred suddenly 15–30 min after the second administration. The patient was admitted to intensive care unit in order to control the epileptic seizures. A status epilepticus was diagnosed requiring intravenous drugs with clonazepam, phenobarbital and propofol. The patient was controlled and transferred in neurologic unit in order to complete paraclinical investigations. Its main antecedent was a severe head injury at the age of 7 years following a public road accident. The brain scan revealed an old frontal hypodensity. Rest of etiological assessment was negative (lumbar puncture, no infectious disease), numbers were normal. The definitive diagnosis was a status epilepticus on post-traumatic sequelae, sensitized by taking a proconvulsant drug. A treatment with levitiracetam was initiated at 750 mg twice a day. Outcome was favourable with no recurrence 10 months later, a recommendation was requested to pharmacovigilance.
Results: The muscle relaxant activity of thiocolchicoside results of an agonist action on glycinergic receptors located primarily in the brain stem and spinal cord. However, thiocolchicoside also acts as an antagonist of the GABA-A receptor (mainly located in the cerebral cortex), this pharmacological action can cause a proconvulsant effect. Epilepsy is a very rare adverse effect, only few cases have been reported in literature. The epileptogenic activity of thiocolchicoside occur mainly in patients with a history of epilepsy, acute brain injury or possible blood–brain barrier disruption.
The chronology is consistent with the responsibility of the drug as a promoting factor. Pharmacovigilance retains after analysing drug causality.
Conclusion: The case history indicates that thiocolchicoside has a powerful epileptogenic activity. Thiocolchicoside can precipitate seizures in predisposed patients, and that its use should be avoided in patients with brain diseases (and therefore lower seizure thresholds) or blood–brain barrier disruption. Pharmacists could warn physicians and should verify the absence of notable history before dispensing thiocolchicoside.

HP-PC085: Acute exacerbation generalized myasthenia after red yeast rice use: a case report

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Many drugs can induce acute exacerbations or reveal myasthenia gravis. Self-medication or complementary and alternatives medicines expose patients.
The objective of this work is to report a recent case of acute exacerbation of myasthenia gravis because of a dietary supplement use.
Design: Intermittent vertical diplopia and ptosis of the left eye settled in a 69-year-old man. Its main antecedent is hypertension treated with perindopril. The neurovascular origin was ruled out. The electromyogram (EMG) found a significant decrement (11%) of a postsynaptic block in the tongue and right orbicularis muscle. Acetylcholine receptor-antibodies were positive. Myasthenia gravis was diagnosed (Osserman score 90/100) and the patient was treated with pyridostigmine. The identification of carotid atheroma required a treatment with a statin that the patient refused. He preferred a cholesterol lowering dietary supplement, containing red yeast rice. Six days later, he was hospitalized for an acute decompensation of myasthenia with bilateral ptosis, oculomotor paresis, drooping head,

chewing trouble and dysphagia (Osserman score 42/100). The patient is treated with high-dose intravenous immunoglobulins then corticosteroids. The dietary supplement is stopped. An opinion was requested to the clinical pharmacist of Neurology. The Osserman score gradually increases to 78/100.

Results: Red yeast rice contains a range of compounds known as monacolins, of which monacolin K-renamed lovastatin, which was found to be an inhibitor of cholesterol synthesis and the progenitor of the statin family. A literature review has highlighted the responsibility of statins in acute exacerbations or reveal myasthenia gravis occurrences. In this case, the chronology is consistent with the responsibility of red yeast rice. The case was reported to the French system of nutrivigilance, which retained after analysing a probable intrinsic imputability score.

Conclusion: Dietary supplement with red rice yeast are not recommended in case of myasthenia gravis. This is the first case of acute decompensation of myasthenia recorded with red yeast rice in the French system of nutrivigilance.

Multidisciplinary collaboration (neurologists, clinical pharmacist) has optimized the patient management.

HP-PC087: Elaboration of a tool helping pharmaceutical analysis of prescriptions for urinary tract infection

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: Development of computerized prescription highlights the need to harmonize pharmaceutical analysis practices. The aim of this study is to analyse the antibiotics prescriptions in the treatment of urinary tract infections, to develop a pharmaceutical validation tool.

Design: A prospective observational study was conducted for one week, in 20 care units. Pharmacists, interns, and pharmacy students were trained on SPILF (French society of infectious pathology) recommendations, on pharmacist's role in the management of urinary tract infections, and on the data collection. All patients with antibiotic prescription for urinary tract infection were included. Some data were collected: reason for hospitalization, clinical signs, results of susceptibility testing, risk factors for complications (organic or functional abnormality of urinary tract, male, pregnancy, elderly, severe immunodeficiency, severe renal impairment) and signs of severity (severe sepsis, septic shock, interventional surgical drainage). Then, the treatments prescribed to the patient, probabilistic on the one hand and documented on the other hand, were compared to SPILF recommendations. Finally, during a multidisciplinary meeting (pharmacist, expert in infectious diseases), we selected the relevant pharmacist interventions.

Results: Twenty-three patients were included (14 women, 9 men), 42% had a urinary catheter. 52.7% of prescriptions were concordant with SPILF recommendations: probabilistic and documented treatment, and duration. Among the non-conforming prescriptions, nine pharmacist interventions have been formulated: four prescriptions did not specify the duration of treatment, one antibiotic was prescribed on an insufficient period, two cases of severe acute pyelonephritis without prescription of aminoglycoside, one prescription was not reassessed according to results of susceptibility testing, one pregnant woman with urinary colonization without clinical signs, was treated before obtaining results of susceptibility testing. three cases of poor management are identified: two cases which treatment began only after results of susceptibility testing (a urinary tract infection linked to care, an acute pyelonephritis with complication risk), and a cystitis treated with nitrofurantoin while the germ was resistant.

Conclusion: A synthetic tool was created. There are three elements for helping pharmaceutical analysis: the questions to ask oneself facing a prescription of antibiotic for urinary tract infection, a flowchart to identify the recommendation adapted to the case, and finally a summary table showing SPILF recommendations. This tool will be distributed and evaluated.

HP-PC088: Off-label use of rituximab in refractory antisynthetase syndrome (AS) through a long-time experience in a neuromuscular diesases center

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: AS is an idiopathic autoimmune inflammatory myopathy, characterized by presence of antisynthetase antibodies: anti-Jo1, anti-PL7, anti-PL12. Patients are usually first treated by corticosteroids (CS) or immunomodulating drugs. Rituximab (RTX) has become another option for refractory AS, supported by few uncontrolled studies[1]. Because of its off-label use, our hospital pharmacy has implemented a controlled drug delivery. This work assesses a 2-years follow-up of patients treated by RTX and the resulted drug costs.

Design: Patients registered in our database since December 2014 who received $\geq$1 injections of RTX to treat AS, were analysed to describe their eligibility criteria, conditions of management and the clinical and biological effects of the treatment (creatine kinase (CPK) used as biomarker). Patient files were consulted to collect all individual data and pharmaceutical software was used to review deliveries. Drug costs were also reckoned based on prices from French health insurance.

Results: For 18 months, 14 patients (median age (min–max): 52 (20–76), 64% women) have been treated with RTX for refractory AS, the majority with anti-Jo1 antibodies (8). All patients suffer from muscular and lung affections, particularly interstitial pneumonia. Many are also living with arthropathies (10) or cutaneous disorders (9). Cardiac involvement is seldom (4 symptomatic patients). The mean age of diagnostic is 7.3 years and the mean treatment period is 2.6 years. The common treatment is 1 g at Day1 (D1) and D15, then 1 g all 6 months. Before RTX treatment, seven patients received $\geq$5 other drugs such as CS (93%), azathioprine (71%), methotrexate or mycophenolate mofetil (57%). Prednisone and azathioprine are also prescribed with RTX respectively for 79 and 23%. Treatment is associated with cures of intravenous immunoglobulins for four patients. To date, median number of administrations per patient is 4 (1–8), D1 and D15 included. All patients have presented positive effects on both clinical and biological markers, mainly during the first 6 months after treatment induction. Wilcoxon tests show a significant difference in CPK level between D1 and M6, also between D1 and the last known result. Today, three complete remissions are specified in patient file; only one hepatitis B virus reactivation is reported. Since 2014, budget impact due to drug cost amounts to 119 000€.

Conclusion: Whereas the use of RTX is controverted for treatment of all types of myopathy, AS could have one of the best response[1]. Our cohort shows real clinical results and positive effect on usual biomarker. Our experience demonstrates the safe and successful use of repeated administrations in refractory AS. However, there is a need for further controlled studies to assess the efficacy/safety of RTX and to define its place in the strategy in view of its cost-effectiveness ratio. The pharmaceutical controlled drug delivery has to be continued to supervise, support and document its proper off-label use.

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HP-PC089: Medication reconciliation performed by doctors do not reduce discrepancies in medication charts

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: As a part of the national patient safety program, the Northern Norway Regional Health Authority are implementing new procedures for medication reconciliation (MR) in hospitals in the region. The procedure defines that MR is the doctor's responsibility and describes how it should be performed. The aim of this study was to investigate whether the implementation of the procedure reduces medication discrepancies (MDs) in the charts at Bodø hospital.
Design: The study is a cross-sectional study measuring the extent and type of MDs in medication charts at four different times during the period of June 2014–December 2015. Clinical pharmacists performed MR according to the Integrated Medicines Management (IMM) methodology on charts already reconciled using the newly implemented procedure. IMM is a validated and structured methodology with a medication reconciliation part which is more detailed than the hospital procedure.
Results: A total of 265 medication charts were reconciled at eight different hospital wards. Of these charts 155 had one or more MDs, with an average of 2.1 MDs per chart (range 1–10). The first measurement showed MDs in 59% (average 2.3 MDs per chart) of the charts whereas 47% (average 1.8 MDs per chart) in the second measurement, 57% (average 2.2 MDs per chart) in the third and 72% (average 2.1 MDs per chart) in the fourth. The most frequent types of MDs identified were "omission of medication" (60%),"use of different dosage" (17%) and "commission of drug" (13%).
Conclusion: Our measurements show that medication discrepancies are identified in almost 60% of medication charts at Bodø hospital. The new procedure does not seem to decrease the percentage of charts with medication discrepancies. The reason for this may be an inadequate procedure and implementation, insufficient training, or limited resources to follow the procedure.

HP-PC090: Individuallized parenteral nutrition in patients with hypertriglyceridemia in an intensive care unit

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Standardized commercial parenteral nutrition (SPN) formulations are designed to meet the nutrient requirements of the majority of patient populations. However, in some clinical situations the "one-size-fits-all" SPN concept does not provide an adequate delivery of micro and macronutrients and the prescription of an individualized parenteral nutrition (IPN) is necessary. The goal of this study is to analyse the results obtained with IPN in patients with hypertriglyceridemia (HTG) in an Intensive Care Unit (ICU).
Design: Descriptive, retrospective study in a tertiary hospital. Patients with HTG (>400 mg/dL) admitted to ICU from January 2011 to May 2016, who needed IPN for more than 24 h, were included. Demographic and clinical variables related to parenteral nutrition were collected from medical records; for the statistical analysis STATA®14 was used.
Results: Thirteen patients were included [69.2% (9/13) men, mean age 47.8 years (range 19.7–78.2) and mean body mass index 27.0 kg/m^2 (range 16.5–41.3)]. The mean APACHE II score was 20.8 (SD 8.2). The three main reasons for admission to ICU were: abdominal pathology 30.8% (4/13), hematologic pathology 30.8% (4/13) and politraumatism 15.4% (2/13). The average duration of ICU admission was 33.5 days (95% CI 5.3–79) and 53.9% (7/13) of the patients died before discharge.

Parenteral nutrition was administered an average of 21.5 days (95% CI 2.5–40.5), of which 7.7 (95% CI 3.0–12.4) were with IPN. Previous SPN had been administered in 84.6% (11/13) of the patients. Before beginning IPN, the average triglycerides level was 608.1 mg/dL (95% CI 388.1–828.0) but at the end of the IPN it was 324.9 mg/dL (95% CI 245.4–404.5), which lead to a mean reduction of 283.2 mg/dL (95% CI 45.3–520.0; $p = 0.02$). Regarding to the total amount of lipids provided with parenteral nutrition, with IPN there was a mean reduction of 30.4 g (95% CI 12.4–48.5; $p = 0.002$) comparing to those administered with SPN.
Conclusion: Usage of IPN in critically ill patients with HTG permits to adjust parenteral nutrition formulations to meet specific nutrition needs, enables to reduce the total amount of lipids administered and, therefore, it allows to significantly decrease triglycerides levels.

HP-PC091: Medication errors due to wrong patient misidentification

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: The incidents involving patient misidentification (PM), or wrong patient medical errors (WPME), are medication errors (ME), near-miss or close-call situations which can pose a considerable threat to patient health. PM may be under-reported due to the unawareness of the error or the difficulty of identifying them. The aim of this study is to describe the incidence and categories of WPME in a university hospital.
Design: Observational, retrospective analysis of the voluntary reported WPME in the pharmacy database since March 2010 until June 2016. These were classified in prescription, transcription, dispensing, administration and drug system errors. In addition, the National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP) taxonomy was used for classifying ME according to the severity of the outcome.
Results: Of 1767 ME registered, 50 of them were WPME (2.8%). 40.0% of them were due to prescription errors, which consist on wrong labelled medical orders, intermingled patient prescriptions or patient misidentification in computerized physician order entry (CPOE). The administration errors supposed a 30.0% of the total amount of WPME and dispensing errors were 18.0%. 6% of WPME were transcription errors, which occurred previously to the implementation of CPOE, and the remaining 6.0% were system errors after CPOE. The WPME reported took place in the hospitalization wards (44.0%), pharmacy (20.0%), outpatient services (16.0%), intensive care unit (16.0%) and day-care hospital unit (4.0%). 88.0% occurred at working days and 12.0% at the weekends. WPME were notified by pharmacists (62.0%), nurses (34.0%) and physicians (4.0%). Referring to the classification according to NCCMERP, 48.0% of WPME didn't reach the patient (category B) whereas 40.0% reached the patient but didn't cause harm (category C) and 8.0% required patient monitoring (category D). The remaining WPME (4.0%) caused harm to patients and required medical intervention (category E). Finally, in

more than half of WPME (62.0%), reporters suggested measures to prevent these errors.
Conclusion: WPME represents near 3% of total ME reported in our hospital. Given that more than 50% reached the patient, safety measures must be implemented to reduce the risk of hazardous events. Additionally, further encouragement in notification is necessary in order to improve patient safety.

HP-PC092: Analysis of adverse effects caused by alemtuzumab at a tertiary level hospital

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Please specify your abstract type: Research abstract
Background and objective: Multiple sclerosis is a demyelinating, degenerative and autoimmune disorder of the central nervous system. Alemtuzumab has been approved as an alternative for patients with relapsing-remitting multiple sclerosis (RRMS) with active disease defined by clinical manifestations or detected by scan results. The main objectives of our study are to describe the protocol implemented in a tertiary level hospital for the preparation and administration of alemtuzumab and the adverse effects detected.
Setting and method: Retrospective observational study of patients treated with alemtuzumab. Data sources: electronic medical records (IANUS®), demographic parameters, previous treatments for RRMS and developed adverse effects. A protocol for alemtuzumab preparation in the Pharmacy Service and a standardized protocol for electronic prescribing were developed.
Main outcome measures: Diagnosis, demographic data, previous treatments and adverse effects.
Results: Two men diagnosed with RRMS aggressive evolution were included in the study. Age: 23 and 31. Both of them without any treatment by the time they started being treated with alemtuzumab (previously one of the patients had been treated with fingolimod, suspended by inefficiency). The protocol design for the elaboration and control of alemtuzumab in the Pharmacy Service ensures greater safety and represents a saving strategy. In addition, the development of the protocol in the electronic prescription system (SILICON®) facilitates the prescription, proper administration and standardization of treatment among patients. The protocol includes daily alemtuzumab infusion for 5 days and other necessary medications including premedication (metylprednisolone, omeprazole, paracetamol and metoclopramide) and anti-infective prophylaxis (aciclovir). Developed adverse effects during infusion were skin erythema, pruritus and fever. It was not necessary to stop the alemtuzumab infusion in any patient. During treatment, one patient developed a severe lymphopenia and upper respiratory tract infection (influenza A).
Conclusion: The role of the pharmacist is critical at various stages, from the preparation and the administration guidelines, to detection, monitoring and reporting of adverse effects. Alemtuzumab is presented as an alternative for those patients who do not respond to standard therapies or who have rapidly evolving severe RRMS. Because of its mechanism of action it is important to closely monitor patients, with particular emphasis on prophylaxis of possible infections.

HP-PC093: Descriptive analysis of patients receiving oral anticoagulation following acute coronary syndromes

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Triple therapy with concomitant anticoagulant and dual antiplatelet therapy (DAPT) following acute coronary syndrome (ACS) increases bleeding risk by 50% compared to patients on DAPT. Bleeding post ACS increases mortality and reinfarction risk; balancing ischemic and bleeding risks is particularly challenging in this population. European Society of Cardiology (ESC) produced a consensus document, providing guidance for patients presenting with ACS requiring concomitant anticoagulation; however optimal duration of triple therapy and safety and efficacy of novel oral anticoagulants (NOACs) and more potent antiplatelet agents requires further evidence.
Design: A registry was collated of patients presenting with ACS requiring concomitant anticoagulation. Baseline characteristics, bleeding and ischemic risk scores, periprocedural treatment and antiplatelet/anticoagulant choice and duration was recorded and analysed for trends in prescribing.
Results: 71 patients have been included in the registry between Oct 2015 and June 2016, of which 40 (56%) were naïve to anticoagulation prior to admission, 24 (34%) were taking warfarin and 7 (10%) were on NOACs. Atrial fibrillation (AF) accounted for 51 (73%) cases, (average CHADSVasc score of 5, HASBLED score of 2), and 15 (21%) were for LV thrombus. Of those naïve to anticoagulation, 25 (63%) were initiated on warfarin and 15 (37%) on a NOAC (last 10 patients all received NOACs). Of those on a NOAC for AF, 17 (81%) were dose reduced on triple therapy; apixaban being the most commonly prescribed (59% apixaban, 35% rivaroxaban, 6% dabigatran). 2 (13%) patients were initiated a NOAC for an LV thrombus, both of which received full dose. 69 (97%) patients received aspirin and clopidogrel as part of their triple therapy regimen, irrespective of loading antiplatelets. 55 (79%) patients continued triple therapy for 3 months, 8 (11%) for 1 month and 2 (3%) for 6 months.
Conclusion: Triple therapy regime typically consisted of aspirin, clopidogrel and anticoagulation for 3 months duration, after which aspirin was discontinued. NOAC prescribing in triple therapy is on the increase, the majority of which are dose reduced until aspirin stops. Long term follow up is on-going to determine the impact of differing triple therapy regimes.

HP-PC094: Choice of antibiotic formulations for children in hospitals

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Please specify your abstract type: Research abstract

Background and objective: Solid oral formulations are more convenient than liquids to manufacture, store and administer for most adults. Given this superiority, one would think that children were prompted to use solid formulations when available in an eligible dose. There are indications, however, that the conversion from liquid to solid formulation in children is influenced by characteristics of the liquid medication, rather than the child's ability to swallow solid medications. The aim of this study was therefore to explore if the proportion of oral liquid formulations differed between antibiotics commonly used for upper respiratory tract infections (URTI) in hospitalized children.
Setting and method: We collected the sales data for 2015 for the children's department of the five university hospitals in Norway. The three most common oral antibiotics used for URTI in children were included: Penicillin V, amoxicillin and erythromycin. The proportion of oral liquids was calculated by dividing the number of defined daily doses (DDD) of liquids by the total oral DDDs for each substance.
Main outcome measures: The proportion of DDDs of oral liquid antibiotics.
Results: A total of 2575 DDDs of common oral URTI antibiotics were sold in 2015, distributed as 30% erythromycin 31% amoxicillin and 39% penicillin V. Amoxicillin had the highest proportion of liquid with 97%, followed closely by erythromycin at 94%. In contrast, only 70% of the DDDs sold of oral Penicillin V were liquids.
Conclusion: Higher proportions of liquid amoxicillin and erythromycin compared to penicillin V were sold to children's departments in hospitals. There are several limitations regarding the quality of sales data, as we lack information of the administered doses as well as the child's age, gender, infection and specific needs. Infections in hospitals often require initial intravenous treatment, and oral switch will often be based on the initial treatment. Despite these limitations, the results fit well with earlier findings which indicate that children prefer liquid amoxicillin and erythromycin to penicillin V.

HP-PC095: Proactive medication reconciliation: a preliminary study to identify barriers before its implementation in surgery departments

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: It's well known that medication reconciliation (MR) decreases drug-related problems at patient admission (PA). In surgery departments, for planned hospitalizations, MR is performed 24–48 h after the PA (Pourrat X and al, 2013). During this period, some chronic treatments are unintentionally not prescribed to patients. The aim of proactive MR (PMR) is to anticipate the PA by collecting their medication history before their hospitalization. The objective of this study was to identify the barriers preventing PMR implementation in our hospital.
Design: One week prospective study in digestive and orthopaedic surgery units in a 600 beds' university hospital. The main outcome is to identify which barriers prevent the collection of MR before PA including the evaluation of time required to collect the relevant information, reconcile any discrepancies after the PA and identify the right sources from which to perform the MR.
Results: Eighteen patients with a median age of 59 years old (14–84) were contacted by phone one week before their scheduled surgery. These calls were conducted by pharmacy residents mainly between 6 and 8 p.m. (a more practical time for patients and at the end of pharmacist's routine tasks). An average of 1.7 (1–3) calls per patient were conducted. One patient was unreachable by phone. The average duration of the calls was 7 min (2–15). Twelve community pharmacy (CP) were contacted. In all cases, CP have accepted to share information about the patient's prescriptions by phone and sending it by fax during the day. Five pharmacists were not contacted because patients had no chronic treatment and consequently no regular CP. On 53 lines of prescriptions, 12 discrepancies between the patient's information and prescriptions were identified and 7 between prescriptions and the anaesthesia records. Drug history was reported in the patient's records by pharmacy students on the day of PA in order to be used immediately by prescribers. Surgery was cancelled for one patient.
Conclusion: The first step of an MR is made by a hospital anaesthetist some weeks before hospitalization but we have demonstrated that this step is not able to avert all potential errors. Our study highlights that the time necessary to perform an MPR appears to be shorter than for an MR. In fact, it's sometimes difficult to properly interview patients during hospitalization (patient in operating room, drug-induced drowsiness). Additionally, a key hurdle is to obtain any necessary modification of the prescriptions by surgeons. PMR can be expected to produce time saving efficiencies given that at PA, prescribers will have their full medication history. This study also allowed us to highlight the good cooperation between patients, CP and the hospital. It is worth noting that efforts were made to accommodate the schedules of a majority of working patients. However, as we would expect pharmacy student to perform the PMR, they will most likely attempt to contact patients during standard working hours which may impact the number of patients they are able to reach.

HP-PC096: Part of the pharmacist in therapeutic education of patient: the vision of patients

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: The French legislation has clearly defined and integrated the Therapeutic Education of Patient (TEP) for healthcare professionals. The pharmacist is invited to get involved in TEP as a caregiver around the patient. In our study, we are investigating how the pharmacist's role is viewed by patients with chronic diseases that are included in a TEP program.
Design: Prospective study on 17 patients included in a TEP program (chronic inflammatory bowel diseases, rheumatoid arthritis, ankylosing spondylitis) between September 2015 and April 2016. In July 2016, the participants of group sessions (GS) conducted with health professionals, including a pharmacist, were interviewed on the phone. The principal outcome of the interviews was to evaluate how their view of the involved health professional's roles evolved before and after GS; to evaluate if they would consider being followed by their pharmacist for individual sessions (IS) in a community pharmacy (CP); and if the information supplied by the pharmacist during GS was understandable.
Results: Before GS, 47% of patients asked their CP about medication problems whilst 58.9% asked a general practitioner and 88.2% a specialist doctor. Concerning symptoms and dietary problems, none of them questioned their CP. After GS, 53% of patients have reported that they ask their CP about medication problems and 5.9% about symptoms. On this last point, the key change concerns nurses (+12% after GS). Several patients have mentioned that Internet was their main source of answers. Other findings included the facts that conducting GS in university hospitals would not inconvenience patients. Seven patients would be eligible for IS in CP, 1–3 times per year. According to them, it would enable to easily access information about drugs. For one patient, it was stated that it would facilitate their access

to health care. However, discussions between patients appear to be essential to facilitate their acceptance of a chronic condition. Some patients also questioned the CP's skills and knowledge when it comes to their particular disease. Nevertheless, 88.2% of patients have found that the vocabulary and documents used by pharmacist during GS was adapted and that the information supplied was very useful.
Conclusion: This study highlights that although the pharmacist is the drug's specialist, a majority of patients will more likely ask their physician about medication. Their participation to the GS hasn't changed their habits even if the pharmacist intervention was relevant and understandable. The fact that the pharmacists took into account the level of health literacy of each participant was an appreciated aspect. CP should be more proactive in their relationship with the patients in order to highlight their skills and the assistance they can provide in a chronic disease. However, it's important to take in consideration that in some cases, patients have lived with their disease since childhood. The role of IS is likely to be much more limited than in other situations given their key need is to interact with patients afflicted with the same condition.

HP-PC097: Use and safety of trastuzumab emtansin in HER2 + metastatic breast cancer in a tertiary hospital

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Novel anti HER2 drugs have changed the management of HER2 + metastatic breast cancer patients. The aim of this study is to describe the use of trastuzumab emtansin (TDM-1) in clinical practice in a tertiary hospital and to evaluate its safety profile.
Design: We performed a retrospective study of patients who started TDM-1 between January 2013 and December 2015. We recorded demographic data, clinical and treatment variables, number of doses received, reasons for discontinuation, progression-free survival (PFS) and adverse effects (AEs). Data were obtained from the chemotherapy prescription program and medical records. AEs were classified according to the Common Terminology Criteria for Adverse Events Version 4.0 of the National Cancer Institute.
Results: Eleven female patients with a median age of 55.6 years [40.7–80.1] and an ECOG 1 (9/11) were included. TDM-1 was prescribed as a third or further line treatment in 8/11 patients and as first-line in one patient who develop disease recurrence within 6 months of completing adjuvant therapy. Median number of TDM-1 cycles was 8.5 [1–29]. All treatments discontinuations were due to disease progression (6/11). PFS was 6.0 [1.9–20.7 months] (patients that received less than three cycles were excluded ($n = 2$)). Most frequent AEs were plaquetopenia, neutropenia and transaminitis but only grade 3 in three patients (two transaminitis and one neutropenia).
Conclusion: The lower PFS obtained comparing to the pivotal study (6.0 vs. 9.6 months) could be explained by the later use of TDM-1 in clinical practice (8/11 patients received TDM-1 as third or further line while 61% in the pivotal study were first or second line). TDM-1 safety profile was according to the summary product characteristics. Few data are currently available regarding the use of TDM-1 in clinical practice. Further data are required to position this drug in clinical practice.

HP-PC098: Pharmacovigilance program: retrospective analysis of a one year period

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: The hospital pharmacist for their specialized training in the area of medicines, possess a greater responsibility in the detection and reporting of adverse drug reactions (ADRs), as well as other problems related to treatment, which may be subject to monitoring and reporting to the regulatory authorities and the respective laboratories.

Thus, the Pharmaceutical Services of the CUF Infante Santo Hospital has implemented a Pharmacovigilance Program, with two main objectives:

1. Optimization of the detection and reporting of problems related to therapy;
2. Implementation of corrective and/or risk minimization measures.

Design: The Pharmacovigilance Program is based on the following methodology:

1. Detection of ADRs/Problems related to therapy/Medical Device: The detection can be performed by the pharmacist or other health professional that guides the process to the Pharmaceutical Services.
2. Information processing by the Pharmaceutical Services and realization of spontaneous reporting: The notification is performed both for the Portuguese regulator (INFARMED) as to the appropriate laboratory (if applicable). After evaluation by both entity, the conclusions are communicated to the Pharmaceutical Services, which has the responsibility to share it with all the other hospital services.
3. Report of the event in the internal risk management platform: When applicable, the Pharmaceutical Services internally report the adverse event to the hospital's risk management department, leading to an internal evaluation of the current process.
4. Completion of the process and implementation of corrective measures: When the regulatory authority and/or the laboratory sends the report/technical advice about the notification, the Pharmaceutical Service in partnership with the risk management team perform a reassessment of the whole process. If needed, corrective and/or monitoring measures are implemented.
5. Monitoring of implemented measures: After the implementation of corrective and/or monitoring measures there is a period of evaluation.

Results: The implementation of this program for the period of 1 year, has led to a total of fourteen spontaneous reports. From all of these notifications, seven were related to quality defect of medicines, four were of ADR, one was due to suspected lack of therapeutic efficacy, and lastly, one of the notifications was medication error derived.
Conclusion: The obtained results, over a 1 year period, by the Pharmacovigilance Program were satisfactory but the aim of the Pharmaceutical Services is to consolidate and optimize the same program with a view to achieving better results. The Pharmaceutical Services will continue to take responsibility for the pharmacovigilance circuit management in this hospital, by promoting a proactive

approach to monitoring the safety, quality and efficacy of medicines, which possess the primary objective to patient safety assurance.

HP-PC099: Improvement of pharmaceutical validation of pediatric parenteral nutrition with a new software: Logipren®

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: For prematures, parenteral nutrition (PN) is essential for medical care but is complex (specific needs, daily change of intakes…). Now, the software Logipren®, developed by the French Society of Neonatology, allows the prescription of PN as well as all the childish therapeutics. It is also in link with our production robot (Baxa pomp) for individual PN bags.

Our objective was to integrate this software while optimizing our pharmaceutical validation process.
Design: The software implementation was lead by a physician/pharmacist collaboration with several preliminary steps:

- Identification of pharmaceutical validation settings (pertinence of individual PN vs. industrial bags, parenteral approach, elements…).
- Integration of learned societies recommendations
- Drafting a check-list and a follow-up sheet of pharmaceutical interventions

Before the life-sized use of Logipren®, a base test has been experimented to identify possible difficulties and to realize some correctives actions of the software or our process.
Results: Logipren® leads us to a change in our pharmaceutical validation process, by introducing new elements:

- The pharmaceutical validation of PN bags is done in collaboration with the physician, during the prescription step.
- All the therapeutics are known, which allow the pharmacist to take into consideration all the intakes (micro-nutrients, vitamins…).
- Remove the transcription step of PN bags in our production software (Abacus®) thanks to an interface with our production robot.
- Less production problems because of the coverage of those pharmaceutical aspects during the prescription.

Since 2 months, this reorganization helped us to propose 22 pharmaceutical notices for 234 prescriptions:

- Omissions (remove lipids, Levocarnyl®, micro-nutrients, electrolytes, remove industrial bags…)
- Modification (reduce proteins according to urea level, micro-nutrients and electrolytes posology, duration of lipids infusion…)

Conclusion: The implementation of Logipren® enabled us to reorganize of the pharmaceutical validation process with a consolidation of the role of the pharmacist during the prescription step, in the paediatric ward. It had a beneficial aspect by the reduction of the validation and production time, a decreased risk of error (suppression of job interrupts and better communication) and an improved production by the end of transcription step to Abacus®.

Furthermore, during our experimentation, we could bring to the software editor new ways to improve it and make it more efficient.

HP-PC100: Crushing drug, another round?

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Please specify your abstract type: Research abstract
Background and objective: Last year, in our hospital, an assessment of the crushing practices was carried. Following the gap, immediate actions were performed. What about this year? Have these practices been improved? The aim of this study is to perform another round of assessment of crushing practices in our hospital.
Setting and method: A prospective study was performed, in April 2016, in seven units.
Main outcome measures: Reasons for crushing, drugs crushed, and the technique used for preparation and administration were recorded.
Results: This year, 405 observations were gathered versus 149 observations last year. Among them, 17.3% of patients have difficulties to take their oral drug versus 22.8% last year. The reasons were the presence of enteral feeding tube in 28.57% (52.9% in 2015), difficulties in swallowing/psycho-behavioural distress in 60.71% (41.2% in 2015), and rejection of oral drug in 10.71% (5.9% in 2015). Physicians and nurses indicate the reason in the medical record in 77.78% of case versus 50% last year. This year, 287 drug were crushed versus 134 drugs in 2015: 22% concerned Nervous system group (vs. 25% in 2015), 18% concerned Cardiovascular system group (vs. 19% in 2015), and 15% concerned Alimentary tract and metabolism group (vs. 13% in 2015).

Nurses use guideline in 50% of cases versus 2.9% last year. As the previous year, in 100% of cases, washing hands before preparation and after administration are met. Last year, none of them was wearing mask and gloves during this operation while this year, 17% was wearing mask and gloves.

Finally, in the two assessment, for each patient, drugs are systematically crushed together and then mixed with the patient's meal.
Conclusion: This study shows that crushing drugs is still problematic in our units. However, best practices were observed, such as the indication of the reason of crushing in the medical record, or the consultation of guideline. A new training for nurses will be conducted to create awareness about risks of crushing drug.

HP-PC101: Equality of care for obese patients affected by invasive candidiasis

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Please specify your abstract type: Research abstract
Background and objective: In invasive candidemia, three echinocandins are indicated: caspofungin, mycafungin and anidulafungin. The aim of this work is to establish which echinocandin to prescribe in a French University Hospital, given the scarcity of available clinical data in the literature regarding obese patients.
Setting and method: In a French UHC with 1500 beds, a multidisciplinary working group composed of a microbiologist, an infectious disease specialist and a pharmacist has been set up to analyse the various therapeutic options.
Main outcome measures: Analysis of the literature, pharmacoeconomic study.
Results: Four medications have been identified as possible therapeutic options. Their adverse effects are similar and their administration rhythm is the same. According to recommendations by the ESMID (2012) and the IDSA (2016), the level of evidence for these three echinocandins in initial treatment of candidemia is equivalent. Concerning obese patients, no weight limit is mentioned,

despite recommended dosage adjustment. Caspofungin must be prescribed at a dose of 70 mg/day for patients weighing over 80 kg. Micafungin must be administered at a dose of 100 mg/day regardless of patient weight. In the case of persistence of cultures or if clinical condition does not improve, the dose may be increased to 200 mg/day. Anidulafungin, which is not referenced in our establishment, must be prescribed at the same dose regardless of patient weight.

From an economic point of view, in our hospital, micafungin at a dose 100 mg/day remains the least costly therapy. However, if its posology is doubled as indicated, caspofungin then becomes the most economic therapy. Amphothericin B, an optional treatment, is never the most economically advantageous therapy.

Conclusion: As a result of this study, the chosen prescribed therapy for obese patients is caspofungin at a dose of 70 mg/day. This work has improved access to healthcare for obese patients. Pharmacokinetics and survival data must be collected on the basis of various patient weights in order to predict clinical efficacy.

HP-PC102: Do pharmacists in an Emergency department improve quality of medication reconciliation?

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: The aim of this study was to develop a system to prioritize patients for medication reconciliation by pharmacists in the Emergency department. It also proved a useful setting for evaluating how other health care professionals perceived the role of the pharmacist performing medical reconciliations within the Emergency department.
Design: The study was located in the Østfold Municipal Hospital, located in Kalnes, Norway. Pharmacists used a prioritization model to identify "high-risk patients" having clinically relevant prehospital medication discrepancies between hospital admission records and the information obtained via medication histories, general physician referrals and nursing homes. Pharmacists registered patient information such as age, gender and drug-related problems (DRPs). Seventeen physicians and thirty nurses in the Emergency department answered structured questionnaires anonymously.
Main outcome measures:

- Number of patients with medication reconciliation performed by a pharmacist.
- Number of drug-related problems denoted in the electronical journal and presented to the physician.
- The overall experience physicians and the nurses had with pharmacists when located in the Emergency department.

Results: Pharmacists performed medication reconciliation for 262 patients, identifying 443 DRPs and 178 potential DRPs in total. Fourteen of the physicians had read the journal notes from pharmacist and found them helpful (n = 4, 29%) or greatly beneficial (n = 10, 71%). Most physicians (n = 14, 82%) and nurses (n = 19, 63%) reported a good cooperation with the pharmacist in the care of the patients. Some of the physicians (n = 4, 29%) and most nurses (n = 21, 70%) wanted more information about the pharmacists work in the emergency department. The majority of ED staff (100% of physicians and 63% of nurses) found pharmacist as a good academic resource in the Emergency department.
Conclusion: The physicians reported an improvement regarding the quality in the medication reconciliation made by pharmacists in the Emergency department and both physicians and nurses expressed a need that pharmacists work in the Emergency department on a more permanent basis. More information in general and especially better communication with nurses regarding the care of the patients are important actions need to optimise collaboration with pharmacist in the Emergency department.

HP-PC103: Design and implementation of oncology pharmaceutical care program to prevent and manage cutaneous toxicity by oncology patients

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Please specify your abstract type: Research abstract
Background and objective: To describe and estimate the incidence of cutaneous adverse effects in patients treated with oral antineoplastic and design and implement an oncology pharmaceutical care program to prevent and manage this cutaneous toxicity.
Setting and method: Literature review; 5 months retrospective descriptive study of patients treated with oral antineoplastic in a university hospital in Spain; evaluation of results of previous descriptive study and design pharmaceutical care program (interviews and algorithm) and preparing of educational materials (brochures).
Main outcome measures: Number of patients with cutaneous adverse effects, number of total effects detected, classification according to type of diagnosed cancer and type of oral antineoplastic administered and the different types of cutaneous adverse effects.
Results: Of 549 patients, 131 (23.86%) had cutaneous adverse effects, of which 31.4% were men. A total of 178 effects were detected (1.36 effects per patient) and 141 treatments analysed (1.07 drugs per patient). 10 types of cancer were described: melanoma 4 (57.14%), lung 12 (52.17%), breast 17 (36.17%), renal 14 (34.15%), colorectal 55 (29.73%), gastric 11 (14.86%), prostate 6 (13.33%), multiple myeloma 2 (8.69%), leukaemia 6 (8.33%) and others 4 (12.50%). Of 25 drugs analysed, 21 (84%) were related with effects, the incidence of the total of patients treated with each of these drugs was: axitinib (100%), erlotinib (75%), gefitinib (66.67%), everolimus (50%), cobimetinib plus vemurafenib (50%), regorafenib (57.14%), sunitinib (46.15%), sorafenib (40%), pazopanib (35.71%), capecitabine (25.28%), pomalidomide (25%), enzalutamide (20%), ibrutinib (20%), idelalisib (20%), ruxolitinib (11.12%), abiraterone (7.14%), dasatinib (6.67%), lenalidomide (6.67%), imatinib (5.08%), temozolomide (3.85%). 10 types of cutaneous adverse effects were detected: Hand-foot syndrome (35.96%), skin rash (21.35%), xerosis (12.92%), folliculitis (10.11%), pruritus (7.30%), paronychia (3.37%), photosensitivity (2.25%), dermatitis (2.25%), hyperpigmentation (1.69%) and others (2.81%).
Conclusion: There is a high incidence of cutaneous adverse effects in patients treated with oral antineoplastic, which could decrease their quality of life and even disrupt drug therapy. It is therefore necessary to develop pharmaceutical care programs to inform, educate and support to cancer patients about these adverse effects.

