Int J Clin Pharm (2016) 38:470–598
DOI 10.1007/s11096-015-0240-y

ABSTRACTS

44th ESCP International Symposium on Clinical Pharmacy Medicines Information: Making Better Decisions

Lisbon, Portugal, 28–30 October 2015

ABSTRACTS

CP-CE	Clinical Pharmacy-Clinical Education
CP-PC	Clinical Pharmacy-Pharmaceutical Care
DI	Drug Information
HP-CE	Hospital Pharmacy-Clinical Education
HP-PC	Hospital Pharmacy-Pharmaceutical Care
PE	Pharmacoepidemiology
PEC	Pharmacoeconomics
PH	Public Health
PT	Pharmacotherapy
RD	Research and Development
TDMP	Therapeutic Drug Monitoring and Pharmacokinetics

ORAL COMMUNICATION 1

HP-PC001: Predicting factors for persistence with antiretroviral therapy among HIV+ patients in the Spanish cohort, PSITAR

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Background and objective: Since the introduction of HAART, HIV has become a chronic disease. Maintain adherence and persistence to treatment are key elements in the pharmacotherapeutic follow-up. Persistence adds the dimension of time to the analysis and represents the time over which a patient continues to fill a prescription. The objective is to determine the persistence to treatment in naive HIV+ patients in the cohort PSITAR.

Setting and method: Prospective multicentre study. Inclusion criteria: naïve patients initiating antiretroviral therapy in 2011 and 2012 and monitoring in pharmaceutical care consultations of the centres involved. Demographic characteristics, virological parameters and pharmacotherapy variables: regimen prescribed, single-tablet regimen (STR) or less drug regimen (LDR), complexity index, adherence to treatment, time to discontinuation and its cause.

Patients were classified according to the treatment received: 2NRTI + NNRTI, 2 NRTI + PI/r or 2NRTI + INSTI.

Main outcome measures: HAART medication persistence was measured as the time (in weeks) from the start of treatment until discontinuation due to treatment modification or abandonment for more than 90 days.

The evolution of persistence was through survival curves using the Kaplan–Meier method, event considering the presence of no persistence. To identify independent predictors of non-persistence we developed a multivariate Cox regression analysis.

Results: 227 patients were included, 82.4 % men. The mean age was 40 ± 11. The most frequency HAART consisted of 2 NRTI + NNRTI (65.6 %). A percentage of 43.2 % persisted with the same initial treatment at the end of the observation period. The median time to discontinuation was 76.4 weeks (95 % CI 56.8–96.0) and the main cause of discontinuation was adverse effects (70.6 %).

Median persistence was 88.8 (95 % CI 73.2–104) weeks for the treatment with 2 NRTI + NNRTI, 42.4 (95 % CI 35.2–50.0) with 2 NRTI + PI/r and 29.6 (95 % CI 4.8–54.4) with 2 NRTI + INSTI.

Statistically significant differences were found in time to discontinuation between treatment groups with a third drug NNRTI versus PI/r ($p = 0.001$), being higher time to discontinuation in the NNRTI group. Overall, the Cox regression model for this outcome showed that the only variable associated with a higher risk of ART non-persistence was the regimen type.

Conclusion: The type of treatment was the only factor identified with a higher risk of non-persistence. This fact should be considered when selecting the optimal treatment for each patient.

Disclosure of interest: None declared.

HP-PC002: Improving medication adherence in patients with hypertension: a randomised controlled trial

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Background and objective: In patients with hypertension, medication adherence is often suboptimal, thereby increasing the risk of ischemic heart disease and stroke. In a randomized trial, we investigated the effectiveness of a multifaceted pharmacist intervention in a hospital setting to improve medication adherence in hypertensive patients.
Setting and method: Patients (N = 532) were recruited from three hospital outpatient clinics and randomized to usual care or a 6-month pharmacist intervention comprising collaborative care, medication review, tailored adherence counselling including motivational interviewing and telephone follow-ups.
Main outcome measures: The primary outcome was composite medication possession ratio (MPR) to antihypertensive and lipid-lowering agents, at 1-year follow-up, assessed by analysing pharmacy records. Secondary outcomes at 12 months included persistence to medications, blood pressure, hospitals admission and a combined clinical endpoint of cardiovascular death, stroke or acute myocardial infarction.
Results: At 12 months, 20.3 % of the patients in the intervention group (N = 231) were non-adherent (MPR < 0.80) compared with 30.2 % in the control group (N = 285) [RD −9.8 (95 % CI −17.3, −2.4] and median MPR (IQR) was 0.93 (0.82–0.99) and 0.91 (0.76–0.98), $p = 0.02$. The combined clinical endpoint was reached by 1.3 % in the intervention group and 3.1 % in the control group (RR 0.41, 95 % CI 0.11–1.50). No significant differences were found for persistence, blood pressure or hospital admission.
Conclusion: A multifaceted pharmacist intervention in a hospital setting led to a sustained improvement in medication adherence for patients with hypertension. The improvement in adherence was associated with modest non-significant trends towards benefit on blood pressure, hospitals admission and cardiovascular events.
Disclosure of interest: U. Hedegaard: Grant/Research support from The Actavis Foundation; The Hospitals Pharmacies' and Amgros' Research Development Foundation. L. J. Kjeldsen: None declared. A. Pottegård: Grant/Research support from AstraZeneca. J. E. Henriksen: Consultant for Novo Nordisk, MSD, Sanofi and Boehringer. J. Lambrechtsen: None declared. J. Hangaard: None declared. J. Hallas: Grant/Research support from Pfizer, Novartis, Nycomed and MSD, Consultant for Pfizer, Novartis, Nycomed, the Danish Association of Pharmaceutical Manufacturers, Leo Pharmaceuticals, and Astra Zeneca.

HP-PC003: Intervention to improve the cardiovascular risk in HIV patients. Infamerica study

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Background and objective: Antiretroviral therapy (ART) has significantly reduced morbidity and mortality, increasing life expectancy of HIV-infected individuals. Aging of HIV patients has been associated with higher incidence of comorbidities, which may finally lead to polypharmacy. Heart disease is the leading cause of death. Several medical conditions and lifestyle choices can also put people at a higher risk for heart disease, including: high blood pressure, high LDL cholesterol, smoking, diabetes, overweight, physical inactivity, excessive alcohol use.

The aim is to determine the efficacy of an intensive pharmaceutical care (PC) in HIV-infected patients with moderate or high cardiovascular risk (CVR).
Setting and method: A randomised multicentre study was conducted between January 2014 and June 2015. We included HIV-infected outpatients with ART who attended the pharmaceutical care office of a hospital pharmacy and had ≥1 medicine to treat high blood pressure, dyslipidemia, angina, cardiovascular prophylaxis and diabetes; and a moderate or high CVR using the Framinghan index.

The intervention group received an intensive PC with a monitoring plan to reduce the CVR including: monitoring of prescribed co-medication, intensive prophylaxis of drug related problems, recommendations (balanced diet, physical activity, smoking cessation). Besides we delivered mobile phones text messages weekly, during the first month, and then monthly, to promote a healthy life. The control group only received standard PC.

We analysed demographics, clinical, analytical and lifestyle variables at weeks 0, 12, 24, 36 and 48.
Main outcome measures: We evaluated the reduction in the CVR at week 24. We carried out a descriptive analysis. Quantitative variables were summarized with medians and interquartile ranges (IQR) and qualitative, with percentages. We performed the Student's *t*, Wilcoxon and McNemar's test using the statistical package SPSS 20.0.
Results: We included 44 patients; 95.3 % men, median age 53.5 years (IQR 50.0–62.5). The viral load was undetectable in 97.5 %. The percentage of high CVR patients at week 24 was significantly lower than a week 0 (74.4 vs. 90.7 %, $p = 0.016$). In both groups (intervention and control), we observed a reduction in the percentage of high CVR patients: 88.0 % (w0) and 72.0 % (w24) versus 94.1 % (w0) and 76.5 % (w24), respectively. The tobacco consumption cut down from w0 to w24 (67.4 vs. 83.3 %, $p = 0.016$), being higher in the intervention group (52.0 vs. 75.0 %) with respect to the control group (88.2 vs. 94.1 %). The HDL-cholesterol level improved in relation with the basal level: 47.2 versus 43.9 ($p = 0.04$), being similar in both groups.
Conclusion: The intensive pharmaceutical care in moderate-high CVR HIV-patients improves the lifestyle and clinical variables. The role of the HIV clinical pharmacist to achieve therapeutic objectives is essential.
Disclosure of interest: None declared.

HP-PC004: Clinical, economic and organizational impact of pharmacist interventions during pharmaceutical analysis of injectable antineoplastics

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Background and objective: At the Grenoble University Hospital, all injectable antineoplastic prescriptions are analysed by pharmacists or pharmacy residents of the chemotherapy preparation unit (CPU). When a drug related problem (DRP) is identified, a pharmacist intervention (PI) is communicated to the prescriber in order to adapt the patient's therapeutic management. This study aims to evaluate clinical, economic and organizational impact of PIs proposed by pharmacists in a CPU of a large University Hospital.
Design: A prospective 10-week study was conducted in order to collect PIs concerning injectable antineoplastic prescriptions of day-care and inpatient units of oncology, haematology and radiotherapy.

Then each PI was assessed by multidisciplinary expert committees using the CLEO tool. Ten different experts (four specialist physicians, two pharmacovigilance experts, three clinical pharmacists, one pharmacist of the CPU) participated in four committees. The CLEO tool includes three independent dimensions: 7-category clinical, 4-category economic and 4-category organizational [1].

Results: From July to September 2014, 237 PIs about 10.1 % prescriptions were recorded. According to the CLEO tool, no IP was considered to have been able to avoid a vital damage, 21 PIs (8.9 %) were considered as major, which can prevent hospitalization or permanent disability. The experts determined that 49 PIs (20.7 %) had a moderate clinical impact which can prevent harm that requires further monitoring/treatment, 62 PIs (26.2 %) a minor clinical impact, 95 PIs (40.0 %) without clinical impact and 9 PIs (3.8 %) negative clinical impact. For economic impact, 105 PIs (44.3 %) were assessed as having a positive impact, representing a saving of direct drug cost of 15,096 € and 38 (16.0 %) as having a negative impact increasing the direct drug cost of 11,878 €. For organizational impact, 67.5 % PIs were coded as positive overall impact on the quality of the care process from the perspective of health care providers, and 30.0 and 2.5 % PIs as respectively null and negative impact.

Conclusion: Pharmaceutical analysis of injectable antineoplastics is associated to positive clinical impact, avoiding in most severe cases hospitalizations or prolonged hospital stays, and positive economic impact saving a total of 3218 € during the period of the study. This evaluation should be conducted continually in order to demonstrate the added value of pharmacists for patients and healthcare system, it could be used as indicators of pharmacist's performance.