HP-PC104: Adherence and attitudes to medicines among patients with chronic spinal cord injury

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Please specify your abstract type: Research abstract
Background and objective: It is known that approximately 50% of people with chronic conditions are adherent to their long-term therapies. There is limited knowledge about adherence and attitudes to medicines among patients with chronic spinal cord injury.
The aim of the study was to examine adherence to regular medicines, and to oral spasmolytic drugs in particular. Further, to investigate patients' attitudes to medicines and other relevant variables as determinants of adherence.
Setting and method: Sunnaas Rehabilitation Hospital, Norway.
A descriptive study enrolling patients ($\geq$18 years) using at least one drug, with chronic spinal cord injury, i.e. at least 1 year post injury, and admitted for a follow-up stay between August 2015 and January 2016. Participants were interviewed by a pharmacist about their drug regimen and were asked to fill out the following, validated self-report questionnaires: Morisky Medication Adherence Scale (MMAS-8), Beliefs about Medicines Questionnaire (BMQ), Visual Analogue Scale (VAS) for pain and modified Penn Spasm Frequency Scale (mPSFS). A multiple regression analysis was performed to determine variables that were associated with adherence.
Main outcome measures: Adherence to all regular medicines and to oral spasmolytic drugs measured by Morisky Medication Adherence Scale (MMAS-8). Attitudes to medicines measured by Beliefs about Medicines Questionnaire (BMQ), and other variables as determinants of adherence measured by Visual Analogue Scale (VAS) for pain and modified Penn Spasm Frequency Scale (mPSFS).
Results: A total of 105 patients were included in the study, median age was 53 years and 63% were males. They used in average four drugs regularly (range 1–15). Almost three-quarters (70%) of the patients reported high or moderate adherence to all their regularly used drugs (MMAS-8 $\geq$ 6 (max 8)). Of the 39 patients using oral spasmolytics, 74% reported high or moderate adherence to these drugs. The majority (97% of the patients) had high perceptions of necessity to their treatment (BMQ $>$ 2.5 (max 5)), and 54% had a high level of concern (BMQ $>$ 2.5 (max 5)). Logistic regression analysis showed that there was no association between adherence and pain, nor between adherence and spasticity. Younger age was found to be associated with higher risk of nonadherence.
Conclusion: Even though overall adherence was high, the patients were more concerned to take their medicines compared to other patients with other chronic conditions. Further studies are required for understanding adherence and attitudes toward medication in this population, and to help the patients feel safe about their medication regime.

HP-PC105: Medication lists: challenges in the transfer between hospital and primary care service

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Errors in medication lists often emerge in transition between health care levels, and there is need for strategies to communicate medication information. Therefor we aimed to describe reasons why medication discrepancies (MD) occurs in the transfer of patients between hospital and primary care service.
Design: In conjunction to a study based on use of structured medication report at transition from hospital to primary care service, we observed different reasons to why MDs occurs. Our observations and experiences linked to communication between health care levels is outlined.
Results: We observed that many MD's disclosed at discharge could most likely be attributed to lack of medicines reconciliation at admission to hospital. For instance, several medicines were prescribed in primary care service prior to admission, but not at admission to the hospital. In addition, at admission, some medicines were listed as prescribed medications although not found in the medication lists in primary care service. We also observed that newly started and discontinued medicines were documented in the hospital discharge letter, but not implemented in primary care service.

According to health care personnel in primary care service, insufficient communication about the patients' medications at discharge from hospital, led to corrections in the medication lists based on their previous knowledge about the patients. In addition, justified medication changes at discharge from hospital were not always implemented in primary care service due to professional disagreement. Some stated that lack of trust was one reason for not always taking changes into account, often based on earlier experience.
Conclusion: These observations indicated that MDs occurred both with and without intent when patients from primary care service were admitted to hospital and returned back due to poor communication. Medication errors during hospitalisation and unproven intentional changes may be the consequences. Due to this, it is important to improve the communication and confidence between professionals in the hospital and primary care service in order to reduce the number of MDs and to enhance patient safety.

HP-PC106: Assessment of professional practices in intravenous administration of human immunoglobulins

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Intravenous human immunoglobulins (IV Igs), plasma protein products, may cause in patient to a range of adverse side effects (headache, skin rash, kidney failure, thromboembolic event). In the framework of securing medicinal care, an assessment of professional practices has been conducted within our university hospital. The overall goal of this study is to evaluate the process of intravenous administration of human immunoglobulins done by the nurse staff.
Design: This prospective study has been carried out in three departments of Neurology. An observation grid was established on the basis of guidelines on good practices. All in all, 53 criterions have been examined resuming: prerequisites before administration, patient setup, IV Igs administration, monitoring, traceability of drug delivery and management of adverse side effects.
Results: During the course of this investigation, 51 administrations were observed. Only 26% of nurses deliver information about the treatment to their patients before administration and 46% question patients about previous hypersensitivity reaction. The presence of spontaneous diuresis is verified in 14% of cases. Emergency cart is not reachable in 33% of all cases. 78% of nurses ask patients to decline their identity. The use-by date on the bottles is checked in 51% of cases.

At the time of preparation of perfusion, labelling does not mention either patient's name (48%) or date and hour of perfusion (93%).

During perfusion, only 11% of nurses follow diuresis and 70% watch rate of administration. Hydration is not always kept 20 min after the end of perfusion (80%). Patient monitoring varies between 5 min and 1 h after perfusion's end. In 14% of cases, diuresis is monitored after the end of administration. 85% of nurses explain to patients side effects that may occur remotely. Finally, administration traceability is was conform in 100% of all cases and in the event of adverse side effects, statement was made in 96% of cases.

Conclusion: Best compliance scores have been achieved in Myology department where patients are fewer than in the two others departments (6 vs. 20 and 25). A presentation of those results will be given in theses three departments in order to improve patient management and securitization of IV Igs administration. This audit will be carried out soon in other departments.

HP-PC107: A satisfaction survey about the use of a new human polyvalent immunoglobulins dose

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: A new human polyvalent immunoglobulins dose (40 g) for intravenous administration is available on our establishment since 2014. In order to secure the administration, this new dosage was initially reserved for the health-cares using administration pumps (being four health-care). The aim of this survey was to evaluate the satisfaction of the nursing staff already user of the new 40 g dose and to estimate the motivation of the non-user nursing staff by the audit date.
Design: This satisfaction survey was carried out with the most IgIV consumer services (being internal medicine, neurology, cardiology and haematology). The questionnaire was structured in two sections: the first section regarding IgIV in general, the second section concerning the new 40 g dose.

The survey included multiple choice questions or questions with answers based on a four levels evaluation scale (not satisfied, mildly satisfied, satisfied, and very satisfied).
Results: The audit was realized on eight health-care, involving 41 nurses. Among the 41 interviewed, 17 (42%) have already used the 40 g dosage. In 80% of cases, users were very satisfied and 20% were satisfied. The most positive points noted were: gain of time provided (89.5% of satisfaction), less manipulation needed (99.9% of satisfaction), and reducing of infectious risk (94.7%).

Moreover, the influence of the injection technique on users' satisfaction was further reported. Indeed, according to nurses interviewed, the use of an injection pump is safer and improves the job comfort of nursing staff, unlike the injection by gravity (used in 14% of cases), which seems to slow down the use of this new dosage. In two cases, a positive opinion given by patient was also reported. Finally, negatives points noted were related to administration instruments (use of pump or not) and to less flexibility in daily dose regulation. Among the 58% not-user of this new dose, the 89% showed a strong interest for the product apart from services making the IgIV administration by gravity.
Conclusion: In light of these results, the use of 40 g dose will be spread to other services. The general diffusion of this dosage will provide a gain of time also at the pharmacy, during the unitary delivery and the computer-based administration of every units. A second survey will be soon effected within patients involved in the switch 20 g/40 g.

HP-PC108: Spot the difference! Medication reconciliation by pharmacist in patient admission and transfer

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Please specify your abstract type: Research abstract
Background and objective: The Clinic of Neurology, Rigshospitalet, Copenhagen, Denmark experience continuous medicine-related patient safety incidents (PSI) related to newly admitted patients and patient transfers between wards. In order to prevent drug related problems (DRP), the pharmacists increased their focus on these patients and provided systematic medication reconciliation. Thus, the objective of this pilot study was to investigate if the intervention would help identify drug discrepancies (DD) and prevent DRP.

Four wards were included in this study; two neurological, one neuro-anaesthetic (ICU), and one neurosurgical ward(s). Three wards use Electronic Medication Module (EPM), whereas the ICU uses Critical Information System (CIS). Furthermore, all patients' prescriptions are registered on Shared Medication Record (SMR), which provides an overview of prescribed medicine. Prescriptions cannot be transferred from SMR and EPM to CIS and vice versa. We suspected that PSI resulted from these system incompatibilities.
Setting and method: Patients admitted or transferred from May 2nd 2016 to June 3rd 2016 were included. Medication reconciliations using SMR, EPM and CIS were conducted by a pharmacist on weekdays. DD were presented to a physician orally and documented. Only DD accepted by physicians led to drug prescribing change.
Main outcome measures: Number of identified DD.
Results: The study included 186 patients, of which 147 (79%) were newly-admitted. 39 patients (21%) were transferred between wards. Of the transferred patients, 37 (95%) were transferred from the ICU to other wards and 2 (5%) were transferred from other wards to the ICU. Of the newly-admitted patients, 44 (30%) were admitted to the ICU and 103 (70%) were admitted to other wards.

The pharmacists identified 16 DD; 3 DD (19%) in the transferred and 13 DD (81%) in the newly-admitted patients. In the transferred, 3 DD were all related to the ICU. In the newly-admitted, 11 DD (85%) was related to the ICU and 2 DD (15%) to other wards. Of the 16 DDs, 11 (69%) were accepted by the physician. An example of a severe DD identified was an omission of prednisolone to a patient admitted to the ICU.
Conclusion: Most DD were identified in patients admitted to or transferred from ICU, which uses the incompatible system CIS. Pharmacist systematic medication reconciliation helps identify these DD and prevent DRP.

HP-PC109: Evaluation of antibiotic drug interactions in intensive care unit

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Please specify your abstract type: Research abstract
Background and objective: Antibiotic related drug interactions are more likely in intensive care unit patients due to common polypharmacy and antibiotic usage. The aim of this study is to determine the antibiotic related drug interactions with three different online

databases (Micromedex-paid, Medscape-free and Drugs.com-free) and to evaluate these interaction information by clinical pharmacist.
Setting and method: A retrospective, descriptive study was set up in Hacettepe University Hospital's Intensive Care Units, between November 10 and December 31, 2015. 62 patients who use at least one antibiotic were involved in this study. All drugs were assessed by each three databases and only antibiotic drug interactions were evaluated. Clinical significance of identified drug interactions were evaluated by clinical pharmacist.
Main outcome measures: Clinical pharmacist's assessment in significance of drug interactions indicated by three online databases.
Results: In 62 patients, the number of detected antibiotic related drug interactions were 42 with Micromedex database, 112 with Medscape database and 91 with Drugs.com database. These drug interactions classified with Micromedex as 2.4% contraindicated, 66.7% major, 28.6% moderate and 2.4% minor; with Medscape as 2.4% contraindicated, 46.4% serious-use alternative, 32.1% significant-monitor closely, 18.8% minor; and with Drugs.com database as 25.3% major, 41.8% moderate, 33% minor drug interactions. When these detected interactions were evaluated by clinical pharmacists, 35.7% in Micromedex, 28.6% in Medscape and 19.8% in Drugs.com recognized as clinical significant. Clarithromycin which CYP450 enzyme inhibitor identified the most responsible for drug–drug interaction.
Conclusion: Online databases are useful, practical and easy accessible soft wares. However, variety of interactions and interactions degrees varies in each program. Furthermore, most of interactions are not clinically significant. As a result, evaluation of interactions only with online database leads misinterpretations of interactions' significance degrees, so for the management of detected drug interactions with databases should be evaluated by clinical pharmacists and physicians in terms of clinical importance.

HP-PC110: Influence of the clinical pharmacy postgraduate education program students in intensive care units

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Please specify your abstract type: Research abstract
Background and objective: An implementation of clinical pharmacy practice by postgraduate students in intensive care units is a new way of learning in postgraduate education which creates opportunities in multidisciplinary collaboration in clinical pharmacy research, and also has influence on clinicians' routine patient care process. This system in educational program was ongoing in the Department of Clinical Pharmacy since 2014. As a part of this educational program, drug related problems in intensive care units were described and analysed, an influence of clinical pharmacy postgraduate students on patient treatment process was sought.
Setting and method: A prospective, cross-sectional study was performed between the March-June 2016 in Hacettepe University Hospitals, Department of Internal Diseases Intensive Care Units which consists of 17 beds. Three postgraduate pharmacy students from the Department of Clinical Pharmacy, Faculty of Pharmacy conducted medication reconciliation in order to identify any problems in patients' medical orders. Drug Related Problems (DRPs) were identified by the students and recommendations for management were approved by a supervisor of Clinical Pharmacy Department before they were directed to physicians for approval. The students were not authorized to undertake any action in patient care process, therefore all required interventions for DRP were undertaken by physicians and the acceptance ratio of the interventions were recorded. The Pharmaceutical Care Network Europe Foundation classification system (v.6.2) was used to asses DRPs.
Main outcome measures: Determination of DRPs by pharmacists and evaluation of their interventions' acceptance by physicians in intensive care units.
Results: During the study period, 106 patients were admitted to the intensive care units. Each patient's medication orders were evaluated and 80 interventions were recommended by postgraduate students. The number of interventions per patient was 0.75. The acceptability rate of interventions by physicians was 96.3%. In addition, physicians were provided drug information on seven different occasions. Recommendations regarding drug therapy were mainly related with treatment effectiveness and adverse reactions. The common causes of DRPs were requiring dose adjustment due to pharmacokinetic problems (42.5%), no therapeutic drug monitoring (18.8%), inappropriate timing of administration and/or dosing intervals (11.3%), requiring dose adjustment due to deterioration/improvement of diseases (6.3%), inappropriate drug selection (5%) and new indication for drug treatment presented (5%). The most common drugs responsible for DRPs were ranitidin, levothyroxine, allopurinol, pantoprazol, piperacillin-tazobactam and vancomycin.
Conclusion: The study showed that the most common DRPs was dose-related, therefore close monitorisation of the intensive care unit patients by students in clinical pharmacy postgraduate program can help physicians in terms of detecting, preventing and minimizing DRPs in order to improve patients' health outcomes.

HP-PC111: The evaluation of antibiotics susceptibility and antibiotic therapy of inpatients

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Please specify your abstract type: Research abstract
Background and objective: Antibiotic stewardship is the process of salvaging important antibiotic agents from becoming ineffective due to bacterial resistance. This is important because throughout the world antibiotics continue to be one of the most important classes of therapeutic agents due to their vital role in saving patient lives. Key goals of antimicrobial stewardship are to improve clinical outcomes, prevent antibiotic resistance, promote patient safety, and reduce health care cost. Pharmacist are in the frontlines because they perform antibiotic stewardship activities, such as selecting the most optimal antibiotic agent, adjusting drug-dosage, and stopping use of unnecessary antibiotics. As a result of the continuous rise in antibiotic resistance and decline in development of new antibiotics, antibiotic stewardship programs are proving to be indispensable in a health care settings.
Setting and method: 100 adult and paediatric inpatients receiving antibiotic therapy in the hospital Medipol University has been evaluated. Patients were selected randomly in the hospital system. Patients were evaluated for antibiotic susceptibility results and compliance with antibiotic management guidelines.
Main outcome measures: To evaluate the antibiotic therapy in patients with culture results and to determine according the treatment guidelines.
Results: It was observed 10 different pathogens in blood culture results of 51 inpatients out of 100 patients who were treated with antibiotics in hospital. Antibiotic susceptibility results for *Acinetobacter* spp, *Staphylococcus* spp, *Enterococcus* spp, *Pseudomonas aeruginosa*, *Klebsiella* spp, *E. coli* spp, *Streptococcus* spp, *Corynebacterium* spp, *Streptococcus pneumonia* and *Enterobacter* spp are evaluated in the study. *Klebsiella* spp was the most isolated pathogen at total of 85 culture results. Most frequently resistance were

observed to *Klebsiella* and *Acinetobacter* spp pathogens. The study found that, when considered *Acinetobacter*; amikacin is the most sensitive antibiotics and ceftazidime, ceftriaxone, cefepime, cefotaxime, piperacillin/tazobactam, imipenem, ciprofloxacin and levofloxacin are most resistant antibiotics.
Conclusion: Our study suggests that it is important to antibiotic susceptibility testing while the choice of drugs for antimicrobial therapy. Because antimicrobial susceptibility are different between individuals. The best treatment results obtained if drug selection were done by microbiologist, clinical pharmacist and physician as an agreed decision according to the results of sensitivity.

HP-PC113: Evaluation of hospital ward-based clinical pharmacy: assessment of value by collaborating health professionals

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Please specify your abstract type: Research abstract
Background and objective: Clinical pharmacists in Hospital Pharmacy Trusts in Central Norway are integrated in multi-disciplinary teams and work patient-oriented according to the Integrated Medicines Management model. From 2013 to 2015 there was an increase in the total number of clinical pharmacists in the region, from 11 to 31. This extensive increase corresponds to a period characterized by recruitment, training and implementation of clinical pharmacy services into new wards. User surveys are conducted every other year to assess perceived value among collaborating health personnel, and hence indirectly point towards the quality of the service. The survey conducted in December 2015 was the first indication of service quality after the expansion period.
Setting and method: The questionnaires were distributed by online survey software (Questback) to 1030 recipients (physicians and nurses) in hospitals of the Central Norway Region (Namsos, Levanger, Trondheim, Kristiansund, Molde and Ålesund/Volda). The form was re-used from a similar survey conducted in 2013 and consisted of 22 questions, both open and closed. The closed questions were analysed descriptively by the survey software, while the open questions were analysed by content analysis, i.e. grouped into categories representing similar subject matter.
Main outcome measures: The results from the conducted user-survey point towards maintained good quality of the service after the expansion period.
Results: A total of 289 (28%) questionnaires were completed. Of these, approximately 80% were answered by hospital nurses, the remaining mainly by physicians (18%) and 2% "other". On the question "What is your general perception of the benefit of the clinical pharmacy service; for collaborating health professionals? for the patient?" the total benefit was ranked 5.45 and 5.54 respectively (Scale from 0 ("no benefit") to 6 ("beneficial to a very large extent"). The open questions: "What disadvantages/advantages have you experienced by the introduction of clinical pharmacist into multidisciplinary teams?" received 153/185 comments respectively. Physical obstacles regarding office space, interference with the decision making process, more time consuming processes and the issue of relying too much upon the advices given was reported as possible disadvantages. 120 respondents answered "None" to this question. The comments regarding advantages dealt mainly with general increased patient safety and quality assurance. In addition, advantages as work-load relieve, time saved, collegial support, practical help, and learning interchange between professions, were highlighted.
Conclusion: Health-professionals assessed the clinical pharmacy service as highly beneficial. The advantages outlined were higher patient safety and quality regarding medication, in addition to collegial support, practical help and learning interchange.

HP-PC114: Proper use of benzodiazepines: study of prescriptions' prevalence

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: In June 2015, the French health authority, the «HAS», published an index resuming the recommendations of benzodiazépines (BZD) prescriptions and proposing an approach to stop using it. Indeed, it has been established that there is a too high and too long consumption of BZD in France. A study of prescriptions' prevalence has been done in our hospital centre. The aim of this study was to know our situation regarding the use of BZD in order to set up some improvements and take part in their proper use.
Design: A prospective study has been done on a 5 months period in different services: geriatric, post-op and rehabilitation facilities, endocrinology, internal medicine, pneumology and cardiology services. The data were raised on a given day in each services and recovered thanks to the prescriptions software but also through interviews with the patients and their doctors. It was examined whether there was a BZD prescription (hypnotic or anxiolytic), whether the duration was superior or not to the duration of the AMM and whether the prescription was done in our hospital centre. If the prescription was already part of the patient treatment, we looked if it was possible for the patient to stop using it, according to the HAS criteria. On their discharge, the letters and BZD prescriptions were also analysed and some patients' general practitioner were contacted after their discharge.
Results: 185 patients (median age 83 years old) were included from November 2015 to March 2016. 59.5% (110/185) of the patients had at least one BZD prescription the day we collected the data. We found only one BZD in 81 prescriptions (73.6%) and among them 77.7% (63/81) were anxiolytic BZD. Among those prescriptions, 62.7% (69/110) already existed before the hospitalization and 37.3% (41/110) were given during the hospitalization (24 were prescribed automatically). 59.4% (60/110) of the prescriptions did not respect the legal duration of the AMM (9 pieces of data were not found). 12.2% (5/41) already exceeded this duration limit. Among the patients who already had a BZD treatment before going to hospital, 24.6% (17 out of 69) could consider stopping their use of BZD. By the end of this study, 143 patients were discharged from hospital, among them 48.3% (69/143) with a prescription of BZD. 55.2% (16/29) of the prescriptions established during the hospitalization had been renewed when the patient came out of the hospital, we managed to contact ten general practitioners (approximately 53.4 days after their discharge), nine patients carried on their BZD treatment, among them one patient had reduced his consumption.
Conclusion: This study is an example of the high proportion of BZD prescriptions in France which the majority doesn't respect the legal length of the AMM. The prescriptions of BZD in the hospital are generally systematically renewed by the general practitioners. The patients must be informed about the risks of using those molecules. In order to ameliorate this practice in the hospital, a proper use leaflet, reminding the prescriptions of BZD, has been created and distributed in each services to make people aware.

HP-PC115: Analysis of HIV patients hospitalization, clinical situation and related factors

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Please specify your abstract type: Research abstract
Background and objective: At the bibliography, late HIV diagnosis, low CD4 counts, not receiving antiretroviral (ART) drugs and comorbidities are strong predictors of hospitalization among HIV patients.
To analyze clinical and epidemiological characteristics of HIV hospitalized patients, evaluate the main causes for hospital admissions and to study the possible relation with adherence of the patients.
Setting and method: It was made a descriptive and retrospective study (2014–2015), including clinical histories of HIV patients admitted in a university hospital of Spain.

Clinical histories were reviewed and included: age, time at treatment diagnosis during admission, time with ART, immunovirological situation (plasma viral load undetectable (PVL) and CD4 lymphocyte >200 10E6 cell/l), adherence to ART and hepatitis B/C (HBV/HCV) coinfection at the moment of admissions.

The diagnoses at admissions were grouped in respiratory infections, other infections, malignancies, psychiatric disease, liver chronic damage and others.
Main outcome measures: Admissions, adherence and clinical status.
Results: During the study period, 112 HIV patients (19% of HIV population receiving ART periodically) were admitted. 40 of them were readmitted one or several times, up to adding a total of 178 admissions. 12 patients (15 episodes) were excluded to the study because of lack of clinical data. Median age of patients was 51.5 (26–82) years. 59.5% of the patients were HCV or HBV coinfected.

27 patients haveńt treated with ART or recently started. Related to the immunovirological state, 58 (35%) episodes had detectable PVL and 64 (39%) episodes were related with CD4 lymphocyte <200 10E6 cell/l.

Adherence of the 73 patients (123 episodes) with more than 1 year of treatment was good (>95%). At the poor adherence group only 52% PVL were undetectable versus 75% of PVL undetectable at the good adherence group.

Main causes of admission were infections (34%) (respiratory disease (23%) and other (11%)), hepatic disease (20%) and neoplasias complications (13.5%).

11 patients died during their admission; 5 due to hepatic disorder, 3 due to neoplasia, and 3 due to infections.
Conclusion: Last diagnosis of HIV or no ART treatment are causes of admission. Immunovirological situation is related with their adherence but isńt with admissions. Coinfection with HCV or HBV or others infections are risk factors for admission.

HP-PC116: Drug related problems at hospital admission in patients with complex treatment regimes

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Please specify your abstract type: Research abstract
Background and objective: Complex medical history and treatment can potentially cause problems. The objective of this study was to investigate the prevalence of drug-related problems (DRPs) and medication discrepancies in internal medical patients with complex treatment at hospital admission. Further, to investigate to which extent DRPs were identified as a result of medication reconciliation, and to which extent DRPs could be associated to the hospitalization.
Setting and method: Patients with at least four regular medicines from two different therapeutic groups were consecutively included at admission to an internal medicine ward at a University hospital in Norway in the period 01.09.14–15.02.15. Pharmacists used the Integrated Medicines Management (IMM) model for medication reconciliation and medication reviews at admission. A medication discrepancy was defined as any discrepancy between the recorded medication list at admission and the patient's actual use of medications, as revealed by medication reconciliation. The patients' actual use of medications, medical journal and laboratory results, were used to perform a medication review at admission time and identify DRPs. The proportion of DRPs revealed due to medication reconciliation was calculated. Moreover, the project group retrospectively assessed possible DRP-induced hospitalizations based on clinical history, cause(s) of admission and identified DRPs.
Main outcome measures: The main outcome was the median number of DRPs per patient at admission. The proportion of DRPs revealed due to medication reconciliation, the proportion of patients with DRPs possibly associated to the hospitalization, and the median number of medication discrepancies, were included as secondary outcomes.
Results: 120 patients were included, 50.0% women. Median patient age was 79 (range 27–96) and most of the patients were home-living before admittance (89.2%). In total 1359 DRPs were identified at admission, with a median number of 11 (range 2–27) per patient. 99 DRPs (7.3%) were identified due to medication reconciliation. For 25 patients (20.8%) a causal relationship between the hospitalization and the DRPs was assessed as "possible". Medication discrepancies were revealed in 113 of the 120 included patients (94.2%), with a median number of 4 (range 0–14) per patient.
Conclusion: Internal medical patients with complex drug regime are frequently exposed to DRPs and medication discrepancies at hospitalization. Medication reconciliation could be essential to identify DRPs, which is likely a common cause of hospitalization in the studied patient population.

HP-PC117: Assessment of oral anticoagulant prescriptions and pharmaceutical analysis at the hospital by regional audit

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Oral anticoagulants (OA) are the most common drug class associated with preventable adverse drug events in hospitalized patients that require optimizing the pharmaceutical analysis (PA) process. In this context, a regional audit was conducted on PA of prescriptions oral of OA. The aim of this study is to provide an overview of the treatment by OA in the hospital by evaluating the consistency of the OA prescriptions compared with national and European guidelines and evaluate the pharmaceutical interventions.
Design: This study is based on the collection of PA data (demographics, indication, posology, drug interactions, monitoring) as well as the collection of pharmaceutical interventions and discordance

between guidelines recommendations and clinical practice. The inclusion criteria were any patient treated with OA (vitamin K antagonists (VKA), non–vitamin K antagonist oral anticoagulants (NOACs)). Included patients were followed minimum 2 months. The primary outcomes include description of baseline characteristics of patients, the number of inappropriate prescriptions compared to the different clinical recommendations, the number of pharmaceutical interventions, the number of adverse drug reactions (ADRs) related to OA use and the assessment of patient monitoring.
Results: During the 6-months study period, 588 patients were included in six health institutions. The average age was 78 years (70% of patients over 75 years old) and 59% of the patients were women. 32% of patients had renal impairment. 73% of patients were treated with VKA, and 27% with NOACs. It was the first prescription of OA for 27% of patients (56% with VKA; 44% with NOACs). The most common indication was the non-valvular atrial fibrillation (60%). In this indication, 99% of patients had CHA2DS2-VASc score $\geq$2, and nearly 30% had a high risk of bleeding (HAS-BLED score $\geq$3). 8 drug interactions were observed, and 35 ADRs occurred related to OA. 42% of patients with an ADRs had a HAS-BLED score $\geq$3. 12.5% of prescriptions were considered inappropriate, including 45% NOACs (no monitoring renal function in 13% of patients over 75 years initiating treatment, inappropriate posology in 14%, and 3% of contraindications). The rate of pharmaceutical interventions was 4%. Nearly 60% of the prescriptions were already adapted when the pharmacist was starting analysis.
Conclusion: Prescribers are sensitized of the risks on the OA prescriptions, which explained the delay upon PA and low rate of pharmaceutical interventions. However, the high number of inappropriate prescriptions shows the necessity to improve the PA process on these drugs, particularly by actions on therapy initiation and patient monitoring, especially for NOACs. For this class, the impossibility of assess the level of anticoagulation by laboratory monitoring requires appropriate initiation and monitoring, especially an assessment of baseline renal function.

HP-PC118: Evaluation of antibiotic prescribing practices in public and private hospitals

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: The development of bacterial resistance these last 10 years is a public health major problem in the world and needs to implement actions. In France, the national drug safety agency has defined a list of "critical antibiotics". This list includes antibiotics particularly generator of bacterial resistance (amoxicillin-clavulanate, cephalosporine, fluroquinolone) and antibiotics called "last resort" (antibiotics against Gram-positive cocci, carbapenem…). At our regional level, an evaluation of prescription of these critical antibiotics was proposed to all medical centers. The aim was to evaluate the quality of prescription of these critical antibiotics.
Design: The regional working group (pharmacists, infectious diseases physicians and biologists) had developed a collection grid including data on patients, antibiotics and four criteria: adequate molecule, compliance with medical prescriptions, duration of antibiotic therapy and reassessment at 72 h. This is a prospective study proposed to all health institutions (public and private), which had to be completed on a given day in all care units and had to be conducted by a team of multi-professional evaluators. The study included a quantitative part (number of patients hospitalized in the audited units, number of patients receiving antibiotics and number of critical antibiotic prescriptions) and a qualitative part (adequate to the four criteria).
Results: Response rate was of 84%. The study investigated on 7026 patients hospitalized in the audited units, including 1391 patients (20%) receiving antibiotics. Among the 1391 patients, 89% were hospitalized in medical, surgery or obstetrics units We recorded 865 prescriptions of "critical antibiotics particularly generator of bacterial resistance" (53% amoxicillin–clavulanate, 30% ceftriaxone, 14% fluoroquinolone and 3% other third-generation cephalosporine) and 42 prescriptions of antibiotics called "last resort" (74% carbapenem). The average age of the population was 69.9 years ($\pm$20 years). Sex ratio was 1.1. 91% corresponded to curative use and 9% to prophylactic use. The expertise of infections diseases physician was requested in only 13% of the cases. The antibiotics were prescribed in majority to treat bronchopulmonary infections (38%), urinary tract infections (16%) and intraabdominal infections (16%). Ninety-two percent of the prescriptions had a proper indication. 66% of the prescriptions complied to the guidelines. The duration of antibiotic therapy was adequate in 82% of the cases. Only 45% of the prescriptions were correct according to these three criteria. Forty-four percent of the prescriptions were reassessed and adapted by the physician.
Conclusion: This study is original because of its regional dimension and antibiotic analysis. The number of analysed prescriptions was significant with an overall proper prescription in adequate with the guidelines. However, actions must be implemented on duration and reassessment and adjustment of treatment. These results were presented to the participating hospitals. These three points will be re-evaluated during a new regional audit.

HP-PC119: Assessment of drug prescribing for the elderly: a 31-month study in a «hospital at home» departement of a French general hospital

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Please specify your abstract type: Research abstract
Background and objective: Since 1999, all French hospital have been inspected according to a guideline established by French Health Authorities (Procedure of Certification). One of the criteria of this guideline is the assessment of prescription in the elderly patient.
The purpose of this study is to assess drug prescription for the elderly in a «hospital at home» department of a French general hospital.
Setting and method: A 31-month study was conducted in a 20-beds «hospital at home» department
All prescription were analysed at the point of admission and at any change in prescription, through a internal guideline with seven criteria.
Main outcome measures: Through our internal guideline, seven criteria were recorded: "No more 2 psychotropic drugs", "no more 1 benzodiazepine", "no contra-indication", "No more 1 anticholinergic drug", number of inappropriate drug prescribed, «No more one non-steroidal anti-inflammatory drug» and «no illogical association »
Results: From 1st November 2013 to 31th May 2016, 326 forms were completed for 124 patients (48 male and 76 female), with an average age of 87.

The criterion «No more 2 psychotropic drugs» has been met in 88.95% of assessment. Otherwise, 2 or more psychotropic drugs are prescribed in 88.89% of assessment from the point of admission.

The criterion «No more a benzodiazepine drug» has been met in 91.72% of assessment. Otherwise, more than one benzodiazepine drug is prescribed in 59.26% of assessment from the point of admission. No contra-indication is detected in 93.25% Otherwise, a

contra-indication between two drugs causing torsade de pointes is detected from the point of admission in this department.

No more 1 anticholinergic drug is prescribed in 84.05% of assessment.

According to the French criteria, one or more inappropriate drug is prescribe in 46.93% of assessment. The most common inappropriate drug group prescribed was alimentary tract and metabolism drug (60.85%) (the hospital at home team needs these class of drug) followed by nervous system (25.95%) (prescribed at the point of admission) and by cardiovascular drugs (12.34%) (prescribed at the point of admission). Finally, the criteria «No more one non-steroidal anti-inflammatory drug» and «no illogical association» have been met in all cases.

Conclusion: This analysis shows that most of criteria for «assessment of prescription among elderly in a «Hospital at home» department have been met. When one has not been met, either the hospital at home team needs the drug prescribed, or this drug have been yet prescribed from the point of admission in this department.
This study could be used for the next Certification.

HP-PC120: Access to health care: case of autologous serum eye drops

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Please specify your abstract type: Research abstract
Background and objective: Autologous serum eye drops (ASE), prepared from patient's serum, are indicated in the treatment of severe dry eye syndrome and defective epithelial healing. Its in-hospital preparation within a controlled-atmosphere zone unable it to be dispensed by non-equipped hospital pharmacies. The aim of this study was to implement security measures to allow transport towards distant hospital pharmacies and all patients even those residing far from a regional university hospital (UH).
Setting and method: This study was conducted in a 1495-bed French university hospital. Patient blood samples were taken within the university hospital every 12 weeks. Serum was then biologically controlled (negative tests for HIV, HBV, HCV, TPHA, VDRL). Preparation was conducted 3 days after blood sampling. Sterile preparations were then stored at a temperature of −18 °C. Studies showed that eye drops were stable 14 days after being thawed. Transport of eye drops to distant hospital pharmacies requires to be conducted under controlled temperature i.e. below 8 °C, to ensure the stability of eye drops. These pharmacies are located close to patient's homes. The entire process was examined by a pharmacy team in order to study and secure each step, transport in particular.
Main outcome measures: Validation of each step of the autologous serum eye drop dispensing process, from sampling to receipt by different hospital pharmacies, transport in particular.
Results: 4 patients benefitted from the preparation. All patients resided more than 100 kilometres from a UH. A follow-up form was completed to qualify dispatching and to trace each step during transport. A temperature sensor was placed inside the box. The receiving agent was required to stop and control the sensor.

A double retrospective control was performed by a pharmaceutical team via the recording of temperature sensors. A second follow-up form was drafted in order to track dispensation reviews, ongoing dispensation and future planning.

A patient information booklet was distributed to hospital pharmacies to inform patients about good practice concerning eye drops.

Conclusion: Technological necessities concerning autologous serum eye drop preparation and transport limit access to health care. In this study, the role of the pharmacist consisted in reducing inequalities among patients residing at a distance from the only regional UH. The role of the pharmacist is to ensure absolute quality of preparation between the UH and the patient.

HP-PC121: Computerized medication reconciliation: overview of pharmaceutical software used and support for development of integrated modules

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Medication reconciliation aims to improve continuity of care for patients. In 2015, a national survey identified barriers for implementation of this activity in France, among which computerized systems were judged unsuitable for hospital practices. In the absence of appropriate hospital information systems (HIS), medication reconciliation remains a time consuming process implying manual transcriptions, potentially leading to a lack of traceability and medication errors.

The objective of the study was to assess the current HIS used in a French region including the integration of medication reconciliation into the software and to define courses of action to assist this integration.
Design: An online survey conducted in May 2016 was addressed to head pharmacists of the 134 health facilities in the region, giving a total of 100 head pharmacists concerned. It included questions on the software used by the health facility, the development of medication reconciliation and its traceability, formulation of operational requirements to the editors of software and availability of a module integrating medication reconciliation provided by the software.
Results: Seventy-eight pharmacists (78%) participated in the study, with all types of health facilities represented: public hospitals, clinics, home health agencies, haemodialysis structures and after care and rehabilitation facilities. Thirty different software were identified in the region. 27 (35%) pharmacists planned to develop medication reconciliation in their health facility and 20 (26%) were already carrying out this activity. Within these 26%, medication reconciliation was conducted on paper only for 9 (45%) of them, while 11 (55%) were using a computerized system (patient file, pharmaceutical software, other) for traceability. The most widely used software in the region contains a module enable for computerized medication reconciliation, and three other editors are currently developing one. No development is scheduled for another three editors nonetheless commonly used in the region. 15 (19%) pharmacists had contact with the editor of the software, and 10 had given thought to the preparation of requirement specifications to the editor to develop an integrated module of medication reconciliation.
Conclusion: Despite the interest attributed to medication reconciliation and despite the need of a fully integrated module of medication reconciliation to HIS, only a few health facilities of the region possess an appropriate computerized system to develop this activity. This study underlines the approaches already made by pharmacists to editors in order to integrate medication reconciliation to the HIS. Subsequently, retrieving these approaches and writing specifications common to all health facilities is scheduled, in order to assist them in providing a strong incentive for the editors to integrate medication reconciliation to existing HIS.

HP-PC122: Establishment of medication reconciliation in our medical institution: experience in the department of internal medicine: emergency downstream

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Medication reconciliation (MR) is an interactive and multiprofessional process that ensures the continuity of care by integrating the ongoing treatment to the new hospital prescription. This helps securing the patient's care pathway particularly at transition points.

The objective is to initiate the MR process in our medical institution with a pilot study in the department of internal medicine—emergency downstream to validate a methodology and adapted tools.
Design: The MR takes place in three steps performed by a pharmacy student:

(1) Realization of best possible medication histories (BPMH), combining at least three sources of information and using sources' collection form. This research begins with a patient interview done in pairs with a medical student using an interview guide.
(2) Comparison BPMH with the initial hospital prescription in the department (after passing through the emergency department) on the treatment reconciliation form. A status is assigned to each line of drugs and then the differences are identified (stopped, changed or added). These two steps are validated by a pharmacist.
(3) Discussion and characterization of observed differences (intentional/unintentional and documented/undocumented) with the senior physician.

Results: Twenty-six MR were performed over 3 weeks in 2015. The MR is performed within 2 days after admission. On average, 2.3 information sources per patient were used for the BPMH: mainly drug prescription (dispensed in pharmacies community); analysis of emergency medical records and patient interview.

For the 26 patients included, 268 drugs were listed. 148 discrepancies were observed and 62 were studied (status stopped or changed only): one documented intentional discrepancy, 43 undocumented intentional discrepancies and 18 unintentional discrepancies (UD).

These UDs affected 12 patients (1–3 medication errors per patient) and corresponded to a non-prescribed drug in 90% of the cases. Vitamins, antihistamines, anti-reflux and proton-pump inhibitors were involved in 59% of cases; cardiovascular drugs in 17% and anti-infectious in 12%.

Through this pilot study, the methodology was validated: (a) need to have a minimum of three sources to achieve a relevant BPMH and to confirm each information with two sources; (b) need for a dedicated time with trained staffs; (c) development of tools to improve the traceability of information obtained from each source and traceability of medication reconciliation activity.
Conclusion: The MR establishment in the internal medicine department was helpful in identifying 18 medication errors that have been corrected. It is proposed to archive the treatment reconciliation form in the patient file to contribute to the traceability of information on treatment. This study strengthens the deployment of this method and MR tools to other services of the hospital.