Reference

1. VO TH et al. Development and validation of a multidimensional scale "CLEO" for evaluating potential significance of pharmacist intervention. ACCP Annual Meeting, October 2014.

Disclosure of interest: None declared.

HP-PC005: Do patients understand our medication charts?

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Background and objective: Patients leaving hospital often have to continue their treatments without help. It is therefore most important to provide all necessary information, e.g. medication charts (MCs), adapted to the patient's health literacy. So far it is unknown how these MCs differ from hospital to hospital and if they meet the patient's needs and wishes.

Setting and method: MCs were identified through literature search and personal contacts and compared regarding content and format. A focus group with different hospital staff evaluated these and chose four MCs for a structured patient interview. Patients from hospital wards were asked to assess the plans and to interpret selected dosing instructions.

Main outcome measures: Comparison of MCs regarding form, content and patient wishes. Comprehensibility of dosing information on MCs.

Results: All nine included MCs contained brand name, strength, dosage form and a dosing scheme. The indication was mentioned in 5 out of 9, the duration of treatment in 3 out of 9 MCs.

45 (67.6 ± 12.0 years, 40 % female) out of 206 patients were interviewed. 24.4 % misunderstood the abbreviation "Mo" for the German word morning ("Morgen") as Monday. 55.6 % interpreted the abbreviation "Na" (night, German = "Nacht") correctly as before going to bed. 24.4 % would take the medication during the night or in the afternoon ("Nachmittag") instead. The maximum daily dose for the intake instruction "3x/d 1 tablet" was correctly stated by 82.2 % of all participants. 42.2 % interpreted correctly the intake instruction "max. 2 tablets max. 4x/24 h". 36 of 45 interviewees understood the expression "on empty stomach" (the German word means the same as sober) as medication intake without food, but only two subjects would take the tablet 1 h before meal. The dosing instruction "3 ML" ("Messlöffel", measuring spoon) was properly understood by 24.4 %, 57.8 % decoded it as 3 ml. In case of the prescription of a solution in milligrams, 20.0 % of the participants were able to calculate the needed millilitres. Patients preferred the use of "1/2" instead of "0.5" for half tablets. The interviewees chose brand names in the first column ($p < 0.001$), however in many MCs active compounds are mentioned first.

Health care professionals favoured the "eMediplan" and "Heidelberger Plan", whereas patients tended to choose the "AMTS-Apothekenplan" ("AMTS-Aktionsplan", $p = 0.169$).

Conclusion: Medication charts used in daily practice differ in content and graphic aspects. Patients' views of the most suitable medication chart were not the same as those of health care professionals. For patients, many dosing instructions were difficult to understand. This could lead to a lower effect or side effects if not noticed by health professionals. Format and content of MCs should be clear and adapted to patients. A good oral instruction is still necessary.

Disclosure of interest: None declared.

HP-PC006: Medication review and reconciliation at a neurosurgical ward with emphasis on interactions involving antiepileptics

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Background and objective: To examine the extent to which the individual drug regimens registered on admission to hospital differs from the actual drug regimen of the patient prior to admission. Furthermore, to study how a pharmacist could contribute by identifying, solving and preventing drug related problems within a clinical pharmacy service, with a special attention to interactions with antiepileptics.

Setting and method: The study included patients admitted to a neurosurgical ward at a University Hospital in Oslo, Norway. Patients using antiepileptics were given priority for study inclusion. Using parts of the IMM-model "Integrated Medicines Management", a pharmacist performed systematic interventions into the medication of each patient during the hospital stay. The model was used for medication reconciliation including a medication interview on admission, followed by a systematic medication review. Identified drug related problems were discussed with the health care team. Information on identified problems and their outcomes were collected and analysed.

Main outcome measures: The frequency of drug related problems identified by the clinical pharmacist and the response of physicians to suggested interventions.

Results: In total, 359 drug related problems were identified in 40 patients. 80 % of the patients had ≥1 discrepancy identified during the reconciliation process. 93 % of the patients had ≥1 drug related problem identified in the medication review. The pharmacist considered 40 % of the identified problems clinically relevant. These were discussed with the health care team, and in 75 % of the cases, actions were made to solve the problem. 93 identified drug related problems were interactions involving medicines, and 90 % of these interactions were considered to be clinical relevant. All of the registered interactions involving antiepileptics were considered clinically

relevant, and antiepileptics were involved in half of the clinically most important interactions.
Conclusion: The majority of patients had discrepancies identified in the medication reconciliation process and drug related problems identified by the medication review. Antiepileptics seems to be a risk factor for clinically important interactions. To improve patient safety, quality assured routines ensuring the recording of a complete medication history on hospital admission should be introduced. The findings suggest that the inclusion of a clinical pharmacy service to hospital wards may increase precision in medication for individual patients.
Disclosure of interest: None declared.

HP-PC007: Increasing treatment adherence to new anti-HCV drug therapy with a multidisciplinary information and monitoring system

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Background and objective: Studies have shown several factors that affect hepatitis C virus (HCV) treatment response, including virological, treatment-related and patient-related factors. When it comes to effectiveness and quality of care, treatment adherence needs to be addressed. Adherence to HCV treatment is challenging because of the complex treatment regimens, frequent interactions and side effects. Many observational studies have examined the association between therapy adherence and improved likelihood of achieving sustained virologic response. The purpose of this study is to implement an information and monitoring system that allows to improve treatment adherence of new antiviral agents against HCV.
Design: Descriptive study was conducted in a regional hospital during 6 months. A multidisciplinary team, including pharmacists and gastroenterologists, selected optimal treatments following the Health System guidelines, according to fibrosis stage and virus genotype. Other items were assessed, such patient age, expected adherence, cost-effectiveness and drug interactions. Patient information leaflets were designed and approved by the whole team. In the first place, patients were informed by a pharmacist about all issues related to their treatment and, in addition, written information was given, containing the Pharmacy telephone number, and a smartphone adherence app was offered. The medication was dispensed for 1 month. Patient information and dispensing data were registered in the electronic prescribing system and a report of the visit was written in the electronic medical record. In successive visits, patients were interviewed about drugs tolerance and adherence. Medication adherence was measured by pill counting method.
Results: 21 treatments with new anti-HCV drugs were started, 68 % men, median age 56.8 years (74–36). The average time to approve a medication application was 1 week. The percentage of treatments adapted by the pharmacist after pharmaceutical review was 50 %. It was necessary to modify the concomitant medication in two patients taking into account the interactions with anti-HCV drugs. Patients were visited every time they came to collect medication at Hospital Pharmacy, meaning an average of 3.75 visits/patient. The average time invested in patient counselling was 60 min/patient, and the adherence rate close to 100 %.
Conclusion: The pathway established by the multidisciplinary team allows the best treatment choice for every patient as well as it helps to achieve an adherence nearly 100 %.
Disclosure of interest: None declared.

HP-PC008: Medicines management for the elderly in a hospital setting: a randomized trial

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Background and objective: It is shown that 5–30 % of all acute admissions are caused by medication-related problems (MRPs), of which many are preventable. Studies on pharmacist-led medicines management in a hospital setting have found a tendency towards improvement in medication use, health service use and costs, but larger randomized trials are needed.

The aim of this study was to investigate the effect of a pharmacist-led medicines management model on admission, during hospital stay and at discharge among elderly patients.
Setting and method: A randomized intervention study was performed from April 2013 to December 2014 at Hospital South West Jutland, Denmark. 600 acutely admitted elderly patients were equally randomized to control, intervention-basic or intervention-extended groups. The control group received standard care, the intervention-basic group received medication review and patient interview on admission and the intervention-extended group received medication review and patient interview on admission, medication review during hospital stay together with patient interview and medication report at discharge.

The three groups were compared using Kruskal–Wallis test for medians and χ^2 test for frequencies.
Main outcome measures: Medication appropriateness index (MAI) at discharge for 80 patients in each group.

Length of hospital stay (LOS) and readmissions within 30 days for all patients in each group.
Results: Of the 796 patients invited, 600 accepted to participate. The pharmacist identified 895 MRPs in 400 patients on admission with more than half of the recommendations implemented. During inpatient stay and at discharge a mean of further 1 MRP per patient in Intervention-extended was identified.

MAI for rater-1/rater-2 was: control 2.2/0.9, intervention-basic 1.5/0.8 and intervention-extended 1.9/0.8. LOS was: control 1.9 days, intervention-basic 1.7 days and intervention-extended 1.4 days. Readmission rate was: control 22 %, intervention-basic 21 % and intervention-extended 17 %.

No significant statistical differences between the groups were detected for MAI, LOS or readmissions.
Conclusion: The pharmacist can be used to identify and solve MRPs, but this study did not find any effect on the outcomes MAI, LOS and readmissions. It is recommended to perform a case study to understand the collaboration between the pharmacist and other health care professionals and to assess the possibility for educational bias.
Disclosure of interest: None declared.

ORAL COMMUNICATION 2

CP-CE001: A qualitative exploration of the barriers to community pharmacy supporting people with mental health problems adhering to medication

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Background and objective: Up to 15 % of the population in the UK are affected by mental health disorders at any one point in time. Many effective pharmaceutical agents are available for the treatment of such disorders yet research highlights major problems with adherence.

The paradigm shift in mental healthcare from hospitals to community suggests that community pharmacists are in an ideal position to promote medication adherence. Existing data proposes that pharmacists would like to play a greater role in improving adherence, however, findings are heterogeneous in nature and the data is lacking on the perspective of the pharmacist.

Setting and method: The views of fifteen community pharmacists, from either Birmingham or Stoke-on-Trent, were explored in a qualitative manner using face-to-face, semi-structured interviews. Transcripts of these interviews were then studied to encapsulate the main principles through inductive thematic analysis.

Main outcome measures: Firstly, the audio recordings from the interviews were transcribed into a Microsoft Word document. Inductive coding of interesting and recurrent features of the data set, alongside grouping like extracts was the primary phase of analysis. The next stage of analysis consisted of sorting codes into themes and assigning all relevant data into these potential themes. Finally, the researcher clearly defined the themes by naming them in a way that ensured correct expression of the set.

Results: The semi-structured interviews revealed a wide range of barriers preventing pharmacists from having a greater involvement. These barriers fell into five main categories: time constraints, inadequate communication, lack of training, lack of awareness of the role of community pharmacists and the current healthcare system. Many worthwhile suggestions were put forward to overcome these barriers, an example being the introduction of an electronic hub system to reduce dispensing workload allowing more patient–pharmacist interaction.