HP-PC123: Clinical pharmacists experiences with interprofessional collaboration

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Please specify your abstract type: Research abstract
Background and objective: Clinical pharmacists have an important role in improving healthcare services. There is lack of knowledge of clinical pharmacists' experiences in interprofessional collaboration. Our objective was to explore the challenges and barriers experienced by clinical pharmacists in interdisciplinary teams in Norway and incorporation of expanded pharmacist roles in hospital settings.
Setting and method: This qualitative study was conducted using semi-structured interviews. A total of 13 clinical pharmacists from four (government) hospitals were included in the study. The interviews were audio recorded using a digital recorder. The recordings were transcribed verbatim.
Main outcome measures: Challenges and barriers clinical pharmacists experience in interdisciplinary teams in hospital setting.
Results: The main findings are that the pharmacists' role is little known to other health care professionals, particularly at hospitals with short tradition for clinical pharmacy services. Clinical pharmacists have great motivation from being able to influence drug treatment for patients. From the perspective of the participating pharmacists they succeed in interdisciplinary cooperation when their professional knowledge solves the patients' drug-related problems. Communicating recommendations to physicians with professional credibility has great importance for the intervention to be implemented. Using the theoretical framework of communicating tensions, we argue that the pharmacists in our study use indirect communication to prevent physicians defensiveness to recommendations. Lack of education in interprofessional cooperation and communication is apparent in this study. The participants also stated that there should be some form of quality assurance or education requirements before one can work as a clinical pharmacist.
Conclusion: Training in communication for graduates and interprofessional collaboration during the undergraduate pharmacy education, can possibly help pharmacists with integration in interdisciplinary teams. Increased attention to teamwork from the hospital leadership is essential for the implementation of interprofessional collaboration in a larger context.

HP-PC124: Antifungal therapy in the intensive care unit (ICU): potential pitfalls

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Antifungal therapy in the ICU, particularly therapy targeting resistant aspergillosis, mucormycosis and systemic candida, is often of lifesaving importance. Posaconazole and voriconazole are the antifungal agents of choice. Our aim was to compile a tool that can be used at the ICU to address aspergillosis, mucormycosis and systemic candida in an optimal manner.
Design: Female patient, age 50 + , liver transplant, CRP > 300 mg/L, creatinine > 150 μmol/L. Abdominal X-ray imaging revealed four large abscesses and laboratory analyses confirmed mucormycosis. Posaconazole intravenous (300 mg one times daily) and liposomal

amphotericin B (1 mg/kg/day) were initiated. The inflammatory markers remained unchanged 5 days following initiation of therapy with no change in size or number of abscesses and the patient developed sepsis. Amphotericin B dose was increased to 3 mg/kg/day. After 1 week the inflammatory parameters and size of abscesses began to fall. The dosage form of posaconazole was switched from intravenous to mixture. The dose remained the same and within 24 h the CRP rose to 600 mg/L.

Results: Pharmacist intervention revealed a missing loading dose of intravenous posaconazole as well as incorrect dosage of the per oral form due to bioavailability variation. Posaconazole mixture dose was increased to 400 mg two times daily. Through serum concentration analysis of posaconazole was suggested prior to the dose increase. The serum concentration was 0.6 mg/L (range >1.0–1.25). Through serum concentration 4 days later was 1.2 mg/L. Both CRP and abscess size were on the decline. A dosage and TDM pocket card for posaconazole therapy of mucormycosis, aspergillosis and candida was compiled.

Conclusion: Optimal systemic fungal infection therapy is essential, especially in the critically ill. Of special importance is TDM and correct dose adjustment when dosage-form changes occur.

HP-PC125: POPI—(Pediatrics: Omission of Prescriptions and Inappropriate Prescriptions) criteria amongst physicians and pharmacists: interrater reliability

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Please specify your abstract type: Research abstract

Background and objective: Potentially inappropriate prescriptions and omission of prescription, respectively IP and OP, are common issues in the pharmacotherapy, especially in vulnerable population, such as elderly and children. There are many available tools detecting IP and OP for geriatrics, however, similar tools are less common in paediatrics. Therefore, a first target tool for paediatric population: POPI «Paediatrics: Omission of Prescriptions and Inappropriate Prescriptions» was created and was validated by Delphi Method in 2014. We aim to evaluate inter-rater reliability between health care professionals, who apply POPI. Our study also assessed their satisfaction and the accessibility of this tool.

Setting and method: Twenty cases with or without IP or OP were selected. These cases were identified in a previous retrospective IP-OP prevalence study on 15.973 patients. These patients were admitted to the emergency department of a university mother and child hospital, between October 2014 and March 2015. One doctor and one pharmacist, who participated in the creation of POPI tool, identified IP and OP in 20 cases and composed "standard answers". These cases were then reviewed independently by eleven clinicians (including generalists, paediatricians, pharmacists, residents, general practitioners), who did not experience this tool before. Inter-evaluator agreement was calculated by using the agreement Kappa test. The satisfaction of users was also evaluated.

Main outcome measures: Inter-evaluator agreement, the median time of use and the satisfaction of users.

Results: A high level of agreement of IP and OP detection was recorded (IP: k median = 0.80; OP: k median = 0.71). The easy use of POPI was approved by 91% evaluators. The median time of use was 2 min 45 s per case (quartiles: 2.4–3.4).

As a result, there were 82% of clinicians satisfied with the provided POPI and they would like to apply this tool in their daily practice.

Conclusion: POPI demonstrated a good interrater reliability and is easy to use. This strong validation by many specialists prove POPI is a reliable tool. It can be applied daily at work in paediatric section by doctors and pharmacists. Other multicentre and prospective study should be conducted to evaluate economical and clinical impacts of POPI.

HP-PC126: Optimizing antibiotic dosage in intensive care unit (ICU) patients on continuous veno-venous hemofiltration (CVVH) with and without diuresis

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: Drug dosing during CVVH is challenging due to changes in pharmacokinetic parameters brought about by the patients' deterioration in health and factors associated with the physical process of filtration. This is of particular significance in the ICU. In addition, there is the issue of the patients' diuresis or lack of such. This will affect the total clearance (Cl_{total}) of the drug. The dose of antibiotics must therefore be calculated individually taking into account all of the above as well as changes of filtration parameters. Our aim was to illustrate how such dosage calculations can be undertaken.

Design: A 50-year-old male patient, weight 75 kg, diagnosed with Stenotrophomonas maltophilia infection. The trimethoprim/sulfamethoxazole dose was 7.5 mg trimethoprim/kg/day every 8 h as specified for anuric patients on CVVH. Patient was initially anuric for 3 days after which diuresis was started. The dose was recalculated.

Results: Creatinine clearance (CrCl) related to CVVH during the anuric period was calculated accounting for ultrafiltration rate, sieving coefficient, blood-flow, haematocrit concentration and pre-dilution. The value was 22 ml/min. Following diuresis on day 4, remaining kidney function was assessed by measuring urine and serum creatinine. The value for $CrCl_{renal}$ (18 ml/min) was added to the extracorporeal clearance, and gave a total clearance of40 ml/min. This warranted dose adjustment of trimethoprim/sulfamethoxazole since this drug requires normal dosage at $CrCl > 30$ ml/min.

Conclusion: During CVVH, the presence or absence of diuresis must be taken into consideration when dosing antibiotics. In anuric patients, the CVVH-machine set up constitutes $CrCl_{total}$, but in patients with diuresis, the remaining $CrCl_{renal}$ should be added.

HP-PC127: Investigation of medication profile of patients during hospital admission

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: The aim of the study is; to evaluate patients' home (prescribed and non-prescribed) and hospital medication during hospital admission by computing Medication Regimen Complexity Index and investigating possible drug–drug interactions.
Design: Patients (aged 18 and older) who applied internal service during 6 months (2 days/a week) were included to the study. Patients' medical profile were obtained from patients' file. Their home medication and hospital medication were calculated with medication regimen complexity index (1) and checked drug interactions with Micromedex Drug Interaction Program.
Results: A total of 151 from 360 of patients who applied to the internal service (male 46.4%, female 53.6; the mean age of patients was 69.01 ± 16.28.) were included to this study during 6 months. Of them, 75.5% had low education level (<8 education years), 53.6% had 2 and more chronic diseases Of them, 45% hospitalized last 6 months before this hospital admission. The most prevalent diagnoses documented at admission were kidney disease (19.8%), cardiovascular disease (15.3%) and cancer (13.2%). The mean of patients' home medication number was 5.64 ± 3.50 and the mean of their MRCI scores was 16.02 ± 10.89. 45% in patients hospitalized in the last 6 months. At least one possible drug–drug interactions were found in 66.6% of patients at home medication and in 78.8% of patients at hospital medication, respectively. The mean number of possible drug–drug interactions at patients' home medications was 2.88 ± 3.62, while the mean number of possible drug–drug interactions at patients' hospital medications was 4.07 ± 4.06. Of them, 53.6% had polypharmacy at home medication. The frequency of possible drug–drug interactions and the score of medication complexity index was found high among patients' hospital medications when compared with their home medications.
Conclusion: The potential role of pharmacist including medication reconciliation and medication review could improve rationale drug use during hospital admission.

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HP-PC128: Effectiveness of oral ribavirin in immunocompromised adults with respiratory viral infections

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Please specify your abstract type: Research abstract
Background and objective: Oral ribavirin has been approved for the treatment of hepatitis C virus (HCV) and respiratory syncitial virus (RSV) by the FDA. Its benefit has not been clearly demonstrated in other respiratory tract infections caused by viral agents such as human parainfluenza virus (HPIV), human metapneumovirus (HMPV) or Coronavirus. Experts' local committee has approved to use oral ribavirin for the treatment of these respiratory viral infections. We aimed to assess the effectiveness and safety of oral ribavirin as main treatment in respiratory viral infections.
Setting and method: From May 2013 to October 2015, we performed a retrospective monocentric study including patients who received oral ribavirin for non-HCV infections.
Main outcome measures: Viremia negativation was used to determine the response rate to oral ribavirin. Specific toxicities (anaemia, cytopenia, liver dysfunction) and renal function were assessed biologically.
Results: Thirty-five immunocompromised patients (F/M: 3/4, age: 57) were included. Underlying conditions were lung transplant (n = 32), heart transplant (n = 1), pulmonary fibrosis (n = 1) and acute myeloblastic leukaemia (n = 1). The median duration between transplantation and infection was 1.8 years (0.1–10.8).

Nine patients were exclusively infected by RSV, 19 by HPIV (2 HPIV-1; 2 HPIV-2; 10 HPIV-3; 4 HPIV-4; 1 non-identified HPIV), 4 by HMPV and 1 by Coronavirus. There were six co-infections: RSV/HPIV-1, RSV/Coronavirus, HPIV-2/HPIV-4 and HPIV-3 or 4/Coronavirus (3 patients). All the patients were admitted in pulmonary division, except for the patient with heart transplant who was in cardiac intensive care unit.

The administered dose was 400 mg tid or 200 mg tid if there was renal insufficiency (9 patients). The median duration of the treatment was 8 days (3–32).

Four patients prematurely discontinued the treatment due to severe toxicity or therapeutic change; three didn't respond to the treatment (no data for the last one).

Four patients were re-treated despite having a virological response to the first cure. One patient treated for a HPIV-3/Coronavirus co-infection had an HPIV-3 relapse 64 days after ribavirin discontinuation. Concerning the three other patients, they received a second cure to treat a new infection (Coronavirus, HPIV-4 and HMPV, in opposition to HPIV-3 twice and HPIV-2 respectively).

Virological response rate was 82% (7/11 for RSV, 22/25 for HPIV, 4/5 for Coronavirus and 4/4 for HMPV). Two non-negative viremia patients (RSV and HPIV-4/Coronavirus) received intravenous ribavirin after oral ribavirin therapy. No patient died from viral infection.

Twelve patients presented specific toxicity: one hepatic cytolysis and cholestasis, eight haemoglobin decrease, two pancytopenia and one mucositis.
Conclusion: Despite the poor number of patient, our study shows that oral ribavirin seems to be efficient to treat HPIV, HMPV and Coronavirus in immunocompromised adults. We observed known side effects that could generally be managed. Oral ribavirin may thus represent a therapeutic strategy in several respiratory viral infections.

HP-PC129: Medication reconciliation and quality of medicine lists at discharge from surgical ward

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Reconciliation of medicine lists is important to ensure correct medical treatment of patients both in hospital and other healthcare levels. While reconciliation upon admission is part of the normal routine at Surgical Ward B, Molde Hospital, there has been less focus on reconciliation at discharge. As such, this study aimed to ensure reconciliation and correct transfer of medical information at discharge.

Design: Medicine lists of all patients discharged from Surgical Ward B, Molde Hospital between week 39 and 51 in 2015 (n = 240) were investigated. The forms were gathered and counted based on the tasks signed for to ensure completed reconciliation and sufficient information given to the patient. The count was performed every 2–3 weeks, and the forms in each count was pooled together as one point of measure. The quality of medicine lists in discharge lists was evaluated based on the Norwegian Patient Safety Program criteria. Medicine lists in discharge lists from week 39 to 51 (n = 102) were pooled together and compared to medicine lists in weeks 36–39 (n = 46).
Results: The results of reconciliation was divided into the subsections of Surgical ward B, and represent the number of completed tasks as signed for in the reconciliation form. The Surgical subsection showed a significant increase in patients with pre-checked medicine lists and reconciled medicine lists over the measured time period. Similar results were not found in the Orthopaedic subsection. As for the quality of medicine lists in the discharge lists, significant improvement was seen in all set criteria, with the exception of "source" in the Surgical subsection. In the Orthopaedic subsection however, no significant improvement was seen in any of the criteria other than "indication for use".
Conclusion: The implementation of reconciling medicine lists at discharge was successful. However, both subsections need to work further to ensure continuation and improvement of the process. Furthermore we found varying results in the writing of medicine lists depending on subsection. Still, regardless of the individual results of the two subsections there is big room for improvement to ensure that sufficient medical information is included in the discharge papers.

HP-PC130: Optimization of patients' medication across healthcare sectors

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: From July 2015 clinical pharmacists began conducting medication histories and reviews (pharmacist notes) at the Emergency Surgical Ward (ESW), North Zealand Hospital (NZH). Inclusion criteria are acute patients using ≥5 drugs or ≥1 risk drug (antidiabetics, anticoagulants, antipsychotics, benzodiazepines, opioids and Digoxin). The aim of the service is to identify drug-related problems and secure correct medication reconciliation between the medicine the patient is admitted with and the medicine in the electronic medication system (EMS) in the hospital. The service ensures that the patients' medication follows across healthcare sectors.

The objective is to determine if the discrepancies between the medicine the patient is admitted with and the medicine in EMS (documented in the pharmacist notes) are used by the physicians. In addition to determine if the pharmacist interventions increase the physicians' acceptance rate of the discrepancies.
Design: Data were collected at the ESW at NZH (capacity of 27 beds). Data consist of pharmacist notes conducted from August 2015 to May 2016. Pharmacist notes were compared to the patient record and EMS to identify if the pharmacist notes were considered by the physicians.

In order to increase physicians' acceptance rate of the discrepancies suggested in the pharmacist notes, interventions were made according to the Model for Improvement. Throughout the period, the focus was on oral delivery of the pharmacist notes. In December 2015 the pharmacist optimized the clinical relevance of the discrepancies, by creating and testing a list of products (including vitamins, herbal drugs, Glucosamine etc.) which the pharmacist should not intervene on. In December 2015 the pharmacist also started to follow up on the pharmacist notes not considered by a physician the previous day to ensure that the physician considered the discrepancies.
Results: There were identified 599 discrepancies between the patients' actual medication at admission and EMS at the hospital in 306 patient records (1.96 discrepancies per patient). In total 424 discrepancies were accepted by the physicians (1.39 discrepancies per patient). The physicians' acceptance rate was based on the acceptance of one or more of the discrepancies in the pharmacist note. Baseline data were collected from August to November 2015, where 54 out of 85 pharmacist notes were accepted by the physicians resulting in an acceptance rate of 63.5%. From December 2015 to May 2016 the interventions made by the pharmacist contributed to an increase in acceptance rate to 81.8% (108 out of 132 notes accepted). If the pharmacist notes were not delivered orally to the treating physician the acceptance rate was 9% (8 out of 89 notes accepted).
Conclusion: The pharmacist interventions contributed to an increase in the physicians' acceptance rate of discrepancies from 56.5 to 81.7%. A result indicating that the pharmacist notes contributes to an increase the quality of the medication process across sectors.

HP-PC134: How the centralization of medicines manufacturing enable to generalize the pharmaceutical validation?

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Please specify your abstract type: Research abstract
Background and objective: The centralization of the reconstitution of injectable anti-infective drugs enhance to decrease costs and several risks. This minimization of the risks operates at several levels such as i) reduction of the staff exposure and external contamination of preparations during the reconstitution phase (with controlled atmosphere areas, isolators, etc.), ii) improvement in the quality of the management of infective diseases thanks to a pharmaceutical validation systematically performed after the prescription and before the reconstitution phase. The main objective of the study was to describe and quantify pharmaceutical validation on injectable anti-infective drugs prescriptions restored in a pharmaceutical reconstitution unit.
Setting and method: An observational descriptive study was carried out on each prescription with at least one injectable anti-infective drug that has to be reconstituted before administration. The process was as follows: 1- prescription by the physician on an electronic prescription software, 2- pharmaceutical validation and if necessary pharmaceutical intervention (PI) made by phone call, 3- reconstitution at the pharmacy, 4- administration to the patient. The pharmaceutical validation methodology followed the French Society of Clinical Pharmacy (SFPC) guidelines "prescriptions screening and analyses level" published in the Good Practices of Clinical Pharmacy and one resident and one pharmacist were devoted to the activity every day.
Main outcome measures: The pharmaceutical validation was quantified by the number of PI by patient, which were categorized according to the SFPC guidelines.
Results: During 4 months, a total of 222 PI were collected. They concerned 93 patients with an average of 2.4 PI per patient. Among them, 11.8% (11) concerned paediatric population. Antibiotics were involved in 53.2% (118) then followed by 36.9% (82) of antifungals drugs and 9.9% (22) of antiviral drugs. The clinical units mainly involved were medical wards in 65.3% (145) then intensive care units in 10.4% (23). PI concerned monitoring issues in 52.3% (116) of

cases (59.5% (69) biological assessment issues, 37.1% (43) absence of therapeutic drug monitoring (TDM) and 3.4% (4) the drug hasn't been adapted to the weight), dosage adjustments in 25.2% (56), information missing concerning the treatment indication in 15.8% (35) and miscellaneous PI in 6.8% (15) such as wrong clinical service on the prescription, etc. Approval rate of physicians was 79.3% (176).
Conclusion: This study has shown that even if prescriptions were secured by electronic prescription software, the pharmaceutical validation remains essential. In that case, the centralization of the reconstitution of injectable anti-infective drugs enabled to generalize this activity on all prescriptions of the hospital. However, the pharmaceutical validation was focused only on anti-infective drugs, that was not fully efficient and must be extended to the whole prescription. It is a priority to develop a comprehensive and exhaustive validation on every medical prescription; however, this activity is highly time consuming and needs larger and more trained staff.

HP-PC135: The START/STOPP criteria as a helping tool to the pharmacists' medication review in the Acute Admissions Unit of The Regional Hospital in Horsens

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Please specify your abstract type: Research abstract
Background and objective: Polypharmacy occurs often increasing the need for patients' medications to be reviewed. The START/STOPP criteria help detects potentially inappropriate prescriptions in older people. In this study we aimed to measure and categorize the different START/STOPP criteria found in medication reviews in the Acute Admissions Unit of Horsens and the acceptance rate.
Setting and method: Patients admitted to the Acute Admissions Unit were selected based on their age and the number of prescriptions in a period of 4 months. Patients 65 years or more which received six or more drugs were included in the study. Only patients who later were transferred to another medicine ward were included in the study. The pharmaceutical medicine review was performed by a clinical pharmacist using minimum two different sources; the electronic medical record and medication-lists. The guideline of Pharmaceutical medicine review in the Hospital Pharmacy Central Denmark Region was used as the standard-guideline. In addition, theSTART/STOPP criteria version 2 was used.
Main outcome measures: The number of START/STOPP criteria found in medication reviews. The different START/STOPP criteria were scored equally with one point each.
Results: 33 patients, 17 males and 16 females, out of 55, were included. The mean age was 79 years and the patients received in average 14 prescribed drugs.

At admission the average number of STOPP criteria were 1.1 ± 0.9 and 0.4 ± 0.6 for the START criteria. In average, 27% of the purposed STOPP criteria were accepted by the physicians. The most frequently accepted STOPP criteria were in the category of drugs that predictably increases the risk of falls in older people. The benzodiazepines where the most common drugs to be discontinued.

In the START category, 25% of the suggested START criteria were accepted, which included: Calcium and vitamin D3 supplement, Beta-2 agonist and bisphosphonate.
Conclusion: The present study demonstrates that it was possible to integrate the START/STOPP criteria as a helping tool in the medication reviews in the Acute Admissions Unit of Horsens. The START/STOPP criteria were found within the different categories, however only a minor part of the registered START/STOPP criteria were accepted by the physician.

HP-PC136: Focus on octreotide prescriptions in a digestive surgery unit

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Please specify your abstract type: Research abstract
Background and objective: The objective of this work is to assess prescribing practices of somatostatin analogues in a surgery department, and to analyse the conformity of switching from immediate-acting octreotide to the long-acting release (LAR) form, in accordance to laboratories' guidelines.
Setting and method: Retrospective observational study. A focus was realized on patients admitted in a digestive surgery unit between January 1 and December 31, 2015. The patients' medical records were reviewed for clinical features, diagnosis workup and treatment strategies.
Main outcome measures: Medical records for patients with diagnosis of gastro-entero-pancreatic or endocrine tumors who had received injections of LAR octreotide during hospitalization were reviewed and the economic impact of prescriptions errors has been evaluated.
Results: Of the evaluated 234 patients, 73 (31%) were hospitalized in surgery digestive unit; mean age at first administration of octreotide was 66 years and 58% were male. The male and female ratio was 1.35:1. Reasons for hospitalization were: digestive system neoplasms (75%), fistula (7%), intestinal obstructions (4%) and other pathologies (14%). Of the 73 patients treated with octreotide, 41 (56%) received a LAR form. Only four patients received doses in accordance with guidelines: one at 20 mg/month LAR form and three at 30 mg/month LAR form, after having respectively been treated by intravenous octreotide at 300 and 600 mcg/day during 7–10 days. Medical prescriptions of the 37 remaining patients did not comply: all patients received 30 mg/month after an intravenous treatment of 300 mcg/day, instead of 20 mg/month. From a financial perspective, these misuses have led to an additional cost of 6659.7 euros for the hospital, excluding tax (30 mg: 1389.29€/unit and 20 mg: 1212€/unit).
Conclusion: Despite the publication of octreotide release form proper use recommendation in our hospital, 90% of patients of digestive unit are not right treated. A new guideline will be written added by doses of long-acting release and economic data. This work will be transmitted to specialists by clinical pharmacists.

HP-PC137: Pharmaceutical process for intrathecal analgesia in clinical oncology practice

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: In some cases, patients with cancer pain remain painful despite the use of high dose of intravenous opioids and intrathecal analgesia becomes the ultima recourse to manage acute pain. Until 2015, intrathecal syringes were prepared by nurses in the unit care which involve a risk for patients.

Therefore, the aim of this work is to describe the set-up of the prescription and preparation process with the potential benefits for the safety.
Design: Multidisciplinary concertation took place between pharmacists, physicians and surgical teams and several points were discussed to secure the process:

- Identification of patients with high level of infection risk;
- Identification of critical points of the pharmaceutical process;
- Validation of quality control and drug stability studies regarding drug compounding involving morphine, ropivacaine, baclofen and clonidine, alone or in admixture.

Results: Multidisciplinary concertation lead us to define the most important points to set up the pharmaceutical process for intrathecal analgesia:

- Chosen patients are cancer patients;
- Implementation of a prescription software to secure the prescription step;
- Production of syringes by the pharmacy department implying several criteria:
- preparation in controlled atmosphere area;
- training of pharmacy technicians;
- implementation of quality control and drug stability studies at 4 °C in syringe over 48 h and at 37 °C in pumps over 1 month;
- microbiological control and bacterial endotoxin level.

Conclusion: The implementation of a pharmaceutical process for intrathecal analgesia gave us the opportunity to reorganize the care of cancer patients tolerant to high dose of opioids. In this process, the pharmacy department plays a major role leading to decrease the risk of infections and errors of dosing.

HP-PC138: Re-evaluation of proton pump inhibitors prescriptions in several French geriatric wards

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Proton pump inhibitors (PPIs) are indicated in gastro-oesophageal reflux and peptic ulcer disease. They are widely prescribed, often in off-label indications. The objective of this work was to reassess PPIs prescriptions in collaboration with geriatricians.

Proton pump inhibitors (PPIs) are indicated in gastro-oesophageal reflux and peptic ulcer disease. They are widely prescribed, often in off-label indications. The objective of this work was to reassess PPIs prescriptions in collaboration with geriatricians.
Design: Prospective study in three geriatric wards. The study included PPIs treated patients from these three geriatric wards.

Dose, indication of the PPI, age, gender and duration of treatment have been recorded for each patient. The relevance of each PPI treatment has been reassessed by a geriatrician, a pharmacist and a junior pharmacist, regarding the indication and the patient's clinical condition. Following this re-evaluation, three situations arose:

- To maintain PPI at the same dose (30 mg or 15 mg)
- To maintain PPI but half dose (from 30 mg to 15 mg)
- To stop PPI

Corrective actions have been recorded in patients' files to allow their traceability.
Results: 109 patients were included in the study.

61% of PPIs prescriptions were off-label, 24% had no indication mentioned in patient's file and 11% were conform to the marketing authorization. 98% of patients have been on PPIs medication longer than 2 months, which is the recommended treatment' duration in France, 55% longer than a year and 29% longer than 4 years.

In collaboration with the geriatricians, PPI prescriptions were maintained for 52% of patients. We reduced the dose in 14% of cases. Finally, we decided to stop a third of the PPIs prescriptions.
Conclusion: PPIs prescriptions are often longer than recommended. This can lead to side effects for patients. In France, lack of new recommendations since 2009 may explain this frequent misuse of PPIs. There is also a reserve from doctors to stop these treatments, especially with fragile patients. In our case, the relevance of each PPI treatment was re-evaluated in three geriatric wards and we succeeded in shortening and stopping PPIs medications in half of the situations. To assess the impact of this action on our geriatricians, a new review of PPIs prescriptions relevance is programmed in 2017.

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HP-PC139: Oral anticoagulants and heparin for children: standardized protocols for prescription, dispensation and administration

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Please specify your abstract type: Research abstract
Background and objective: High-alert medications (HAM) are medications that are associated with a high risk of serious harm if used improperly. We already identified paediatric HAM used in our institution to identify safety measures for their use. Anticoagulants and heparin were part of these high-alert medications.

We aim to write standard protocol of use for low weight heparin and oral anticoagulant used in our mother–child teaching hospital. Our secondary objectives were to decrease medication errors, anti-Xa and INR unexplained variability and to help nurses to administer the drugs (standard dilution, oral solution available)
Setting and method: We carried out a literature search on Pubmed®, on websites of several learned or professional societies and agencies. The results of the literature search were compiled on written protocol and presented to our institute drug safety-steering committee composed of four doctors, two head nurses, two pharmacists, and one risk manager.
Main outcome measures: Not applicable.
Results: The protocols concerned enoxaparin, tinzaparin, warfarin but we chose to also include protamine. The most difficult issue was to have standardized dilution and protocol for all ages and weight: from premature to adolescents and all units of care (from cardiology to intensive care unit, nephrology and neonatology). We took into account the administration errors we had in our hospital and the pre-existing protocol to avoid any drastic error-prone change. The final

version of these protocols will be presented on the final communication with web link to upload them.
Conclusion: For now we did note evaluate the impact of these protocols but a before/after analysis of error reports and users evaluation will be done. However, these protocols can help all health professionals working in paediatric units for benchmarking.

HP-PC140: Does a hospital formulary system impact timely medication administration and quality of inpatient care?

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Please specify your abstract type: Research abstract
Background and objective: The prevalence of drug omissions is often underestimated but their impact can be clinically relevant. We hypothesized that delays in the administration of non-formulary/non-stored drugs could impair the quality of care. The aims of this study were: 1° to determine the time between the prescription and the administration of the first prescribed dose and, if applicable, to calculate how many doses were omitted. 2° to analyse the clinical relevance of the identified delays.
Setting and method: Three months retrospective study of electronic records of patients hospitalized on the internal medicine wards of a network of hospitals supplied by a centralized pharmacy. This pharmacy is located in one of the sites; other sites are 15–45 km apart.
Main outcome measures: 1. For the main hospital site and the three distant sites:

- Median time between the prescription and the administration of the first prescribed dose
- Mean number of omitted doses for formulary and non-formulary/non-stored drugs.

2. Categorization of patient's harm caused by the delays of time-critical drugs, according to the NCC-MERP taxonomy of medication errors.
Results: 16'954 prescriptions were analysed. Calculated delays for non-stored/non-formulary drugs were longer than for formulary drugs. However, the median time to administration is less than 1 h for both formulary and non-stored/non-formulary drugs; and more than 95% of formulary drugs and around 90% of non-stored/non-formulary drugs were administered within 24 h following their prescription. There was no significant difference in the mean number of omitted doses or in the delays between the site where the centralized pharmacy is located and the other sites, except for one of them.

A delay representing 1.5 or more omitted doses was found for 332 (1.96%) prescriptions. Among them, only 17 were considered potentially clinically relevant. None of them caused severe harm to the patients involved.
Conclusion: In our setting, non-stored/non-formulary drugs take more time to be delivered than formulary drugs, but more than 95% of formulary drugs and around 90% of non-stored/non-formulary drugs are administered within 24 h following their prescription. None of the 17 patients who experienced delays underwent severe harm. Our study showed that delays also occur for formulary drugs but no systematic cause of omission was identified; further studies should focus on all dose omissions during hospitalization.

HP-PC141: Potential clinical impact of medication reconciliation in a surgery department

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: A French national survey of inpatient adverse events reveals that nearly half of adverse drug events (ADE) are preventable. Medication errors behind these ADE occur mainly during the transition steps of care pathway. In this context, medication reconciliation process has been implemented in our vascular surgery department. The objective of this study is to Identify unintentional discrepancies (UID) and assess their potential clinical impact
Design: A pharmacy resident or a pharmacy student reconciliated patients: aged older than 65 or with at least five chronic treatments at admission or suffering from chronic diseases. Patients were considered reconcilable if at least two reliable sources on usual patient's treatment were available. These many sources of data (patient interview, prescription or interview of general practitioner, reference dispensary, drug box …) were compared to the admission prescription during the first 48 h of hospitalization to detect and correct UID. Based on gravity scale promoted by the French High Authority of Health, two pharmacists (a resident and a senior) and a vascular surgeon reviewed every UID in order to define their potential clinical impact. The UIDs were considered minor if it leads to no consequence for the patient, clinically significant if it leads to essential monitoring, major if it could cause temporary clinical consequences, and critical if it could result in permanent clinical consequences or the involvement of the prognosis.
Results: Between February 15th and May 31st 2016, a total of 102 patients have been reconciled. 10 patients were excluded due to a lack of reliable sources. Mean age was 73.9 years old (±11.4) and sex ratio M/F was 0.7. 85% of the reconciliated patients' admissions were scheduled. The mean number of medication was 10.8 (±2.9). 38 patients (41%) had at least one UID and the mean UIDs per patient was 2.0 (±1.6). The most common types of UIDs were omission (73%), incorrect dose (15%) and incorrect administration frequency (11%). More than 60% of these UID presented a potential clinical impact: An adverse effect (high blood pressure, hyperglycaemia) was observed for nine patients and lead to therapeutic optimization and monitoring; 37 UID were considered to have potential clinically significant impact (49%), 11 a potential major impact (15%) and 1 a potential critical impact.
Conclusion: These results appear consistent with those reported in literature. Vascular surgeons have appreciated the approach and would like systematic medication reconciliation before surgery. As a major part of admissions were scheduled, we would like to establish the reconciliation before the patient's hospitalization every time it's possible. This new organization should facilitate the care pathway before surgery and decrease preventable postoperative adverse events.

HP-PC142: Delirium in elderly patients: successful use of melatonin

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Postoperative delirium happens to about one-third of elderly patients and is a major cause of morbidity and mortality. It is reported that Haloperidol, an antipsychotic, has been the agent of choice for managing delirium. However, it induces cerebrovascular adverse effects and greater mortality. The hyperactive type of delirium is known to be associated with a low melatonin level and the loss of a normal melatonin secretion rhythm. The postoperative administration of melatonin to elderly could decrease the symptoms of delirium.

The purpose of this study was to evaluate melatonin effectiveness in a cohort of patients suffering from postoperative delirium.
Design: A retrospective study of melatonin prescriptions has been conducted over a 12 months period. Medical background, type of surgery, symptoms of delirium, use of antipsychotics and benzodiazepines have been studied in all patients who received melatonin in an orthopaedic surgery unit. Length of hospital stay, time between delirium and melatonin administration and the effect of melatonin had been evaluated.
Results: A total of 14 patients were included: average age was 77.6 years (64–87), sex ratio M/F = 1. Twelve patients (86%) were hospitalized because of an infection (prosthesis or osteoarticular). In 64% of cases (n = 9), the prescription of melatonin was started when the patients were hospitalized in our Intensive Care Unit.

Nine patients (64%) were under chronic treatments like benzodiazepines or antipsychotics.

The average length of hospital stay was 76 days (11–186).

Melatonin was started on an average of 14 days after surgery (2–61), and administered at the dose of 2 mg XR in the evening, during an average of 35 days (7–113).

Cognitive impairments requiring a prescription of melatonin were: confusion (86%, n = 12), agitation (64%, n = 9), daytime sleepiness (64%, n = 9), temporal-spatial disorientation (57%, n = 8), nocturnal awakening (14%, n = 2), hallucination (14%, n = 2), difficult falling asleep (7%, n = 1).

The average time to recover from confusion was 8 days, agitation 4 days, daytime sleepiness 10 days, temporal-spatial disorientation 7 days, nocturnal awakening 16 days, hallucination 5 days and falling asleep 24 days.

Melatonin treatment helped stopping benzodiazepines treatment in six patients (66%).
Conclusion: After administration of melatonin, delirium symptoms were improved for all patients and benzodiazepines treatment stopped for six patients.

Earlier prescription of melatonin could regulate sleep-wake cycle and reduce the duration and incidence of delirium.

HP-PC143: Management of phosphorus and calcium supplementation in case of hypocalcemia due to Denosumab

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Please specify your abstract type: Research abstract
Background and objective: Denosumab (Xgeva®), a fully human monoclonal antibody targeting RANKL, which inhibits bone resorption, is indicated to prevent skeletal complications in patients with solid tumors and bone metastases. About 10% of patients develop hypocalcaemia, a common adverse event that may induce spasms, muscle cramps, paraesthesia, prolonged QT interval, tetany, convulsions…

We report the management of ionic supplementation and physicochemical incompatibilities in a case of hypocalcaemia due to Denosumab.
Setting and method: The clinical case was analysed with the Pharmacovigilance Regional Center.
Main outcome measures: A 61 year old patient, with nodal and bone metastasis in prostate cancer, was treated with Denosumab (stopped with the last injection 2 months before, on the 29th of March). He went to emergency on the 30th of May with asthenia, anorexia, nausea, diarrhoea, QT prolongation. Biological results showed hypocalcaemia (corrected calcaemic = 1.94 mmol/L) and hypophosphatemia (phosphorus < 0.21 mmol/L).

Concomitant calcium and phosphorus intravenous supplementation started with loading doses (10 g of calcium and 1.8 g of phosphorus) and then a week of following daily intakes: phosphorus (1 g IV and 1.2 g oral); calcium (1 g IV and 4.6 g oral).

However, low-serum corrected calcium and phosphorus levels persist at 1.89 mmol/L and 0.24 mmol/L.
Results: Incompatibility between phosphorus and calcium by formation of soluble or not-soluble complexes is described in literature. In our case, calcium and phosphorus were mixed in a same infusion. After a week of supplementation, calcium infusion is continued with increased dose (4 g/day) and phosphorus infusion is stopped.

Phosphorus oral supplementation remains stable (1.2 g per day); Calcium oral supplementation is increased (9.3 g per day). 2 h between intakes is applied to avoid digestive complexation. 48 h later, corrected calcium levels are normalized at 2.19 mmol/L and phosphorus levels are still low. Therefore, as hypocalcaemia due to Denosumab induced a secondary hyperparathyroidism and thus hypophosphatemia; phosphorus levels are expected to increase subsequently.
Conclusion: This case report shows that recurrent hypocalcaemia with Denosumab is possible few months after administration. Supplementation with large amount of calcium is needed and administration methods may impact the effectiveness of supplementation. Indeed, it seems that the incompatibility between phosphorus and calcium did not allow an effective supplementation.

HP-PC144: Prevalence and management of drug interactions at medical wards at Ålesund Hospital

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Drug interactions (DIs) can cause side effects and lack of therapeutic effect. The objective of this study was to describe the prevalence of DIs at the medical department of Ålesund Hospital, and to investigate how DIs were managed by clinical pharmacists and physicians.
Design: At the medical department, Ålesund Hospital, clinical pharmacists serve seven out of ten wards, from which patients were included during a five weeks period. The clinical pharmacists selected patients for screening for potential DIs (www.interaksjoner.no) as

usual (= pharmacist group). Detected DIs were classified according to a predetermined classification system, and it was registered whether the physician implemented suggested changes in prescription. For patients not selected by clinical pharmacists (= non-pharmacist group), a pharmacy student performed the search for DIs.
Results: In total 373 patients were admitted. On average, each patient had 1.6 DIs, and 56.6% of the admitted patients had at least one DI. The prevalence of DIs was significantly higher among the 194 patients in the pharmacist group compared to the 179 patients in the non-pharmacist group (median@@@ 1 vs. 0, respectively, $p < 0.001$). The groups differed significantly regarding number of drugs used, age, duration of hospital stay and number of warfarin users. 10.5% of the DIs detected in the pharmacist group were discussed with the physician. The remaining 89.5% were considered not necessary to discuss for various reasons e.g. because they were considered not clinically relevant (30%) or already adjusted for in clinical practice (20%). For 24 DIs the clinical pharmacist suggested a change in prescription, and 20 of these suggestions (83%) were implemented by the physician.
Conclusion: Just over half of the patients were selected by the clinical pharmacist for screening of DIs, and the pharmacist seemingly made a reasonable priority of patients with many drugs, old age, a long hospital stay and users of warfarin. Only 1 of 10 DIs was discussed with physicians. This indicated that pharmacists do a considerable work in assessing the relevance of DIs before discussing with the physicians. It also seemed that changes in prescription suggested by the clinical pharmacist were reasonable.

HP-PC145: Securing the paediatric use of oral chemotherapy: a proactive risk assessment

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Oral chemotherapy is an important part of the therapeutic strategy in childhood cancer or haematological malignancy. It also represents an emerging risk area in oncology practice. Several medications errors involving oral chemotherapy were reported in children of our onco-haematology department, fortunately without clinical consequences. Nevertheless, the potential severity of such errors led us to implement a failure analysis of the paediatric oncology care pathway in order to identify and prevent potential risks, and secure the paediatric use of oral chemotherapy.
Design: We conducted a Failure Modes, Effects and Criticality Analysis (FMECA) which is a proactive risk assessment approach. First, process maps were detailed for each step of the oncology care pathway. It was performed by a multi-disciplinary group composed of 2 physicians, 1 coordinating nurse, 2 hospital pharmacists and 1 pharmacy resident. Then, for each step of the medication-use process, the team identified the failure modes, their main causes and effects. Finally, participants rated the expected severity, frequency and detectability for each failure mode, assigning a score on a five-point scale. A Risk Priority Number (RPN) was then calculated by multiplying those three indexes. The risks getting a high RPN were categorized as critical risks and have been the object of safety improvements.
Results: 69 failure modes were identified, including 15 critical risk failure modes. 9 critical failures were related to hospital discharge prescriptions and 6 were about the dispensation of oral chemotherapy by pharmacy assistants. Most failures were due to prescriptions heterogeneity, lack of clinical information reported on prescriptions, and lack of training of pharmacy assistants in reading oral chemotherapy prescriptions and in mistake detection. Two improvement strategies were implemented. First, physicians' awareness led to the harmonisation of practices and to the standardisation of discharge prescriptions. Then, to enhance pharmacy assistants' abilities, an educational program on oral chemotherapy dispensation was planned.
Conclusion: The implementation of a FMECA has highlighted the most critical risks of oral chemotherapy medication-use process. The awareness of all caregivers and the targeted changes in our practices allowed us to improve the safety of the paediatric oncology care pathway.

HP-PC146: Medication reconciliation and medication review at a gastrointestinal surgical ward

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: The purpose of this study was to investigate if medication reconciliation and medication review, by using the Integrated Medicines Management (IMM) model, were suitable to assure the quality of patients' medical treatment at a gastrointestinal surgical ward. Furthermore, to analyse frequency, type, handling and clinical relevance of medication discrepancies (MDs) and other medication related problems (MRPs).
Design: Patients, above 18 years of age, from two departments at a gastrointestinal surgical ward at a Norwegian university hospital were included consecutively. Medication reconciliation was performed at admission by a clinical pharmacist. The resulting medication histories were compared with the medications documented in the medical records. MDs were detected and categorized. Thereafter the clinical pharmacist identified MRPs by reviewing the medical records systematically and categorized the revealed MRPs. MDs and MRPs were presented for the physician with proposed solutions. The physician's actions to manage the MRPs were registered. Later a multidisciplinary team assessed the clinical significance of MDs and MRPs in a subset of patients.
Results: A total of 48 patients were included. Overall, 144 MDs and 153 MRPs were identified. At least one MD was revealed in 90% of the included patients, whereas at least one MRP was identified in 88% of the patients. The most frequent type of MDs was omission, whereas MRPs most often were related to medications that were considered unnecessary. Totally, 76% of the MDs and MRPs were discussed with the treating physician. The physicians followed the pharmacist's input in 85% of the discussed MD-cases and 62% of the MRP-issues. Long-term consequences of MDs and MRPs were considered more serious than short-term consequences for the patients.
Conclusion: Medication reconciliation and medication review revealed, solved and prevented a large number of MDs and MRPs in this study. The results emphasize that pharmacist involvement, by using the multidisciplinary IMM-model, contributed to more correct medical records and furthermore to quality assurance of the patients' medical treatment at a gastrointestinal ward.

HP-PC147: Prevention and management of drug interactions in oncology day-hospital: results from a 6 months study involving drug assessment and pharmaceutical report to oncologist

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Please specify your abstract type: Research abstract

Background and objective: Quality during transitions of care is a major concern in drug safety for patients. Traditional hospitalization allows to reconciliation medication but there is not possible for day-hospitalization (patient's hospitalization short time and no outpatient medication prescribe by oncologists). However, lack of communication between health professionals may expose patients to drug–drug interactions (DDI). While DDI between oral antineoplastic and other drugs are well known, there is a lack of knowledge about DDI between parenteral antineoplastic (AK) and other drugs. In this pilot study, we aim to investigate prevalence and characteristics of DDI between AK and other drugs in real life and to propose a pharmaceutical report model to enhance patient's drugs safety.

Setting and method: During 6 months, all new oncologic patients (thoracic and digestive) receiving chemotherapy in day-hospital have been recruited by clinical pharmacist. First it was conducted a patient—clinical pharmacist interview and carried out the best possible medication history (BPMH) by contacting at least three different sources of drug information. Then, the BPMH has been confronted with oncologic treatment (including concomitant medications such as like antiemetic) with support at least with two different database of DDI analysis. Finally pharmaceutical recommendations in order to manage potential relevant DDI were reviewed with oncologists then reported and inserted in personal health record (PHR).

Main outcome measures: Prevalence and description of potential clinically relevant DDI in an ambulatory oncology population.

Results: From November, 2015 to April, 2016 $n = 90$ oncologic patients were included with following characteristics: mean age of 63.2, sex ratio 2:1, majority of oncologic thoracic localization (56%). Number of oncologic concomitant medications per patient was 3.97 ± 0.94 (mean $\pm$ standard deviation). Patients present an average of 2.2 ± 1.93 comorbidities (excluding cancer) and 5.97 ± 3.76 linked medications per patient. Pharmaceutical analysis revealed 33 potential clinically relevant DDI (0.37 ± 0.97 per patient): 72% of them concern antiemetics (ondansetron and aprepitant): pharmaceutical interventions were formulated (including recommendations to adapt chronic treatment) and 39% of them involved biological monitoring (for renal function, INR, potassemie or magnesemie).

Conclusion: Our pilot study confirms high prevalence of DDI between oncologic and non-oncologic drugs. Clinical pharmacy services with BPMH performing and pharmaceutical recommendation appears to be useful to enhance patient' drug safety in oncology day-hospital. We currently are deploying our study in order to convey a pharmaceutical letter to general practitioner and community pharmacist.

HP-PC148: Loading dose of anti-infectives: elaboration of a tool helping pharmaceutical analysis

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: The recent data on vancomycin and ceftazidime confirm that continuous infusion is the best way of administration of these antibiotics. Moreover a loading dose before the administration is required for the antibiotics to prevent from the infratherapeutic period at the start of infusion and limiting the risk of resistance emergence. Long half-life antibiotics and antifungals also require a loading dose to be effective. The aim of this study is to analyse the prescriptions of anti-infective requiring a loading dose in order to develop a tool to help pharmaceutical analysis.

Design: A prospective observational study was carried out during 15 days in 16 units. Initially, pharmacists, residents and students were trained (role of the loading dose, drugs concerned). Then, all patients with anti-infective requiring loading dose were included. Some data were collected: weight patient, creatinine clearance, loading dose or not, dose, administration mode, monitoring of steady state concentrations (vancomycin and ceftazidime) and dose adjustment. The results were analysed and compared to bibliographic research before discussion during a multi-disciplinary meeting (pharmacists, infection control specialist and pharmacokinetic specialist). Finally, a list of relevant pharmacist interventions was selected.

Results: Out of the 393 patients, 44 were enrolled for prescription of anti-infective requiring loading dose. Twenty-six prescriptions including Vancomycin, 8 Ceftazidime, the others Fluconazole, Caspofungine, Voriconazole and Posaconazole.

Concerning Vancomycin, the loading dose was prescribed in 85% of case, monitoring of steady state concentrations was performed in 90% of case and dose adjustment after first dosage was required in 56% of case. Selected pharmacist interventions were:

- to favour continuous infusion (excepted paediatric)
- to keep loading dose at full dose even in patient with renal failure
- to monitor steady state concentrations after the first 24 h in patient with renal failure or obesity
- to adapt dosage when the target concentration is not reached

Concerning Ceftazidime, the interventions were:

- to recommend continuous infusion: 6 g/24 h after loading dose of 25 mg/kg
- to monitor steady state concentrations in patient with renal failure

A total of 27 interventions (dosage, adaption of posology at the monitoring, patients with renal failure, obese, paediatric patient, administration…) were identified by the group of experts.

Conclusion: This study allowed creating a recap data sheet for students and hospital pharmacists. The selected interventions will allow the harmonization of practices. These recommendations have been validated by the commission of the anti-infective. Finally, this study shows that the pharmacist has a key role in the management of anti-infective requiring loading dose.

HP-PC149: Assessment of potentially inappropriate medications in orthogeriatric patients using the RASP list

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Please specify your abstract type: Research abstract

Background and objective: Inappropriate drug prescribing can result in over- and undertreatment. This is associated with adverse drugs events. Both implicit and explicit screening methods can be used for

the detection of inappropriate prescribing. The objective of this study was to investigate if the RASP list (Rationalization of home medication by an Adjusted STOPP list in older Patients), an explicit screening method adapted to the Belgian context, can be used to reduce the number of potentially inappropriate medications (PIMs) in orthogeriatric patients.
Setting and method: Single-centre, interventional study conducted at the orthogeriatric department of the UZ Brussel, a 721-bed university hospital. The RASP list was first applied by a last year pharmacy student to the admission medication of orthogeriatric patients hospitalised in October 2015. After potential adaptations to the medication by a liaising geriatrician, the RASP list was additionally applied by the same pharmacy student to the discharge medication of these patients.
Main outcome measures: Detection and reduction of the number of PIMs.
Results: In total, 59 orthogeriatric patients, from whom an informed consent was obtained, participated in this study. On admission, a total of 136 PIMs were detected in this population. At discharge, the number of PIMs decreased to 101. The median number of PIMs per patient decreased from 2 (on admission) to 1 (at discharge). This difference was statistically significant ($p < 0.001$; Wilcoxon Signed Rank test). Drugs of ATC class N (nervous system) were responsible for the highest number of PIMs.
Conclusion: PIMs can be detected and reduced in the hospital using the RASP list. A structured and collaborative medication review between (student) pharmacists and physicians appears a good approach to reduce the number of potentially inadequate drugs. Nevertheless, more research is necessary to substantiate this further as well as to assess the clinical impact of the findings.

HP-PC150: Impact of implementing ward based dispensaries across a hospital site on both service delivery and patient care

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Waiting for medication at discharge is often quoted as a key factor for delaying patients leaving hospital. Feedback from service users (patients and healthcare professionals) was for a more patient facing pharmacy service. This led to a phased installation of remote dispensaries on wards within the hospital to supply medicines. This new and innovative service enabled the supply function to be fully co-ordinated on the ward. This model was initially implemented on 8 wards, which coupled with one-stop dispensing meant 91% of discharges require nothing to be supplied at the point of validation, 100% of discharge prescriptions meeting key performance indicator of being dispensed and ready within 1 h with average turnaround time of 18 min for a discharge prescription and a reduction in missed doses—3.1% in September 2015 to 2.1% in March 2016. This success prompted further installation of remote dispensaries in all clinical areas on site.
Design: Implementation included; purchasing hardware, pharmacy labellers, locating appropriate computer terminals and stock cupboards. The main pharmacy labelling and stock control system was fully integrated at ward level, enabling the automatic reordering of replacement stock. Identification of items and quantities to stock for remote dispensaries was also needed prior to role out. There was a need to scope staffing requirements including the redeploying of roles from a main inpatient pharmacy to patient facing areas.
Results: Over 6000 items are supplied at ward level each month via satellite pharmacies for all wards, equating to more than 80% of the total dispensing workload for the site allowing for pharmacy staff to be redistributed from dispensary to the ward. This offered the benefit of being more patient facing and supporting other initiatives such as patient counselling and medicines reconciliation. The project has impacted the pharmacists as it has enabled them to focus on clinical aspects of service delivery, including attendance of ward rounds as well as supporting a ward team approach with the pharmacy technician. Results of missed dose audit from June 2016 shows across the site 41% (7) wards scored below the national 1.4% target and (29%) 5 wards had no unintentional missed doses.
Conclusion: Ward based dispensing has led to pharmacists and pharmacy technicians being 100% ward based. As a constant presence on the ward, the team offer consistency within the pharmacy service for patients, nursing and medical staff. Impact of pre-discharge planning has been beneficial to nurses, patients and work flow of the pharmacy teams. Ward based dispensing has improved supply at discharge as well as promoting a more patient facing pharmacy service that has seen the pharmacy team instilled as integral to service delivery at ward level.

HP-PC151: Clinical pharmacy practices at Hacettepe University Hospitals

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Please specify your abstract type: Research abstract
Background and objective: Hacettepe University Hospitals Clinical Pharmacy Unit was established in April 2014. This unit runs its services by clinical pharmacy postgraduate students under the supervision of two qualified clinical pharmacists as part-time and on-call basis, in adults, paediatrics and oncology hospitals.

The aim of this study was to identify drug related problems and describe its management strategies in inpatient and outpatient settings by pharmacists in clinical pharmacy postgraduate education program.
Setting and method: During a total of 9 months study period (Period I: February-July 2015, and Period II: November-February 2016), clinical pharmacy postgraduate students followed patients for 2–3 times in a week in different services in hospitals (internal medicine, internal medicine intensive care, infectious diseases, neurology intensive care, paediatric bone marrow transplant/haematology unit, paediatric intensive care, geriatrics and nutrition units) and drug related problems were identified and pharmacists' recommendations were listed.
Main outcome measures: Determination and evaluation of drug related problems by pharmacist in hospital.
Results: A total of 114 recommendations was provided for 93 patients. Those recommendations were classified as alteration or discontinuation of drug treatment (33.3%), dose adjustment (31.6%), change in drug administration time (14.9%), inadequate treatment (7.9%), healthcare staff training/consulting (6.1%), patient education (5.3%) and error/deficit in therapeutic drug monitoring (1.7%).
A majority of recommendations (n = 38) were related with alteration or discontinuation of drug treatment provided mainly in departments of internal medicine (n = 9, geriatrics (n = 7), neurology intensive care (n = 5) and infectious diseases service (n = 5). The following main reason for pharmacist's recommendation was related with dose adjustment (n = 36) which were provided in departments of internal intensive care (n = 16), infectious diseases service (n = 6), neurology (n = 5) and internal medicine (n = 5).
Conclusion: Clinical pharmacy practices are being carried out effectively in many services, particularly in internal medicine services, internal medicine intensive care unit and infectious diseases services. A collaborative and bed-side education in postgraduate

programs in clinical pharmacy help to increase the knowledge and skills of students in real life circumstances and also maintain safe and effective drug therapy by an involvement of clinical pharmacists in hospital services.

HP-PC152: Development of a tool to help pharmaceutical analysis in patients with hepatic failure

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Hepatic impairment can cause significant changes in the pharmacokinetics of many medicines. However hospital pharmacists can be helpless in performing pharmaceutical analysis behind the lack of precise guidelines. We need a strategy to first detect accurately patients with hepatic impairment, then lead us in dose adjustments.

The objectives of this project were to develop a helping tool for hospital pharmacists in the pharmaceutical analysis of patients with hepatic failure's prescription and to select relevant pharmacist interventions.
Design: We first planned an investigation of patients with hepatic failure's management, with multidisciplinary experts groups. The study was conducted during one week in post-surgical, gastro-enterology, endocrinology, cardiology, pulmonology, geriatric departments and reanimation care units. A flowchart based on hepatic's biomarkers helped us including patients. Criteria used to assess hepatic impairment could be: a stage C Child-Pugh score, Prothrombin score inferior to 70%, Bilirubin superior to 50 micrograms per millilitres of blood without haemolysis, Aspartate and Alanin Aminotransferases superior to three times the high normal value, and presence of a Vitamin K antagonist interfering with those results. After a review of each included patient's prescription, we checked the major pharmacokinetic elimination pathway of each prescribed molecule (biliary or renal) and if hepatic biotransformation was expected. We also checked if the molecule could cause hepatic side effects.
Results: Out of 474 patients, 15 patients were included for liver failure (3.2%) and 4 for a cholestasis (0.8%) mainly in reanimation care units (17.5%) and gastro-enterology (10%). Among the 232 lines of prescribed medicines, the main pharmacological classes encountered were cardiology, (5%) pain (5%), psychiatry (4%), haemostasis (2%) and antibiotics (1%). At the end of the investigation, the expert group decided on the relevant pharmacist interventions. These were based on dose adjustment of anti-infectious, psychotropic drugs, painkillers, oral anti-diabetics, anti-coagulants and corticosteroids. Alternatives are proposed for each class.
Conclusion: To conduct a better pharmaceutical analysis, 3 steps are necessary. First, any liver failure or cirrhosis must be detected thanks to the patient's biological results and medical record. Then the patient's prescription can be analysed in order to highlight drugs that need a dose adjustment in a context of hepatic impairment. Finally, the physicist and the pharmacist discuss about dose adjustments or alternatives if presence of contraindication with the drugs prescribed. Soon the designed tool will be available to all pharmacists to harmonize clinical pharmacy practices.

HP-PC154: Pharmacist-led adherence clinics for Hodgkin's and non-Hodgkin's lymphoma

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Please specify your abstract type: Research abstract
Background and objective: Data regarding adherence rates to oral chemotherapy in lymphoma patients is limited. The aim was to assess pharmacist intervention on adherence to oral chemotherapy in patients suffering from Hodgkin's (HL) and non-Hodgkin's Lymphoma (NHL).
Setting and method: Following ethics approval, 5 HL and 41 NHL patients attending chemotherapy sessions at the Medical Investigations and Treatment (MITU) at Mater Dei Hospital accepted to participate. A questionnaire was compiled to evaluate adherence to oral chemotherapy and to assess pharmacist intervention. The questionnaire was divided into 3 sections (A-C). The same questionnaire was used for both the first interview ($t = 0$) and after 6 weeks ($t = 1$). An additional section (D) was incorporated at $t = 1$ to evaluate pharmacist intervention. Section A consisted of questions regarding patient management of lymphoma. Section B incorporated the Morisky 8-item Medication Adherence Scale (MMAS-8)[1] to evaluate adherence to oral chemotherapy. A total MMAS-8 score of zero indicates high adherence, a score between 1 and 2 indicates medium adherence and a score between 3 and 8 indicates low adherence. Section C consisted of additional questions regarding medication adherence. Between $t = 0$ and $t = 1$, pharmacist intervention involved providing each patient with an information leaflet which was developed in this study, an individualised treatment chart and verbal advice. IBM® SPSS version 22 and the Wilcoxon signed-rank test were used to assess changes in medication adherence between $t = 0$ and $t = 1$.
Main outcome measures: Evaluation of pharmacist intervention on adherence to oral chemotherapy in patients suffering from HL and NHL.
Results: Out of the 5 patients with HL at $t = 0$, 3 'never' missed a dose, 1 missed a dose 'once in a while' and 1 'sometimes' missed a dose. For the 41 patients with NHL at $t = 0$, 38 'never' missed a dose, 2 missed a dose 'once in a while' and 1 'sometimes' missed a dose. The reason for missing a dose was forgetfulness. All 41 NHL and 5 HL patients indicated the haematologist as their source of information about the management of lymphoma.

Of the 41 NHL patients, 3 scored low adherence and 38 scored medium adherence at $t = 0$ and after 6 weeks ($t = 1$) all 41 NHL patients who participated scored medium adherence. Of the 5 HL patients, 2 scored low adherence and 3 scored medium adherence in the first interview ($t = 0$) and after 6 weeks ($t = 1$) all 5 HL patients who participated scored medium adherence. There was a statistically significant increase ($p < 0.05$) in the number of patients who scored medium medication adherence between $t = 0$ and $t = 1$ for both NHL and HL patients.
Conclusion: This study shows how pharmacist intervention and extended professional services could be implemented in the clinical setting to impact on the management of HL and NHL patients.

Reference

1. Morisky De, Green LW, Levine DM. Concurrent and predictive validity of a self-reported measure of medication adherence. Med Care. 1986; 24: 64–74.

HP-PC155: Shall we select the prescriptions for pharmaceutical analyze?

Virginie Larbre*[,1], Clément Boidin[1], Amélie Faudel[1], Laura Sarfati[1], Ophélie Maison[1], Pierre Collart-Dutilleul[1], Catherine Rioufol[1,2], Stéphanie Parat[1]

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Please specify your abstract type: Research abstract
Background and objective: To assess relevance of 14 selected risk factors defined from literature (8 drugs and 6 clinical situations) and to valid a risky patients 'profile in order to select prescriptions with drug-related problems.
Setting and method: Prospective study led on prescriptions of new admitted patients in 7 units (internal medicine, geriatric, nephrology, cardiologic and rehabilitation units) during 75 days. Data were collected by pharmaceutical team: patient identity, risk factors, pharmaceutical interventions (PI) according to the French Society of Clinical Pharmacy, and their becoming.
Main outcome measures: We compared the PI rate in control and risky groups.
Results: Study gathered 197 patients with a mean age of 61.5 years, including 108 risky patients. PI rate was 55.6% for risky group and 29.2% for control group ($p = 0.0002$, OR 3.01; [1.6; 5.75], $\alpha = 0.05$). The most frequent PIs were similar in both groups (overdoses, non-compliance to guidelines, inappropriate way of administration…), with acceptance rate about 75%. Among PI, 31% were linked to risks factors. The Positive Predictive Value (PPV) of the risky patient profile defined was 55.6% and the Negative Predictive Value (NPV) was 70.8%.
Conclusion: This study confirms that more PIs are notified among risky patients 'group. The selection of these 14 criteria would lead to analyse 56% of the prescriptions only. Further studies are expected to assess the potential clinical impact of such limitation and to improve pharmaceutical care.

HP-PC156: The implementation of medication reconciliation in a gastroenterology service

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: In May 2015, an activity of medication reconciliation was implemented in the gastroenterology service to carry on the optimization of the medication care of patients due to the recent computerization of their prescriptions.
Design: This project, worked in collaboration with the gastroenterology service has been introduced in two medical committees. This activity gathers pharmacy students, the pharmacist, senior and junior doctors. Reconciled patients are selected according to several criteria (advanced age, poly pathological, poly-medicated and those for whom a drug background is difficult to retrieve for the medical team). A minimum of 3 information sources is used for the collection of the drug background. All information are synthetized on a paper, validated by the pharmacist and discussed again with the prescriber.
Results: On a 10-month period, 61 patients were reconciled with on average age of 72. The reconciliation is executed on average 2.4 days after the entry in the service. 96.7% of reconciliations are retroactive. The main sources of information used for the collection of the drug background are: in 85.2% of the cases an oral interview with the patient and/or the family; in 82% of the cases the prescriptions, the hometown pharmacist (78.7%) and a medical letter (67.2%). 6.7 drugs are on average on the hospital prescription, and 47.5% (29/61) of the patients are concerned with at least one Non Intentional Divergence (NID). On average there are 1.2 NID/patient and 3.9 Intentional Divergences (ID)/patient. The main types of NID are omissions (44.7%), drug dose errors (19.7%) and errors in administration frequency (11.8%). After the detection of NID, the proposed modifications to the prescribers are accepted in more than 50% of the cases (31/61). The average time of a reconciliation is 49 min. Exchanges on the ID and NID are made with the junior doctors in 85.2% of the cases.
Conclusion: Some NID are occurring for 47.5% of the reconciled patients. It is therefore necessary to extend this new activity to reconciliation in other services in order to increase the interception of eventual medication mistakes and allow their correction.

HP-PC157: Pharmacist intervention in adherence to diuretics in congestive heart failure

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Please specify your abstract type: Research abstract
Background and objective: Diuretic therapy is routinely used in the management of congestive heart failure (CHF).,Compliance with clinical practice guidelines is reported to result in improved outcomes for patients with CHF such as reduced exacerbations. The aim was to assess the effect of pharmacist intervention on adherence to diuretic treatment in a hospital and community pharmacy scenario.
Setting and method: The study was undertaken at Karin Grech Hospital (KGH), a geriatric and rehabilitation hospital, and in one community pharmacy. Inclusion criteria for patients recruited from KGH were age over 60 years, suffering from CHF and on bumetanide therapy. The validated 8-item Morisky Medication Adherence Scale (MMAS-8)[1] was administered to patients on admission ($t = 0$), repeated after two weeks hospital stay ($t = 1$) and again one-month post-discharge ($t = 2$). A total MMAS-8 score of zero indicates high adherence, a score between 1 and 2 indicates medium adherence and a score between 3 and 8 indicates low adherence.

In the community setting patients on diuretic therapy were chosen by convenience sampling. The same adherence scale was administered prior to pharmacist intervention ($t = 0$) and one-month after pharmacist intervention ($t = 1$). Pharmacist intervention in the community setting involved dissemination of an informative leaflet regarding CHF and diuretic therapy developed for the purpose of this study.
Main outcome measures: Impact of pharmacist intervention on adherence to diuretic therapy in CHF patients.
Results: A total of 37 patients were recruited from the hospital setting, of whom 19 were female and 18 were male with a mean age of 80 years (range 67–97 years). On admission ($t = 0$), 16 patients scored high adherence, 11 scored medium adherence and 10 scored low adherence to bumetanide therapy. Following 2 weeks at the hospital ($t = 1$), the number of patients scoring high adherence increased from 16 to 31 and the number of patients scoring low adherence decreased from 10 to 1. One-month post-discharge ($t = 2$), patients scoring high adherence decreased from 31 to 19 and patients scoring low adherence increased from 1 to 3 ($p < 0.05$).
A total of 38 patients were recruited from the community pharmacy, of whom 21 were female and 17 were male, with a mean age of 79 years (range 68–97 years). After pharmacist intervention ($t = 1$), the number of patients scoring high adherence increased from 21 to

23, while the patients scoring low adherence decreased from 9 to 5 ($p > 0.05$).
Conclusion: Pharmacist intervention in the hospital setting improved adherence to bumetanide therapy. In the community pharmacy setting, there was a slight improvement in the compliance. Pharmacist monitoring and patient support is important post-discharge to ensure patient compliance to therapy.

PE008: Reporting of adverse reactions in relation to utilisation of antiepileptic drugs in Norway

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Please specify your abstract type: Research abstract
Background and objective: Antiepileptic drugs (AEDs) are widely used in epilepsy and for other indications (psychiatry, neuropathic pain). Documentation of adverse reactions post marketing is often scarce. The aim of this study was to investigate reported adverse reactions in relation to utilization of AEDs in Norway.
Setting and method: Aggregated adverse reactions data were obtained from the Eudravigilance database (EMA). The data contained reports from Norway, 2004–2013. The Norwegian Prescription Database (NorPD) was used to get the number of users being dispensed AEDs from pharmacies in Norway. All data were anonymised.
Main outcome measures: Number of adverse reaction reports and number of users of AEDs.
Results: A total of 1594 adverse reactions were reported from 394 different patients during 2004–2013, while the number of AED users regardless indication in Norway was on average about 100.000 every year. 2/3 of the reports were from women, median age was 42 (0–95) years. Pregabalin (593), carbamazepine (265), lamotrigine (206), gabapentin (144) and valproic acid (119) had the most reported adverse reactions in relation to the number of users. For perampanel, one of the newest AEDs, 11 adverse reactions were reported during 2011–2013. The most commonly occurring adverse reactions included rash, dizziness cross sensitivity reactions and pyrexia. 34 cases of sudden unexplained death in epilepsy were reported in total.
Conclusion: Surveillance of AEDs may be followed by combination of data from adverse drug reaction databases and drug utilisation data from prescription databases. Focus on reporting adverse reactions is important for pharmacists and clinicians, especially for newly approved drugs. Awareness of increased exposure of AEDs to new groups of patients followed by data regarding safety aspects is important and contributes to improved pharmacovigilance.

PE009: Primary care pharmacists as a support for general practitioners in the follow-up of polymedicated patients

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Please specify your abstract type: Research abstract
Background and objective: The medication review of polymedicated patients is a priority shared among all healthcare professionals. A multidisciplinary approach of these patients is necessary to achieve the best results for their treatment (1). The objective was to analyse the rate of acceptance of the recommendations made by the Primary Care Pharmacist (PCP) to the General Practitioner (GP) regarding the treatment of polymedicated patients.
Setting and method: *Setting:* A Primary Health Care Centre (27,521 population). *Method:* A review of the medical records of polymedicated patients (≥5 chronic drugs for ≥6 months). The patients' data were collected from January to June 2015 from their clinical records. Statistical descriptive analysis of data was performed.
Main outcome measures: Drug related problems (DRP) for each patient: interactions, contraindications, inadequate dosages, non-indicated drugs, omission of a necessary drug, duplications, medication with low therapeutic effect, and inappropriate medication for patients ≥75 years old. Treatment alternatives proposed to GP's by PCP were also measured.
Results: 34 patients were included in the study (average age: 68.6 ± 11.7, 74% women). Out of the 34 patients, 88 interventions were laid out to reduce the risks of DRP's and to improve the efficiency of treatments. 97% of patients presented some DRP or some intervention to improve the efficiency of their treatment, this mean an average 2.5 interventions for patient. The prevalence of intervention proposals were: non-indicated drugs (28%), interventions for improve the efficiency of treatments (20%), interactions (16%), inappropriate medication for patients ≥75 years old (10%), contraindicated drugs (9%), duplications (6%), medication with low therapeutic effect (5%), inadequate dosages (5%) and omission of a necessary drug (1%). 97% of these intervention proposals were accepted by the GP: 38% of the accepted proposals were carried out and from the remaining 62, 43.6% led to a prescription from a specialist physician. In 51% of the cases, the patient did not accept the changes. 5.4% were not carried out due to other issues. The main drug related problem was the prescription of non-indicated drugs and the most involved drug was omeprazole.
Conclusion: Acceptance by GP's to changes proposed by Primary Care Pharmacists was high. A significant number of changes was not accomplished due to the negative response by some patients and led prescriptions from a specialist physician. The GP greatly values the multidisciplinary aid in approaching the complexity of polymedicated patients.

Reference

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PE010: The risk of new onset depression in association with influenza

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Please specify your abstract type: Research abstract

Background and objective: Case-reports provided evidence that influenza infections, particularly severe episodes, may exert neuronal damage in the CNS and thereby increase the risk of depression. It was the aim of this study to analyse the association between influenza infections and the risk of developing incident depression.
Setting and method: We conducted a case–control analysis using the large UK-based primary care database Clinical Practice Research Datalink (CPRD). This database contains anonymous longitudinal data from primary care. At present, it contains over 100 million person-years of data from some 10million active patients. The study encompassed 103,307 patients below the age of 80 years with an incident major depression diagnosis between 2000 and 2013, and we matched each case to one control patient on age, sex, general practice, number of medical encounters, and years of history in the CPRD prior to the index date.
Main outcome measures: Major depression diagnosis was identified by READ-codes based on ICD-10 codes (F32), with a minimum of three prescriptions for antidepressant drugs recorded after the diagnosis. We calculated relative risk estimates of developing depression in association with previous influenza infections, stratified by the number, timing and severity of such events, and we adjusted for a variety of comorbidities, smoking status, alcohol intake, body mass index, use of oral corticosteroids, and benzodiazepines.
Results: Patients with a previous influenza infection had an increased risk of developing depression (OR 1.30, 95% CI 1.25–1.34) compared to patients with no history of influenza infections. A recent influenza infection recorded within 30–180 days prior to the index date yielded an adjusted OR of 1.57 (95% CI 1.36–1.81), and an increasing number of previous influenza infections was associated with increasing odds ratios ($\geq$3 recorded influenza infections, adjusted OR 1.48, 95% CI 1.22–1.81). We did not see any differences in the relative depression risk associated with influenza with regard to a previous influenza vaccination.
Conclusion: This study suggests that influenza infections are associated with a moderately increased risk of developing depression.

PE011: The incidence of potential clinically significant drug interactions of warfarin in elderly patients

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Please specify your abstract type: Research abstract
Background and objective: Warfarin is known for its interactions with many drugs. Elderly patients are particularly sensitive to warfarin interactions. To evaluate the incidence of potential drug interactions when prescribing new drugs to elderly patients on warfarin, a prospective observational study was conducted.
Setting and method: Patients on warfarin older than 65 years were included and monitored for 6 months in 4 community pharmacies in Croatia. Data regarding new prescribed drugs was obtained from pharmacy records at the moment of dispensing or by patient self-reporting. The potential interacting drugs were identified using the Lexicomp® Lexi-Interact Online software. Only the clinically significant (levels C, D, X of clinical significance as classified by Lexicomp® Lexi-Interact Online) interactions were included in this analysis.
Main outcome measures: Number of new proscribed drugs, level of interaction with warfarin, mechanism of interactions.
Results: We included 157 elderly patients with an average age of 73 years. In the follow-up period, new drugs were prescribed to 54 patients (34.4%). There were 79 prescriptions of new drugs and 57 (72.2%) of those were drugs with a clinically significant interaction with warfarin. There were 39 prescriptions of drugs with level C of interaction (68.4%), and 18 (31.6%) with level D. There were no drug interactions of level X.

In the group with level C the most prescribed drugs were antibiotics with 26 prescriptions: amoxicillin/clavulanate 28%, clindamycin 8%, ciprofloxacin 8%, norfloxacin 8%, azithromycin 5%, cefuroxime 5%, clarithromycin 3%, doxycycline 3%. The remaining 13 prescriptions included tramadol with paracetamol 18%, rosuvastatin 5%, simvastatin 3%, fluvastatin 3%, levothyroxine 3% and torasemide 3%.

The dominant mechanism of the potential interactions was pharmacokinetic.

In the group with level D the most prescribed drugs were nonsteroidal anti-inflammatory drugs with 12 prescriptions—diclofenac 35%, ibuprofen 23%, indomethacin 12%. Among other drugs, 6 prescriptions were antibiotic sulfamethoxazole with trimethoprim 12%, fenofibrate 6%, miconazole 6%, and fluconazole 6%.

The dominant mechanism of the potential interactions was pharmacodynamic.
Conclusion: Pharmacists should actively monitor prescribing of new drugs to elderly patients on warfarin in order to reduce the risk of clinically significant drug interactions.

PE012: Potentially inappropriate medications in the elderly and their different approval rates in countries participating in the EU COST Action 1402 initiative

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Please specify your abstract type: Research abstract
Background and objective: Explicit criteria of potentially inappropriate medications in the elderly (PIMs) have been published in the USA, Canada, Australia and many EU countries. There is a lack of studies describing prevalence of PIM use in Central and Eastern Europe. The aim of the EU COST Action 1402 initiative WG1B (2015–2018) is to evaluate the registration rates and use of PIMs in Central and Eastern Europe compared to other EU countries participating in this initiative. This abstract describes preliminary findings on different registration rates of PIMs in different EU countries.
Setting and method: Researchers/members of the EU COST Action 1402 initiative from the Czech Republic, Serbia, Hungary, Spain, Turkey and Portugal were asked to fill in evaluation tables for the list of 484 PIMs in the period 01-06/2016. Items available in these evaluation tables related to: registration of individual PIMs on the pharmaceutical market, registered doses, drug forms, availability of PIMs on prescription or as OTC drugs, prescription limits and the

most frequently used brand names. Data were evaluated using comparative descriptive statistics.
Main outcome measures: Overall prevalence of registered PIMs in different countries, cross-country differences in availability of individual PIMs.
Results: Of 484 PIMs 81.8% were registered in at least 1 participating country. For the Czech Republic (45.2%), Turkey (48.6%), Spain (52.1%) and Hungary (54.1%) overall prevalence rates of registered PIMs were found to be similar. However, these prevalence rates substantially differed in Serbia (low prevalence—33.9%) and Portugal (high prevalence- 68.5%). Substantial differences were found also in the lists of individual PIMs registered in different countries. These lists were similar in Spain and Portugal compared to the Czech Republic, Hungary, Serbia and to Turkey.
Conclusion: Although overall prevalence rates of registered PIMs were similar in the majority of evaluated countries (except Serbia and Portugal), availability of individual PIMs was substantially different. Our pilot results confirmed that there are substantial geographical/regional differences in Europe in the lists of PIMs available (in Spain and Portugal compared to Central and Eastern Europe and compared to Turkey).

PE013: Effectiveness of a pharmacist provided intervention in reducing potentially inappropriate prescriptions in polymedicated patients in primary health care

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Please specify your abstract type: Research abstract
Background and objective: Inappropriate prescribing is a common circumstance found in polymedicated patients. Screening tools for identifying potentially inappropriate prescription (PIP) and pharmacist interventions for evaluating them have been developed to decrease this (1). The aim of this study was to evaluate the effectiveness of a pharmacist provided intervention to reduce PIPs in polymedicated patients.
Setting and method: The design was a quasi-experimental study focusing on a single group before and after intervention. The study took place from July to December of 2015 at three primary care centres (52,992 population). Polymedicated patients were those using $\geq$10 chronic drugs for $\geq$6 months.
Main outcome measures: Reduction in the rate of PIP per polymedicated patient (number of PIPs found divided by the total number of polymedicated patients) before and after intervention, and the influence of the following variables: type of PIP (inappropriate medication for patients $\geq$75 years old, medication with low therapeutic effect, duplication of benzodiazepines (BZD) or angiotensin-converting enzyme (ACE) inhibitors, combination of anticoagulant and antiplatelet, combination of non-steroidal anti-inflammatory drug (NSAID) with a diuretic and ACE inhibitor, NSAID in cardiovascular disease, chronic antipsychotic in dementia, chronic BZD, or chronic NSAID), gender and age of patients with at least one PIP, and the main prescribed drugs involved in the PIPs based on ATC classification system of World Health Organization.
Results: There were 1093 and 959 polymedicated patients before and after intervention, respectively. 71.36% (n = 780, before) and 68.30% (n = 655, after) of the total patients had at least one PIP. The number of PIPs was reduced from 1373 to 1108, while the rate of PIP per polymedicated patient decreased from 1.26 to 1.15, achieving the limit established by the regional health authority. 50.90% (before) and 48.70% (after) of patients had more than one PIP at the same time, up to 5 PIPs per patient. Before and after intervention, more than half of patients with at least one PIP were $\geq$75 years old, and approximately 9 out of 10 were $\geq$65 years old. Also before and after intervention, 8 out of 10 patients with chronic NSAID and with BZD duplication were women. 6 out of 10 patients with combination of anticoagulant and antiplatelet were men. The main PIPs before and after intervention were, respectively: chronic prescription of BZD (39.77 vs. 37.99% of the total PIP), medications with low therapeutic effect (19.81 vs. 21.30%) and inappropriate medication for patients $\geq$75 years old (16.82 vs. 17.42%). The main ATC group involved in the total of PIPs was drugs for the nervous system, and the five most prescribed drugs were all BZD (lorazepam being the first).
Conclusion: Pharmacist provided intervention was able to reduce PIP in polymedicated patients. Gender, age and ATC classification of drugs involved were factors in the PIPs.

Reference

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PE014: Effect of prenatal selective serotonin reuptake inhibitor (SSRI) exposure on birthweight and gestational age: a sibling-controlled cohort study

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Please specify your abstract type: Research abstract
Background and objective: Up to 10% of women are exposed to selective serotonin reuptake inhibitors (SSRIs) during pregnancy. Information on their effect on birthweight and gestational age remains conflicting. The aim of this sibling-controlled prospective cohort study is to address shared genetic and family-level confounding to investigate the effects of prenatal SSRI exposure and maternal depression on birthweight and gestational age.
Setting and method: We used the Norwegian Mother and Child Cohort Study (MoBa) and the Medical Birth Registry of Norway (MBRN). Our study population consisted of 27 756 siblings; 194 were prenatally exposed to SSRIs and 27 500 were unexposed to any antidepressant medication. Random and fixed effects analysis with propensity score adjustment was used to evaluate the effects on birthweight and gestational age.
Main outcome measures: Birth weight. Gestational age.
Results: SSRI exposure during two or more trimesters was associated with a decrease in birthweight of 205 g [95% confidence interval (CI) 372 to38] and a decrease in gestational length of 4.9 days (95% CI9.1 to1.4). Neither maternal SSRI use in one trimester, lifetime history of major depression nor depressive symptoms during pregnancy were associated with these pregnancy outcomes.
Conclusion: Prenatal exposure to SSRIs during two or more trimesters may decrease birthweight and gestational length. Our results indicate that neither maternal depression nor shared genetics and family environment fully explain this association.

PE015: Drug burden index to define functional and cognitive effects in older adults with intellectual disabilities: an observational cross sectional study

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Please specify your abstract type: Research abstract

Background and objective: The Drugs Burden Index (DBI) is a tool to evaluate the burden of medications with anticholinergic and sedative effects and this exposure has been associated with poorer physical and cognitive function in older people. Objectives were; to determine the cumulative burden of anticholinergic and sedative medicines in older adults with intellectual disability (ID) using the DBI, to examine the relationship between DBI score with demographics and comorbidity.