Conclusion: The pharmacists interviewed agreed with the notion that community pharmacists are well placed in the heart of the society to deliver extra support but expressed that the level of involvement was limited due to the presence of barriers. It would be beneficial for further protocols, such as additional training, to be put into place to overcome these barriers to enable pharmacists to have a more proactive and successful role in supporting medication adherence in mental health.

Further exploration into this area using a larger sample size and potentially interviewing pharmacists from different populations in the UK may be useful.

Disclosure of interest: None declared.

CP-PC001: Medication changes among patients receiving drugs via multidose drug dispensing

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Background and objective: Multidose drug dispensing (MDD), is a sophisticated dosing aid that provides patients with robot-dispensed disposable bags where all drugs intended for one dosing moment are gathered. MDD is dispensed every week or every 2 weeks. Medication changes are preferably executed with a delay until the new MDD, however acute adjustment of the MDD can be necessary (e.g. because of side effects). This study aims to provide more insight into frequency and type of medication changes in patients using MDD.

Setting and method: A nested case control study among eight community pharmacies in the Netherlands. During 3 weeks all medication changes among patients using MDD were systematically documented.

Main outcome measures: Frequency and type of medication changes, the procedures and the immediacy with which the MDD is adjusted and the time required by pharmacy staff to adjust the MDD.

Results: 268 medication changes were documented (0.042 drug changes per patient per week). 34 % of these changes involved addition of a drug, 33 % a dosage adjustment, 22 % a cessation of a drug and 11 % was categorized as different. 46 % of the medication changes was executed with a delay until the dispensing of a new MDD. Acute manual adjustment of the MDD occurred in 24 % of the changes. 18 % of the patients temporarily received new medication separate from the MDD, 7 % was manually adjusted when the new MDD was dispensed and in 3 % a completely new MDD was ordered to replace the MDD already in use. The average time per drug change was 2.3 min (1.9–2.8) for the pharmacist; 11.3 (9.8–12.74) for the pharmacy technician; 2.2 min (1.6–2.8) for a courier for home delivery. Acutely implemented medication changes take significant more time compared to delayed mutated adjusted MDD ($p < 0.001$).

Conclusion: A large number of medication changes among patients using MDD is adjusted acutely. This process of manually adjusting MDD is at high risk of errors and is time consuming. Therefore, delayed adjustment of MDD is preferable where appropriate. Pharmacists must critically evaluate the necessity of acute adjustments.

Disclosure of interest: None declared.

CP-PC002: Comparison of referral criteria for minor ailments from tertiary sources: preliminary results

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Background and objective: It is widely accepted that pharmacists have an important role in assisting consumers who present minor ailments. Pharmacists' consultations should include screening for more serious conditions and, when necessary, referral to medical care. To adequately deliver this function it is fundamental to agree on referral criteria. A study was set up to systematically compare physician referral criteria (RC) for minor ailments among four reference textbooks.

Setting and method: Four commonly used information sources on minor ailments were selected: one North American textbook (Handbook of Nonprescription Drugs: an Interactive Approach to Self-Care, 2012) and three British textbooks (Minor Illness or Major Disease?, 2012; Symptoms in the Pharmacy: A Guide to the Management of Common Illnesses, 2014; Community Pharmacy: Symptoms, Diagnosis and Treatment, 2014). This paper reports on the comparison of RC in six conditions—diarrhoea, constipation, cough, cold and flu, dysmenorrhea, insomnia—in all four sources.

Main outcome measures: Number and nature of RC for the selected conditions across the four sources.

Results: The condition with lower mean RC was insomnia (5.00, SD = 1.41) while cough had the highest mean RC (12.75, SD = 4.79). Cold and flu showed the greatest difference in the number of RC between sources (range = 13). Cold and flu as well as cough presented the maximum number of RC (19) in individual sources, while insomnia and dysmenorrhoea had the minimum (3). "Minor Illness or Major Disease" presented the greater total number of RC (67), particularly higher in 4 out of 6 conditions, with cold and

flu presenting three times more criteria than other sources. There were also disagreements on the nature of RC across the four sources. For example, duration was generally listed as a RC, but its definition showed inconsistencies (e.g. cough lasting for more than 7 days vs. 3 weeks). Alarm symptoms, which suggest malignancy and would require referral (such as unexplained weight loss), were not consistently indicated as a referral criterion for specific conditions. Overall, RC were seldom referenced or were not always explained.
Conclusion: Preliminary findings suggest significant variation in the nature and number of referral criteria between standard textbooks. This has implications for education and practice, to ensure consistent performance of pharmacists and maximize the recognition of clinically significant signs or symptoms for referral.
Disclosure of interest: None declared.

CP-PC003: A theoretically-based exploration of multi-compartment compliance aid use amongst residents of very sheltered housing and their care team in North East Scotland

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Background and objective: Pharmaceutical care plays a significant role for older people but, 'the use of multi-compartment compliance aids (MCA) has become regarded as a panacea for medicines use' [1, 2]. This research aimed to explore the provision, use, monitoring and perceived impact of MCAs from the perspectives of very sheltered housing (VSH) residents and their care team.
Setting and method: Case studies were conducted with VSH residents aged ≥65 and using an MCA for ≥6 months. Residents were invited to take part in a 15 min audio-recorded, semi-structured interview. Questions based on the 14 domains of the theoretical domains framework (TDF) related to the purpose, utility and management of medicines helped identify determinants of MCA use. Residents also identified people in their care team for interview. Transcripts were analysed using the Framework Approach. This study had NHS ethical and Research and Development approval.
Results: Twenty interviews were conducted with residents at three sites (A, B, C) with further interviews conducted with the residents care team: formal carers (17), GPs (8), pharmacists (8), one family member. Findings indicated consensus around purpose of MCAs (knowledge) with varying views around who is/should be involved in the decision to start an MCA (social influences; role; beliefs about capabilities). Health professionals thought it important that residents and carers knew what/why medicines were prescribed (knowledge; role; beliefs about consequences). Some residents asserted their independence, 'it can be really annoying when somebody says 'oh you can't take it at this time', I say, yes I can do it' (Case 6C; beliefs about capabilities). Prescription changes were challenging to implement (nature of the behaviour; knowledge; skills), 'it's a little white tablet, well she's got 3 or 4 of those' (Carers A). While MCAs were viewed as desirable (emotions; reinforcement; beliefs about consequences) few knew the implications for pharmacy, 'a lot of the time I'm chained to the pharmacy…I feel so guilty—it could be your mum, it could be your granny and they're really struggling' (Ph1A; environmental; emotions).
Conclusion: This study captures multiple perspectives of MCAs. With an increasingly aged, multi-morbid population dependent on polypharmacy the pressure on pharmacy to meet the burgeoning demand for MCAs has overtaken their capacity to supply.
Disclosure of interest: None declared.

CP-PC004: Effectiveness of the Dader Method for pharmaceutical care in patients with bipolar I disorder: EMDADER-TAB: randomized controlled trial

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Background and objective: Bipolar I disorder-BD is a chronic illness characterized by relapses alternating with periods of remission. The pharmacist can contribute to improve health outcomes in these patients through pharmaceutical care (PC), in association with the multidisciplinary health team, however, more evidence derived from randomized clinical trials (RCT) is needed to demonstrate the effect of PC in BD. The objective was to assess the effectiveness of a pharmaceutical intervention using the Dader Method of PC in patients with BD-I measured by the decrease in the number of hospitalizations, emergency service consultations, and unscheduled outpatient visits.
Setting and method: Randomized clinical trials comparing PC with improved usual care (IUC) of outpatients with BD-I in a psychiatric clinic in Colombia. The main outcome was the use of health care services, using Kaplan–Meier methods and Cox regression. The trial protocol was registered in ClinicalTrials.gov: NCT01750255.
Main outcome measures: The primary outcomes to be measured were: (1) the number of hospitalizations; (2) the number of emergency service consultations; and (3) the number of unscheduled outpatient visits. The secondary outcomes to be measured were: (1) adherence to treatment; (2) life quality through the Quality of Life Scale: The Short Form (36) Health Survey Questionnaire; (3) Clinical Global Impression for Bipolar Modified scale, CGI-BP-M; (4) Young Mania Rating Scale for the evaluation of mania; (5) Hamilton Rating Scale for Depression; (6) problems related to necessity, effectiveness, and security of the pharmacotherapy (NOMs to be identified and measured); (7) drug-related problems in drug therapy effectiveness, and safety; (9) the patient's satisfaction with the pharmaceutical care service measured through the patient satisfaction questionnaire on pharmaceutical care.
Results: 92 patients were included in the EMDADER-TAB (43-intervention, 49-control). At baseline, no significant differences in demographic and clinical characteristics were found in both groups. After 1 year of follow-up, the risk of hospitalizations and emergencies was higher for improved usual care (HR 9.03; $p = 0.04$; HR 3.38; $p = 0.03$, respectively). Additionally the risk of outpatient-unscheduled visits, was higher for PC (HR 4.18; $p = 0.03$). Furthermore, Pharmaceutical care had an influence in the reduction of depressive symptoms and severity of the disease and favored pharmacologic adherence, quality of life and satisfaction with health services.

Conclusion: Pharmaceutical care compared with improved usual care, significantly reduced the risk of use of health services in outpatients with BD-I.
Disclosure of interest: None declared.

DI001: Cancer patients, target therapies and risk of cardiotoxicity: a meta-analysis of clinical trials

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Background and objective: Despite the beneficial effects of target therapies agents in increasing overall survival, cardiotoxic side effects remain a serious complication for cancer patients eventually requiring dose reduction, treatment interruption or, more seldom, determining life-threatening conditions. In clinical trials involving targeted therapies, the extent of cardiotoxicity, could be masked by mechanisms secondary to tumor-induced damage. Thus, aim of our work is to assess the true risk due to drug therapy, by comparing, in a meta-analytical way, incidence of the effects reported in clinical phase III trials conducted for different cancer types.
Design: Phase III clinical trials published until April 2015 on PubMed databases considering cardiotoxic effects were searched. Eligible studies were chosen according to the PRISMA statement. Summary incidences and RRs with 95 % CI were calculated using the fixed-effects or the random-effects (DerSimonian–Laird), according to the heterogeneity of selected studies. Subgroup analyses were further conducted, where appropriate comparing the relative effect for each drug class.
Results: We selected 31 randomized phase III clinical trials; 27,456 patients were included in this analysis. The most represented studies concerned treatment for breast and prostate cancer. Overall incidence of all-grade cardiotoxicity was 6.6 %, with the highest cumulative incidence observed with abiraterone (16 %) and vandetanib (14 %) and the lowest in arms employing ramucirumab (0.81 %) and gefitinib (3 %). Overall relative risk of all-grade effects compared to controls was 1.33 (95 % CI 1.06–1.67). At subgroup analysis, significance of the overall effect was not obtained by any of the drug classes tested, nor significant differences could be found matching the effects against each other. For high-grade toxicity, overall events incidence was 2 %, with overall relative risk compared to the control arms of 1.54 (95 % CI 1.26–1.88). Highest incidence of high grade cardiotoxicity was observed with vandetanib (8 %), while lowest with sunitinib (0.8 %). At subgroup analysis, significantly higher incidence of high-grade cardiac toxicity was found in the anti-EGFR mAbs (RR 1.47, 95 % CI 1.09–2.00, $p = 0.013$), anti-VEGF mAbs or VEGF-trap (RR 1.82, 95 % CI 1.24–2.69, $p = 0.003$) and anti-VEGF-TKIs (RR 5.62, 95 % CI 1.49–21.24, $p = 0.011$) subgroups.
Conclusion: Even though the results of the meta-analysis show a formally enhanced risk for cardiotoxic events in the treatment arms, these result relevant only for what concerns the incidence of high-grade effects. Some drug classes seem to be more frequently related to high-grade cardiotoxicity, thus suggesting the hypothesis that some forms of cardiotoxicity could be directly associated to the treatment with such agents. This observation might lead to the development of a more careful monitoring protocol during the patients follow-up.
Disclosure of interest: None declared.

PE001: Comparison of three scales of drugs with anticholinergic effects on Brazilian polypharmacy population

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Background and objective: Drugs with anticholinergic effects may produce peripheral adverse effects (dry mouth, dry eyes, constipation, blurred vision, etc.) but also central effects (dizziness, sedation, confusion, delirium, etc.), causing a decline in cognitive and physical function, especially in elderly population.

The aim of this study was to compare the results of using three different scales of drugs with anticholinergic effects on a cohort of individuals using five or more medicines in Curitiba, Brazil.
Setting and method: All the medicines used by ambulatory patients with five or more different drugs dispensed during December 2013 were obtained from the city of Curitiba Health Services (population covered 876,000). Three scales of drugs with anticholinergic effects were applied: Anticholinergic Cognitive Burden List (ACB), Anticholinergic Drug Scale (ADS), and Anticholinergic Risk Scale (ARS). Pearson correlations and paired *t* tests were done.
Main outcome measures: Anticholinergic effects using three different scales.
Results: A total of 8139 patients were dispensed with 5 or more drugs during December 2013 (1 % of population covered), with an average age of 55.1 y/o (median 60; SD = 21.0), being 68.2 % females. Percentage of patients using a drug with anticholinergic affects varies depending of the scale used: 57.5 % with ADS, 36.3 % with ARS, and 60.7 % with ACB. Percentage of patients aged 65 or over also varies among the three scales: 54.6 % with ADS, 53.6 % with ARS, and 62.4 % with ACB. The three scales have significant and strong correlations (ADS–ARS: R = 0.845; ADS–ACB: R = 0.932; ARS–ACB: R = 0.840; $p < 0.001$ in all of them). However, significant differences in the score attributed to each patient appeared (*t* test, $p < 0.001$ for the three pairs).
Conclusion: Although the three scales compared seem to perform similarly at population level (similar total scores), significant differences exist at a patient level (different paired analysis and different number of patients with drugs with anticholinergic effects). Selecting one scale or creating a composite of the three scales is a decision to make, with implications on polypharmacy management.
Disclosure of interest: None declared.

PE002: Self-monitoring of blood glucose in newly treated type 2 diabetes mellitus

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Background and objective: There is little evidence to support the use of self-monitoring of blood glucose (SMBG) in the management of type 2 diabetes mellitus (T2DM) in the absence of insulin use. The objectives of this study were to describe the use of SMBG in a cohort of newly treated T2DM subjects and to assess the contribution of SMBG on overall prescription costs.

Setting and method: A population based retrospective cohort study was conducted using the Irish national pharmacy claims database. Newly treated T2DM patients aged ≥40 years were included in 2012 as being initiated monotherapy of an oral antidiabetic and having received no antidiabetic therapy in the previous year. Subjects were followed for 1 year post treatment initiation.

Adjusted logistic regression was performed to investigate the association between the use of SMBG and choice of initial antidiabetic agent while controlling for various demographic factors. Adjusted odds ratio (OR) with 95 % confidence interval (CI) are presented. The association between total prescription costs and SMBG was assessed using generalised linear model with gamma family and log link functions, adjusting for various demographic and treatment factors. Cost ratios and 95 % CIs were obtained and were used to determine the contribution of SMBG to dispensing costs.

Main outcome measures: Use and costs associated with SMBG.

Results: A total of 12,941 subjects were eligible for the study with 64 % of subjects using SMBG. SMBG use was highest in subjects aged 40–49 years (71 %) and decreased with age, with 48 % of those aged 80–89 years using SMBG. Most subjects used SMBG at least daily (51 %). Those initiated on sulphonylureas were more likely be users of SMBG than those initiated on metformin (OR 1.29, 95 % CI 1.14–1.46), while there was no statistically significant difference between high frequency users of SMBG (at least daily) initiated on metformin or sulphonylureas (OR 1.13, CI 1.0–1.28). Use of SMBG resulted in dispensing costs that were overall 81 % higher than those without SMBG use (cost ratio 1.81, 95 % CI 1.76, 1.92).

Conclusion: Use of SMBG, including the frequency of use, in newly treated T2DM was high, and resulted in high associated dispensing costs. Subjects initiated on sulphonylureas were significantly more likely to use SMBG. SMBG represents a significant financial component in diabetes care, yet previous work has shown no clear benefit in newly treated type 2 diabetes patients on oral therapy. There is the potential for cost savings by introducing a review or limit on the amount of SMBG tests available to newly treated T2DM patients.

Disclosure of interest: None declared.

ORAL COMMUNICATION 3

PT001: Suspension for treating refractary mucositis for patients with cancer receiving treatment

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Background and objective: Treatment of cancer is increasingly effective but associated with short and long-term side effects. Oral side effects, including oropharyngeal mucositis, remain a major source of illness despite the use of a variety of specific treatments for them.

To provide a solution and describe the method of preparation of a suspension for the treatment of oropharyngeal and digestive tract mucositis in patients with cancer receiving chemotherapy, radiotherapy or both refractory to other treatments.

Setting and method: We made a bibliographic search of the agents prescribed for the treatment of oral mucositis in patients who receive chemotherapy, radiotherapy or both, including oral mucositis, oral pain, dysphagia, analgesics strength and time to heal mucositis.

The manufacturing process of the suspension include: aluminum hydroxide suspension (40 ml), diphenhydramine hydrochloride (40 ml), lidocaine solution (20 ml), nystatin suspension (7.2 ml) and purified water. To mix the components in the named order and stir in the mechanical shaker for 30 min except for nystatin which is added at the time of use of the suspension by a pre-filled syringe in the pharmacy because polyvalent ions such as aluminum of almagate reduce the activity of nystatin. Finally stirring in mechanical stirrer and packed in amber glass to protect the suspension from the light.

Results: The result is a suspension of 120 ml that can be swallowed. The suspension is stable for 90 days in refrigerator but when nystatin is added the stability reduces to 30 days in refrigerator.

Maximum dose to avoid toxic effects of lidocaine and diphenhydramine is 10 ml three times at day.

Conclusion: The mouthwash was effective against pain, ulcers, infections and bleeding of mucositis of all digestive tract improving the quality of life of patients.

Disclosure of interest: None declared.

PT002: Risk of QTc-prolongation and Torsade de Pointes in a university hospital: preliminary results of the RISQ–PATH study

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Background and objective: More than 170 drugs are linked with QTc-prolongation, which in rare cases can lead to Torsade de Pointes (TdP) and sudden cardiac death. The risk is especially high in patients with other risks factors for QTc-prolongation. The aims of this study were to investigate the prevalence of QTc-prolongation and concomitant risk factors in patients treated with an acute QTc-prolonging drug in a university hospital and to develop a RISQ–PATH score to identify high-risk patients.

Setting and method: An observational study was set up in the University Hospitals Leuven (Belgium). All patients starting treatment with a QTc-prolonging antibiotic, antimycotic or haloperidol (March–December 2014, nine general/surgical wards), were eligible for the study. Baseline and follow-up electrocardiograms (at steady state concentration) were performed. Furthermore, demographical, medical and medication data were collected. The RISQ–PATH score was developed based on a literature review of risk factors (very high evidence: 6 points, high: 3 points, moderate: 1 point, low: 0.5 point; maximum 45 points). A score of 15 points or more was defined as a high risk for QTc-prolongation; sensitivity/specificity values were calculated.

Main outcome measures: Prevalence of QTc-prolongation and concomitant risk factors; sensitivity/specificity of RISQ–PATH score.

Results: During the study period, 178 patients (46.6 % female, mean age 69 ± 14 years) were included (levofloxacin: N = 80; haloperidol: N = 41; fluconazole: N = 41). No significant difference between the mean QTc-values of baseline (425.7 ± 31.7 ms) and follow-up ECGs (428.0 ± 30.7 ms) was found ($p = 0.328$). However, 26 patients (14.6 %) did develop a prolonged QTc-interval (≥450 (♂)/470 (♀) ms). Moreover, in 31 patients (17.4 %) a delta QTc ≥ 30 ms was measured. A quarter of the patients (24.1 %) received concomitant treatment with ≥1 drug with a known risk of TdP. Half of the patients (51.7 %) had a RISQ–PATH score ≥15. The RISQ–PATH score was able to predict a prolonged QTc with a sensitivity of 80.8 % and a specificity of 53.5 %.

Conclusion: Although no significant difference was found in mean QTc between baseline and follow-up electrocardiograms, 14.6 % of the patients did develop a prolonged QTc-interval. The RISQ–PATH

score was able to predict high-risk patients with a sensitivity of 80.8 %. We are currently optimizing and validating this risk score.
Disclosure of interest: None declared.