Setting and method: Data from Wave 2 of the Intellectual Disability Supplement to the Irish Longitudinal Study on Ageing (IDS-TILDA), a nationally representative study of ageing people with ID in Ireland. DBI scores were calculated for all participants with available medication data (n = 677). Bivariate associations between DBI and demographic and clinical characteristics were examined with a significance level of 0.05

Main outcome measures: DBI scores of participants categorised into low (0), medium (0–1) and high (≥1). DBI score categories were related to demographics, cognitive effects and to a modified Functional Comorbidity Index (FCI), which is associated with physical function in older adults.

Results: Of 677 participants, 95.1% (644) had DBI exposure; 51.3% were exposed to any anticholinergic medication, 32.1% to any sedative medication; mean number of DBI medications 2.91 (±1.68), mean DBI score: 1.30 (±1.24). 145 (21.4%) participants had DBI score 0, 165 (24.4%) 0–1, and 367 (54.2%) ≥1. Antiepileptics accounted for the greatest contribution to cumulative score (27.6%), antipsychotics (25%) and antidepressants (14%). There was no significant association between higher DBI score and sleep difficulties ($p = 0.135$). There was a significant age gradient associated with higher DBI score ($p = 0.016$) and significant association between higher scores and increased comorbidity scores; mean FCI of 3.28 in those with DBI ≥ 1, 2.73 in DBI 0–1 and 2.35 in those with DBI 0.

Conclusion: Cumulative exposure to sedative and anticholinergic medicines was high in older adults with ID. Higher DBI scores were associated with higher comorbidity and associated poorer physical function.

Optimising use of medications with anticholinergic and sedative effects through medicines review by pharmacists as part of multidisciplinary teams using a tool such as the Drug Burden Index may reduce functional decline and improve quality of life among older adults with ID.

PE016: Is there an association between cardiovascular risk and medication adherence in diabetes patients?

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Please specify your abstract type: Research abstract

Background and objective: Poor adherence to pharmacotherapy may have considerable consequences for the patients' health and for healthcare costs to society. There was observed that diabetes patients have higher risk of later health complications development. It is necessary to be adherent to non- and pharmacological recommendations as well, to improve the clinical outcomes and decrease the cardiovascular risk (CVR). The aim of this study was to evaluate the medication adherence and CVR in group of patients with diabetes, and to find an association between them.

Setting and method: The methods were based on a questionnaire survey using a modified 8-item Morisky score and SCORE Charts (2012). Medication adherence and CVR were evaluated in the whole group (n = 107, 51 males and 56 females, range 22–86 years) as well as in subgroups according to age, gender, (no-/ex-) smoking, level of education, residence, number of used medicines, exercises, compliance to the diabetic diet, and total cholesterol levels. The survey was realized in three ambulatory diabetic centres in Slovakia. The study has been approved by Ethics Committee of University Hospital Bratislava - Ruzinov. All participants signed an informed consent.

Main outcome measures: The results of medication adherence were evaluated as follows: 8 points = full adherence, 6–7 points = partial adherence and 0–5 = non-adherence. The CVR (estimating 10-year cardiovascular attack risk) was evaluated according to SCORE Charts using data from questionnaire and medical records—gender, age, smoking, total cholesterol levels and blood pressure.

Results: The results showed a partial medication adherence in the study group in average (6.84 ± 0.28). The average value of CVR in the study group was 3.7%. The highest average medication adherence has been observed in males ≤65 years (7.03), with elementary education (7.0), in ex-smokers (7.1), in patients with regular physical activity—at least 3 times a week (7.29), in patients non-adherent to the diabetic diet (7.05), in patients using 2 medications (7.11), and in patients with satisfactory (4.5–5.0 mmol/l) total cholesterol levels (6.97). The lowest CVR has been observed in females ≤65 years (1.8%), in no-smokers (3.2%), with elementary education (3.0%), in patients with irregular physical activity (2.9%), in patients adherent to the diabetic diet (3.14), in patients using 4 medications (2.9%) and in patients with satisfactory (4.5–5.0 mmol/l) total cholesterol levels (2.97). On the other hand, the highest CVR has been observed in males >65 years (7.3%), smokers (5.9%), secondary educated patients (3.8%), without any physical activity (4.7%), in patients partially adherent to diabetic diet (4.7%), using 6 medications (4.1%) and, surprisingly, in patients with satisfactory (<4.5 mmol/l) total cholesterol levels (4.76%).

Conclusion: Our survey has showed that medication adherence in our study group has been decreased and CVR has been increased. CVR and adherence to pharmacotherapy in the study group did not correlate with each other. The medication adherence, CVR and their relationships are specific in every patient.

PE017: Quality of life associated with medication adherence in diabetic patients

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Please specify your abstract type: Research abstract

Background and objective: Studies show that quality of life (QoL) of patients with diabetes mellitus can influence medication adherence, satisfactorily improving clinical outcomes and reducing the morbidity and mortality rates and disease progression. This applies even upside

down—medication adherence could significant contribute to improving patient QoL. The aim of this study was to evaluate the medication adherence in group of patients with diabetes, to evaluate their QoL and find a correlation between them.
Setting and method: The methodology was based on a questionnaire survey using a modified 8-item Morisky score and questionnaire EQ-5D-5L, including visual analogue scale (VAS). Medication adherence and QoL were evaluated in the whole group (n = 107) as well as in subgroups according to age, gender, level of education, monthly income, number of used medicines and type antidiabetic treatment. The survey was realized in three ambulatory diabetic centres in Slovakia. The study has been approved by Ethics Committee of University Hospital Bratislava—Ruzinov.
Main outcome measures: The results of medication adherence were evaluated as follows: 8 points = full adherence, 6–7 points = partial adherence and 0–5 = non-adherence. The QoL in 5 levels of 5 dimensions results were evaluated as follows: the lowest QoL in every dimension = 1 point, the highest = 5 points. The highest VAS evaluation has been 100 points and every patient should mark number on the scale 0–100 to indicate his/her health on current day.
Results: The results showed a partial medication adherence in the whole group in average (6.84 ± 0.28). The average value of the QoL in the study group was 21.21 and VAS 69.29. The highest medication adherence has been observed in males (7.04 ± 1.29), patients <40 years old (7.0 ± 1.05), with primary education (7.07 ± 1.04), with monthly income over 600€ (7.38 ± 0.99) and in patients using 2 medications (7.11 ± 1.6).

The highest QoL and VAS (QoL; VAS) has been observed in males (22.0; 74.24), patients <40 years old (23.22; 77.22), university educated (23.11; 75.55), with monthly income over 600€ (22.75; 75.63). QoL has been highest in patients using 3 medications (23.92), VAS has been highest in patients using 1 medication (83.33).

We have observed the highest level of medication adherence in patients treated with combined therapy—with oral antidiabetic agents and insulin (7.06), the lowest in patients treated with only insulin therapy (6.95). Highest QoL was recorded in patients treated with oral antidiabetic agents (22.04), and the lowest QoL in patients with insulin therapy (19.97). The highest VAS has been observed in patients using only oral antidiabetic agents (72.45), the lowest in patients using combined therapy (62.06).
Conclusion: Survey has showed that medication adherence and QoL in our study group has been decreased. QoL and adherence to pharmacotherapy in the study group did not correlate with each other. The medication adherence, QoL and their relationships are specific in every patient. The role of health care professionals should be in education and counselling with patients to improve QoL and medication adherence as well.

PE018: Appropriateness of antibiotic use in urinary tract infections in the elderly

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Please specify your abstract type: Research abstract
Background and objective: To assess the appropriateness of antibiotic prescriptions used for urinary tract infections (UTI) in the elderly.
Setting and method: We included patients aged 70 years and older, hospitalized in the geriatric department and for whom a urine culture was performed between March and May 2016. A prescription was qualified as inappropriate: when the antibiotic prescribed was not the narrowest compared to the culture result, or when there was a contra-indication, or when the treatment duration was shorter or longer than recommended. Prescriptions were consistent with the guidelines when they were identical to those adopted by the French Society for Infectious Diseases in December 2015.
Main outcome measures: Appropriateness of antibiotic prescription (type and duration)
Results: 47 elderly patients were included (women: 74.5% (n = 35), mean age: 85.9 years). 68% of antibiotic choices were appropriate and 64% of treatment durations were consistent to the guidelines. Urinary clinical signs were mentioned in the medical files for 29.8% of the cases (n = 14). 28 patients received an empirical antibiotherapy (59.6%). 70.2% (n = 33) of urine cultures were positive with bacteria, *Escherichia coli* being the most prevalent (n = 18). The urine culture results led to a change in antibiotics for 66.7% of the cases. For cystitis, 53.8% of the antibiotics chosen were appropriate (n = 7). The main reasons of non-conformity were the lack of de-escalation (to amoxicillin or pivmecillinam), and the prescription of ciprofloxacin when the bacteria was in vitro resistant to other fluoroquinolones. The average duration of effective antibiotherapy for cystitis was 9.3 days (appropriateness: 53.8% (n = 7)). For pyelonephritis, 88.9% of the antibiotics chosen were appropriate (n = 8). The average duration of effective antibiotic treatment was 10.1 days (appropriateness: 77.8% (n = 7)). 40.4% of the patients had a transurethral catheterization (n = 19). Another infection was diagnosed for 48.9% of the patients (n = 23).
Conclusion: According to these results, it appears important to re-emphasize to the prescribers the guidelines around the UTI diagnosis and treatment in order to improve the prescriptions appropriateness in elderly patients. It is particularly necessary to promote the de-escalation of antibiotherapy (with pivmecillinam for example which has recently become available in our hospital) and to insist about the recommended durations of treatment.

PE019: Assessing potentially inappropriate medication use in nursing home patients by NORGEP-NH

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Please specify your abstract type: Research abstract
Background and objective: To measure the use of potentially inappropriate medications (PIM) in the general elderly population several criteria lists exist, e.g., Beers criteria. Last year, 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).
The aim of this study was to investigate the prevalence of PIMs in nursing home patients using this new assessment tool. Furthermore, we studied possible associations between the use of PIMs and factors like gender, age, geographical area and the number of drugs used.
Setting and method: Cross-sectional study comprising 103 nursing home patients from two geographical different regions in Norway; Tromsø city (n = 70) and Lofoten Islands (n = 33). Data was collected from November 2015 to January 2016. PIMs were identified by NORGEP-NH. 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 antidepressant (26%) and hypnotics (23%). An increasing

number of regularly used drugs increased the odds of having PIMs (OR: 1.74), as well as it lead to 0.18 more PIMs per extra drug used. On average, 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. Yet, statistical significant differences were identified in some criteria.

Conclusion: This is the first study that explicit 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 to measure the prevalence of PIM, but to develop interventions in order to prevent PIMs from being used.

PE020: Use of pharmacy dispensing data to measure adherence and identify nonadherence with oral hypoglycaemic agents

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Please specify your abstract type: Research abstract

Background and objective: A framework for calculation of adherence for oral hypoglycaemic agents (OHAs) based on data from health-insurance claims is available. Pharmacy dispensing data aid identification of nonadherent patients in pharmacy practices. However, use of these data for calculation of OHA adherence requires additional methodological categories. We examined the impact of different methodological choices on estimation of OHA adherence using pharmacy dispensing data.

Setting and method: A framework for adherence calculation for pharmacy dispensing data was developed from health-insurance claims. A basic scenario was developed from 16 methodological categories. Consequences of choices for different parameters within these categories on the scores of the three adherence measures were calculated from dispensing data.

Main outcome measures: For OHA use between July 2013 and July 2014, three adherence measures were calculated: (1) average medication availability (AMA); (2) mean rate of adherent patients with an AMA ≥80% (MRAP80); (3) mean number of patients per pharmacy identified as nonadherent at AMA < 80%.

Results: Data were available for 604,500 OHA users in 1737 community pharmacies in the Netherlands. For the basic scenario, mean AMA for OHA was 88.3%. MRAP80 was 80.3%, which corresponded to an average of 69 nonadherent patients per pharmacy. Different choices for parameter values resulted in score variations for AMA of 85.0%–91.8%, for MRAP80 of 75.3%–86.1%, and between 49 and 92 nonadherent patients per pharmacy.

Conclusion: Sixteen methodological categories helped calculation of OHA adherence based on pharmacy dispensing data. Adherence scores expressed as percentages were relatively robust to variation in parameter values, but differed substantially for the absolute numbers of nonadherent patients per pharmacy.

PEC003: Cost-utility analyses (CUA) of biological agents for refractory ulcerative colitis: the importance of local analysis

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Please specify your abstract type: Research abstract

Background and objective: Ulcerative colitis (UC) is a chronic inflammatory disease usually affecting young adults and impacting on patient's quality of life. Although many biological agents (BAs) have been approved for the treatment of moderate-to-severe UC in patients who have responded inadequately to conventional therapy, the selection of BAs is controversial due to the lack of head-to-head trials. Indirect economic comparisons of these costly drugs are available from National Healthcare perspectives that are not the Italian ones. Therefore, the objective is to evaluate cost-utility of BAs for the treatment of refractory moderate-to-severe UC both in Italy and in the Lombardy Region.

Setting and method: A Markov model (considering 3 transition states: remission, clinical response, relapse) was constructed using the software R 3.3.1 markovchain-package to evaluate incremental cost-utility ratios (ICUR) of adalimumab, infliximab, infliximab biosimilar, golimumab and vedolizumab treatments of patients over a ten-year time horizon from the perspective of the Italian (N) and Lombardy Region (R) healthcare system. Clinical parameters were derived from clinical trials. Costs (which have been actualised—1.5%) were obtained from the National database and Regional public tender. Utility was expressed as QALY (Quality Adjusted Life Years).

Main outcome measures: ICUR.

Results: Costs per treatment were different from a N and R perspective (adalimumab −55%; infliximab −16.7%; infliximab biosimilar −29.6%; golimumab −9.6%; vedolizumab −10%). Direct healthcare costs (treatment cost, visits, lab tests, hospital admissions) were calculated over 10 years of treatment per patient: adalimumab (N: €114,226.70, R: €68,314.12, −40.2%), infliximab (N: €130,594.90, R: €103,081.00, −21%), infliximab biosimilar (N: €110,437.80, R: €78,852.03, −28.6%), golimumab (N: €118,602.10, R: €96,922.20, −18.3%), vedolizumab (N: €113,851.80, R: €102,932.20, −9.6%) with associated QALY respectively of 6.68, 6.66, 6.66, 6.70, 7.02. From a N perspective, infliximab biosimilar was dominating compared to all other treatments. The ICUR of vedolizumab/infliximab biosimilar was €9483.33 for 10 years (willingness to pay (WTP) €948.33/QALY). From a R perspective, adalimumab was dominating compared to all other treatments. The ICUR of vedolizumab/adalimumab was €101,817.88 for 10 years (WTP €10,181.78/QALY).

Conclusion: National and Regional CUA produced different results. As Regional price discounts can occur, local analyses are needed to estimate the economic impact of therapies to ensure optimal choice.

PEC004: Comparison of the economic impact of two drug storage systems

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Please specify your abstract type: Research abstract
Background and objective: Automated dispensing systems (ADS) have been implemented to reduce overall medication errors related to picking, preparation and administration of drugs.
Costs of drug storage between ADS and classic dispensing system (CDS) had not been yet performed in France. Our objective was to assess economic impact of ADS compared to CDS.
Setting and method: Retrospective quasi experimental study was conducted in 2 university hospitals in 2015, one with ADS (800 beds, 43 ADS) and one with CDS (600 beds, 31 CDS). All medical units (hospital stay >24 h) were included. Statistical analyses (t-tests) were performed using R. Data extraction was realized with Pharma©(Computer Engineering; France) and Omnicell© software.
Main outcome measures: Main outcomes were cost and management indicators: mean number of drug units, drug references, costly drug references, drug reloading and stock value per system (standard deviation, SD). A drug was defined as costly if unit price was > 20€. Additionally, mean number of references per reloading was calculated.
Results: Mean number of drug units per system was 4544 (SD 1840) for ADS vs 3856 (1387) for CDS ($p = 0.07$). The mean number of drug references was 225 (85) for ADS vs 228 (69) for CDS ($p = 0.85$). Regarding the mean stock value per system, it reached 4789€ (3685) for ADS and 1771€ (1445) for CDS ($p < 0.001$). Mean number of reloading in 2015 was 96 (37) for ADS and 71 (23) for CDS ($p < 0.001$). Furthermore, the mean number of references per reloading was 32 (17) for ADS and 53 (15) for CDS ($p < 0.001$). Mean number of costly drug per system was 3 for ADS and 1 for CDS. The global stock value in the wards was 205,915€ in ADS and 54,908€ in CDS representing respectively 14.5 and 6.1% of total pharmacy stock value.
Conclusion: Our data demonstrate that despite the same storage capacity, ADS allow the storage of more expensive drugs such as innovative drugs fully reimbursed up to national reimbursement prices, due to the lower risk of pilferage.
This preliminary study was focused mainly on stock value. Subsequently, another study is conducted to evaluate cost of these two drug storage systems, satisfaction of pharmaceutical technicians and nurses and time allowed for systems reloading.

PEC005: Assessment of prescribing practices one year after the biosimilar infliximab

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: In France, pharmacists are not entitled to substitute an original biological drug with its biosimilar, due to specific issues of efficiency, safety, and patient monitoring. Our hospital referenced a biosimilar of infliximab on 6 January 2015. According to the French Medication Safety National Agency's recommendations, it has been decided that naïve patients would be treated with biosimilars, and changes between specialties would be proscribed. The objective is to compare prescribing practices between infliximab and its biosimilar, 1 year after its introduction.
Design: A database tracking patients treated with infliximab was set up.

Data comparing prescribing practices of biosimilar and reference treatment were analysed between June 2015 and May 2016. Regional and national infliximab consumption between January 2015 and February 2016 were used to compare the practices of our hospital with other hospitals. The past and future savings were estimated from repayments data of the regional health agency.
Results: Infliximab was administered to 633 patients, of which 201 (32%) were naive.

111 patients were treated with biosimilar (i.e. 17.5% of all patients), of which 97 were naive. In the end, nearly 48% of naive patients actually received the biosimilar and 2.5% of patients treated with infliximab switched specialties during treatment. In 80% of cases, biosimilar prescriptions were consistent with the recommendations (vs. 94% for infliximab). In 79% of cases the off-label prescriptions of the biosimilar were explained in the patient record (vs. 75% for infliximab). In February 2016, the share of biosimilars was 14% in France, 12% at regional level and 15% locally. In 1 year, infliximab and its biosimilar's consumption in our hospital have increased by 12% in quantity and only 2% in expenditure (+€ 6 M expenditure). Negotiating a lower purchase price and costs has enabled the hospital to save € 137,629 (vs. € 182,961 during the previous year). Because of the decline of refund rates, the gains would have been zero without using the biosimilar but € 377,172 if it had been prescribed to every naive patient.
Conclusion: Current data from the literature on security and effectiveness of infliximab biosimilars are very reassuring and the French Medication Safety National Agency doesn't exclude the possibility of changing specialties during treatment. In our hospital, there is room to improve the efficiency of treatment with infliximab. Feedback on prescribing practices will be given to prescribers and a campaign to widespread prescriptions of biosimilars will be made. The arrival of biosimilars on the market is a real economic opportunity for hospitals, which are increasingly financially constrained in particular by the arrival of therapeutic innovations which are more and more expensive.

PEC006: Therapeutic reference pricing for proton pump inhibitors in Slovenia

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Please specify your abstract type: Research abstract
Background and objective: Therapeutic reference pricing (TRP) was first introduced in Slovenian practice for the class of proton pump inhibitors (PPIs) in October 2013. The study evaluated the impact of TRP on the use and costs of PPIs in Slovenia.
Setting and method: The study used Health claims data on prescription PPIs from 1st January 2011 to 31st July 2014 obtained from the Health Insurance Institute of Slovenia. To assess medicine use and costs before and after TRP implementation data were aggregated into four periods: Jan-Dec 2011, pre-baseline period; Jan-Dec 2012, baseline period; Jan-Sept 2013, transition period between announcement and introduction of TRP; Oct 2013 to Jul 2014, period after TRP enforcement.
Main outcome measures: Medicine costs; defined daily doses (DDDs) dispensed per 1000 inhabitants per day; market share; Herfindahl-Hirschaman index (HHI); number of active substance switches; number of exceptions when medicine is fully reimbursed since physicians may choose option "not to switch medicine" when adverse consequences are predicted.
Results: Average monthly cost of PPIs declined from € 1,350,289 in pre-baseline period to € 800,125 in period after TRP introduction

although the consumption increased from 52.4 to 55.2 DDDs/1000 inhabitants/day. Cost of PPIs decreased the most in baseline period (26%), however TRP induced 9.5% cost reduction compared to the transition period. The reference pantoprazole was market leader already in the transition period, but its use increased significantly after TRP introduction and represented 51% of total PPIs consumption. Manufacturers' market shares were constant before TRP, whereas TRP caused decrease of the largest market share for 5%. Still, this resulted in the minor market concentration change; HHI was on average 0.351 before and 0.307 after TRP introduction. Further, at least one active substance switch was detected in approx. 15 and 21% of patients before and after TRP introduction, respectively. Similarly, the proportion of exceptions when medicine was fully reimbursed increased from 6.7% in transition period to 23.7% in period after TRP introduction.

Conclusion: Enforcement of TRP for PPI contributed to approx. € 1 M annual cost savings. From the payer's perspective the new policy was proven to be effective in reducing pharmaceutical expenditure; however TRP also affected physician prescribing pattern and use of PPIs.

PEC007: Blood coagulation factor: improvements of the supply chain

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Most of the Antihemophilic Factor (AHF) must be held by a teaching hospital to face serious bleeding events. To ensure better availability, offsite-stocks at critical points are required (emergency unit, intensive care unit, etc.). However, this management system increases the risk of economic loss and alteration of the quality due to expired products. In this context, we carried out an optimization of the supply and management system of the AHF. To identify critical points of the supply and management system and to implement improvement solutions.
Design: A multidisciplinary working group belonging to a Regional Management Centre of Haemophilia was set up. Two lines of improvement were discussed: i) optimization of stocks ii) optimization of the supply system.
Results: The optimization of stocks has led to the modification of the threshold of the lowest stock (LS) for 19 AHF out of 38. In 70% of cases, this stock modification has exceeded 15%. The overall cost of LS has been reduced by 15.0% (83,000 €) for the general stock at the central hospital pharmacy (HP) and by 8.5% for offsite-stocks (20,000 €). The AHF mainly involved in this reduction was FVII 5 mg (27,000 €), then followed by the strengths of 2 mg and 1 mg (13,000 € for each). In order to improve the AHF management, several propositions have been implemented: (1) developing an online, easily accessible and monthly updated spreadsheet that displayed several accurate data such as the shortest expiry date and the storage location. This operative tool is shared between all pharmacists involved in AHF management in order to facilitate a stock rotation and decrease economic losses, (2) regular reminders to physicians and health care staff concerning the guidelines for inventory management and the importance of checking the drug expiry date, (3) presentation of the financial results and raising awareness on AHF costs to the medical consultant[PPIP1] and (4) optimizing stock distribution based on consumption on the different hospital sites for better patient care management (PCM).
Conclusion: This optimization of stocks and improvement of the supply chain have led to a direct cost saving of 83,000 €. However, a more accurate assessment has to be performed to quantify the direct and indirect impact on PCM and cost saving. This work has been done in a context of a sharing operative network at a regional level. The aim of such project is to share, to optimize and to improve practices, knowledge, human and medical health resources at a widespread level to enhance the security and quality of health services and to promote cost and time saving.

PEC008: Economic benefit and clinical advantages with inclusion of patients in clinical trials at Centro Hospitalar Porto between January 2013 and May 2016

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: The overall pharmaceuticals consumption in hospitals is rising, which has led to an increasing expenditure, challenging health care professionals and threatening patients safety.

Clinical trials in hospitals have increased over the past few years and currently play an important role, giving access to new investigational medicinal products and also avoiding costs with standard treatments.

The objective of this study is to evaluate the savings of Centro Hospitalar do Porto, a central university hospital with 800 beds and currently 80 clinical trials, with patients included in clinical trials between January 2013 and May 2016.
Design: Retrospective observational study over 41 months. All the clinical trials ongoing between January 2013 and May 2016 were analysed and the data was collected based on: pathology and doses established; number of treatments per patient and the medium prices of standard treatments that patients would be receiving if they were not in the clinical trial.
Results: There were 112 clinical trials ongoing between January 2013 and May 2016, but only 30 were selected to be included in this study.

The total number of patients included was 652.

The clinical trials selected for this study were conducted in 6 medical specialties: 4 in dermatology, 6 in immunology clinical unit, 11 in hemato oncology, 1 in Gastroenterology, 5 in ophtalmology and 3 in Neurology.

During these 41 months, with all ongoing clinical trials, Centro Hospitalar do Porto was able to save, in medical products, more than 2 million euros.
Conclusion: During the period of time established, 82 of the Clinical trials ongoing, were not selected due to: not including patients or not having an alternative treatment.

Hospitals and patients can benefit from clinical trials not only financially but also by preserving resources and medication.

On Centro Hospitalar do Porto, the pharmacists specialized in clinical trials, as members of the study team, are more and more required to perform specific tasks, their contribution has been increasing over the years and also have become more aware of all the advantages from participating in clinical trials.

These savings can be used to provide a better assistance and contribute, in general, to a higher quality health care.

PEC009: Review one year after a switch buprenorphine to buprenorphine/naloxone in a French prison

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Several studies show a misuse of opioid maintenance treatment (OMT) in detention. In fact, buprenorphine

(BUP) when it's misused, could present the same effects as heroine. In order to reduce misuses, the pharmacist decided to switch all the patients under BUP to buprenorphine/naloxone (BUP/NLX). BUP/NLX prevents patients from misusing by a withdrawal syndrome when it's issued by another route of administration than sublingual route. In France, BUP/NLX is more expensive than BUP which may explain why this therapeutic strategy is not often observed.

The purpose of this study is to evaluate the extra cost after switching patients from BUP to BUP/NLX in order to decide if this choice could be maintained.

Design: To identify our population, we used the administration reports drugs written by nurses.

- Based on the purchase price of BUP and BUP/NLX tablet in our hospital, we compared the annual cost of patients under BPH in 2014 to the annual cost of patients under BUP/NLX in 2015.
- We evaluated the daily consumption of BUP per patient (mg/patient/day) in 2014 and compared daily consumption of BUP/NLX per patient in 2015

Results: 18% of the patients were treated by BUP in 2014

- 58 patients switched from BUP to BUP/NLX and 1 year later, 25 patients are still treated by BUP/NLX
- 17% decrease of dose per patient per day among patients following an opioid maintenance treatment
- Savings up to 6000 euros per year under BUP/NLX

Conclusion: In assessing the treatment for opioid dependence, it's necessary to encompass both clinical and public health outcomes. Due to BUP/NLX pharmacology, we observed a significant decrease of misuse. In addition, it doesn't lead to extra cost. However, we are also reducing the rise of benzodiazepine treatments with the implementation of stricter conditions of prescription.

PEC010: Market of haemophilia B: description and forecast

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Please specify your abstract type: Research abstract

Background and objective: Haemophilia B is an X linked genetic disorder characterized by spontaneous or prolonged haemorrhages due to factor IX (FIX) deficiency[1].

Within the next few years, new treatments are willing to hit the market. Among them are recombinant extended half-life products that will reduce by half the number of injections and will potentially improve the patient quality of life.

The aim of the study is to describe the development of haemophilia treatments market between 2011 and 2014 and to forecast the potential impact of these new therapies on the haemophilia market.

Setting and method: National and French hospitals of Paris (APHP) consumption data of 4 FIX between 2011 and 2014 have been studied. New therapies in development or soon to be marketed have been identified. Potential benefits and interest in the therapeutic care of these new products were discussed with haemophilia's medical experts.

Main outcome measures: Quantity (UI) and value (euros) of FIX APHP and national consumption.

Results: In 2014, 1 recombinant (rFIX) and 3 plasma-derived factors (pFIX) were on the French market. The AP-HP's purchases of these 4 factors represent almost 15 million UI and 10 million euros, which comprise 24% of national FIX expenditures.

In France and APHP, ambulatory care is a major part of the use of these treatments with nearly 90% of the FIX purchases in 2014.

French rFIX consumptions are higher than pFIX consumptions (64% against 36%). In the AP-HP hospitals, rFIX even account for 89% of consumptions against 11% for pFIX. Both national and AP-HP rFIX purchases have steadily increased between 2011 and 2014.

The added competition arising from new treatments may lead to more competitive market procedures in hospitals and may reduce costs of haemophilia treatments.

According to haemophilia doctor, long-acting (LA) FIX would offer obvious benefits like fewer infusions and presumably fewer bleeds. These treatments will mainly be used in a prophylactic way—in ambulatory care- than in a curative way (such as surgical use).

Conclusion: The therapeutic extent of these new treatments is still hard to define. The choice of treatment must remain consensual between physicians and patients.

PEC011: Clinical pharmacist and good practice: about a case report of a Castelman syndrome

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: Good practice about medicines imposes to Health Institutions a close monitoring of prescriptions, especially off-label prescriptions. Patient care should take into account clinical profile, respect of guidelines and health expense control. We report here a case highlighting the significant role of the clinical pharmacist in care units to ensure medication good use in a Castleman syndrome, a rare disease due to Human Herpesvirus 8 (HHV-8) and associated with human immunodeficiency virus (HIV) infection.

Design: Case report.

Results: Our patient, a 49 years old man (creatinine clearance rate (CrCl): 95 mL/min), was diagnosed with HIV infection in February 2016 (CD4 at 160UI/L), leading to introduce a therapy by Emtricitabine-Tenofovir, Darunavir, and Ritonavir. The evolution was hampered by repeated episodes of acute renal failure (ARF; CrCl: 21 mL/min) and pancytopenia (hemoglobinemia at 8.6 g/dL, leucopoenia at 3.3G/L, and thrombopenia at 55G/L). Because of HHV8 blood PCR at 30 000copies/mL, transient crises with pancytopenia, ARF, and HIV infection, a diagnostic of Kaposi Sarcoma Herpesvirus (KICS), an atypical Castleman syndrome, was retained. Given the lake of data in literature for this rare disease, a multidisciplinary team (medical specialists and clinical pharmacists) was gathered to choose an appropriate therapeutic strategy. Treatment regimen consisted of: Day 1, intravenous etoposide at 250 mg; Day 4, rituximab at 375 mg/m^2; following one week later by rituximab 1 day and oral etoposide at 250 mg the day after.

Good communication between medical specialists and pharmacists enables the patient to get an optimal and personal treatment. Relaying the information by clinical pharmacists in care units to pharmacists in charge of Good Practice facilitate the reimbursement.

Conclusion: Clinical pharmacists in care unit help to optimize therapeutic strategies according to their experiences and scientific works. Cooperation with physicians is improved, as well as prescriptions follow-up of off-label drugs, and health patients fully respected. Quality and relevance of prescriptions are strengthened, with a better control of economic expenses.

PEC012: The economic implications of human papillomavirus (HPV) vaccination in Malta

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Please specify your abstract type: Research abstract

Background and objective: The Maltese Government launched the HPV vaccination scheme in 2013 and the National Healthcare System (NHS) has since provided the Cervarix® vaccine free of charge to girls aged 12. The aim of this study was to assess the cost of the administration of HPV vaccines in the healthcare system of Malta. This study was based on the scheme provided by the NHS.

Setting and method: The study was carried out at the University of Malta. The relevant information was obtained from the National Statistics Office, the Primary Health Care Department and the Central Supplies and Procurement Unit. The local scheme for vaccinating 12 year old girls was assessed for the years 2013–2015. Costs for 2016 were analysed separately. Primarily, estimated costs were generated in terms of the wholesale cost of the vaccine, the number of girls born per year and the number of doses administered per year. In order to generate more accurate results, this method was repeated in terms of the tender price (as of 2015), the number of girls who attended the full three dose scheme and the number of doses administered per year. Cost estimation of including boys in the vaccination scheme per year was also performed.

Main outcome measures: Cost of vaccinating girls per year.

Results: In Malta, the wholesale cost per Cervarix® vaccine on the private market as of December 2015 was €90.79c. While the cost per Cervarix® vaccine offered by the NHS acquired by tender in 2015 was €26.52c. In 2013, girls born in both 2000 and 2001 were vaccinated. While in 2014 and 2015, girls born in 2002 and 2003, respectively, were vaccinated. The number of girls born per year was used to estimate the annual cost for vaccinating 12 year old girls, based on the wholesale price and tender price respectively. The estimated yearly cost using the wholesale price was approximately €547,000 while the average estimated cost based on the tender price was approximately €157,000. This signifies that cost savings based on the tender price compared to wholesale costs were of approximately €390,000. The cost for the cohort who completed the three dose schedule using the tender price on average was of €171,000 per year. This result proved to be more than the anticipated cost. A reason for this could be that the number of girls aged 12 increased possibly due to an influx of immigrants. Including boys in the vaccination scheme would increase costs by an average of €165,000 per year.

Conclusion: This study shows that procuring branded vaccines using the tendering process reduces expenditure for the Government and the tax payer. Wholesale prices were found to be more expensive than tender prices. This proves that the tendering system in Malta is a potent system with many advantages for the tax paying public. The impact of the tendering process must therefore, be safeguarded.

PH013: Hajj pilgrims' knowledge, attitude and practices regarding Middle East respiratory syndrome coronavirus (MERS-CoV)

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Please specify your abstract type: Research abstract

Background and objective: With the old age, presence of comorbidities, and overcrowding in mass gatherings such as the annual Hajj pilgrimage in Saudi Arabia, there is a high risk of spreading infectious diseases among pilgrims and then within their country of origin. Knowledge and application of hygiene principles in such an environment is therefore important to reduce the transmission of infectious diseases. Up to date, there have been no studies to evaluate pilgrims' knowledge, attitude and practices toward MERS-CoV during the annual Hajj pilgrimage in order to see whether there is a need for these aspects to be improved.

Setting and method: A cross-sectional survey study was conducted with a convenience sample of 257 participants. Participants were pilgrims, aged over 18, and able to speak Arabic or English. A self-administered structured questionnaire was distributed during Hajj season in Mecca. Descriptive and multiple linear regression analysis were used in data analysis.

Main outcome measures: Assessing pilgrims' knowledge, attitude and practices regarding MERS-CoV.

Results: Two hundred and fifty-seven participants completed the study, 80% of whom were female, and the median (IQR) age was 35 (24.5–43.5) years. Pilgrims had moderately correct knowledge and accurate attitudes towards MERS-CoV with median scores of 5 (IQR 4–7) and 6 (IQR: 5–7) respectively. They were less educated about management (80%), hallmark symptoms (77%), high-risk individuals (45%) and source of coronavirus (38%). Almost 40% of participants showed a negative attitude towards the use of protective measures such as avoiding food prepared under unsanitary conditions and contact with live animals. Some participants (30%) were unable to comply with hygiene practices, particularly washing hands with soap and water or disinfectant after sneezing/coughing and wearing a face mask in crowded areas. Educational level and employment status were significantly associated with knowledge whereas gender and age were significantly associated with attitude and practices respectively ($P < 0.05$). The correlation between knowledge, attitude and practices was significant (correlation coefficient: 0.207; $P < 0.05$). Better knowledge was found to be a predictor for positive practice.

Conclusion: These findings aided in the assessment of the adequacy of current pilgrims' educational measures. They will also provide insight when designing future interventions to promote specific messages to improve knowledge, change attitude and improve practice regarding MERS-CoV.

PH014: Type 2 diabetes risk assessment program for children and adolescents at the community pharmacy setting

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Please specify your abstract type: Research abstract

Background and objective: The prevalence of type 2 diabetes significantly increased in the paediatric population, which is affected by obesity worldwide. Today, type 2 diabetes accounts for 45% of all cases of new-onset diabetes in adolescents. Preventive health care particularly taking place at community pharmacies may involve risk assessment for the children and the adolescents, early referral for seeking relevant medical care and patient education on healthy lifestyle choices.

The aim of the study is to conduct a type 2 diabetes risk assessment program for the kids ≤18 years of age of whose parents visited the community pharmacies involved in the study and also to identify the behavioural parameters that might be associated with this risk.

Setting and method: The study was conducted in 4 community pharmacies. All patients with kids aged ≤18 years who visited the study pharmacies during one-week period were informed about the study and invited to participate in the study. Patients who gave their informed consent were included in the study. All data were provided by the parents. Demographic data, height and weight of the kid, as well as data regarding the behavioural features (eating habits, exercising, time spent in front of a screen, etc.) of both the children and the parents were collected using standardized forms. Type 2 diabetes risk test consisted of 8 questions and identified subjects at risk. The parent of the kid who was identified to have risk for type 2 diabetes was referred to a physician for further examination. Also, information regarding type 2 diabetes and the importance of preventive measures such as converting to a healthy life-style was provided.
Main outcome measures: Main outcome measures were the percentage of kids identified to be at risk of developing type 2 diabetes and the behavioural parameters associated with type 2 diabetes risk.
Results: The study involved 212 subjects. Of the subjects 26% were identified to be at risk of type 2 diabetes. More girls than the boys had the risk (36 vs. 9.3%). Those with type 2 diabetes risk were older, taller, heavier and had higher body mass index. They were spending more time in front of a screen (TV, PC, tablet, smart phone); 22.6% were spending more than 6 h a day. Although the kids' eating habits were similar for those with and without risk, the parents' of the kids with risk ate out more frequently, consumed rice, pasta and pastry more frequently. Both the kids with risk and their parents exercised more regularly and frequently.
Conclusion: This study shows that pharmacist have a vital role in identifying children and adolescents at risk for type 2 diabetes; thus at early management of this condition. Identifying and addressing the behavioural parameters associated with the risk will be helpful in life-style modification interventions.

PH015: Reporting of adverse drug events in an university hospital centre: a reflex for all?

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Analyse and promote the reporting of adverse drug events (ADE), to improve the quality and safety of care to be able to control the risks.
Design: A software is available on the intranet website of the institution, to enable health professionals to report ADE.
The drug and medical devices commission (COMEDIMS) of the hospital, centralizes these statements and always makes a multidisciplinary and overall analysis of the event, using a collection sheet which is based on the PDCA model (Plan, Do, Check, Act). It proposes the nursing and medical teams axes of improvement.
Results: In 2015, only 48 ADE were reported and analysed by the COMEDIMS, including 20 from the paediatric centre (44%), particularly sensitized to this issue. Health professionals are divided as follows: healthcare executives (60%), nurses (23%), pharmacists (11%), residential students (2%), doctors (2%) and others (2%).
The main impacted steps of the drug circuit are: administration (62%), prescription (27%) and the use or implementation of a sterile medical device (4%). Identified causes include related following factors: operational tasks and procedures (37%), health professionals (31%), work environment (13%), organization and management (7%), drugs or associated medical devices (5%).

The number of ADE reports, taking into account the size of the institution, remains very low. In January 2016, the COMEDIMS decided to broadcast a communication campaign to promote ADE reporting, on the hospital website via the intranet. Three months after the release, this document was viewed 1059 times, and the number of reports increased by 229% compared to the same period in 2015.
Conclusion: In front of the low number of returns of adverse drug events, and relying on the charter of non-punishment, the COMEDIMS wants to increase health professionals' awareness.
In our hospital, where e-learning about drug-related iatrogenesis is already available, the communication campaign with poster and analysis of adverse events seems to be a useful complementary tool to enhance awareness of medication safety concerns.