PT003: Eastern and Central European perspectives in potentially inappropriate medication use and polypharmacy in older patients (EU COST initiative IS 1402)

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Background and objective: Recent tools on potentially inappropriate medications (Beers criteria, STOPP–START criteria, etc.) are less specific for Central and Eastern (CE) Europe and were rarely used in larger epidemiological studies in this region. The aim of this narrative review under the EU COST Action IS 1402, 2015–2018 "Ageism: A multi-national, interdisciplinary perspective" was to summarize results of larger epidemiological studies published in CE-Europe on potentially inappropriate medication use (PIM) and polypharmacy (POL) in older patients in the past decade.
Setting and method: Narrative review of larger cross-sectional studies from CE-European countries, either country-specific studies ($N > 200$ subjects) or cross-national studies ($N > 900$ subjects) determining PIM use and POL in older patients and/or predictors of PIM use (subjects 65+, different settings of care, any criteria). Articles published between 2004 and 2014 in journals having the IF or in peer-review journals have been selected. This narrative review belongs to outputs of EU COST action IS1402 "Ageism: A multi-national, interdisciplinary perspective".
Main outcome measures: Prevalence and predictors of PIM use and POL in CE-Europe.
Results: Eight larger studies on PIM use and POL were published in CE-European countries: Czech Republic-CZ [3 studies, 2005-HC (home care), 2011-AC (acute care), 2009-NHC (nursing home care)], Croatia-CR (3 studies, 2004-PC (primary care), 2008-AC, 2014-PC), Slovac Republic (2008-AC), Bulgaria (2013-AC) and Serbia-SE (2014-PC). Prevalence of PIM use was documented to be the lowest in NHC in the CZ (14 % in 2014, Beers 2003 criteria) and the highest in PC in CR (62.4 % in 2014, tool of Matanovič-Palčevski, 2012). Prevalence of polypharmacy (5+/6+) in CE-EU countries ranged from 37 % in SE (PC) to 90 % in CR (AC). The most frequent predictors of PIM use were ($p < 0.05$): POL (OR 2.19–7.4), poor economic situation (OR = 2.48), depression (OR = 1.3–2.03), immobilization (OR = 1.3–1.87), CHHF (OR = 1.73), gout (OR = 10.26) and hypertension (OR = 31.3). Inversely associated predictors were: hospitalisation in <14 days, living alone, age 75+ and diagnosis of dementia.
Conclusion: Low evidence on PIM use and POL in older population in CE-Europe and higher rates of PIM prevalence (particularly when determined by country-specific criteria) emphasize the need for future cross-national research in this area in CE-Europe. This is also one of the aim of the CE-EU team under the EU COST Action IS1402.
Supported by the COST action IS 1402 "Ageism: A multi-national, interdisciplinary perspective"—subgroup WG1 HEALTH: "Healthy strategies for healthy ageing" (2015–2018).
Disclosure of interest: None declared.

PT004: Improving alert acceptance with context specific drug–drug interaction screening

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Background and objective: Clinical decision support systems (CDSS) have the potential to reduce unwanted DDIs but often result in alert fatigue. The objective of this study was to investigate whether a newly developed context-specific DDI alerting system would improve alert acceptance.
Setting and method: This was a controlled pre-post intervention study conducted at the UZ Brussel hospital in Brussels, Belgium. The intervention was the implementation of a new context-specific DDI alerting system for physicians. Intervention cases consisted of all patients admitted to the 29-bed acute geriatric and 21-bed infectiology department. The control cases consisted of all patients admitted to the 29-bed cardiology and 29-bed neurology department. After a 7-month pre-intervention period, the new system was activated in the intervention departments, while the old system remained activated in the control departments. Post-intervention data was collected for a 7-month period. The new CDSS included a follow-up system for real-time evaluation of the alerts by a clinical pharmacist.
Main outcome measures: Alert acceptance rate of the new versus the old system.
Results: A significant increase of the overall acceptance rate was observed between the pre- and post-intervention period (2.2 vs. 52.4 %, $p < 0.001$) for the intervention departments and between the control and intervention departments (2.5 vs. 52.4 %, $p < 0.001$) in the post-intervention period. There were no significant differences in acceptance rates between the pre- and post-intervention period in the control departments and also not between the control and intervention departments in the pre-intervention period. Based on the real-time evaluation of the alerts and override reasons of the new system, the clinical pharmacist conducted 10 interventions for 10 overridden alerts.
Conclusion: The improvement was probably related to several optimization strategies including the customization of the severity classification, the creation of individual screening intervals, the inclusion of context factors for risk assessment, the new alert design and the creation of a follow-up system. System aspects that require further optimization were identified and will be developed. Further research is warranted to develop context-aware algorithms for complex class–class interactions. The follow-up of alerts by a clinical pharmacist seems important because interventions were conducted for high risk situations.
Disclosure of interest: None declared.

PH001: An exploration of key stakeholders' perspectives on the implementation of Ehealth policy in community pharmacy in Scotland

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Background and objective: Ehealth related policies aim to facilitate collaborative health and social care in providing integrated, person-centred, patient care with community pharmacy offering extended and accessible services. This research aimed to explore and describe key

stakeholders' perspectives on the implementation of Ehealth policy in community pharmacy in Scotland.
Setting and method: Invitations to participate were emailed to a convenience sample of key stakeholders. The email included a link to an online consent form with information sheet and interview schedule attached. Questions covered four areas identified from policy documents: implementation, patient care, education and training, information governance. Semi-structured telephone interviews were audio-recorded with transcripts available for participant review followed by five-step thematic analysis. Ethical and NHS Research and Development approvals were obtained.
Results: Thirty interviews were conducted November 2014 to March 2015. Participants included NHS Directors and Assistant Directors of Pharmacy (n = 12), Technical Leads (n = 5), Community Pharmacy Champions (n = 5), Scottish Government (n = 2) and pharmacy group representatives (n = 4) plus managing directors of pharmacy multiples (n = 2). Eleven of the 14 Scottish health boards were represented. Analysis indicates both optimism and realism around policy-driven implementation of Ehealth in community pharmacy. A recurrent theme was 'access': the need for at least read access to a shared, single health record; with access levels appropriate to each health professional. Another theme of 'capacity': included the upskilling of the pharmacy team recognising different individual learning styles; also, new ways of working to release capacity from the dispensing process to promote patient-facing roles. The topic of information governance raised many questions: many mentioned data protection, code of ethics or NHS contract while one noted 'everybody ticks the boxes but actually do they understand what they're ticking?' Given the opportunity to introduce one Ehealth technology, most mentioned the single, shared health record while others would welcome truly electronic transfer of prescriptions, mobile technologies/devices, greater wi-fi coverage/access and clinical mailboxes.
Conclusion: These findings represent unique insight into policy-driven progress with the implementation of Ehealth in community pharmacy in Scotland. Key stakeholders perspectives on the impact for practice of access, capacity and information governance relate directly to safe, effective patient-centred care; education and training needs; and staff–patient perceptions of appropriate information governance.
Disclosure of interest: None declared.

PH002: Knowledge, attitudes and beliefs of carers regarding fever: a qualitative systematic review

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Background and objective: Fever is one of the most common childhood symptoms, yet it causes unjustified anxiety amongst most caregivers. Fever and febrile illness in children account for numerous consultations with healthcare practitioners each year. It is one of the most frequent reasons for paediatric consultations at emergency departments each year. In the United States of America (USA) 60 million clinic visits per year are due to fever in children costing an estimated $10 billion annually.

The aim of this review is to cohere evidence on the knowledge, attitudes and beliefs of caregivers regarding fever and febrile illness in children.
Setting and method: A systematic search was conducted in ten bibliographic databases from inception to June 2014. Citation lists of studies and consultation with experts were used as secondary sources to identify further relevant studies.

Titles and abstracts were screened for inclusion according to predefined inclusion and exclusion criteria. Results were analysed thematically. A gap analysis was conducted on the views of parents and nurses.
Results: 1565 studies were screened for inclusion in the review. The results of quality assessment, based on CASP criteria, indicated that all studies were of medium to high quality. The final review comprised of four studies from which six analytical themes emerged. Four themes related to parents: (a) control; (b) impact on family; (c) knowledge; and (d) experiences. A further three themes related to nurses: (a) practices and decision making in fever management; (b) antipyretic administration; (c) improving nurses' fever management.
Conclusion: Our review shows that the factors which impact on the knowledge, attitudes and beliefs of caregivers regarding fever and febrile illness in children are multidimensional. This review offers explanations as to why parents and nurses hold the views and opinions that they do about fever. The review offers a critical perspective and aims to increase understanding around this topic which is often lacking in quantitative literature. The review also highlights the paucity of research in this area, thus providing a necessary foundation to research in this area. Furthermore, the review provides a clear basis from which a clear approach to fever management can be designed.
Disclosure of interest: None declared.

PH003: Parental views regarding childhood fever: a Danish interview study

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Background and objective: Fever and febrile illness are some of the most common childhood symptoms, however, correct management of this condition is not well understood in the population. Management of fever causes concern and anxiety in many caregivers. Every year there are numerous cases of unintentional over- and under-dosing of children with antipyretics. This study describes the perspectives of Danish parents of young children with fever.
Setting and method: Semi-structured interviews were conducted in Copenhagen, Denmark in July and August 2014, with either one or both parents, of children where at least one child was 5 years old or younger. Interviews were audio recorded and transcribed verbatim. Data were analysed thematically. Local Ethics Committee approval was granted.
Results: Of the 24 approached; 21 parents agreed to participate in the study (response rate 87.5 %). The average interview duration was 8 min and 52 s. There were 12 female and 9 male parents interviewed. Fourteen (66.7 %) individuals were first-time parents. Parental concern was found to be one of the main themes associated

with fever and febrile illness. Parents were generally concerned when their child was unwell "and you get concerned no matter what…about everything." (Interview 1), however, this was heightened when the child had a febrile illness "I was very much worried" (Interview 5). Parents used a variety of information sources to obtain their knowledge of fever and the management of a febrile child: "I would use the internet…I would go to one of the official pages" (Interview 10). Some parents felt that they knew very little about fever, particularly in small children: "not anything really" (Interview 4). However, some parents had a good knowledge of fever: "That it's the body's way to try to beat the infection or something" (Interview 9). All parents used non-pharmacological methods to reduce fever before using pharmacological methods; "only if it's very necessary" (Interview 1). There was a desire amongst most parents for initiatives, to help with management of fever and febrile illness, to be introduced and for more information to be available.

Conclusion: The understanding and awareness of parents regarding fever and febrile illness in children impacts upon fever management and parental confidence. User-friendly initiatives are required to help parents manage a child with fever.

Disclosure of interest: None declared.

PH004: Expectations, beliefs, behaviours and sources of information on prescribed medicines by homeless patients

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Background and objective: Homelessness takes many forms including sleeping rough, living in derelict buildings, living in squats or sofa surfing. The aim of the study was to explore homeless patients' expectations, beliefs, behaviours and sources of information on prescribed medicines by the homeless.

Setting and method: Qualitative semi-structured, face-to-face, interviews were conducted with patients registered with Marywell homeless healthcare centre in Aberdeen, UK. Patients prescribed at least one medicine prior to the day of consultation and assessed by their GP as having good rapport with practice staff were included. A validated topic guide was used and interviews lasted a maximum of 30 min with trained researchers. Interviews were audio-recorded, transcribed verbatim and thematically analysed. NHS Ethics and R&D permissions were obtained.