PH016: Social media: a force for inclusion

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Please specify your abstract type: Research abstract
Background and objective: The migration of modern social networks to the internet has facilitated the transition of traditional pharmacy networks online. The ubiquitous nature of social media (SoMe) combined with merging of personal and professional personas have led to organisations publishing guidance on online behaviour and responsible use of social media. The research to date on the use of social media as a support for professional practice in general is limited. As the pharmacy profession evolves to embrace the technologies which underpin core services and mainstream online daily social activities, it is important that research tracks and evaluates its use and impact within the profession. The objective of this research was to explore and describe how and why pharmacists interact with hosted networks on social media.
Setting and method: Two one-hour online hosted micro-blogging Twitter chats were held in December 2015 via the #WePh network. Topic guides were developed around 'Exploring the use of Twitter and WePharmacists' in line with the WeNetwork guidelines (#WeCommunities), informed by existing literature, discussion with the #WePh moderator after review by an expert panel. All research was carried out in accordance with university governance processes and Association of Internet Researchers guidelines. Themes were inducted from analysing the textual content of the chats using the topic guide as a framework. The research was approved by the School of Pharmacy and Life Sciences Ethics Committee.
Main outcome measures: Tweets per chat
Results: Each of the chats had over 2 million impressions with participants representing international pharmacy practice. Themes of e-professionalism and online privacy emerged as concerns; however, the benefits included using social media for education, networking, support mechanisms and career development. Tweets highlighted personal experiences of 'trolling' (angry, offensive behaviour) and the effect on user interaction with social media. Twitter was also recognised as a career development tool and, in particular, collaborative outcomes around mentorship networking early career pharmacists with more experienced colleagues.
Conclusion: Results support the responsible use of social media as a force for inclusion, breaking down geographical barriers in support of pharmacy practice. Further research is underway including a systematic review of guidance on the use of social media by registered healthcare professionals.

PH017: Perception of patients and physicians concerning the access to orphan drugs

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Please specify your abstract type: Research abstract
Background and objective: Orphan drugs (OD) are developed for the treatment, prevention or diagnosis of rare diseases (RD) that are life-threatening or chronically debilitating[1]. The objective of the study was to describe and compare the perception of patients and physicians about the access to OD commercialized in our country.
Setting and method: Cross-sectional study, approved by the bioethical committee of our university, performed through a questionnaire, designed for each group, including open and closed ended questions (patients: 49 questions and physicians: 52 questions) distributed by e-mail. Contact was established with physicians (n = 169) related to RD patients and with patients (n = 52) through their associations. Four RD were studied: hereditary angioedema, Fabry disease, paroxysmal nocturnal haemoglobinuria and mucopolysaccharidosis.
Main outcome measures: Sociodemographic characteristics of the volunteers (patients and physicians) and perceptions concerning RD and OD related aspects: accessibility, allocated resources, formation/information, assistance quality and satisfaction with the healthcare system.
Results: 39 (75.0%) patients and 65 (38.5%) physicians completed the questionnaire. The majority of the patients (97.4%) had a confirmed diagnosis that was obtained in less than a year in 33.3% of the cases. The physicians declared that these percentages were 83.1 and 38.5% for their patients, respectively. In both groups, 30.8% of the cases obtained diagnoses in more than 3 years and this delay can lead to relevant consequences: aggravation of the diseases or failure to receive any treatment. In general, 64.1% of the patients and 66.2% of the physicians were satisfied with the access to the available OD. 83.1% of the physicians considered that their patients received the most adequate treatment. However, 24.6% declared that their patients have had problems accessing treatment, supported by 28.2% of the patients, which were due primarily to the refusal by the healthcare system. 71.8 and 66.2% of patients and physicians respectively, considered that the resources allocated to RD/OD in our country were not sufficient. 66.2% of the physicians declared that there was no registry of RD in their hospital, and 53.8% of the patients did not know if it existed. 71.8% of the patients and 76.9% of the physicians were not satisfied with the coordination between the different healthcare professionals. 66.7% of the patients were satisfied with the access to specialized professionals, and 61.5% of the physicians were satisfied with the dedication they can offer to the patients.
Conclusion: No significant differences were observed between the opinions of the two groups. The participants did not reveal large barriers in obtaining the OD, although the ones who revealed them, highlighted the refusal by the healthcare system as the largest one. Moreover, lack of resources for RD and OD, registry and coordination at an assistance level were indicated.

Reference

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PH018: "It's a jungle out there": a focus group study about being diagnosed with type 2 diabetes

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Please specify your abstract type: Research abstract
Background and objective: It is estimated that half of the 350,000 persons with diabetes in Norway have not been diagnosed. With early treatment, life expectancy can be increased and the incidence of long-term complications and health costs reduced. Community pharmacies may be able to help uncover undiagnosed diabetes, but being diagnosed with diabetes can lead to strong emotional reactions, and how the diagnosis is given may influence the experience. The aim of this study was to explore how Norwegian people living with type 2 diabetes (T2D) experienced being diagnosed, and what led up to the diagnosis. In addition, their attitudes towards a planned community pharmacy service to identify undiagnosed T2D was investigated.
Setting and method: Three focus group interviews with people with T2D were conducted using a semi-structured interview guide. Eleven participants were recruited through a course about type 2 diabetes. The interviews were audio-taped and transcribed in modified verbatim form and analysed in accordance with Malterud́s principles of systematic text condensation. The study was approved by The Norwegian Data Protection Authority, and did not require approval from the Regional committee for medical and health research ethics.
Main outcome measures: How people with T2D describe their experiences of being diagnosed with T2D, how the disease was revealed and reactions towards using community pharmacies to perform risk assessment for T2D.
Results: None of the participants were diagnosed due to their own suspicion of having diabetes. Some saw their doctor because of unspecific symptoms such as fatigue and thirst, and were thereafter diagnosed with T2D. Others were diagnosed through a routine check-up. Negative reactions like shock, discontent and denial were commonly used to describe the experience of being diagnosed with T2D, but some participants also expressed a more relaxed attitude, especially if they were familiar with the disease through family members. Participants expressed a strong wish for more and better information following the diagnosis. "It's a jungle out there" was used to describe how difficult they felt it was to find trustworthy and understandable information. They described change of lifestyle, side effects from drug use, and stigma as challenges following the diagnosis. While in general the participants were positive to using community pharmacies to uncover undiagnosed diabetes as this could help reduce the number of people who were undiagnosed, some were sceptical. They questioned whether the pharmacy staff had the necessary competence of the for this type of service, and saw it as the doctor's responsibility.
Conclusion: More information and support when people are diagnosed with diabetes may lead to that the experience being diagnosed will be more adaptable and that the challenges living with diabetes are reduced. Community pharmacies are important healthcare providers, and risk assessment of T2D at the pharmacy can be valuable. However, the pharmacies may also be helpful to reduce the information gap.

PH019: Sick-leave in pregnancy: a European web-based study

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Please specify your abstract type: Research abstract
Background and objective: To date, inter-country comparability between studies on sick-leave during pregnancy is difficult since most

studies have been conducted on individual country level. The objective of this study is to explore patterns and factors associated with sick-leave in pregnancy, focusing on medication use.
Setting and method: Multinational, web-based study in 12 European countries in the period of October 2011-February 2012. Via utilization of an electronic questionnaire, we collected data about timing and reason for being on sick-leave, maternal sociodemographic and lifestyle factors, pregnancy-related illnesses, medication use and maternal mental health via the Edinburgh Postnatal Depression Scale (EPDS, range 0–30). Descriptive analysis and logistic regression models were conducted.
Main outcome measures: Sick-leave during pregnancy.
Results: Of 6686 women included, 3385 (51%) reported to have been on sick-leave during pregnancy. The crude rates of sick-leave varied across countries, ranging from 32 to 35% in Sweden and the United Kingdom, to 62–71% in Norway, Serbia, Croatia and Poland. The most common reasons for being on sick-leave were pregnancy complications (18%), pain in the neck, back or pelvic girdle (11%), and nausea and vomiting (NVP) (11%). Women using medications for NVP or pain had significant higher rates of being on sick-leave compared to women with untreated NVP or pain, 60 vs 51%, and 55 vs 50% ($p < 0.001$), respectively. Women on sick-leave had also significantly higher rates of depressive symptoms based on the EPDS compared to women not being on sick-leave (mean (SD): 8.4 (5.0) vs 7.1 (4.7), $p < 0.001$). Factors associated with sick-leave in pregnancy included number of acute conditions (over 7 vs 3–4 conditions, adjusted odds ratio (aOR): 2.4, 95% Confidence Interval (CI): 1.9–3.1), number of chronic conditions (2–3 vs 0 conditions, aOR: 1.8, 95% CI 1.4–2.2), infertility treatment (aOR: 1.4, 95% CI 1.2–1.7), and smoking before pregnancy (aOR: 1.2, 95% CI 1.1–1.3).
Conclusion: There are differences across European countries in the extent of sick-leave during pregnancy. Maternal health and medications use were important factors associated with sick-leave in pregnancy.

PT003: Impact of antiemetic guideline consistency on the patient's quality of life

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Please specify your abstract type: Research abstract
Background and objective: Chemotherapy-induced nausea and vomiting (CINV) is a disruptive and unpleasant side effect in chemotherapy patients and is associated with decline in patients' quality of life and decrement in the adherence to effective chemotherapy regimens.
Setting and method: 100 chemotherapy naive patients were included in this study. consistency with guidelines were assessed according to MASCC/ESMO 2014. FLIE questionnaire was administered to patients before chemotherapy, and 5 days after receiving chemotherapy to assess the difference in the quality of life due to chemotherapy administration.
Main outcome measures: Patients were categorized into two groups as consistent with guidelines group (acute (GCGA) and delayed (GCGD)) and inconsistent with guidelines group (acute (GIGA) and delayed (GIGD)). FLIE score differences between the two groups were assessed.
Results: The median FLIE score for patients prior to chemotherapy was 126 and a dramatic decline was noticed post chemotherapy (FLIE score 108; $p < 0.001$). The post-chemotherapy score were for nausea and for vomiting (49.5, 63 respectively). Although the FLIE score differed significantly between GCGD and GIGD ($p < 0.01$), these differences were not significant in GCGA and GIGA.
Conclusion: The significant drop in FLIE scores in the study (126 pre- to 108 post-chemotherapy) reflected substantial declination in patients' quality of life. The lower postchemotherapy FLIE score of nausea emphasized the negative impact of nausea, and to a lesser extent vomiting on the patients ability to complete normal daily activities such as enjoying meals and maintaining social activities. Although there were no significant differences in FLIE scores between GIGA and GCGA groups for acute CINV prevention, significant differences were noted between GIGD and GCGD ($p < 0.001$). The FLIE score was lower for GIGD patients. This result implied guideline inconsistency associated with high incidence of nausea which negatively affect patient quality of life.

PT004: Analysis of effectiveness ans safety of abiraterone in castration-resistant prostate carcinoma

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Abiraterone (an androgen biosynthesis inhibitor) plus prednisone is approved for treating patients with metastatic castration-resistant prostate cancer (mCRPC), with and without prior chemotherapy. The aim of this study was to evaluate prescription profile and safety of abiraterone for metastatic prostate cancer in a regional hospital.
Design: This was a single-institution, retrospective observational study including all patients diagnosed with prostate carcinoma that started treatment with AA between December 2013 and June 2016. Demographic and clinical data were extracted from the medical record (Diraya®) and dispensing module Outpatient Database Athos® APD. Data collected: ECOG performance status, age, date of diagnosis, previous treatment regimens, values of prostate-specific antigen (PSA) and testosterone baseline and after 3 months of treatment. Disease progression prior to initiation of treatment (PSA and/or radiological study).
Results: 7 patients, average age of 82 years (63–89), over 75 (66%). ECOG pre-treatment: 83% (ECOG 1) and 16.6% (ECOG 2). All patients had been previously treated with androgen blockade with analogue of gonadotropin-releasing hormone (LHRH) and antiandrogen. Average time between diagnosis and treatment was 8.95 years (max 16/min 6.2). In previous radiological study, 5 patients (66.6%) had bone metastases and 2 patients (33.3%) lymph node metastases, but no visceral metastases. 1 received 10 previous cycles of docetaxel, the others 6 were docetaxel-naïve. Baseline mean values were: PSA: 60.45 ng/mL (1.53–133), 20.08 Testosterone ng/dL (34.54–10). Means values at 3 months 13.23 ng PSA/mL (45.8–0.58), testosterone <10 ng/dL for all patients. One patient discontinued treatment by arrhythmia, another patient increase glycaemia corrected with a reduction of corticoids.
Conclusion: Despite the beneficial clinical effects, cardiotoxic side effects remain a serious complication eventually requiring treatment interruption. Abiraterone inhibition CYP17 needs of corticoids coadministration, which could cause others side-effects.

PT005: Dose conversion ratio in hemodialysis patients switched from darbepoetin to epoetin alpha

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Please specify your abstract type: Research abstract
Background and objective: There is limited information published on switching erythropoiesis-stimulating agent (ESA) treatment for anaemia associated with chronic kidney disease (CKD) from darbepoetin (DA) to epoetin alpha (EPO) outside the protocol of interventional clinical studies. Randomized clinical studies have reported data on switching from EPO to DA, however, there is a lack of published literature on switching in patients from DA to EPO.
The objective of our study was investigate doses differences and ratio upon switching in ambulatory patients with renal anaemia undergoing haemodialysis.
Setting and method: Retrospective cohort study, observational. Inclusion: Eligible patients had received haemodialysis and DA for $\geq$5 months. Patients with transfusion the 90 days prior to the laboratory analysis were excluded. Dose conversion ratio (DCR) was calculated for patients with Hb and ESA data available in both evaluation periods (EP) (Months 1 and 2 were defined as the pre-switch EP, and Months 6 and 7 as the post-switch EP). All statistical analysis were performed using the Excel software. Descriptive statistics were used to characterize the sample in different time periods. In the beginning we decided to use a DCR of 200 IU/mcg, DA was administrated weekly, and EPO 3 days per week.
Main outcome measures: Haemoglobin level (Hb), dose of DA/EPO and red blood cell transfusions pre- and post-switch were quantified.
Results: Of 18 patients (55% men) enrolled, 4 had data available for DCR analysis. Two dropped out because they died, and 12 as decided by the nephrologist because did not feel confident with the switching after the first/second month with EPO. In the pre-switch period Hb = 11.1 $\pm$ 1.2 g/dl, received an average dose of DA 20 $\pm$ 11 mcg, and in the post-switch (medium of 4 and 6 month after the switching) period 11.5 $\pm$ 0.5 g/dl, received 6000 IU per week. Which represent a DCR of 150 $\pm$ 104 IU/mcg.
Conclusion: In our population of haemodialysis patients switched from DA to EPO the DCR was 150 IU/mcg. The number of patients is low. We need to study the reason why the doctor has more confidence with the treatment of DA.

PT006: Antibiotic audit with feedback performed by pharmacist in a Norwegian hospital setting: registration of cefotaxime use on a pulmonary ward

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Increasing antibiotic resistance is widely acknowledged as one of the greatest threats to public health. Overuse and inappropriate use of antibiotics, in particular broad-spectrum antibiotics, is the key driver for development of antibiotic resistant bacteria. Over decades, there has been an increase in the use of broad-spectrum antibiotics in Norway, despite low resistance rates that do not justify this practice. Norwegian hospitals are required to have antimicrobial stewardship programs to ensure more appropriate use of broad-spectrum antibiotics in hospitals. In collaboration with the Infection Prevention and Control Unit, the Pulmonary ward at Haukeland University Hospital decided to carry out an audit with feedback, focusing on the use of cefotaxime, a third generation cephalosporin. The aim was to observe if the use of this antibiotic was according to the Norwegian guidelines for antibiotic use in hospitals.
Design: This audit included in-patients treated with cefotaxime from October 2015 to January 2016. Patient data were collected once a week and obtained from electronic medical charts, medical records and through discussion with the contact physician. The main focus was on indication and dosage of cefotaxime.
Results: In total, 43 patients were included. 14 (33%) received treatment for community acquired pneumonia (CAP), even though empirical treatment for CAP is penicillin according to the national guidelines. For seven (16%) patients the indication was either unclear or missing. Five (12%) patients received cefotaxime treatment in combination with metronidazole for empyema, which is adherent with the national guidelines. Three (7%) patients received cefotaxime as monotherapy for atypical pneumonia, but according to the national guidelines empirical treatment is macrolides.
Conclusion: A significant proportion of the patients received antibiotic therapy that deviate from the national guidelines, without any plausible reasons. Such prescribing practices may contribute to the development of antibiotic resistance. Key measures should be in relation to enhance competence, awareness regarding use of the national guidelines and promote more prudent antibiotic prescribing.

PT007: Study of the implementation of good practice for use parenteral nutrition three-chamber bags

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Please specify your abstract type: Research abstract
Background and objective: Evaluate use of parenteral nutrition Three-chamber bags (PNTB) and the degree of compliance with good practices for safe use (GP), published by the Spanish Society of Hospital Pharmacy (SEFH).
Setting and method: It is a retrospective study of all PNTB prescriptions in our hospital analysed during March 2016. Data were obtained from the Electronic Health Record (SIAS®) and module SIAS Pharmacy®.
Main outcome measures: SEFH published an article (Farm Hosp.2014; 38 (5): 389–397) sorting GP criteria into 4 categories: Prescription (request by standardized procedure), Validation (pharmaceutical validation, individualized dispensation and the absence of stocks of PNTB in hospital ward), Preparation (micronutrient supplementation, incorporating them in laminar flow hood and galenic validation) and Administration (full label identification PNTB).
Results: During the study period, 742 NPTB prescriptions were analysed: 39 Kabiven 2053 mL, 202 Kabiven 2566 mL, 40 Smof-Kabiven 1477 mL, 44 Smofkabiven 1970 mL; all of central administration. Likewise, 417 prescriptions were Kabiven 1920 mL peripheral administration.

248 prescriptions (33%) were in the service of General Surgery, 298 (40%) of Internal Medicine, 132 (18%) of the Intensive Care Unit (ICU), 21 (3%) of Urology, 17 (2%) of Vascular Surgery and 26 (4%) of other services.

As for the degree of compliance with GP, the results are expressed as percentage of compliance compared to the ideal of 100%.

Prescription criterion was fulfilled to 100%: all requirements of PNTB were performed using standardized procedure.

In what concerns Validation, 94% of PNTB prescriptions were validated by a pharmacist. The invalidated prescriptions were made outside opening hours of the Pharmacy Service, which is open

Monday to Friday from 08:00 to 20:00 and on weekends and holidays from 08:00 to 15:00. 100% of the dispensations were individualized and not PNTB stocks were found in hospital wards.

As for Preparation, 36% were supplemented with micronutrients. PNTB of Kabiven peripheral administration 1920 mL are not supplemented in our centre. Of the remaining 325 prescriptions central administration, 81% were supplemented. In all cases, the addition of micronutrients was performed in laminar flow hood in Pharmacy Service and the corresponding galenic validation was performed.

Finally, in the process of Administration, 94% of PNTB identified with a complete label: name of the patient, medical record number, type of PNTB, qualitative and quantitative composition, date of administration and infusion rate.

Conclusion: Use practices of PNTB of our centre are far from those recommended by the SEFH standards. This initial evaluation will serve for improvement measures that increase the quality of prescribing and safe use of PNTB, in order to minimize errors that can occur with the use of this therapeutic modality.

PT008: A pilot study for methadone dispensing from a community pharmacy

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Please specify your abstract type: Research abstract

Background and objective: Methadone maintenance treatment was developed in Malta in 1987 and is provided to patients by SEDQA, the national agency against drug and alcohol abuse. Methadone is the most frequently prescribed opioid in opioid substitution treatment and is dispensed through a centralised service through the Substance Misuse Outpatients Unit. In 2013, 1078 patients were in opioid substitution treatment, 976 of who were on methadone. In 2005, the government introduced a take-home methadone program. The prescribing, purchasing and dispensing of methadone are regulated by subsidiary legislation 101.06.

The objectives were to determine whether community pharmacists in Malta would be willing to dispense and supervise the consumption of methadone and to investigate the involvement of community pharmacies in the development of a regionalised methadone dispensing service.

Setting and method: The study was set in community pharmacies. A cross-sectional study, through the use of a questionnaire, was performed to quantitatively analyse whether pharmacists in Malta would be willing to dispense methadone. The questionnaire consisted of 19 questions divided into 3 sections, with each section assessing a particular aspect of community pharmacists' attitudes towards methadone dispensing. Community pharmacies were then chosen via a systematic sampling procedure. A hard copy of the questionnaire, addressed to the managing pharmacist, along with a cover letter, instructions on how the questionnaire was to be returned, and a prepaid self-addressed envelope was distributed via postage to 103 community pharmacies. An online format of the questionnaire was also circulated to 311 community pharmacists through the pharmacy council. Data was analysed using SPSS version 21.

Main outcome measures: Community pharmacist's attitudes towards methadone dispensing.

Results: A total of 109 responses were obtained and a response rate of 35.04% was achieved. Eighteen percent of the pharmacists ($n = 109$) who responded to the questionnaire worked in a community pharmacy located in the north of Malta, 24% in the centre, 17% in the south, 8% in the southeast and 4% in Gozo. Thirty-two percent of community pharmacists were willing to dispense methadone to drug misusers. The number of community pharmacists who are willing to dispense methadone increased to 41% if they were provided with appropriate education and support. Twenty-nine percent of community pharmacists were prepared to handle the duty of supervising the consumption of methadone while 86% had never learnt about methadone and its clinical application within opioid substitution treatment.

Conclusion: Community pharmacists should be provided with education and training regarding methadone substitution treatment before embarking on a new regionalised methadone dispensing service within community pharmacies. This would allow more community pharmacists to become involved in a new dispensing methadone service.

PT009: Evaluation of regorafenib in patients with colorectal cancer

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Please specify your abstract type: Research abstract

Background and objective: The colorectal cancer is the second more frequent cancer in Europe and the third in the world. Regorafenib is only approved in adult patients with metastatic colorectal cancer who are previously been treated with available therapies or are not considered suitable candidates to these treatments. Regorafenib is an oral anti-tumor drug that blocks the kinases involved in the tumor angiogenesis (VEGFR1, -2, -3, TIE2), the oncogenesis (KIT, RET, RAF-1, BRAF, BRAFV600E) and the tumor microenvironment (PDGFR, FGFR).In this study, we are reviewed the reports of the patients with colorectal cancer who are been treated with Regorafenib in our hospital and analysed the information in order to evaluate the efficacy and safety of Regorafenib.

Setting and method: Descriptive and observational study about the use of Regorafenib from April 2015 to the present day. The variables studied, obtained from the software applications Archinet and Diraya, were: sex, age, pathology, location of metastasis, posology and adverse effects of Regorafenib, tumor markers (CEA y CA 19.9) before and after the treatment with this drug and the mutational state of KRAS.

Main outcome measures: The tumor markers CEA and CA 19.9 only decreased in the 22.22% of the patients after the Regorafenib treatment.

Results: Regorafenib was taken by 9 patients (78%men).The average age of these patients was 64.78 ± 8.48 years old. The patients took Regorafenib to treat: metastatic and non-intervened gastrointestinal stromal tumors (GIST) E-IV that progressed with the previous treatment of Imatinib and Sunitinib (11.11% patients), intervened colon adenocarcinoma E-IV (33.33% patients), sigma adenocarcinoma E-IV (33.33% patients) and unresectable and non-intervened rectal adenocarcinoma E-IV (22.22% patients).All patients presented metastasis in different locations on the body: liver (55.55% patients), diaphragm (11.11% patients), intestine (11.11% patients) and lung (44.44% patients).The 77% of the patients started the treatment with 160 mg of Regorafenib, administrated once a day for 3 weeks followed by one week without this drug; while the 22.22% of the patients started the treatment with 120 mg. However, the 33.33% had to decrease the initial dose and the 55.56% of the total patients had to get off the treatment because of the development of side effects. The most frequent adverse effects were: hypertension associated with headache, hyperbilirubinemia, elevation of AST and ALT, intense asthenia. The 66.67% of the patients presents native KRAS. The native KRAS was presented in the 100% of the patients treated with Regorafenib who had an appropriate development of the illness (decrease of CEA and CA 19.9)

Conclusion: The decrease of CEA in the 22.22% of the patients and the high development of side effects reveal that Regorafenib has low effectiveness and security in the control of the progression of colorectal cancer. In addition, it is supposed that this drug has better results in native KRAS patients. However, more studies are necessaries in order to demonstrate the effectiveness of Regorafenib in this pathology.

PT010: Evaluation of nintedanib in patients with non-small-cell lung carcinoma (NSCLC)

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Please specify your abstract type: Research abstract
Background and objective: The NSCLC means a high rate of mortality in developed countries. Patients diagnosed with NSCLC who debut with advanced or metastatic disease have a median survival of 13 months. One of the innovative drugs approved to improve survival in NSCLC is Nintedanib: an inhibitor of multiple tyrosine kinases, which can be found in some receptors on the surface of cells involves in the growth and spread of cancer cells ("PDGFR", "*FGFR*" and "VEGFR"). Nintedanib is not yet marketed in Spain. Hospital pharmacists are responsible for applying this treatment as "expanded drug", only after the elaboration of an exhaustive report. In this study, we have reviewed all the reports and classified the information in order to present our clinical practice. The objective of this study is to evaluate the effectiveness and safety of Nintedanib in patients with NSCLC treated in a tertiary hospital.
Setting and method: Descriptive observational study of the use of Nintedanib from November 2014 to September 2015. Sex, age, body mass index (BMI), pathology, smoking habits, line of treatment, posology and adverse reactions of the treatment with Nintedanib and *tumor markers (CEA an CA 19.9) before and later the treatment with Nintedanib* were collected from medical history through Archinet informatic application.
Main outcome measures: *The tumor marker CEA decreased in 57% of the patients and CA 19.9 no decreased in any patient after Nintedanib treatment.*
Results: Nintedanib was used in 7 patients (57% men and 43% smoker).The average age of these patients was 58 years old. The average BMI was 28 kg/m^2 (18–50).All patients received Nintedanib together with Docetaxel for metastatic NSCLC with adenocarcinoma histology and with non-mutated EGFR and ALK in third line treatments. Posology: all patients started the treatment with Nintedanib 200 mg/12 h from day 2 to day 21 every 3 weeks; but 2 patients had to reduce the initial dose to 300 mg/24 h (1 patient) and 150 mg/12 h (1 patient) because of some adverse reactions. The side effects were: asthenia, diarrhoea, alteration of transaminases, muscle pain and cramps, weight loss and mucositis.
Conclusion: The decrease of CEA in 57% of the patients reveals that Nintedanib is effective in controlling NSCLC progression which involves an increase of the survival and the quality of life of these patients. However, more studies are required to demonstrate the efficacy of Nintedanib in this illness.

PT011: Rapid, clinically meaningful relief from sore throat symptoms with flurbiprofen 8.75 mg delivered as a lozenge or spray

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Please specify your abstract type: Research abstract
Background and objective: Patients with sore throat symptoms often seek fast, meaningful relief when presenting to their local pharmacy. Flurbiprofen is a non-steroidal anti-inflammatory drug, which has been developed as a spray and lozenge to provide targeted relief for the main underlying process responsible for the symptoms of sore throats, inflammation. To study the relief provided by flurbiprofen 8.75 mg delivered as a spray or lozenge, we conducted a multicentre, randomised, double-blind, double-dummy, parallel group, active-controlled, single-dose, non-inferiority study.
Setting and method: Adult patients with acute sore throat were randomly assigned to take one dose of either flurbiprofen 8.75 mg spray plus a placebo lozenge, or flurbiprofen 8.75 mg lozenge plus placebo spray at 16 sites across Russia.
Main outcome measures: Patients rated sore throat relief using the Sore Throat Relief Rating Scale (STRRS; a 7-point scale, 0 = no relief, 1 = slight relief, 2 = mild relief, 3 = moderate relief, 4 = considerable relief, 5 = almost complete relief, 6 = complete relief) at timed intervals throughout 2 h starting from 1 min post completion of first dosing (1 min after administration of the spray, and 1 min after the lozenge had fully dissolved). Adverse events (AEs) were recorded over 2 h post-dose.
Results: 417 patients were assessed (n = 205 for spray, n = 212 for lozenge). >90% of patients in either treatment group experienced some relief (a score of >1 on the STRRS) at 1 min post-dose, which increased to 98% of patients by 2 h. 55–60% of patients reported 'at least moderate relief', which is a well-recognised measure of a clinically meaningful effect at 1 min post-dose, which increased to 74–78% of patients by 2 h. Over the 2 h post-dose, a total of 17 drug-related AEs were reported by 13 patients across both treatments and no severe adverse events were reported.
Conclusion: Flurbiprofen 8.75 mg delivered as a lozenge or spray provides fast, clinically meaningful relief from sore throat.

PT012: Analising antiangiogenics prescription in an ophtalmology service after a protocol implementation

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: After some years using antiangiogenics in our Hospital, we observed a large variety of use. Considering the high cost of these treatments, we proposed Ophthalmology Service to develop a protocol of use, attending efficiency criteria. In this paper, we analyse the protocol implementation repercussion.
Design: A protocol of use was designed with the main of unify criteria and to use the most efficient treatment depending on the specific

situation on each patient. Once it was implemented, we compared two periods, the period after the implementation (January-may2016) and the period before of it (January-may2015).
The protocol designed is the following:

1. Aflibercept:
    1. neovascular membranes with visual acuity higher than 0.1
    2. one eye affection.
    3. Severe cardiovascular pathology (severe episodes in the last 6 months).
    4. non-responders to other anti-VEGF.
2. Bevacizumab:
    1. diabetic macular edema.
    2. Macular edema secondary to vascular pathology.
    3. neovascular membranes with visual acuity lower than 0.1
3. Ranibizumab:
    1. myopic neovascular membranes

The cost for each injection and patient was the following: aflibercept 207€, bevacizumab 10€, ranibizumab 857€.
Results: In the 2015 period, 303 patients were treated with antiangiogenics.181(60%) with aflibercept, 110(36%) with bevacizumab and 12(4%) with ranibizumab. In the 2016 period, 297 patients were treated, 147(49%) with aflibercept, 134(46%) with bevacizumab and 16(5%) with ranibizumab. The consumption of aflibercept decreased a 19%, bevacizumab consumption increased 22% an ranibizumab increased a 33%.We also observed, some patients had more than one diagnostic at the same time.

Once the protocol was implemented, the percentage of use was the following: 38% 1.1, 4% 1.2, 1% 1.3, 6% 1.4, 24% 2.1, 13% 2.2, 9% 2.3, 5% 3.1.

As economic result, in the2015 period, our hospital spent 85,860€ in antiangiogenics, while in the 2016 period, the spending was 56,160€.With these results, we calculate an estimated save of 71,280€ per year.
Conclusion: Protocol implementation supposes a reduction in the therapeutic variability and a major equity, treating all patients under the same criteria. Besides, it has an important economic repercussion.

PT013: Prescribing of potentially inappropriate drugs in the elderly

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Please specify your abstract type: Research abstract
Background and objective: Drug prescribing is the most common medical intervention in the elderly. However, elderly patients are more sensitive to the drug's effects due to pharmacokinetic and pharmacodynamic changes associated with aging. Chronic diseases and co-morbidities often require the use of a large number of medications. Therefore, when prescribing drugs for the elderly, the choice of suitable drugs, dosage and duration of treatment should be carefully considered as well as clinically significant drug interactions. Inappropriate prescribing is often associated with an increased risk of adverse drug reactions, increased morbidity and mortality, and health care costs. The aim of this study was to determine the incidence of potentially inappropriate medications (PIM) prescriptions in the elderly (≥65 years) using the original protocol developed by Mimica Matanovic and Vlahovic-Palcevski.
Setting and method: We enrolled 240 patients hospitalized in Clinic of Internal Medicine. Data about patients' medications was collected during patient interview taken by the pharmacists on hospital admission. Pharmacotherapy was analysed using the original protocol developed by Mimica Matanovic and Vlahovic-Palcevski in order to detect PIMs.
Main outcome measures: number and type of potentially inappropriate medications, potential clinically significant interactions.
Results: The average age of patients was 74 years (range 65–92), and the average number of drugs per respondent was 6.7 (range 1–15). A total of 109 patients (45.4%) were taking at least one PIM. The most common PIM were long-acting benzodiazepines, central antihypertensive moxonidine and non-steroidal anti-inflammatory drugs (NSAIDs) in patients with hypertension. In the study population, 110 patients (45.8%) have taken at least one combination of drugs that could result in a clinically significant interaction. The most common combinations included application of NSAIDs and antihypertensive drugs or diuretics, concomitant use of multiple medications with effects on the central nervous system and drug combinations that can cause hyperkalaemia.
Conclusion: This study revealed the high prevalence of inappropriate prescribing. Clinical application of this protocol could be an effective method for improving and optimizing drug prescription with the aim to reduce the number of side effects and the morbidity and mortality associated with the drug use in the elderly.

PT014: Nephrotoxicity of amphotericin-B lipid-based formulations versus conventional one: A systematic review and meta-analysis

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Please specify your abstract type: Research abstract
Background and objective: To reduce adverse effects of conventional amphotericin B formulation (deoxycholate or d-AmB) it can be infused in Intralipid® (a fat parenteral nutrition), or lipid-based formulations can be used (i.e. amphotericin B lipid complex (ABLC), amphotericin B colloidal dispersion (ADCD) and liposomal amphotericin B (L-AmB)). Studies evaluating safety profiles present conflicting results. The aim of our study was to gather evidence on nephrotoxicity rates of d-AmB *versus* lipid-based formulations in immunosuppressed patients susceptible to invasive fungal infection.
Setting and method: A systematic review, including randomized controlled trials (RCTs) that compared the use of d-AmB and amphotericin B lipid-based was performed. A search was conducted in PubMed, Scopus, Web of Science and Scielo. Results were synthetized and meta-analysis was performed using software Review Manager 5.3.
Main outcome measures: Nephrotoxicity rates.
Results: Eighteen RCTs were identified (n = 2525 participants). The result from the meta-analysis favours the treatment with the lipid-based amphotericin B formulations (OR: 0.32 (0.25, 0.41) and presents a low heterogeneity ($I^2 = 18\%$). About 22% of patients from lipid-based treatment group presented an increase in serum creatinine of one to two times, which corresponds to stage one or two of acute renal failure (ARF). And 2% presented an increase of tree times in serum creatinine achieving a stage three in ARF (severe) which will require dialysis. While in group treated with conventional formulation

(d-AmB) 45% patients presented an increase of one to two times in serum creatinine, and 6% patients with an increase of tree times in serum creatinine.
Conclusion: The present meta-analysis gathered the evidence to show that the amphotericin B lipid-based formulations present a better safety profile, concerning nephrotoxicity, compared with conventional formulation (d-AmB).

PT015: Factors associated to linezolid-induced thrombocytopenia

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Please specify your abstract type: Research abstract
Background and objective: Linezolid is an antibacterial agent approved to treat different respiratory and skin and soft tissue infections. Among its main adverse effects, haematological toxicity stands out. Several risk factors that may increase linezolid safety issues have been suggested. We aimed to identify risk factors associated to the appearance of linezolid-induced thrombocytopenia.
Setting and method: Cross-sectional retrospective study in a Portuguese Teaching Hospital. Adult patients treated with linezolid (600 mg BID) for more than 6 days between Jan-2014 and Dec-2015, with complete laboratory tests available were included. Patients admitted into the Haematology ward, or with haematological conditions, or that had blood or derivatives transfusions were excluded.
Main outcome measures: Linezolid-induced platelet counting reduction.
Results: Of the 1.033 patients treated with linezolid, 315 patients were analysed. They were 69.5 years old, 68.3% males, and treated for an average of 14.8 days (SD = 10.1) with Linezolid 600 mg BID. Baseline creatinine clearance was 51 (SD = 41) with no difference between genders (t test $p = 0.076$) but in correlation with age ($r = -0.376$; $p < 0.001$). Patients presented 260,873 platelet (SD = 140,658) with no difference between genders (t-test $p = 0.177$) or correlation with age ($p = 0.745$). After linezolid, platelet counting reduced in 18.6% in average (SD = 41%). Multivariate analysis found initial platelet counting (OR 1.004; 95% CI 1.002–1.006) and treatment duration (OR 1.047; 95% CI 1.017–1.077) as the only predictors for mild platelet reduction (25–50%). Another multivariate model found creatinine clearance (OR 0.988; 95% CI 0.980–0.996), initial platelet counting (OR 1.003; 95% CI 1.001–1.005), and treatment duration (OR 1.033; 95% CI 1.008–1.059) as the predictors for severe platelet reduction (>50%).
Conclusion: Linezolid-induced thrombocytopenia is associated to impaired renal function, initial platelet status, but mainly to linezolid course duration.

PT016: Hepatitis c virus relapses in patients treated with second generation direct-acting antivirals

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Second generation Direct-Acting Antivirals (DAAs) are associated with high sustained virological response rates after 12 weeks post-treatment (SVR12); however, there are about 5% of relapses.
The aim of this study is to analyse the patients who suffered a relapse after the DAAs treatment in a tertiary hospital.
Design: A retrospective, observational study from September 2014 to June 2016 including the patients who suffered a relapse after treatment with second generation DAAs was carried out. Demographic (age and sex) and therapeutic (HCV genotype, type of DAA, treatment start/end date and outcome, presence of cirrhosis, liver transplantation, hepatocellular carcinoma and/or HIV) variables were gathered. Information was obtained from the Electronic Clinical History (HCIS®) and the Registration of Use of DAAs from Regional Health Authorities (RUA-VHC®). Service Statistical analysis of data was carried out using Microsoft Excel®.
Results: A total of 751 patients have finished the treatment with DAAs at the hospital. Of them, 728 patients have shown SVR12 and 23 patients (3.1%), 5 women and 18 men, aged 57.9 (42–78), have suffered a subsequent relapse.

All of these 23 patients, except one whose treatment adherence was inadequate, were cirrhotic (15/23), liver transplanted (5/23) and/or presented hepatocellular carcinoma (3/23). 6/23 patients were coinfected with HIV.

8/23 patients (35%) were genotype 3. The total genotype 3 patients treated with DAAs (SVR12/relapsed) were 79, which means that 10.1% (8/79) of all genotype 3 patients has had a relapse.

10/23 patients (43%) were treated with Ledispavir/Sofosbuvir (2.4% of a total of 411 patients (SVR12/relapsed) treated with this option). 39% of patients who suffered a relapse were treated with DAAs Sofosbuvir, Simeprevir, Daclatasvir, previously to the introduction of the newest antivirals (Dasabuvir + Ombitasvir/Paritaprevir/Ritonavir, Ledispavir/Sofosbuvir), which represents 6.3% of the total of 142 patients treated with the older option.
Conclusion: Relapses rate was 3.1%, slightly lower than reported in other studies.
According to the references, these results show that genotype 3 is the one presenting more relapses. All the patients presented a deteriorated performance status, except for one whose treatment adherence was inadequate.

Patients treated before April 2015, when the newest DAAs where introduced, showed more relapses.

More studies have to be developed in the near future since other DAAs will appear, the treatment options will be amplified and the number of relapses is expected to decrease.

PT017: Implementation of an antimicrobial stewardship program: the role of the clinical pharmacist

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Please specify your abstract type: Research abstract
Background and objective: The inappropriate use of antibiotics remains a major issue since it causes bacterial resistance, longer hospital stay and increased mortality. Antibiotic prescriptions must be monitored: the Clinical Pharmacist has a key role in ensuring patient safety and quality of pharmaceutical care. Therefore, an Antimicrobial Stewardship program has been implemented as part of a National project of the Italian Society of Hospital Pharmacy (SIFO). The objective is to describe the results obtained at the Hospital.

Setting and method: A multidisciplinary antimicrobial management team has been implemented including Clinical Pharmacists, Microbiologists and Infectious Disease Specialists. The Pharmacist examines drug charts on a daily basis in the Department of Medicine and supports clinicians to improve the appropriate use of antibiotics. Data from 2 time-points were extracted from medical records and collected in an Excel database: T0 (November 2015-January 2016) and T1 (February 2016-April 2016).
Main outcome measures: Type of infection, antibiotic consumption data, type of isolated pathogens, patient allergies, Clostridium difficile infection assessment and adverse drug reactions (ADR).
Results: 465 records were analysed (T0-T1), 277 of which contained at least one antibiotic prescription. The most frequent infections were urinary tract (27%), respiratory (20%) and gastro-intestinal (14%). Antibiotic therapy was started in 15.9% of cases due to aspecific increase of C-reactive protein (CRP). DDDs were calculated for each treatment and were grouped by type of infection and setting (empiric vs targeted): ceftriaxone, meropenem and metronidazole were the most widely used antibiotics for empiric therapy. At T1, an increase in the use of Piperacillin-Tazobactam instead of Meropenem was observed. The DDD of ceftriaxone for targeted therapies decreased significantly, while an increase was observed for carbapenems, levofloxacin, glycopeptides and, in case of MDR bacteria, tigecycline. Three allergies to antibiotics were reported in medical history. There were 20 Clostridium difficile infections (5 relapses), confirmed by antibiogram. A total of 22 ADRs were identified: 3 of these were related to antibiotics.
Conclusion: Antimicrobial Stewardship is a fundamental step to optimise antibiotic management, ensure patient safety and improve quality of care. The results obtained so far demonstrate the added value of a multidisciplinary team in controlling bacteria resistance and in the improving the use of antibiotics.

PT018: Effectiveness and safety of pirfenidone used for treatment of idiopathic pulmonary fibrosis

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: The aim of this study was to analyse effectiveness and safety of pirfenidone, an anti-inflammatory and antifibrotic agent used for treatment of idiopathic pulmonary fibrosis.
Design: A retrospective, descriptive, observational study including all patients treated with pirfenidone at the hospital between March 2015 and June 2016 (15 month) was carried out.
To identify patients and collect data the outpatient medication dispensation software Farhos® and the electronic medical record software HCIS® were used. Statistical analysis was carried out using Microsoft Excel®.

Demographic (age and sex), clinical (forced vital capacity (FVC), diffusing CO capacity (DLCO) and six-minute walk test (WT6 M)) and therapeutic (dosage and adverse reactions) variables were collected.
Results: Throughout the study period, a total of 22 patients (16 males) started treatment with pirfenidone, with a median age of 74.5 years (46–81). During this period 5 patients were excluded for lack of monitoring.

The median FVC, DLCO, WT6 M values prior to pirfenidone therapy, were 59% (50 > 81%), 38.5% (17 > 65%) and 357 m (200–620 m) respectively. All patients met the inclusion criteria of CAPACITY trial according to FVC and WT6 M; however 8 of them didn't meet the DLCO criteria (at least 35%)."

All patients were monitored every 3 months. The median in FVC percentage change at the end of the study was −1% (−13% to +9%). 8 patients (50%) showed an improvement on FVC during treatment with a median change of 7%. In the other eight patients FVC value decreased with a median of −6%. Only one patient would be candidate to discontinue treatment due to a lack of efficacy, according to discontinuation criteria established at the hospital (absolute decrease of ≥10% in FVC during first year of treatment).

DLCO percentage was measured in 14 patients, with a median change of 2% (−17% to +10%). DLCO decreased in 6 patients. WT6 M was monitored in 12 patients, with a median change of −44.5 m (−222 m to +35 m).

Adverse effects related to pirfenidone were gastrointestinal disorders (9/17), increase of hepatic GGT (5/17), and dermatologic toxicity (2/17).

Six patients (35%) required a dose reduction because of gastrointestinal adverse effects. Five patients (29%) discontinued treatment with pirfenidone due to hepatotoxicity (2), gastrointestinal (1) and dermatologic effects (1). One patient died.
Conclusion: Half of the patients improved FVC during the period of the study. The other half, showed a decrease in FVC value which was similar to the median obtained in CAPACITY trial.

Gastrointestinal disorders were the most frequent adverse effects and cause of discontinuing treatment.

Treatment monitoring is important to achieve therapeutic benefit and control the adverse effects.

PT019: Medication review in patients with mental disabilities

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Please specify your abstract type: Research abstract
Background and objective: Systematic medication reviews in interdisciplinary teams can help to identify potential and actual drug-related problems (DRP). The Centre for Development of Institutional and Home Care Services in Oslo, Norway, conducted medication reviews for polypharmacy patients with mental disabilities in 2015–2016, based on a lack of knowledge about drug-related problems in this patient group.

The objective was to examine prescribing patterns, frequencies and types of DRP in patients with mental disabilities.
Setting and method: The forms for medication reviews were developed by the national patient safety campaign in Norway. The nurse/social educator recruited eligible patients, observed them, and ordered test if needed. The clinical pharmacist (JWA) reviewed the medications to identify DRPs. The interdisciplinary case conference took place at the different general practitioners' offices being responsible for the individual patients. The general practitioner, the nurse/social educator and the pharmacist were present, and in some cases, also patients took part.
Main outcome measures: An independent researcher (AQM) collected and analysed the data based on the DRP-forms containing information on the prescribed medicines, strength, dose, indication, a description of DRP and suggested interventions to resolve them.
Results: Overall, 40 patients with mental disabilities, aged 34–77 years, consented to have a medication review. They used on

average 12 medicines (range 5–23). The team identified 191 DRP in 39 of the 40 patients (average 4.9, range 0–13). Overall, 79% of all DRP were resolved. For one-third of the medicines, an action was taken to improve the prescribing. The most commonly medicines were analgesics (62%), antiepileptics (58%) and anxiolytics (52%). The most frequent DRPs were unnecessary drug choice (24%), side effects (11%) and too low dose (11%). DRPs were most common in antipsychotics (10%), antidepressants (9%) and anxiolytics (7%).
Conclusion: Patients with intellectual disabilities take more medicines and have many DRPs compared to other patient groups. They are also more prone to taking combinations of CNS-active medicines and therefore more at risk of side effects and drug interactions.

PT020: Protocol feasibility and patient findings when using a dry extract of *Zingiber officinale* Roscoe (ginger extract GR10) during pregnancy

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Please specify your abstract type: Research abstract
Background and objective: There is limited information about the use of dry extracts of ginger root. The objectives of this study are (1) to evaluate the feasibility of a pilot study with a food supplement among pregnant women (2) to learn what the patient findings are when using the dry extract of ginger during pregnancy. This abstract deals with the intermediate evaluation of a study conceived to investigate the safety of the ginger extract GR10 during pregnancy.
Setting and method: A prospective, interventional and real life pilot study with pregnant women between 4 and 14 weeks of gestation and having symptoms of nausea and vomiting or digestive complaints. The included patients can use the ginger extract GR10 for digestive comfort during pregnancy when needed. During the use, the score of digestive discomfort is noted and the researcher reports adverse events.
Main outcome measures: (1) Number of included patients as an indicator of feasibility: including a number of 50 patients was taken as a target (2) analysis (qualitative and quantitative) of the patient diaries, more particularly patient behaviour, wellbeing and impressions.
Results: Within twelve weeks, 51 patients were included with an average age of 29.9 years and a median age of 29 (19–42) years. 45 patients used GR10: 3 patients were dissatisfied, 15 patients had a neutral opinion and 19 patients were satisfied to very satisfied. One miscarriage occurred at a gestational age of almost 17 weeks (only 2 tablets of GR10 were used, with no relevant medical history in preceding pregnancies). Two patients were hospitalized, of which 1 with *hyperemesis gravidarum*. One patient complained about heartburn and one patient experienced a bad taste and heartburn. Three patients have indicated that they experienced more nausea after taking the tablets. 29 patients experienced no adverse events. The remaining 8 patients were not yet evaluated. Of the 51 included patients, six patients decided not to use the product: 3 because their gastrointestinal complaints were not serious enough, 1 because problems of swallowing (using ginger gums instead). One patient was afraid for the negative consequences for her unborn child. The last of the non-users indicated that she had no confidence in the product.
Conclusion: Conducting a pilot study with the ginger extract GR10 in case of pregnancy is feasible. The majority of the evaluated patients were satisfied. Signing the consent form does not guarantee the intake of the product. Pregnant women remain very cautious in the use of unknown products during their pregnancy, even though it concerns a food supplement and not a drug. The severity of symptoms does not give a good indication whether or not and how often the product will be used.

PT021: Effectiveness and safety of ibrutinib used for the treatment of relapsed and refractory mantle-cell lyphoma: experience in a third level hospital

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: To analyse effectiveness and safety of ibrutinib, an oral inhibitor of Bruton tyrosine kinase, in patients with mantle cell lymphoma (MCL) who have received at least one prior therapy.
Design: A descriptive observational study was carried out. All patients with relapsed or refractory MCL who started treatment with 560 mg of daily ibrutinib between September 2014 and June 2016 were included. Patients were identified and followed through electronic medical record.

Demographic and baseline clinical characteristics of patients were collected: age, sex, ECOG (Eastern Cooperative Oncology Group scale), number and type of prior regimens, simplified MIPI status (Mantle-Cell Lymphoma International Prognostic Index), and disease stage (relapsed or refractory).

Progression free survival (PFS) and response to treatment were recorded to evaluate effectiveness. Adverse effects related to ibrutinib and possible interactions with concomitant medication were documented to measure safety.

Statistical analysis of the data was carried out using Microsoft Excel 2013® and SPSS® 18.
Results: Throughout the period of study a total of 5 patients (4 males and 1 female) with a mean age of 62.5 ± 8.2 years started treatment with ibrutinib. The median of previous treatments were 2 (1–5) including first-line treatment with high dose chemotherapy (100%), steam-cell transplantation (80%), rituximab (100%), bortezomib (60%) and lenalidomide (20%).
The median ECOG value prior to ibrutinib therapy was 0 (range 0–1). The MIPI status was intermediate risk in 4 patients and high risk in 1, the disease stage was relapsed in 80% of the patients.

Partial response was reported in 3 patients. The mean PFS estimated at the end of the study period was 13 months (95% 4.4–21.5).

Adverse effects related to ibrutinib were: fatigue (10%), diarrhoea (10%) leucocytosis (30%) and infections (50%), including upper respiratory and urinary tract infections, sinusitis and pneumonia.

One possible interaction between ibrutinib and everolimus was found in a liver transplant patient. Close monitoring of everolimus plasmatic levels was recommended.
Conclusion: The mean PFS estimated in our study was similar to the median obtained in the pivotal phase II trial. Infections were the most frequent adverse effects. Concomitant medication to ibrutinib should be checked, as ibrutibib is metabolised by CYP3A4 and interactions may be frequently present.

PT022: Influence of inappropriate medication in the use of health services and consequent clinical problems

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Please specify your abstract type: Research abstract
Background and objective: The use of inappropriate medication is common in elderly patients with polypharmacy. The aim of this study was to assess how the Number of Potential Safety Problems (NPSP), as well as sex and age can affect the use of health services or produce new clinical problems in patients.
Setting and method: A Longitudinal study was carried out in Primary Care Centres. Participants: patients aged ≥65, under treatment with 5 or more drugs and belonging to 7 Primary Care Areas in 5 different towns. Patients should have at least one of the following Potential Safety Problems: (a) concomitant use of a non-steroidal anti-inflammatory drug (NSAID) with an antihypertensive drug, anticoagulant or antithrombotic drug; (b) use of two or more benzodiazepines. Two Clinical Management Units (CMU) were randomized per area to be included in the study. Thirty patients per CMU were randomized to be enrolled and monitored during 30 months (January-2013 to June-2016).Results were analysed by Poisson Models.
Main outcome measures: The main outcome was falls, fractures, cardiovascular events and the use of health services such as hospital admissions, visits to a primary health care centre and home visits. The independent variables were sex, age and NPSP. Each patient was reviewed every 6 months to collect follow-up data.
Results: A total of 411 patients and 1660 records were selected to be reviewed (average age 74, women 69.4% of the patients).The results showed a significant association between each increase in NPSP and the rise in nurse home visits (0.09; $p < 0.061$), visits in primary health care centre to physicians (0.05; $p < 0.006$) and to nurses (0.13; $p < 0.001$), hospital visits (0.22; $p < 0.001$), emergency visits (0.15; $p < 0.003$), number of adverse effects (0.40; $p < 0.001$) and number of clinical problems (0.19; $p < 0.001$).With each year increase in age, there was a significant reduction in visits to physicians (0.12; $p < 0.001$), to nurses (0.15; $p < 0.060$) or to hospital (0.03; $p < 0.026$) and a significant rise in physician (0.08; $p < 0.001$) and nurse (0.06; $p < 0.001$) home visits. Women compared to men resulted in a significant decrease in nurse home visits (0.57; $p < 0.045$) and clinical problems (0.16; $p < 0.043$) but a significant increase in visits to nurses (0.43; $p < 0.001$), hospital admissions (0.39; $p < 0.053$) and hospital visits (0.35; $p < 0.030$). Age, sex and NPSP had no significant effect on falls, fractures or cardiovascular events.
Conclusion: The NPSP in elderly patients contributes to an increase in the use of health services and comorbidity. Effective interventions should be addressed to general practitioners to reduce inappropriate prescriptions.

PT023: Dolutegravir discontinuation in real life

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: Dolutegravir (DTG) is one of the preferred options for initial antiretroviral therapy (ART) due to its high efficacy, good tolerability and low potential for drug–drug interactions. Nevertheless, an unexpectedly high rate of DTG discontinuation (up to 16%) due to adverse events in the clinical practice has been recently reported. Therefore, we aimed at assessing the DTG discontinuation rate and reasons for discontinuation in our hospital.
Design: Single-centre, retrospective study from September 2014 to June 2016 of 2709 patients cohort with ART both naive and pre-treated. Patients who had started DTG-based ART containing regimen were identified and the reasons for the discontinuations were analysed. Data were collected using the primary care service program and the electronic prescription program.
Results: Out of 2700 patients attended by Pharmacy Department in our hospital, 563 patients (494 males, mean age 47 years (range 16–84)) had started a DTG-based ART. Out of them, 61 patients were ART naive and 502 ART-experienced. At the moment of starting DTG, mean CD4 cells were 654cell/mm^3 (range 7–2147) and HIV-1 RNA load in plasma was detectable in 69 patients.

Treatment discontinuation was reported in 52/563 patients (9.2%) with a median treatment time of 241 days (range 7–842). 8/52 patients (15.4%) were naïve and 44/52 patients (84.6%) pre-treated. Most of the patients (404) were in single tablet regimens (STR) containing DTG in combination with abacavir and lamivudine, whereas the rest were in combination with other antiretroviral drugs.

The main reason for treatment discontinuation was toxicity in 38/52 patients (73.1%). The rest of the patients discontinued due to other motives (clinical trial inclusion (3/52), treated in another hospital (4/52), exitus (1/52) and others (6/52). Reasons for the discontinuation were classified in different side effects: 17/38 (44.7%) related to central nervous system (CNS) (insomnia, psychiatric disorders such as anxiety, nightmares and depression), 14/38 (36.8%) gastrointestinal effects, 4/38 (10.5%) headaches, 6/38 (15.8%) musculoskeletal effects, 4/38 (10.5%) fatigue, 1/38 (2.7%) allergy and 6/38 (15.8%) for other reasons. Some patients reported various toxicities at once.
Conclusion: More than 6% of patients treated with DTG discontinued by toxicity reasons. It is important to note that half of these patients had CNS adverse effects.

PT024: Profile of prescription direct acting antivirals for hepatitis C virus in patients coinfected with HIV/HCV

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Please specify your abstract type: Research abstract
Background and objective: HCV therapy has been revolutionised recently by the approval of antiviral agents direct-acting (DAA) facilitating the treatment of patients coinfected with HIV/HCV. However, potential drug interactions and overlapping toxicities of both treatments represent the major challenges in adapting therapy. To analyse the prescription profile of direct acting antivirals (AAD) in patients coinfected with HIV/HCV.
Setting and method: Retrospective observational study from January 2015 to January 2016 in a Specialty Hospital. The data were collected from the Hospital program of clinical stories, Archinet®, and the outpatient program Farmatools®. The results were analysed using the statistical program R-commander.

Main outcome measures: Inclusion criteria: adult patients coinfected with HIV/HCV with undetectable viral load. The following variables were collected: age, gender, HCV genotype, degree of fibrosis, patient type (naïve or pre-treated), baseline CD4 count, CD4 levels end of treatment, sustained viral response (SVR) and HCV treatment.
Results: 20 patients, of whom 16 were men, mean age 52 years were included. 9 patients received Daclatasvir and Sofosbuvir for HCV, 3 patients had genotype 1a and 1b respectively, 2 patients genotype 3 and 1 patient genotype 4. 8 patients had fibrosis F3 F4, 1. Of the 9 patients 3 they had not received previous treatment (naïve) and 6 had failed to treatment. HIV treatment was modified in 8 patients, 6 patients achieved SVR. The CV was undetectable to HIV treatment change for all patients. CD4 levels increased in all patients at the end of treatment for HCV with a median of 304 cells/ul and 398 at the beginning and end respectively. 2 patients received Ombitasvir/Paritaprevir/Ritonavir and Dasabuvir, who had a genotype 1a. These two patients had received previous treatment and had a F2 and F4 fibrosis. None of them was modified HIV treatment and only one got SVR. CV remained undetectable and CD4 slightly increased after the treatment. 9 patients received Ledipasvir and Sofosbuvir, 6 patients had genotype 1a, 2 patients genotype 1b and 1 patient genotype 4. 4 patients had F4 fibrosis and 5 had F3. 9 patients had received previous treatment (naïve). The HIV treatment was modified only in one of the patients, 8 patients achieved SVR. CV increase in 2 patients after the treatment while CD4 followed the trend of increasing.
Conclusion: The AAD that caused fewer changes in the HIV treatment were Ombitasvir/Paritaprevir/Ritonavir and Dasabuvir followed by Ledipasvir/Sofosbuvir. Sofosbuvir and Daclatasvir present a greater number of interactions with HIV drugs so they behaved to a major change. More patients are needed to assess more accurately the AAD leading to a minor modification.

PT025: Effectiveness of monotherapy with a ritonavir-boosted protease inhibitor for HIV patients in clinical practice

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Please specify your abstract type: Research abstract
Background and objective: The simplification strategies reduce the amount of tablets and the toxicity in order to facilitate adherence in patients with virological suppression. The strategy more studied is monotherapy with a ritonavir-boosted protease inhibitors (PI/r).
To analyse the effectiveness of monotherapy with PI/r in pre-treated patients infected with HIV.
Setting and method: Retrospective observational study. Selected HIV patients treated with PI/r monotherapy at any time of pharmacotherapeutic history to 30/12/2015, with at least one clinical and analytical control 6 months before the beginning. Data were collected from the medical record Archinet® and outpatient Farmatools® program. Variables included were age, sex, duration of monotherapy, virological failure, treatment failure, CD4% during monotherapy.
Main outcome measures: Inclusion criteria: virological suppression for 1 year prior to the start of monotherapy, no previous IP virological failure, high CD4 count (>300 cell/ml) and a high level of drug adherence. The effectiveness is defined as the percentage of patients without virological failure (2 consecutive plasma viral load (VL) >200 copies/ml) and without treatment failure (any event causing retirement monotherapy).
Results: 141 patients with monotherapy, which represent 22% of patients with antiretroviral therapy (ART) at our institution were identified. 29 were excluded (8 co-infected with hepatitis virus, 3 with insufficient data and 18 no had more than 6 months included), including 112 patients in the analysis, with a mean age of 45 years and 60% were men. The median of time monotherapy treatment was 1.75 years (639.5 days), 89(79.4%) patients received darunavir/r and 23 (20.53%) lopinavir/r. The effectiveness of monotherapy treatment during the follow up period was 100% with undetectable PVL at follow-up. The median of CD4% over the treatment time was 794 cell/ml (34%).
Conclusion: The effectiveness of treatment with IP/r monotherapy in our hospital obtained good results. According with our results treatment adherence plays a very important role. This is a current and valid strategy that brings benefits to the patient and to the healthcare system.

PT026: Use of oncology drugs through a compassionate use in a specialty hospital

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Please specify your abstract type: Research abstract
Background and objective: The access to investigational drugs for patients who are not included in a clinical trial and without authorized therapeutic alternatives is known as compassionate use. The incorporation of the evidence-based medicine in the area of oncohaematology has implied that an important part of clinic therapy validated by evidence that could not be controlled from an administrative point of view. This is due to the continuous and progressive development of investigation and information on cancer treatment and the delay of the administration regulation. The use of drugs in this way is regulated by Royal Decree 1015/2009 (19/6).

The objective of the study is to describe the use of cancer drugs through compassionate use in the last 5 years in a specialty hospital.
Setting and method: Descriptive retrospective study on a specialty hospital. All the applications for a compassionate use drugs were analysed from January 2011 until October 2015. The data were obtained from medical records programme Diraya® and from an Excel database of medicines in compassionate use of the Pharmacy Service.
Main outcome measures: The following variables were registered:

- Number of patient clinic history
- Authorized medicine
- Authorization date
- Applicant Service

Results: We recorded 80 requests of cancer drugs in compassionate use during the 5 years of study. Oncology was the service that recorded more authorizations with 95%, followed with Gynaecology with 2.5% and finally Endocrinology and Haematology with 1.25%. 64 drugs of the 80 requests were approved (80%) and 16 unauthorized (20%) in the 5 years of study. The year in which more applications were received was 2013 (31.25%) and the least requests were received in 2012 (6.25%), being the year where all requests were authorized. In 2015 fewer applications were authorized, 75%. In the years 2011, 2013 and 2014 were authorized 88.3, 76 and 88.3%, respectively. A total of 34 different active drugs were received during the study, the most requested Bevacizumab (24%) for grade III oligoastrocytoma, ovarian cancer (monotherapy), metastatic gall bladder cancer and metastatic platinum-resistant ovarian cancer, Everolimus (18%) for indications of neuroendocrine carcinoid tumour and metastatic breast cancer, Nab-paclitaxel (18%) for invasive lobular carcinoma indications of high-grade and metastatic pancreatic cancer, ipilimumab (12%) for the indication of metastatic melanoma, and Regorafenib for indications of colorectal cancer and metastatic GIST I pre-treat with imatinib (12%).

Conclusion: The solicitude of drugs through compassionate use needs effective commissions of Pharmacy and Therapeutics, along with the Medical Management to establish an agile and faster requesting circuit and the consequent use monitoring.

PT027: Intralesional aldesleukin: treatment of skin metastasis in malignant melanoma

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Please specify your abstract type: Research abstract
Background and objective: To describe the standard procedure for the elaboration and control of a magistral formula (MF) to assess their effectiveness in two patients with cutaneous metastases of malignant melanoma refractory to other treatment.
Setting and method: Medication for compassionate use was requested for two patients of 78 and 49 years with histopathologic diagnosis of cutaneous metastases of malignant melanoma in the left thigh and left heel in which the lack of response to first-line treatments made to be valued to start with adesleukina intralesional therapy. The first week was infiltrated 3 MU (1 ml) in 5 lesions less than 1 cm, 9MU (3 ml) in the larger lesions and repeating each week until complete remission of the lesions. In the 2nd patient we proceed in the same way but the second week was infiltrated 5MU (8 ml). The following week, infiltrated 9 mml, in 15 metastases and we turn to 2 weekly infiltrations. The response was assessed by clinical disappearance of the lesions treated. Complete response (CR) is defined as a clinical disappearance of lesions and partial response (PR) greater than 50% reduction of the lesion diameter.
Main outcome measures: We performed a literature search (Pubmed, Trissel, SPC) for all studies published to determine the standard procedure for preparing and monitoring the MF (processing, preservation, stability, dose and indication).
Results: The standard procedure of preparation and quality control was carried out following the rules established in RD 175/2001. It was made in a vertical laminar flow cabinet. The Aldesleukin vial was reconstituted with 1.2 ml API (18 MU/ml) and then diluted with 4.8 ml of a solution of 0.1% albumin, 5% glucose as stabilizer, to avoid aggregate formation, preparing 1 ml syringes (3 MU/ml). It was obtained a homogeneous and clear solution without precipitate or opalescence appearance. Stable 6 days in a refrigerator (2–8° C), protected from light. Initially patients had approximately a total of 60 injuries. After 2 months of treatment it was obtained a CR of most lesions in the first patient and RP of the second patient injuries. Treatment was well tolerated. The side effects presented were only a flu-like syndrome in the second patient.
Conclusion: Intralesional administration aldeslukina has been effective in treating malignant melanoma skin metastases in our patients, allowing the extension of its use in patients with the same involvement refractory to other primary treatments. The results are similar to those of the publications consulted.

PT028: Evaluation of sofosbuvir plus daclatasvir combination for hepatitis C virus treatment

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Please specify your abstract type: Research abstract
Background and objective: Chronic infection with hepatitis virus C (HCV) affects about 170 million people worldwide and is a leading cause of liver cirrhosis and hepatocellular carcinoma. The new direct acting antivirals against HCV have revolutionized the treatment of this disease. Due to the high cost of these drugs it is necessary to assess their use in clinical practice.

To evaluate the effectiveness of Daclatasvir in combination with Sofosbuvir in patients with HCV monoinfected in a Specialty Hospital.
Setting and method: Retrospective observational study of patients who began treatment with the combination of Daclatasvir and Sofosbuvir from January 2015 to January 2016 in a Specialty Hospital. The data were collected from the Hospital program of clinical stories Archinet® and the outpatient program Farmatools®. The results were analysed using the statistical program R-commander.
Main outcome measures: The sustained virologic response (SVR) was considered the primary endpoint of the study. As secondary variables were analysed: sex, duration of treatment, naïve patients or pre-treated, degree of fibrosis, HCV genotype, concomitant use with Ribavirin, viral load (VL) before treatment and medical service.
Results: There were included 28 patients of whom 23 were men. Baseline characteristics were: 17 patients with genotype 3, 8 genotype 1b, 2 with genotype 1a and 1 genotype 4. The degree of fibrosis in the study was 15 patients with F4, F3 9 and 3 to F2. Among the 17 patients infected with HCV genotype 3, 9 had not received prior treatment (naïve) and 8 had failed therapy. The duration of the treatment was 12 weeks to 16 patients and 24 weeks for 12 patients. Only 7 patients receiving Ribavirin of these 5 had genotype 3 and 2 genotype 1b. From Ribavirin patients it was greater the number of patients in whom the treatment duration was 24 weeks (6 patients versus 1 with p-value = 0.008151). The Digestive Service attended to 17 patients while 11 patients were followed by Infectious. The median CV was 3,067,940 IU/ml. SVR was achieved in 81.2% of patients with HCV genotype 3 in 87.5% with genotype 1b and 100% with genotype 4 and 1a. After 12 weeks of treatment 61% of patients achieved SVR and 39% after 24 weeks. Only one patient died during treatment.
Conclusion: The results are similar to those obtained in clinical trials. SVR has not been influenced by HCV subtype, duration of treatment, degree of fibrosis, pre-treatment or by concomitant use of Ribavirin. Further studies are needed to evaluate the efficacy of this treatment.

PT029: Innovative Canadian pharmacogenomic screening initiative in community pharmacy (ICANPIC) study

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Please specify your abstract type: Research abstract
Background and objective: The safety and efficacy of medications can vary significantly between patients as a result of genetic variability. As genomic screening technologies become more widely available, pharmacists are ideally suited to utilize this tool to optimize medication management. The objective of this study is to evaluate the feasibility of implementing personalized medication services into community pharmacy practice and to assess the number of drug therapy problems identified as a result of pharmacogenomic screening.
Setting and method: The study was designed as open-label, non-randomized, and observational. Two community pharmacies in Toronto, Ontario offered pharmacogenomic screening as part of their professional services program. Prior to initiation, participating

pharmacists received structured, comprehensive training in pharmacogenetics. Pharmacists then facilitated voluntary subject enrolment among patients who they believed would benefit from screening and met inclusion criteria. Eligible patients received a simple buccal swab followed by DNA analysis using PillCheck®. PillCheck® is a genotyping assay that translates genomic data and generates a personalized, evidence-based, report that provides insight into patients' inherited drug metabolic profile. Upon receiving the report, pharmacists invited patients back to the clinic for interpretation of the results. Clinically significant drug therapy problems were identified and recommendations for medication optimization were forwarded to the primary care physician.

Main outcome measures: Number of clinically significant drug therapy problems identified by pharmacists as a result of pharmacogenomic testing.

Results: 100 patients were enrolled in the study. Average age was 57.4 years and patients were taking a mean of 5.6 chronic medications. Pharmacists cited the most common reasons for testing as ineffective therapy (44.6%), to address an adverse reaction (35.5%), and to guide initiation of therapy (11.8%). An average of 1.3 drug therapy problems were identified per patient. Pharmacist recommendations included change in therapy (57.1%), dose adjustment (14.3%), discontinuation of a drug (7.1%), and increased monitoring (19.6%). Generally, physician feedback was positive but did reveal an opportunity for a broader understanding of the technology.

Conclusion: These results highlight the readiness of community pharmacists to adopt pharmacogenetic screening into practice and their ability to leverage this novel technology to positively impact medication management. Community pharmacists are ideally suited to both offer personalized medication services and interpret genomic results.

PT030: Medication reconciliation: relationship between omission errors of eye drops treatment and delirium

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: Visual impairment is a common geriatric syndrome and glaucoma/miotic eye drops treatment is a frequent therapeutic option. Pharmacist's role in medication reconciliation is an effective process for reducing medication errors and supporting safe medication use.

We observed that mentioned medication reconciliation was occasionally not performed during hospital stay and could be cause of delirium because of visual impairment. The aim of this study was to evaluate the influence of omission errors of eye drops treatment on incidence of acute confusional state.

Design: We conducted an observational, descriptive and retrospective study in an Orthogeriatric Unit with an average of 600 patients with hip fractures per year (95% surgically treated). Data collection was performed from June 2015 to March 2016.

Reconciling medications at admission was performed by implementing the tools and resources of The Canadian Patient Safety Institute (CPSI).

We extracted from our electronic database (Filemaker Pro®):

- Demographic patient data (age and gender).
- Name and posology of the glaucoma/miotic eye drops treatment.
- Medication reconciliation performed and identification of professional in charge (pharmacist, geriatrician or orthopaedic surgeon) registration during hospital stay.
- Protocolar management of delirium with tiapride occasional intramuscular administration performed if necessary was also registered to establish the incidence of acute confusional state.

Results: Thirty-two patients (26 women and 6 men) were included, median age 86 year-old [76–98]. In 21 patients, eye drops reconciliation treatment was performed by the pharmacist in 17 of the 21 patients, the geriatrician in 3 cases and the orthopaedic surgeon in 1. In 11 patients, the mentioned medication reconciliation was not performed (pharmacist absentism).

Considering the 21 patients on eye drops treatment during hospital stay, 4 (19.0%) of them suffer from acute confusional state. On the other hand, among the 11 patients without medication reconciliation, delirium was registered in 7 cases (63.6%).

Concerning ocular topic treatment, 2.4 $\pm$ 1.1 active principles per patient were observed, being the most frequent timolol (68.8%), brinzolamide (40.6%) and latanoprost (37.5%).

Conclusion: We consider of paramount importance the pharmacist evaluation availability at an Orthogeriatric Unit, minimizing the impact of acute confusional state during hospital stay by medication reconciliation.

PT031: Post-lung transplantation supportive care and haemorrhagic rectocolitis disease: what is the therapeutic strategy?

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: To report the therapeutic management of haemorrhagic rectocolitis onset in a lung-transplanted patient with mycophenolate-induced diarrhoea.

Design: Case report.

Results: A 54-year-old-man lung transplant patient for alpha 1-antitrypsin deficiency in 2003 receiving mycophenolate mofetil, tacrolimus and corticosteroid developed chronic diarrhoea worsened by sigmoid and cecal necrosis in 2011, and treated successfully by sigmoidectomy. Severe diarrhoea attributed to mycophenolate mofetil reappeared in April 2015, which motivated a switch to mycophenolate sodium. The absence of clinical improvement in June 2015 led to stop mycophenolate sodium and introduce azathioprine at 100 mg/day (absence of mutation for the ThioPurine Methyl Transferase gene). One month later, the patient presented melena, diarrhoea, bloating, nausea, and knee pain, attributed to azathioprine. This latter was stopped and mycophenolate mofetil was rechallenged associated with symptomatic treatment (i.e., diosmectite and loperamide). In January 2016, a colonoscopy, performed in a context of profuse chronic diarrhoea with mucus during 3 months, highlighted haemorrhagic rectocolitis. Therefore, the patient initiated sulfazalasine therapy with no clinical improvement, and then high doses of oral corticosteroids. Because high-dose of oral corticosteroids was not recommended as a long-term treatment, mercaptopurine was proposed as a new therapeutic option.

Mercaptopurine has no indication as an immunosuppressive treatment in solid organ post-transplant supportive care. However, as the active metabolite of azathioprin, an immunosuppressive drug

widely used in transplantation, mercaptopurine has immunosuppressive functions towards T-lymphocytes. After multiprofessional collaboration between gastroenterology, pneumology and pharmacy specialists, it was decided to stop mycophenolate mofetil and introduce mecaptopurine at 1.5 mg/kg/day, as immunosuppressant for haemorrhagic rectocolitis as well as lung transplantation. This unusual lung transplant immunosuppressive therapy, associated with tacrolimus, improved digestive disorders and patient's quality of life. Currently, mercaptopurine is biologically and clinically well tolerated. The dosage of blood residual concentrations of purinethol metabolites (6-thioguanine and 6-methylmercaptopurine) is going to be performed.

Conclusion: Immunosuppressive therapy in solid organ transplantation is a real challenge for patients who have comorbidity onset. Despite a lack of data in the literature, a multidisciplinary collaboration based on comprehensive pharmacology skills is essential to choose the best therapeutic option in this type of patients.

PT032: Risk of drug interaction between complementary medicines and cancer treatments in a French oncology department

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Please specify your abstract type: Descriptive abstract (for projects)
Background and objective: The use of Complementary Medicines (CM) in oncology is the subject of broad but still controversial interest. A large part of patients with cancer uses CM, including complementary drugs, during their treatment period. Indeed, according to different studies, this proportion ranges from 18 to 83%. Importantly, the risk of interaction between CM and anti-cancer drugs is not negligible; hence we need to identify these CM to ensure the security of our patients and the success of their treatment.
Design: To achieve this purpose, a monocentric retrospective analysis was conducted with collection of data by pharmacy students during medication reconciliation of hospitalized patients from January to June 2016. Collected data are patients' characteristics, prevalence of CM use and potential CM-anticancer drug interactions.
Results: 161 patients were included in the study (91 men–70 women); median age was 65 [34–88 years]. A total of 24.2% (n = 39) were using a least one CM, most frequently homeopathy (62%, n = 24) or phytotherapy (36%, n = 14); some patients were using a combination of two CM (41%, n = 16). CM are mainly used by women in comparison to men (32.9% versus 17.6% and $p = 0.025$, Chi square test). For phytotherapy, at least 36 different herbs were described by patients and among them the most frequently used were mistletoe (*Viscum album*), propolis and fireweed (*Epilobium angustifolium*). Data analysis showed that 23% (n = 9) of patients were at risk of potential CM-anticancer drug interaction. Moreover this risk was increased to 50% if we considered only patients taking phytotherapy. Interactions included pharmacokinetic (15%, n = 3), such as altered hepatic metabolism, and pharmacodynamics ones (85%, n = 17).
Conclusion: In conclusion, our work clearly demonstrates that the use of CM by patients is associated with high risk of relevant drug interaction with their anti-cancer treatment. Even if further investigations are necessary to clarify the clinical impact of these interactions, the use of CM must be considered during prescribing process.

PT033: Clinical trials with direct oral anticoagulants for stroke prevention in atrial fibrillation: are they representative for real life patients?

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Please specify your abstract type: Research abstract
Background and objective: Since their reimbursement, the direct oral anticoagulants (DOACs) are increasingly used for stroke prevention in atrial fibrillation (AF). The objective of this study was to identify the proportion of real life patients with AF eligible for DOAC therapy, based on the inclusion and exclusion criteria used in the clinical studies and based on the officially approved indications as mentioned in the Summary of Product Characteristics (SmPC).
Setting and method: Data for this retrospective cross-sectional study was extracted from the UZ Brussel Stroke Registry, containing anonymized data of 2205 patients with a suspected stroke. Characteristics of patients with documented AF were compared with the patient characteristics in clinical trials and the approved indications in the SmPC.
Main outcome measures: Proportion of real life patients with AF eligible for DOAC therapy.
Results: Data of 468 patients with AF was analysed. Based on the selection criteria of the clinical trials, significantly less patients were eligible for treatment with rivaroxaban compared to dabigatran etexilate (39.3% versus 47.6%; $p = 0.010$), but not compared to apixaban (45.5%; $p = 0.055$). Based on the indications and contraindications in the SmPC, significantly fewer patients were eligible for apixaban compared to dabigatran etexilate and rivaroxaban (62.0% for apixaban, 72.9% for dabigatran etexilate and 75.6% for rivaroxaban; $p < 0.001$ and $p < 0.001$, respectively). Significantly more patients were eligible for DOAC therapy based on the indications and contraindications in the SmPC compared to the inclusion and exclusion criteria of the clinical trials (72.9% versus 47.6%; $p < 0.001$ for dabigatran; 75.6% versus 39.3%; $p < 0.001$ for rivaroxaban and 62.0% versus 45.5%; $p < 0.001$ for apixaban).
Conclusion: When taking into account the selection criteria from the pivotal clinical trials with DOACs for stroke prevention in AF, less than half of real life patients are eligible for therapy with one of the DOACs. However, the indications mentioned in the SmPCs of these drugs are less strict.

PT034: Analysis and review of patients with idiopathic pulmonary fibrosis treated with pirfenidone

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Please specify your abstract type: Research abstract
Background and objective: Idiopathic Pulmonary Fibrosis (IPF) is a disease in which tissue deep in the lungs becomes thick and stiff, or scarred, over time. The formation of scar tissue is called fibrosis. Pirfenidone is an anti-fibrotic and anti-inflammatory agent, thus offers a new hope for treating progressive fibrotic diseases.

Our objective is to set a description of Idiopathic Pulmonary Fibrosis patients treated with Pirfenidone, as well as the adverse reactions observed.
Setting and method: Descriptive study in which all patients have received Pirfenidone. The data were obtained through the dispensing program of outpatient (Farmatools) and review of medical records of the hospital database (Archinet) and clinical station (Diraya).
Main outcome measures: We have extracted from each patient baseline data, comorbidities, dose received, reported adverse reactions and data about haematology and biochemistry.
Results: We have a total amount of 5 patients treated with Pirfenidone, all diagnosed with Idiopathic Pulmonary Fibrosis, including 2 women and 3 men. The age of patients is between 66 and 81 years, with an average of 70.8 years. All patients are ex-smokers and one of them is also ex-alcoholic.

Concerning concomitant pathologies, 3 patients have Diabetes Mellitus, 2 have arterial hypertension, and one of them has ischemic heart disease. Another has upper gastrointestinal bleeding prior, among others chronic pathologies.

Pirfenidone dose received was the usual dose in 4 of the 5 patients: days 1–7 267 mg every 8 h, days 8–15 534 mg every 8 h and a maintenance dose of 801 mg every 8 h. In one patient due to its low IMC the dose received was smaller (1–7 days 267 mg every 12 h, days 8–15 267 mg every 8 h and maintenance dose of 534 mg every 8 h).

In relation with the adverse effects, digestive discomfort were observed in 2 of the 5 patients, causing the interruption of the treatment in one of them (with prior gastrointestinal bleeding). In the other patient it was relieved by lowering the dose received. Also, one patient has experienced photosensitivity. Alterations in transaminase levels were observed in 2 patients but that didn't force to discontinue the treatment. No alterations were observed in the blood count.
Conclusion: Treatment with Pirfenidone is being generally well tolerated by patients. It has improved their life-quality and reached the objective data of a slowdown in disease progression.
Currently, the number of patients is no enough to give conclusive information in relation to the drug effectiveness.