Main outcome measures: Homeless patients' expectations, beliefs, behaviours and sources of information on prescribed medicines by the homeless.

Results: Twenty-five participants were interviewed. The majority were male (n = 15) with drug (n = 15) or alcohol (n = 9) misuse offered as the key reason leading to homelessness. Most participants rated their health as either fair (n = 10), bad/very bad (n = 10). Most participants were prescribed medicines for the management of mental health or opioid dependence. Several participants emphasised the benefits of methadone when asked about their beliefs and expectations of their medicines. They believed that methadone was helping them lead a 'normal' life, enabling them to feel 'stable', 'confident' and keeping them away from illicit drug addiction and its consequences including crime.

Although most participants were aware of the consequences of suboptimal adherence to prescribed medicines, several challenges were cited in achieving adherence. These included medicines being stolen and the lack of secure storage. A few participants emphasized that obtaining food was a higher priority than medicines while being homeless. Doctors were the preferred source for medicines information with pharmacists rarely utilised. Barriers to pharmacy access included lack of means to travel to pharmacies, perceived discrimination and other life priorities such as seeking shelter preventing timely attendance at appointments.

Conclusion: Results suggest that there is scope for greater pharmacy involvement as well as integration between health and social care services to enable homeless patients to retain, manage and derive most benefit from their medicines.

Disclosure of interest: None declared.

POSTER DISCUSSION FORUM 1

CP-PC005: An exploration of the barriers to cardiovascular disease (CVD) medications adherence in Arabic-speaking women living in Kuwait (ASWK) with CVD: a qualitative study

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Background and objective: Women are 10 % more likely to be suboptimal-adherent to cardiovascular-disease (CVD) medications 30-day post-acute-myocardial-infarction [1]. In Kuwait, as women enjoy a higher life expectancy, the number of chronic diseases also increases. However, adherence barriers have not been explored in Arabic-speaking women living in Kuwait (ASWK) previously. This study aims to identify barriers that imbed CVD-medications adherence in CVD-ASWK which will inform the development of appropriate adherence interventions.

Design: Thirty CVD-ASWK (mean age 56 years; SD = 3) were purposively recruited from CVD-outpatient clinics of multiple health centres [all tertiary (N = 1), all secondary (N = 5), primary (N = 4)] across Kuwait. The Morisky Adherence Scale was used to measure adherence. Telephone and face-to-face semi-structured interviews investigated participants' perceived barriers to medication adherence, knowledge and beliefs about medications, satisfaction with healthcare providers' (HCP) relationships, and the role of their socio-cultural circumstances on medications adherence. Interviews were recorded and transcribed verbatim. Two researchers identified codes in the transcripts and conducted parallel translations of the quotes. Interview transcripts were analysed thematically. Themes and subthemes were described in a thematic map.

Results: Participants were aware of the necessity of their medications but their experiences of side-effects by themselves or witnessing them in their social context were strong enough to lower the dose prescribed or to prevent some participants from starting their CVD medications. Furthermore, participants described communication gaps and a lack of collaboration with their HCP during the clinic visits. This left them with an unmet need for information and contributed to suboptimal-adherence. Participants reported that the load associated with social responsibilities, poly-pharmacy, and comorbidity as reasons for forgetting medicines. Lack of motivation and low self-efficacy also appeared to diminish adherence. Other participants relied on the use of herbal remedies to aid disease management. Interestingly, participants appeared to be more adherent after encountering CVD complications as they recognized the severity of the condition.

Conclusion: Future research will address HCP perspectives on sub-optimal-adherence and discuss the feasibility of implementing an educational programme for the patients, offering communication skills training for the HCP and introducing new services such as medication reviews to overcome gaps in support for medication adherence.
Disclosure of interest: M. Almane Other Ph.D. student, F. Smith: None declared, J. Portlock: None declared.

DI002: Has the readability of package leaflets of biological medicines improved?

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Background and objective: According to readability Guideline published by the European Commission (2009), the information contained on the package leaflets should be understood by the patients [1]. The objective of this study was to determine the degree of readability and length of the package leaflets for biological medicines in 2010 and compare them with the corresponding values of the same package leaflets in 2013.
Setting and method: Thirty-six package leaflets were selected and downloaded from the European Medicines Agency website [2], and their readability and length (number of words) were obtained.

To get the readability levels of package leaflets, three readability formulas were used: SMOG grade, Flesch-Kincaid grade level and Szigriszt's perspicuity index. For each studied year, the readability was calculated using the whole text of all sections of the package leaflets except section 6 "Contents of the pack and other information", because it was almost identical in all package leaflets and its content is considered less relevant by the patients. The mean of the sections values was calculated for each package leaflet and for each readability index, in order to get a single value by package leaflet. On the other hand, the total length of each package leaflet was calculated from the sum of the length values of the evaluated sections.
Main outcome measures: Readability indices and length of the studied package leaflets were obtained and analysed.
Results: The length of the package leaflets increased during the studied 3-year period (p value <0.05) but no significant differences were found between the readability levels in the same period (p value >0.05). Besides, none of the package leaflets was easy to understand, and the readability values exceeded the recommended values for the written materials targeted to patients.
Conclusion: There was no improvement in the readability of the package leaflets studied between 2010 and 2013, and none of them was easy to understand. The package leaflets for the medicines studied need to improve their readability so that they can be understood by the patients in order to contribute to safe and appropriate use of medicines.
References

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Disclosure of interest: None declared.

CP-PC006: Medication review focusing on anticoagulation therapy in Swiss community pharmacies

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Background and objective: Oral anticoagulation therapy (OAC) entails a high potential for adverse events and strict adherence is needed. The main target population is aged, uses polypharmacy and presents multiple comorbidities. Thus, medication review and identification of safety issues and knowledge gaps about OAC is critically important. The polymedication check (PMC) is a reimbursed intermediate medication review focusing on adherence and medication management for Swiss primary care. We aimed to assess the impact of the PMC extended with a semi-structured interview focusing on OAC.
Setting and method: Fifth-year pharmacy students collected data during an internship in community pharmacies between November 2014 and March 2015. They recorded all pharmacist-led interventions on OAC issued from one PMC and the semi-structured interview containing six questions on knowledge and five questions on safety issues in OAC. One week later, a follow-up telephone interview was performed re-addressing the six knowledge questions. Interventions were categorized using PharmDISC in a posteriori setting.
Main outcome measures: Quantity and type of interventions related to OAC during PMC and during the interview. Score of patient knowledge of OAC (0 = minimum knowledge; 6 = maximum).
Results: Patients (n = 69; age: 75 ± 12 years, 43.5 % woman) were prescribed in 56.5 % vitamin K antagonists and in 43.5 % new oral anticoagulants (NOAC). During PMC, 99 interventions were documented predominantly due to "insufficient adherence" (50.5 %) and "incomplete patient information" (21.2 %), of which 60.8 % were partially or totally accepted. During the interview, 96 knowledge gaps and 9 safety issues were identified that were followed by 102 interventions, of which 91.2 % were partially or totally accepted. Median knowledge score increased from 5 (quartiles: 4/6) to 6 (quartiles: 6/6) at follow-up ($p < 0.001$).
Conclusion: A semi-structured interview performed immediately after the traditional PMC enabled community pharmacists to propose 2-times more interventions than with the PMC alone, of which most were accepted. Sustainability of interventions aimed at filling the knowledge gaps was proven after 1 week by the increased knowledge score, demonstrating the added value of a specified PMC focusing on OAC.
Disclosure of interest: None declared.

DI003: Safety profile of Ibrutinib and Idelalisib

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Background and objective: Chronic lymphocytic leukemia (CLL) and mantle cell lymphoma (MCL) are elderly person diseases. Incidence are respectively 4 and 1 cases for 100,000 persons per year. Ibrutinib is a Bruton's tyrosine kinase inhibitor and Idelalisib is a phosphatidylinositol 3 kinase p110δ inhibitor. No curative treatment is available but Ibrutinib and Idelalisib approval could allow new therapeutic strategies. Clinical trial showed a good safety profile of these two molecules but these effects on a wider population are unknown. The objective of this work was to identify the side effects on patients treated by Ibrutinib or Idelalisib.

Design: Data were collected from the medical records of patients treated by Ibrutinib or Idelalisib from February to April 2015.
Results: 12 patients have been treated. The sex ratio was 3.3 and the median age was 71 years old [50–80]. Seven patients were treated for CLL and 5 for MCL. 75 % of patients received at least three previous lines of treatment. Treatment interruption was necessary for 3 of them (25 %).

For Ibrutinib, nine patients received from 420 to 700 mg/day and the median duration of treatment was 101 days [41–132]. The major toxicities were vascular disorder (14 %) including 80 % of hematoma, blood and lymphatic disorder (14 %), essentially neutropenia and hypogammaglobulinaemia and infection (14 %) mostly lung infection. 11 % of patients had gastrointestinal disorder (diarrhea) and 11 % had general disorder (exhaustion). Two interruptions were necessary, one for a lysis syndrome and the other one for digestive haemorrhage.

For Idelalisib, four patients were treated with 300 mg/day and the median duration of treatment was 104 days. The major toxicity was blood and lymphocyte disorder at 30 % (leukocytosis and hypogammaglobulinaemia) then vascular and musculoskeletal disorder at 20 % each (hematoma and cramps). One interruption was necessary for pneumonitis.
Conclusion: Ibrutinib and Idelalisib are used in relapsed or refractory CLL and MCL. They are well tolerated with a predictable safety profile for Ibrutinib which is not the case with Idelalisib due to the small number of patients.
Disclosure of interest: None declared.

CP-PC007: Developing an instrument (promise) to identify patient related outcomes in medication reviews

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Background and objective: Patient reported outcome measures (PROMs) are regularly used in a clinical setting to measure the effectiveness of treatment for individual patients. A medication review (MR) is a complex type of pharmaceutical care for which PROMs are not yet developed.

Our aim was to develop an instrument to identify patient experienced barriers for good medication use and potentially adverse drug reactions (ADRs).
Setting and method: Existing instruments to identify barriers for proper medication use were selected from literature. Furthermore, an ADR list was developed for common side effects of frequently used drugs in the Netherlands. This was based on 165 ADRs from a selection of 48 medicines, which were grouped into 65 symptoms, from which the top 22 formed the final selection representing 102 (61 %) of the underlying ADRs. Both components were combined into one instrument, which was tested on a small scale among pharmacists and patients.
Main outcome measures: A useful tool to assess patient experienced barriers in good medication use.
Results: An instrument was developed containing 35 items in the six sections: perceived health (1 item), patients' perceptions (5), self efficacy (2), adherence (5) and ADRs (22 symptoms). Small scale testing resulted in some changes of the ADR list, the sequence of items, a simplified ADR scoring system and better instructions for use.
Conclusion: An instrument was developed as potential tool for identifying patient related outcomes of a MR. The feasibility and added value are under investigation in a proof of concept study.
Disclosure of interest: None declared.