PT035: Analysis and review of patients with a magistral formula of sodium cromoglycate 200 mg without excipients

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Please specify your abstract type: Research abstract
Background and objective: To describe the total amount of patients treated with a magistral formula of sodium cromoglycate 200 mg without excipients: indications, concomitant therapy and the response to therapy.
Setting and method: We run a descriptive study in which we included the totality of patients in treatment with a magistral formula of sodium cromoglycate 200 mg without excipients in a tertiary hospital. The data were obtained through Paracelso (development of magistral formulas program), as well as with Farmatools (dispensation program of outpatient) and the review of medical records from the hospital database (Archinet), and Diraya clinical station.
Main outcome measures: From each patient we extracted data relative to sex, age, diagnosis, time in treatment with the formula, dose received, response to therapy, concomitant antihistamines treatments and adverse effects.
Results: A total of 9 patients in treatment with a magistral formula of sodium cromoglycate 200 mg without excipients were reviewed: 2 women and 6 men with a mean age of 45.3 years old (range 38–59 years).

Regarding the indication of the prescription, 3 patients have been diagnosed of indolent systemic mastocytosis and the remaining 5 were diagnosed of mast cell activation syndrome. In all cases, the diagnosis was established by examination of the bone marrow in the Mastocytosis Studies Institute of Castilla la Mancha (Spain).

On average, patients took the treatment 12.75 months, with a range between 3 months and 24 months. The dose received was 200 mg every 8 h in 7 patients, having to be increased to 400 mg 3 times daily in a case with poor response to the therapy. In the remaining patients, the treatment response has been optimal. In relation to the concomitant anti-allergic treatment received, 6 patients took fexofenadine daily during the study.

No cases of adverse effects related to the therapy received have been reported.
Conclusion: Both indolent systemic mastocytosis and mast cell activation syndrome are considered rare diseases, and we should indicate that in Spain there are no commercial medicines available of Sodium Cromoglycate without excipients for its treatment. The treatment with this magistral formula of sodium cromoglycate 200 mg without excipients has been effective and well tolerated in all patients, improving the symptoms associated with their condition as well as their quality of life, and also, assuming a solution to the lack of marketing of the drug currently in Spain.

PT036: Profile of prescription, safety and effectiveness of the new therapies for hepatitis C in patient with genotype 1b

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Please specify your abstract type: Research abstract
Background and objective: To analyse the prescription profile, safety and effectiveness of new therapies available for the treatment of HCV genotype 1b in a tertiary hospital.
Setting and method: We run a retrospective observational study in which we included a total amount of 59 patients infected with HCV genotype 1b treated with the new therapies against HCV from February 2015 to December 2015 in a tertiary hospital.
The data were obtained through the outpatient dispensing program Farmatools and the review of the medical records from the hospital database, Archinet and Prescription Hepatitis C Portal of the Andalusian Health Service.
Main outcome measures: From each patient the following information was collected: sex, age, viral genotype (gen.), Naive/non-naive, HIV coinfection, presence of cirrhosis, degree of hepatic fibrosis measured by Fibroscan, treatment prescribed and duration, adverse effects, sustained viral response (SVR) and the service that made the prescription.
Results: A totality of 59 patients with HCV gen. 1b were reviewed which 64.4% of them were men with a mean age of 58.76 years (range 38–78 years). 21 of the patients were naive and only 2 of them were HIV co-infected, there were a 57.63% of cirrhotic patients. Regarding the degree of hepatic fibrosis, 36 patients had grade F4, F3 grade 13 patients, 8 patients grade F2 and F1 grade 2 patients.
The most commonly therapy prescribed was Lepidasvir + Sofosbuvir in 28 patients (14 without Ribavirin and with Ribavirin 14) using a treatment schedule of 12 weeks in 23 of them. The treatment was discontinued in one case because of the adverse effects, achieving

SVR in the remaining patients. The combo treatment with Paritaprevir/Ombitasvir/r + Dasabuvir was prescribed in 16 times (10 without Ribavirin and 6 with Ribavirin) choosing only in one of them for a treatment period of 24 weeks. There were no treatment discontinuations and SVR was achieved in all patients treated in this way. 8 patients received Simeprevir + Sofosbuvir for 12 weeks (3 without Ribavirin and 5 with Ribavirin), one patient of the left the treatment due to adverse effects. SVR was found in the remaining patients who completed treatment. Sofosbuvir + Daclatasvir was prescribed to 5 patients, associating Ribavirin in only one case. A treatment duration of 12 weeks was used in 3 patients and 24 weeks in the remaining two. One patient failed RVS without any incidences of adverse effects in any case. Interferon + Ribavirin sofosbuvir + was prescribed to 2 patients in 12-week regimen which was well tolerated achieving SVR. Digestivo service treated the 83% of the total amount of patients.

Conclusion: New therapies for HCV have been used in all the treated patients and the older drugs have been relegated. About the effectiveness, SVR was achieved in 98.30% of patients. Regarding the safety, only 2 patients have discontinued the treatment due to adverse effects representing less than 5% dropout rate of the therapy.

RD001: Bisphenol A exposure and its chlorinated derivatives in patients treated by on-line hemodiafiltration

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Please specify your abstract type: Research abstract

Background and objective: The health safety conditions governing the practice of on-line hemodiafiltration (HDF-Ol) are well- defined but do not yet incorporate the risks related to the presence of endocrine disruptors (ED) such as bisphenol A (BPA). Our recent work in haemodialysis (HD) has nonetheless demonstrated its presence in dialyzers and in the ultrapure water used to produce the dialysate. The aim of this new study is to assess for the first time exposure not only to BPA but also to its 4 chlorinated derivatives (Clx-BPA) (100 times more estrogenic than BPA): mono-, di-, and tri tetra-chloro-BPA during treatment with HDF-Ol.

Setting and method: Samples were taken from the ultrapure water processing loop and then at different stages of production of the dialysate and the substitution liquid (LS). We also quantified the BPA provided by the dialyzers used in HDF-Ol at our institution. The assays were performed using a LC–MS/MS technique.

Main outcome measures: Our results demonstrate that BPA is produced not only by the equipment used in HDF-Ol (Dialyzers, ultrafilter, concentrated cartridges), but also by the water used to produce the dialysate and the LS, which are also contaminated with BPA-Clx via ultrapure water.

Results: BPA and its Clx-BPA were detected at the inlet of the water treatment plant and at each stage of purification (on average 3.2, 0.3, 12.0, 0.2, 0.9 ng/L respectively for BPA, the mcBPA, dcBPA, tcBPA and ttBPA). BPA was found in the dialysate (39 ng/L) and LS (1033 ng/L) wherein the concentration of BPA decreases over time to reach 265 ng/L at the end of a session. Finally, BPA was present in all tested dialysis at concentrations of up to 149.0 ng/dialyzer in the compartment mimicking the blood and to 174.0 ng/dialyzer in the dialysate despite prior rinsing with 2L of 0.9% NaCl.

Conclusion: Our study is the first one to show the risk of exposure to BPA and BPA-Clx HDF-Ol. While assessment of the impact of this exposure in a patient under treatment remains to be done, it is now possible to better master contamination by BPA and its four chlorinated derivatives through better practices (choice of medical devices) and improvement of the overall water treatment process.

RD002: Implementing pharmacogenetics in a hospital pharmacy

Xando Díaz-Villamarín[1], Cristina Lucía Dávila-Fajardo[1], Luis Javier Martínez-González[2], Patricia Moreno-Raya[1], Alejandro Rodríguez-Delgado*[,1], José Cabeza-Barrera[1]

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: Thanks to pharmacogenetics we can identify and predict different responses to the same drug among different individuals. During these last years we have noted a big increase of dosing guidelines and advices about the use of several drugs due to the influence of different polymorphisms.

The aim of this study is to describe and evaluate the use of pharmacogenetics in our hospital from April 2012, when we started our first research about pharmacogenetics, to the actual time, using these information in our daily clinical practice; and indeed quantify the number of different tests and the number of different clinical advices done because of pharmacogenetic information, by different healthcare specialty areas and drugs.

Design: we reviewed all the pharmacogenetic test requests in our Hospital from April 2012 to April 2016, noting which health specialty and for which drug was asked the test. Polymorphisms were genotyped using TaqMan® genotyping assays technology by 2 independent laboratories to confirm the results.

Results: From April 2012 we were asked for 2208 pharmacogenetic tests from 7 different healthcare specialty areas: Rheumatology (9.78%), Infectious diseases (1.49%), Oncology (3.53%), Cardiology (71.51%), Vascular surgery (5.11%), Neurology (4.53%), Ophthalmology (4.03%); this information was asked about 5 different drugs: Clopidogrel (81.16%), Trastuzumab (3.53%), Ranibizumab (4.03%), Azathioprine (2.99%) and Tocilizumab (8.29%). From all the genotypes, 713 (32.29%) were done after using the drug (study phase) and 1495 (67.71%) were done previous to the use of the drug in daily clinical practice to make a "clinical recommendation"; from these recommendations 1429 affected to the prescription of Clopidogrel.

Conclusion: During the last 4 years we could implement the use of pharmacogenetics in the daily clinical practice in our hospital in 5 different healthcare areas affecting 2 drugs and we started research studies previous to its use on the clinical practice for other three different drugs.

RD003: Development of the Drug Burden Index tool for use in an Irish population of older people with intellectual disability

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Please specify your abstract type: Descriptive abstract (for projects)

Background and objective: The Drug Burden Index (DBI) is a tool used to quantify the anticholinergic and sedative burden of medication on an individual. It has been independently associated with poor physical and cognitive performance in community-dwelling older people. Objectives were: to create an inventory of medications used in

Ireland with clinically significant anticholinergic and/or sedative activity and to decide upon the Minimum Daily Dose (MDD) for each medication.
Design: Medications with potential anticholinergic and/or sedative burden were identified by literature review and examination of the Summary of Product Characteristics (SmPC) for all medications registered in Ireland. Each medicine was classified as anticholinergic or sedative. Drugs with both anticholinergic and sedative properties were classified as primarily anticholinergic. The MDD, a key component of the DBI score calculation, was selected by reference to the Irish SmPC. Other options which were also considered for this value include the defined daily dose (DDD) of a medication, as available from the World Health Organisation (WHO), and the MDD as outlined in the British National Formulary (BNF). MDDs were decided upon regardless of indication as the lowest effective therapeutic dose as specified in the SmPC for the medication. The final list of medicines and MDDs to be included in the inventory was then defined by consensus of three pharmacists.
Results: In total, 383 medicines with potential anticholinergic and/or sedative activity were considered for inclusion. A final list of 258 medications was identified by consensus (117 anticholinergic, 141 sedative). Of these, 128 (50%) were agents which act primarily on the nervous system. The three main therapeutic groups contributing to the inventory of DBI medications were antipsychotics (25 medications), antidepressants (21 medications) and antiepileptics (20 medications).
Conclusion: Creation of an inventory of medications with anticholinergic and/or sedative properties, in combination with the individual MDDs, was achieved. This is a useful resource for use in analysis of drug burden in an older population. It could help in both identifying patients who would benefit from medication review as well as analysing population medication data.

TDMP005: Vancomycin dosing: comparison of trough values estimated between a prediction mathematical method versus Bayesian bicompartimental model

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Please specify your abstract type: Research abstract
Background and objective: Vancomycin is an antibiotic widely used to treat infections such as bacteraemia, infective endocarditis, osteomyelitis, meningitis and pneumonia. Nowadays, optimal trough concentration is stablished between 10 and 15 mg/L to avoid development of resistance or 15–20 mg/L to improve penetration in complicated infections. Some articles[1] have been published explaining the methodology to calculate an expected trough level in steady state. Our aim was to compare the trough serum value estimated by the mathematical method with a two-compartimental Bayesian forecasting model.
Setting and method: Observational retrospective study carried out in a tertiary hospital from January to December 2015. Non obese adult patients with creatinine clearance (CrCl) < 120 ml/min and who have achieved steady state level were included. Vancomycin serum values were measured using a chemiluminescence's immunoassay (CMIA) and Bayesian analysis was performed with Abbottbase PKSystem® (Pks®). The statistical analysis was made with MedCalc Software®. Bland–Altman plot and Passing-Bablok regression were used to compare both methods.
Main outcome measures: sex, age, weight, dose, creatinine, and size were collected from clinical history. Serum trough values (CminR) were collected from CMIA. Trough values were estimated using two methods: mathematical method (CminF) and Bayesian calculations (CminB).
Results: 50 patients were included, with a mean age of 61 (±16.17) years. 52% were male and 48% female. They received a median dose per 24 h of 2000 (1000–3000) mg. The mean of CminR was 17.21 mg/L (95% CI 13.86–20.58), CminB 17.28 mg/L (95% CI 13.87–20.69), CminF 18.21 (95% CI 14.2399–22.1856). Correlation coefficients (r) comparing both methods were significantly different: r between Cminf and Cminr was 0.75 (95% CI 0.5866–0.8467), while r between Cminb and Cminr was higher: 0.99 (95% 0.9900–0.9968). Bland-Alman plot analysis showed both methods cannot be used interchangeably. The regression equations estimated by Passing-Bablok regression were $y = -3.873368 + 1.309775x$ and $y = -0.110207 + 1.003266x$.
Conclusion: Bayesian method has demonstrated better correlation with real measures than mathematical method. Most part of our patients could be underestimated or overestimated using mathematical methods which could cause toxicity or lack of efficacy, so this method is unsuitable for clinical use. Bayesian estimation remains the best option for optimal dosing of vancomycin.

Reference

1. C. Andrew DeRyke et al. Optimizing Vancomycin Dosing Through Pharmacodynamic Assessment Targeting Area Under the Concentration-TimeCurve/Minimum Inhibitory Concentration. Hospital Pharmacy. Volume 44, Number 9, pp 751–765

TDMP006: Comparison of area under the curve estimated between a prediction mathematical method versus Bayesian bicompartimental model

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Please specify your abstract type: Research abstract
Background and objective: 24-h area under the curve/minimum inhibitory concentration (AUC/MIC) is actually the most useful pharmacokinetic/pharmacodynamic parameter to predict vancomycin efficacy. The Infectious Diseases Society of America (IDSA) recommended that vancomycin antibiotic exposure (AUC24/MIC) should be over 400. However, because of the difficulty of gathering the available information in the clinical setting to calculate AUC/MIC, some authors[1] have published articles explaining the method to calculate AUC in steady state with mathematical equations. Our aim was to compare the AUC estimated by mathematical method with a two-compartimental Bayesian forecasting model.
Setting and method: Observational retrospective study carried out in a tertiary hospital from January to December 2015. Non obese adult patients with creatinine clearance (CrCl) < 120 ml/min and who have achieved steady state level were included. Vancomycin serum values were measured using a chemiluminescence's immunoassay (CMIA) and Bayesian analysis was performed with Abbottbase PKSystem® (Pks®). The statistical analysis was made with MedCalc Sofware®. Bland–Altmann plots and Passing-Bablok regression were used to compare both methods.
Main outcome measures: age, weight, dose, creatinine, and size were collected from clinical history. Area under the curve (24 h) was

estimated using the mathematical method (AUCF) and Bayesian calculations (AUCB).
Results: 50 patients were included, with a mean age of 61 (±16.17) years. 52% were male and 48% female. They received a median dose per 24 h of 2000 (1000–3000) mg. The mean of AUCB was 632.56 mg/L*h (95% CI 543.90–721.22) and AUCF 648.3154 mg/L*h (95% CI 554.88–741.75). Correlation coefficient (r) between AUCF and AUCB was 0.79 (95% CI 0.6574–0.8764). Bland–Altmann plots analysis: mean difference = 15.8, limits of agreement 422.9 and −391.4. The regression equation estimated by Passing-Bablok was y = 44.413383 + 0.929528x.
Conclusion: both methods estimate practically the same mean value of AUC with an acceptable correlation coefficient. However, Bland–Altmann plots and Passing-Babloq regression showed the two methods may not be used interchangeably because the differences observed could have important clinical implications in the efficacy and toxicity of antibiotic treatments. Moreover, this observed differences in AUC can be accentuated if MIC > 1. So, Bayesian estimation remains the best option for optimal dosing of vancomycin.

Reference

1. C. Andrew DeRyke et al. Optimizing Vancomycin Dosing Through Pharmacodynamic Assessment Targeting Area Under the Concentration-TimeCurve/Minimum Inhibitory Concentration. Hospital Pharmacy. Volume 44, Number 9, pp 751–765

TDMP007: Acenocoumarol influence on digoxin serum concentration in patients with atrial fibrillation

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Please specify your abstract type: Research abstract
Background and objective: Combination therapy with digoxin and acenocoumarol is common in patients with atrial fibrillation (AF). Getting optimal concentrations of digoxin leads an appropriate response; taking into account its narrow therapeutic range and all the factors which can affect to its pharmacokinetics.

Interaction between them has been studied, even though its mechanism is not clear yet. Patients who are taking both drugs need higher doses of digoxin; because they get lower concentrations by using the same dosage.

The objective of this study was to analyse digoxin concentrations in patients treated with this combination compared to expected concentrations according to population parameters.
Setting and method: Retrospective observational study from December 2015 to March 2016 performed by Pharmacokinetic Unit. Patients included had chronic treatment with acenocoumarol and digoxin, which determination were realized in the steady state before the next dosage. Patients with toxics concentrations of digoxin, or who were suspected nonadherence, were excluded.

The plasma digoxin concentrations were determined through the autoanalyzer Architect c-4000® (PETINIA). Dosage adjustment was realized by the program Abbot Pharmacokinetics System (PKS).

A comparative between the real measured concentrations in patients and estimated concentrations were realized based on population parameters. Finally, in order to get optimal concentrations, some dosage changes were proposed based on pharmacokinetic monitoring.

Data collected: population characteristics (gender, age, weight, and height), analytical data (potassium, urea, creatinine and clearance).
Main outcome measures: Digoxin serum concentrations (Optimal range 0.8–1 ng/mL).
Results: Data from 73 patients, 65.8% women with a mean (SD) age of 77.84 (9.07) years were included in the study.

At baseline, potassium, urea, creatinine and clearance mean (SD) was 4.43 (0.52) mmol/L; 55.99 (34.05) mg/dL; 0.96 (0.39) mg/dL; 48.76 (22.14) mL/min.

69.86% of the patients had lower concentrations than expected according to population parameters. Finally, digoxin dosage was increased in 41.07% of patients, it was maintained in 47.96%, and it was decreased in 10.97%.
Conclusion: Digoxin concentrations in patients with AF in combination therapy of digoxin and acenocoumarol are lower than would be expected in most cases. It is important monitoring digoxinaemia to achieve optimal concentrations and a good clinical response. Further studies are needed to determine the relevance of this interaction in clinical practice.

TDMP008: The IL-6 G>C genetic polymorphism (rs1800795) on the response to Tocilizumab at 3, 6, 9 and 12 months

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Please specify your abstract type: Research abstract
Background and objective: Tocilizumab (TCZ) is a humanized monoclonal antibody inhibitor of IL-6 receptor, indicated in combination with Methotrexate in the treatment of rheumatoid arthritis (RA) in patients with inadequate response or intolerance to prior therapy. Interleukin 6 is involved in the pathogenesis of rheumatoid arthritis via its broad effects on immune and inflammatory responses. Previous studies have shown that C-allele at the −174G>C (rs1800795) polymorphism is related with a bad response to Tocilizumab (according to EULAR criteria). The aim of our study was to explore the potential role of *IL-6* genetic polymorphisms as a predictor of Tocilizumab efficacy in rheumatoid arthritis (RA) patients and check this association depending on the genotype.
Setting and method: The IL-6 (G>C) (rs1800795) genetic variant was genotyped using predesigned TaqMan® genotyping assays technology and analysed on a ViiA7® Real-time PCR system.
Main outcome measures: Clinical response was evaluated at 3, 6, 9 and 12 months according to the EULAR criteria. Patients were classified as "responders" (Good and moderate response according to EULAR criteria) and "non-responders". The statistical analysis was performed using SPSS v.20.
Results: We recruited 163 patients with RA treated with Tocilizumab, these were aged 54.02 ± 11.11 (mean ± SD), 132 (81%) were women. The mean DAS28 at baseline was 5.66 ± 1.14. Of these 163 patients, the IL-6 G>C genetic polymorphism was significantly associated with "responders" at 3 months after the baseline (CC vs non-CC $p = 0.039$, OR 0.270, 95% CI 0.072–1.005) but not at 6 ($p = 0.666$), 9 ($p = 0.233$) and 12 ($p = 0.244$) months.
Conclusion: The IL-6 G>C may be useful as a genetic marker of Tocilizumab efficacy at 3 months. Other polymorphisms, clinical parameters and other pharmacological treatment during the follow-up may be checked about their influence on the response to Tocilizumab.

TDMP009: CYP2C19*2,*3 polymorphisms in the response to clopidogrel after percutaneous transluminal angioplasty or stroke

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Please specify your abstract type: Research abstract
Background and objective: Clopidogrel is metabolized by the isoenzyme CYP2C19 to its active metabolite responsible of the inhibition of platelet aggregation. CYP2C19*2 and CYP2C19*3 polymorphisms have been associated to a worse response to Clopidogrel in patients after an acute coronary syndrome (ACS) and peripheral vascular disease but not in patients after Stroke. The aim of this study is to compare the apparition of stroke, ACS, cardio-vascular death and the need of surgery in patients after percutaneous transluminal angioplasty (PTA) or stroke depending on the presence of CYP2C19*2*3 polymorphisms.
Setting and method: Retrospective cohort study. We recruited patients treated with Clopidogrel after a PTA of the lower limb or stroke (without surgery) from 2010 to 2013 in our hospital. Data collected: Age, sex, CYP2C19*2 (rs4244285) and CYP2C19*3 (rs4986893) genotypes and the primary end-point: stroke, ACS, CV death and surgery of the affected vessel during 12 months after discharge. Polymorphisms were genotyped using TaqMan® genotyping assays technology.
Main outcome measures: We recruited 58 patients with stroke (62.07% men; mean age 68.30) and 72 patients after PTA (77.7% men; mean age 67.44) treated with Clopidogrel after discharge.
Results: Among patients with stroke: 25.9% of them had at least a copy of the CYP2C19*2 allele and no one had the CYP2C19*3 allele; only 4 of these patients (6.8%) suffered the primary end-point during 12 months after discharge; 1 of these patients had the CYP2C19*2 allele. Among patients with PTA of the lower limb: 25% of them had the CYP2C19*2 allele and no one a CYP2C19*3 allele; 25 (34.72%) of these 72 patients suffered the primary end-point during 12 months after the discharge and 11 of these had the *2 allele of the CYP2C19 isoenzyme. Patients with PTA of the lower limb with the CYP2C19*2 allele shown a higher risk of the primary end-point than those patients CYP2C19 *1/*1 (O.R. = 4.49 (1.45–13.84) $p = 0.009$. This not happened after stroke ($p = 0.967$)
Conclusion: Patients after a PTA with at least a copy of the CYP2C19*2 allele and treated with Clopidogrel have a higher risk of the primary end-point than those patients not carrying it. This not happens after stroke.

TDMP010: FCGR3A (A>C) (rs396911) single nucleotid polymorphism and the efficacy of tocilizumab in rheumatoid arthritis patients

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Please specify your abstract type: Research abstract
Background and objective: The engagement of FcGRs by TNF antagonists could affect to macrophage-mediated clearance of immune-complexes. The aim of our study was to evaluate the potential role of *FcGR3A* (A>C) (rs366911) single nucleotide polymorphism (SNP) as a predictor of Tocilizumab efficacy in rheumatoid arthritis (RA) patients.
Setting and method: The *FcGR3A* (A>C) (rs366911) SNP was genotyped using predesigned TaqMan® genotyping assays technology and analysed on a ViiA7® Real-time PCR system. The statistical analysis was performed using SPSS v.20.
Main outcome measures: Clinical response was assessed at 24 weeks with the DAS28 scale. The end-point was a change in DAS28 (cDAS28).
Results: Clinical data from 140 patients treated with tocilizumab were obtained. The mean age of the patients was 53.25 ± 12.42 years and 79% were women. The mean DAS28 at baseline was 5.71 ± 1.13. We found no statistically significant association between our end-point and the genetic polymorphisms studied (no AA vs AA $p = 0.94$, OR 0.84, 95% CI 0.15–4.55; no AC vs AC $p = 0.68$, OR 0.77, CI 95% 0.14–4.15; CC vs no CC $p = 0.43$ OR 0.82, 95% CI 0.04–16.14)
Conclusion: Our results confirm that the *FCGR3A* polymorphisms (A>C) (rs396991) may not be useful as markers for the efficacy of tocilizumab in patients with rheumatoid arthritis. Further studies to confirm these results are needed.

TDMP011: Therapeutic drug monitoring of infliximab biosimilar and anti-infliximab antibodies in inflammatory diseases

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Please specify your abstract type: Research abstract
Background and objective: To describe our experience in therapeutic drug monitoring of infliximab biosimilar (Inflectra®)(IFX-B) and its antibodies (ATI-B) in dermatology and digestive inflammatory diseases.
Setting and method: Observational retrospective study in a tertiary hospital. Period: March/2015-April/2016. Patients with dermatological conditions and inflammatory bowel disease being treated with IFX-B (5 mg/Kg/8 weeks after the induction dose) were included. The concentrations of IFX-B and ATI-B were quantified by two sandwich-type ELISA immunoassays (Triturus® analyser).
Main outcome measures: Plasma levels of IFX-B and ATI-B, clinical response and infusion reactions. The clinical response was assessed according to pathology of each patient (based on specific clinical variables for the pathology into the electronic history).
Results: Fourteen patients (3 paediatrics) (57.1% women), 32 (9–66) years.

(1) Dermatology diseases: 5 patients (4-psoriasis, 1-hidradenitis), 3/5-biologic drug pre-treatment: 1-ustekinumab (primary failure), 1-ustekinumab and etanercept (secondary and primary failure respectively), 1-secukinumab in clinical trial (primary failure). Weight: 83 (50–115) Kg. Teen assessments, 2 (1–3) assessments per patient, 4.5 (4–8) IFX-B doses, 50% concomitant treatment (4/5 methotrexate, 1/5- corticosteroid).

Pharmacokinetic results (% assessments):

(A) 30.0% no IFX-B detection (C < 0.035 mcg/ml) and positive ATI-B (C > 2 UA/ml) (3 assessments/1 patient). ATIs = 114, 282 y 309 UA/ml. No clinical response (NR) in 66.6% assessments.

(B) 10.0% IFX-B and ATI-B (C ≤ 2 UA/ml) no detection (1 assessments/1 patient). NR 0%.

(C) 60.0% IFX-B detection (C > 0.035 mcg/ml) and negative ATI-B (6 1 assessments/4 patients). IFX-B concentration = 1.6

(0.4–9.0) mcg/mL. NR 50% (2/3-biologic drug pre-treatment patients, 1/3-treatment withdrawal).

(2) inflammatory bowel disease: 9 patients (3 paediatrics) (6 Crohn's disease, 3 ulcerative colitis), 2/9-biologic drug pre-treatment: 1-adalimunab (secondary failure), 1-adalimunab (primary failure). Weight: 63 (21–90) Kg. Twenty assessments, 2.5 (1–5) assessments per patient, 4 (4–8) IFX-B doses, 80% concomitant treatment (16/16-azathioprine, 8/16-corticosteroid).

Pharmacokinetic results (% assessments):

(A) 5.0% (1 assessments/1 patient): 27.3 UA/ml, NR (switch to adalimumab).

(B) 20.0% (4 assessments/2 patients). NR 0%.

(C) 75.0% (15 assessments/6 patients). IFX-B concentration = 5.2 (1.6–13.0) mcg/mL. NR 73.3% (2/5- biologic drug pre-treatment patients).

Conclusion: Our results showed no association between IFX-B concentration and clinical response. The incidence of ATI-B was low. A correlation was observed between the presence of ATI-B and loss of clinical response, as infliximab original.

TDMP012: Serum concentration of non-vitamin K antagonist oral anticoagulants (NOACs) in older hip fracture patients

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Please specify your abstract type: Research abstract

Background and objective: To determine use of NOACs in older hip fracture patients by objective detection in serum(s) at hospital admission compared with medication lists and, also, to estimate the elimination half-life (T½) in NOAC users. Further, to study the impact of NOAC use on waiting-time for surgery and need for blood transfusions. Finally, to assess detected s-concentration in relation to reference ranges of NOACs.

Setting and method: A prospective study of older (≥65 years) hip fracture patients admitted to an orthogeriatric unit, October 2015 to February 2016. Medication reconciliation (MR) was performed. Time for last consumed dose of NOAC, start of surgery and need for blood transfusions were recorded and compared to warfarin-users. Blood samples from admission and next to surgery were analysed for s-concentration of NOACs, and these were compared with the information from MR.

Main outcome measures: Categorisation of s-concentration into above, within or below the reference ranges of NOACs at admission and before surgery. Estimation of T½ of NOACs by T1/2 = ln2/kel [kel; elimination constant] using two s-concentration measurements.

Results: We included 167 patients (median age 84 years, 73.1% women). NOAC use was detected be serum analysis in 11 patients (6.6%; 100% coherent with MR), while 15 patients (9.0%) used warfarin. 7 of the 11 NOAC users (63.6%) had s-concentrations of NOACs above the reference range at admission, and five patients (45.5%) had s-concentrations within the reference range before surgery. Patients using NOAC had significantly longer median waiting-time for surgery than warfarin-users (50 vs 36 h, $p = 0.004$). Blood transfusions were given to 36.4% of NOAC-users vs 21.4% of warfarin-users ($p = 0.651$). Mean estimated T½ of NOACs were 33, 16.5 and 14.5 h for dabigatran (n = 2), apixaban (n = 4) and rivaroxaban (n = 2), respectively.

Conclusion: MR is effective in detecting NOAC use in older hip fracture patients, but importantly s-concentrations are higher than expected in this population. This might reflect the significantly longer waiting-time for surgery, and tendency of more need for blood transfusions, in NOAC versus warfarin users.

TDMP013: Determination of nilotinib with high-performance liquid chromatography in human plasma from patients with chronic myelogenous leukaemia, and its applications

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Please specify your abstract type: Research abstract

Background and objective: Nilotinib is a second generation BCR-ABL tyrosine kinase inhibitor (TKIs) that has shown promising anti-leukemic activity against chronic myelogenous leukaemia (CML). With the advent of TKIs, the prognosis of CML has improved dramatically. However, the inter-individual variability in adverse events and clinical efficacy, as well as high drug cost remains major issues, and has become a major obstacle to treatment. Therefore, therapeutic drug monitoring (TDM) of TKIs is an important tool for the management of CML patients. In this study, we attempted to develop an HPLC method for quantifying plasma nilotinib, which is applicable for its TDM.

Setting and method: The HPLC column was a Capcell Pak C18 MG II (250 mm × 4.6 mm i.d., Shiseido, Tokyo, Japan). This column is supplied with packing material made of totally porous spherical silica coated with a silicone polymer monolayer containing octadecyl (C18) groups. The mobile phase was composed of 0.5% $Na_2PO_4H_2O$ (pH 2.5), acetonitrile, and methanol (55:25:20, v/v/v), which was degassed in an ultrasonic bath prior to use. The flow rate was 1.0 mL/min at ambient temperature and sample detection was carried out at 250 nm. Plasma samples were obtained from 11 patients with CML receiving nilotinib treatment. Sampling was performed at the steady state. Blood samples were collected by venipuncture 24 h after oral administration of nilotinib. Plasma was separated by centrifugation at 1900 × *g* for 15 min and stored at –40 °C until analysis. Plasma samples (100 μL) were then extracted as described above. The same samples were also sent to a commercial laboratory (BML, Inc.) for assaying nilotinib concentration by liquid chromatography–tandem mass spectrometry (LC–MS/MS). In addition, we applied this method to TDM of CML patients receiving nilotinib at our hospital.

Main outcome measures: The calibration curve exhibited linearity over the nilotinib concentration range of 50–2500 ng/ml at 250 nm, with relative standard deviations (n = 5) of 7.1, 2.5, and 2.9% for 250, 1500, and 2500 ng/ml, respectively. The detection limit for nilotinib was 5 ng/ml due to three blank determinations (ρ = 3). In addition, we compared the results with those measured by LC–MS/MS at BML, Inc. (a commercial laboratory). As a result, a strong correlation was observed between the nilotinib concentrations measured by our HPLC method and those obtained by LC/MS–MS ($r^2 = 0.988$, $p < 0.01$). In addition, TDM of nilotinib was performed to six CML patients. There was the case which participated in dosage adjustment of nilotinib in hepatic dysfunction and poor glycaemic control.

Results: We have developed a simple ultraviolet detection method for the determination of nilotinib, which has high sensitivity and large dynamic range. This study demonstrates the reliability of a simple, robust, rapid, and inexpensive HPLC–UV method for nilotinib TDM in patients with CML.

Conclusion: The results can be expected to extend the availability of nilotinib TDM, because our HPLC–UV method requires only standard equipment available in most hospital laboratories.

TDMP014: Daptomycin PK/PD profile in neutropenic cancer patients with beta-lactam-resistant gram-positive infection

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Please specify your abstract type: Research abstract

Background and objective: The pharmacokinetics (PK) and pharmacodynamics (PD) of many antibiotics are modified in neutropenic patients and few data are available on daptomycin in this population. This prospective study aimed to assess the PK/PD profile of daptomycin in the treatment of neutropenic patients with beta-lactam-resistant Gram-positive cocci infections.

Setting and method: This substudy was performed in the context of a prospective pilot study on daptomycin versus vancomycin in adult hemato-oncological patients with febrile neutropenia and proven or suspected infection with methicillin-resistant staphylococci or beta-lactam-resistant enterococci. Patients received daptomycin 6 mg/kg/day (8 mg/kg/day for enterococci) for $\geq$7 days as a 2-min infusion.

Main outcome measures: PK analysis using a published non-linear mixed effect model with Nonmem®, followed by comparison of parameters with values published for healthy subjects. PD analysis based on AUC/MIC (area under the concentration–time curve/minimal inhibitory concentration). According to EUCAST, an AUC/MIC ratio >438 is required for bacteriostatic effect against staphylococci and >800 for a two-log reduction in bacterial count. For *E. faecium*, an AUC/MIC ratio of 0.94 has been suggested for bacteriostasis and 4.14 for a 1-log bacterial count reduction.

Results: Model-derived mean AUC observed in 13 patients was 539.3 $\pm$ 340.1 mg h/l, maximum concentration (Cmax) 88 $\pm$ 28 mg/l, minimal concentration (Cmin) 7.2 $\pm$ 6.7 mg/l. Clearance was 0.98 $\pm$ 0.36 l/h and volume of distribution at steady sate 11.3 $\pm$ 3.3 l, both values found higher than those reported in healthy subjects. All patients (7/7) with a staphylococcal infection achieved AUC/MIC values predictive of bacteriostatic effect on Staphylococci, and 6 out of 7 values associated with two-log bacterial killing. Of note, infection relapse occurred in the only patient with suboptimal daptomycin exposure (AUC/MIC of 580). The PD targets were also reached in the two patients with *E. faecium* infection. An asymptomatic elevation of creatine phosphokinase was reported in two patients (568 U/L and 218 U/L) with Cmin of 25.7 and 13.7 mg/l, respectively.

Conclusion: Daptomycin PK profile in 13 neutropenic cancer patients indicated higher total clearance and volume of distribution, along with lower total exposure, compared to healthy subjects. Despite this, standard dosages allowed attainment of PD targets in 6/7 patients with a staphylococcal infection (two-log drop) and 2/2 with *E. faecium* infection (1-log drop).

TDMP015: Therapeutic drug monitoring of infliximab in inflammatory bowel disease versus optimization of treatments based on clinical response

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Background and objective: Individual clinical response to infliximab can be influenced by their pharmacokinetics and immunogenicity, so therapeutic monitoring of drug levels (TDM) can guide these biologic treatments.

The objective was to analyse the suitability of serum infliximab trough levels (SITLs) in patients with inflammatory bowel diseases (IBD) receiving dose schemes based only on clinical response.

Setting and method: Prospective and descriptive study of patients with IBD treated with infliximab and under TDM.

Medical records were reviewed. Dose schemes were established according to clinical guidelines (5 mg/Kg every 8 weeks) and optimized based on an index of clinical response (MAYO, PCR…). SITLs (Therapeutic range 3–9 mcg/mL) and anti-drug antibodies (ADA) were measured in all of patients by Elisa (Promonitor®). ADA presence was considered as a therapeutic failure indicator. Informed voluntary consent was obtained from all patients.

Main outcome measures: SITLs and ADA.

Results: A total of 61 patients, with a median age of 48 years (range [18–83]), were included in the analysis. Infliximab standard dose according to clinical guidelines were administered to 39 patients: 46.1% showed SITLs under the therapeutic range (11.1% with ADA). In eight patients with maintained good clinical response, dose decrease or interval elongation had been implemented: 25% of these patients showed SITLs below the therapeutic range (100% with ADA). It had been necessary to increase the dose or shorten the interval in 14 patients due to inadequate clinical response: 28.6% of these patients with SITLs below the therapeutic range (50% with ADA).

Conclusion: Optimization based on clinical response of infliximab treatments in patients with IBD is not always an effective strategy, since it leads to a high percentage of patients with SITLs below the therapeutic range and ADAs. TDM together with clinical response should guide the optimization of infliximab treatments.

TDMP016: Therapeutic drug monitoring of valproate: is there a rationale for it?

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Background and objective: In addition to its anticonvulsive properties, valproate is also used as a mood stabiliser in bipolar disorder and as augmentation treatment of other psychiatric disorders. The unpredictable relationship between dose-plasma valproate concentrations and correlation between concentrations-efficacy suggest therapeutic drug monitoring (TDM) of plasma valproate concentrations might be useful. The aim of our study was to evaluate the rationale of a new protocol for measuring valproate concentrations and the incorporation of a clinical pharmacist in the process of valproate TDM service, compared to pre-existing standard measuring.

Setting and method: In the retrospective study we analysed the process of measuring plasma valproate concentrations at the Department of Psychiatry and at the Unit for Forensic Psychiatry of a large teaching hospital in Slovenia before the enrolment of a clinical pharmacist. For the prospective study we created a protocol for TDM of valproate in adults based on literature research. The protocol included reference range, sampling time, indications for sampling and schedule of other laboratory tests that have to be monitored during valproate therapy.

Main outcome measures: Percentage of plasma valproate concentrations in reference range (C_{trough} = 50–125 mg/l) before/after the

enrolment of a clinical pharmacist, percentage of measured valproate C_{trough}.

Results: In the retrospective study 30 randomly chosen patients with measured plasma valproate concentrations were included (56% male, age 49 ± 15 years, length of hospital stay 56 ± 40 days). Plasma valproate concentrations were measured 5.8 ± 4.4 times per patient, 22% were in the reference range (other 78% subtherapeutic), 3% were drawn at C_{though}, 15.5% were drawn for assessing compliance (non-trough). In the prospective study 19 patients were included (37% male, age 46 ± 16 years, length of hospital stay 36 ± 22 days). Plasma valproate concentrations were measured 2.95 ± 1.5 times per patient, 43% were in the reference range (other subtherapeutic), 71% were drawn at C_{trough}, 14.3% were drawn for assessing compliance.

Conclusion: The inclusion of a clinical pharmacist in valproate TDM service increased the number of valproate plasma concentrations in the reference range by almost 100% and increased the number of concentrations drawn at C_{trough}, when indicated. Including a clinical pharmacist in valproate TDM is beneficial and the new protocol is useful for optimising valproate therapy.