DI004: Cold storage of parenteral nutrition: time to reach room temperature before administration

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Background and objective: Following the publication of the new Ministerial Direction (20 March 2015), we have decided to review the circuit of parenteral nutritions. In particular, we have assessed the time required for parenteral nutritions to reach a temperature suitable for administration (IV administration of cold product may cause an unpleasant pain for patient). To reduce this pain, it is advisable to allow the product to reach room temperature before administration. The objective of this study was to measure the time required for the parenteral nutritions to return to room temperature, after leaving to cold storage.
Design: Several standard parenteral nutritions have been prepared for this study: 150 mL ($n = 3$) and 200 mL ($n = 3$). Each bag was removed from the cold storage (3.5 °C) at time t_0, and the temperature was measured by inserting the probe in the nutrition solution. Then, the bag was kept at room temperature and the temperature was monitoring every 10 min. We have controlled at room temperature in the pharmacy facility (around 21 °C) and we have used a water bath to simulate the temperature in neonatal care unit (28 °C).
Results: The average temperature for nutrition solutions at the output of the cold storage was 7.1 °C. In pharmacy facility, the room temperature was 21.2 °C on average: we have observed that the 150 mL bags return to room temperature after 2 h and 30 min, and the 200 mL bags after 3 h. The increase of bag temperature was more important during the first 10 min: from 8.0 to 13.1 °C for 150 mL bags, and from 7.0 to 11.7 °C for 200 mL bags. The temperature of 19 °C was reached after 1 h for the bags of 150 mL and after 1 h and 10 min for the bags of 200 mL. In the water bath (28 °C), all bags reached 28 °C after 10 min.
Conclusion: The time to reach room temperature depends on the volume of the bag: increasing with the volume. This time depends on the room temperature: it decreases with increasing room temperature. According to these results, we recommend to release of bags (150 and 200 mL) from cold storage 10 min before administration in neonatal care unit (28 °C), and 1 h before administration in care units with a room temperature between 20 and 25 °C. The volume is an important parameter, therefore we are carrying out further experiments on adult parenteral nutrition with larger volumes: from 1500 to 4000 mL.
Disclosure of interest: None declared.

CP-PC008: Determination of potential drug–drug interactions by using various software programs at community pharmacy setting

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Background and objective: The aim of the present study is to determine potential drug–drug interactions and compare the reports of potential drug–drug interactions gathered from various software programs at community pharmacy setting.

Setting and method: This study was conducted at 50 community pharmacies located in Istanbul (2 days in a week) between March and April 2015. The first 20 prescriptions contained at least two drugs and belonged to patients aged 18 and more, have been evaluated for potential drug–drug interactions in each community pharmacy. The prescriptions including drugs that are not involved in the software programs have not been included.
Main outcome measures: Potential drug–drug interactions were evaluated by using 'Micromedex 2.0® Software Drug Interactions', 'Medscape Drug Interaction Checker®', and 'drugs.com'.
Results: In a total of 1000 prescriptions, it was determined that 39.2 % of them had at least one potential drug–drug interaction according to at least one-software programs. The mean of age was 54.63 ± 17.20 and 58.7 % of them was female in the prescriptions determined at least one potential drug–drug interactions. The rates of drug–drug interactions were identified in 'Micromedex 2.0® Software Drug Interactions', 'Medscape Drug Interaction Checker®', and 'drugs.com' at 21.2, 33.3 and 31.3 %, respectively. The mean of drugs in prescriptions determined at least one potential drug–drug interactions has been statistically high when compared prescriptions that not determine any potential drug–drug interactions ($p < 0.05$). The concordances of rating regarding clinical importance of potential drug–drug interactions in each software programs have been found as statistically different ($p < 0.05$).
Conclusion: The rates of potential drug–drug interactions gathered from various software programs have been found difference when compared with each other. Therefore using concurrently various software programs should be essential in determination of potential drug–drug interactions. The pharmacist should take part in determination and prevention of potential drug–drug interactions at community pharmacy setting when considering the high rate of potential drug–drug interactions found in the present study. The competent pharmacist should also evaluate the reports of potential drug–drug interactions gathered from various software programs to determine clinical importance and management of potential drug–drug interactions.
Disclosure of interest: None declared.

DI005: Drug–drug interaction in patients using proton pump inhibitors: a patient drug profile study

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Background and objective: Proton Pump Inhibitors are used for prevention and treatment of some diseases like gastric and duodenal ulcers, gastroesophageal reflux disease, Zollinger–Ellison syndrome and for the prophylaxis of NSAIDs-induced gastrointestinal disorders. The extensively and long-term use of PPIs raises the potential for clinically significant drug interactions in patients receiving concomitant medications which metabolized to cytochrome P450 enzymes.

In the light of this information, we aimed to investigate the clinical aspects of drug interactions in patients who use PPIs.
Setting and method: This retrospective study was conducted in patients using PPIs in NEU Hospital between 1 December 2014 and 31 January 2015. Medication charts of patients who admitted to the hospital were reviewed and potential interaction recorded during study period. Interactions were determined using web-based software programs such as Medscape, Drugs and Micromedex which are commonly use online databases in the literature and they were reported as major or significant, moderate or medium and minor or mild interaction. Also we checked the compatibility between these online drug interaction programs according to the results of three levels of interaction.
Main outcome measures: Major/serious, moderate, minor interactions are determined on drug interaction databases of Drugs.com, Medscape.com and Micromedex.com.
Results: Totally 100 patients' medication chart or prescriptions were included in this study (22 of them are in-patient and 78 of them are ambulatory patient). These patients were followed-up by Gastroenterology (n = 56), Internal Medicine (n = 20), Neurosurgery clinics (n = 2) and different ambulatory clinics (n = 22). PPI which the most prescribed is Pantoprazole (n = 59) and n = 39 of PPIs were used as prophylactic agent. Drug–drug interactions were found in 31 % of patients. Major interactions according to Drugs.com is 4 %, serious interactions according to Medscape.com is 2 % and serious interactions According to Micromedex.com is 3 %. All of interactions (as major/serious, moderate, minor) is determined according to Drugs.com as N = 61, Medcape.com as N = 28 and Micromedex.com as N = 13. We calculated percentage of concordance as 21 % (75 % for major/serious interactions, 20 % for moderate interactions and 12 % for minor interactions concordance).
Conclusion: The long-term use of PPIs increases the potential for clinically significant drug interactions in patients receiving concomitant medications. Identification of potential drug interactions may help in reducing drug related problems. In our study, there is no concordance between drug interaction programs to detect especially moderate and minor interaction for PPIs. To provide evidence-based decision about the drug interactions, it is recommended to check for more than one drug interaction sources.
Disclosure of interest: None declared.

TDMP002: Bosentan and immunosuppressants: a new clinical significant interaction

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Background and objective: Lung transplantation is considered as a curative therapy for pulmonary arterial hypertension (PAH). However, a recurrence of PAH can be occurred in some lung transplant patients, leading to introduce PAH-specific treatments which can interact with immunosuppressive drug therapy. This clinical case aimed to report a drug–drug interaction between bosentan, a non-selective endothelin receptor antagonist used in PAH, and immunosuppressive drugs in a lung transplant patient.
Design: Case report.
Results: A 46-year-old man received double-lung transplantation in October 2010 in a context of idiopathic PAH uncontrolled by PAH triple-specific therapy (bosentan, tadalafil, and intravenous epoprostenol). A recurrence of PAH was highlighted with a right cardiac catheterization [mean pulmonary artery pressure (mPAP) = 33 mmHg] in March 2015. A PAH-specific monotherapy by ambrisentan, a selective endothelin receptor antagonist, 5 mg daily was immediately introduced with a clinical and hemodynamic improvement (mPAP = 19 mmHg). During this period, no change was required concerning immunosuppressive therapy: tacrolimus 1.5 mg/day, everolimus 1.5 mg/day, mycophenolate mofetil 500 mg/day, and prednisone 5 mg/day. The occurrence of a bilateral leg swelling 6 weeks later led to switch ambrisentan to bosentan (125 mg twice a day). The routine therapeutic drug monitoring revealed, 7 days after bosentan initiation, an important decrease of tacrolimus and everolimus residual blood concentrations, from 3.7 to

1.8 μg/L (target = 3–4 μg/L) and 5.9 to 2.9 μg/L (target = 5–8 μg/L), respectively, under the same dosages. No other modification of patient's treatments, blood sampling or compliance problems, that may explain this event, were reported. Therefore, based on chronological arguments and literature, bosentan appears to be responsible for a biological and potentially clinical significant enzymatic induction effect on tacrolimus and everolimus via cytochrome P450 3A4.
Conclusion: To our knowledge, this is the first case report highlighting a significant drug interaction between bosentan and immunosuppressive drugs. A close therapeutic drug monitoring is required in this context to limit and prevent the occurrence of severe adverse events, particularly acute transplant rejection.
Disclosure of interest: None declared.

TDMP003: Genetic polymorphisms influence on the response to clopidogrel in peripheral artery disease patients following percutaneous transluminal angioplasty

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Background and objective: Clopidogrel has provided significant reduction in major vascular events in patients with peripheral artery disease in general, and those undergoing percutaneous transluminal balloon angioplasty in particular. At present it is not possible to predict which patients will develop restenosis, amputation, thrombosis or reoperation for lower limb following percutaneous transluminal balloon angioplasty. However, different polymorphisms have been associated with differences in clopidogrel response in acute coronary syndrome patients. The aim of this article is to study the association of theses genetic variations with the clopidogrel response in a cohort of Spanish peripheral artery disease patients and performed a meta-analysis combining these data with another published previously.
Setting and method: 72 patients with lower limb atherosclerotic disease following percutaneous transluminal balloon angioplasty and treated with clopidogrel were recruited. We evaluated the combined effect of *ABCB1* 3435 C>T genotype, *CYP2C19*2* and *CYP2C19*3* genotypes and rates of the primary efficacy endpoint including atherotrombotic ischemic events, diagnosed by ultrasound imaging, during 6 and/or 12 months after the prescription of clopidogrel. Reoperation for lower limb thrombosis post-PTA and amputation was also recorded. Other clinical parameters used to evaluate the clinical evolution of the patients: intermittent claudication, toe-brachial pressure index, arterial PVR test, Fontaine/Routherford degree were measured at 6 and/or 12 months after the initiation with clopidogrel.
Main outcome measures: Subjects carrying at least one *CYP2C19*2* allele and/or *ABCB1* TT had a significantly higher risk for the primary endpoint (OR 5.0, 95 % CI 1.75–14.27, $p = 0.003$) than non-carriers patients. LOF-carriers patients were associated with a worse Fontaine/Routherford degree evolution than non-LOF patients [$p < 0.0001$, OR 13.96 (4.44–43.8)].
Results: The meta-analysis conformed the association analysis of *CYP2C19*2* polymorphism with new atherotrombotic ischemic events (OR 5.40, 95 % CI 2.30–12.70).
Conclusion: Our results support the role of the *CYP2C19* and *ABCB1* polymorphisms as a genetic marker of cardiovascular events in atherosclerotic of the arteries of the lower limb disease patients following PTA treated with clopidogrel.
Disclosure of interest: None declared.

CP-PC010: A comparison of drug-related problems before and after the introduction of a clinical decision support system during medication review

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Background and objective: Explicit criteria, like the Beers-criteria or STOPP/START criteria are developed to identify inappropriate medication and prescribing omissions. Explicit criteria can be easily integrated in a clinical decision support system (CDSS). The aim of this study was to investigate the effect of adding a CDSS to medication review software in daily pharmacy practice.
Setting and method: A pre-post analysis of data from the medication review tool of pharmacies who performed at least five medication reviews in patients aged ≥65 years using ≥5 medicines. In 2013, a CDSS was added to the medication review tool, which could detect potential DRPs at the start of the medication review.
Main outcome measures: Per pharmacy, the number and type of DRPs and implementation rate were calculated.
Results: The mean number of DRPs per patient was higher in the post-CDSS cohort than in the pre-CDSS cohort (3.6 vs. 3.2, $p < 0.01$). The mean implementation rate was lower post-CDSS (44 vs. 50 %, $p < 0.01$), which resulted in an equal number of resolved DRPs per patient in both cohorts (mean 1.6). 41 % of the DRPs in de post-CDSS cohort were identified by the CDSS. The implementation rate of the DRPs generated by the CDSS was lower than the implementation rate of DRPs found by the pharmacists themselves in the post-CDSS cohort (29 vs. 55 %, $p < 0.01$).
Conclusion: The use of a CDSS during medication review is associated with the identification of a higher number of DRPs, but similarly the introduction of CDSS led to a lower implementation rate. Further development of medication review software with more specific alerts is needed for the identification of more clinically relevant DRPs.
Disclosure of interest: None declared.

CP-PC011: Which patients will have the highest risk for drug-related problems? A comparison between frail and non-frail patients

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Background and objective: It remains unclear whether frequently used selection criteria for medication review, mostly based on age and number of chronically used medicines, identify those patients with the highest risk for drug-related problems (DRPs). Frail patients may be more susceptible to adverse drug events. Therefore the aim of this

study was to compare the number of DRPs between frail and non-frail patients.
Setting and method: A retrospective observational pilot study. One-hundred patients (20 from each frailty score ranging from 0 to 4) were selected from the ISCOPE (Integrated Systematic Care for Older People) database. The ISCOPE score was based on the number of problems on four domains of health: functional, somatic (health and illness), psychological and social. Patients were classified as "frail", when they had an ISCOPE score of 3 or 4. Potential DRPs were identified based on drug dispensing records, medical data (diagnoses and laboratory values) and complaints from the ISCOPE-questionnaire.
Main outcome measures: The primary outcome measurement was the mean number of DRPs per patient. Linear and logistic regression was performed to adjust for patient characteristics.
Results: The mean number of DRPs was higher in frail patients ($n = 40$) compared to the non-frail patients ($n = 60$) (7.6 vs. 5.1, $p < 0.01$). The mean number of chronic medications in use was also higher in frail patients (6.3 vs. 4.5, $p = 0.01$). Frail patients remained at increased risk of having 5 or more potential DRPs (OR 11.9, 95 % CI 1.9–75.4), after adjustment for the number medicines in use, renal impairment, non-compliance, use of multi-dose drug dispensing, low education level, living in a care home, low "self-rated health" and the use of fall-increasing drugs.
Conclusion: This pilot study suggests that frailty could be an appropriate selection criterion for the selection of older patients for a medication review.
Disclosure of interest: None declared.

POSTER DISCUSSION FORUM 2

HP-PC009: Relevance of the dispensation activity in a university hospital: example of anticoagulant medications

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Background and objective: A way of securing the hospital circuit of anticoagulants is to require medical prescriptions for their dispensation. This allows a pharmaceutical checking of the main critical points: indication and dosage, considering the patient's weight and renal function. This way, if physicians send wrong prescriptions to the pharmacy, mistakes can be corrected so that right medications are administered to patients. This study aimed at assessing whether these critical points were known and checked during the dispensation of some anticoagulants in our hospital.
Setting and method: Two-month retrospective study. Anticoagulants unavailable in the wards were selected: tinzaparin, dabigatran, apixaban and rivaroxaban. Dispensed prescription sheets were collected; clinical and biological data were obtained with the computerised patient file Millennium® (Cerner Corporation) and prescriptions' analysis was performed according to the drugs' Summary of Product's Characteristics and local recommendations.
Main outcome measures: Medications' indications and dosages, wrong prescriptions, wrong dispensations, wrong prescriptions corrected by the pharmaceutical staff before dispensation, status of the pharmaceutical staff dispensing prescriptions.
Results: 78 prescriptions were analysed: 22 (28.2 %) of tinzaparin, 21 (26.9 %) of dabigatran, 20 (25.6 %) of rivaroxaban and 15 (19.2 %) of apixaban. Among them, 24 (30.8 %) were wrong, with 6 (7.7 %) indication errors and 17 (21.8 %) dosage errors. The dispensations were performed either by technicians (66.7 %), or by pharmacy residents (33.3 %). For tinzaparin, 5/22 (22.7 %) prescriptions were wrong regarding the dosage; the errors were mainly due to prescriptions in mL rather than in antiXa units. For apixaban, dabigatran and rivaroxaban, 19/56 (33.9 %) prescriptions were wrong, regarding the indication (12.5 %) and/or the dose (19.6 %). Finally, these 24 wrong prescriptions led to 23 (29.5 %) wrong dispensations: 6 by residents and 17 by technicians. One prescription mistake was corrected by a resident before dispensation.
Conclusion: This study shows a lack of knowledge about critical points from the pharmaceutical staff, potentially leading to dangerous errors for inpatients' anticoagulant treatments. The dispensation rules were consequently enforced: the staff was trained and a validation circuit was implemented for anticoagulants, by technicians and/or pharmacists.
Disclosure of interest: None declared.

HP-PC010: Prescriptions review at Brazilian university hospital

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Background and objective: The safety of the hospitalized patient is a central matter in health services. Problems in the pharmacotherapy are a major cause of preventable adverse events and are associated with high morbidity and mortality. Studies have shown that clinical pharmacy activities can contribute to patient safety and play a key role promoting rational use of medications. This study aimed to analyze the prevalence of problems in the pharmacotherapy and their predictive factors through clinical review of the orders from critical care units of a large teaching hospital in Brazil.
Setting and method: The review of prescriptions was performed daily, considering its appropriateness regarding selection, doses, use of the therapeutic regimen, administration instructions and pharmacotherapy safety. Characteristics of the included patients, such as pharmacotherapeutic profile, comorbidities, time and reason for hospitalization were raised, and the predictive factors of medication issues defined by multivariate analysis.
Main outcome measures: Predictive factors for medication issues.
Results: During the study period more than 7000 prescriptions were reviewed, for more than 1000 patients. Among the study population, 54.2 % were women, with a median age of 59 years. Eight out of ten patients had some type of comorbidity, the most common were related, directly or indirectly, to the cardiovascular system: hypertension (42.4 %), diabetes (21.1 %) and coronary artery disease (18.0 %). The average of prescripted drugs/day was 10.2 (SD 3.3), and 95 % of patients were considered polymedicated. Approximately 40.0 % of the patients had medication issues and 933 pharmaceutical interventions were made. Four drugs, ranitidine, enoxaparin, omeprazole and meropenem were responsible for almost 35.0 % of all problems. The number of medications (OR 1.10, 95 % CI 1.05–1.15), days with pharmacist assessment (OR 1.26, 95 % CI 1.22–1.91), and with low coefficient of determination, age (OR 1.01, 95 % CI 1.00–1.02) and the presence of coronary artery disease (OR 1.75, 95 % CI 1.24–2.47), were predictors for medication issues.
Conclusion: The clinical review of the orders is an essential activity to the hospital routine and allows the identification and resolution of high rates of medication issues. Although predictor factors facilitate the selection of patients at risk for medication issues, individualized pharmacist review still is the "key point" to ensure prescriptions quality and consequently improve patient safety.
Disclosure of interest: None declared.

HP-PC011: Medicines reconciliation at hospital admission in surgical patients

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Background and objective: Medicines reconciliation (MR) is known to minimise medicines errors and reduce morbidity in hospitalised patients. This process aims to identify and solve unintended medicines discrepancies defined as differences between the home treatment prescription and the first hospital prescription.

The purpose of this study is to asses the number, type and importance of pharmaceutical interventions related to MR in surgical patients.

Design: Prospective study conducted in services of Traumatology, General Surgery and Urology of a tertiary level hospital from February to May 2015. All patients admitted to surgical wards who were ≥65 years old were included.

The methodology used in the MR process is the following: within the 24 h of the patient's admission, the pharmacist 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 whether it was intended in accordance with the patient's condition. If the discrepancy is unintended, appropriate changes are made to the medicines.

Results: 424 patients were included with a mean age of 74.44 (43–102). The average number of regular medicines per patient was 3.85. We found 1845 discrepancies between home and hospital treatment, 12 were intended and 1833 were unintended. Unintended discrepancies were classified in: omission of medication = 1749 (95 %), different dosage/route of administration/regimen = 57 (3.1 %), different medication = 14 (0.76 %), not indicated medication = 13 (0.7 %). The average discrepancies per patient was higher in General Surgery (5.25) than Urology (4.88) and Traumatology (3.36). The acceptance rate for our interventions was 99.35 %.

Conclusion: The high number of detected unintended discrepancies justifies the completion of a process of MR in patients admitted to the service of Traumatology, General Surgery and Urology. The highest percentage of unintended discrepancies corresponds to omissions of medication. The acceptability of pharmaceutical interventions related to MR has been excellent. Therefore the presence of a pharmacist in surgical services is key to ensuring that patients receive their home medication during the transition between different levels of care.

Disclosure of interest: None declared.

HP-PC012: Medicines reconciliation and drug adherence in a population of acute psychiatric patients at a Swedish teaching hospital

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Background and objective: Studies on medicines reconciliation and adherence are limited in Swedish psychiatry. An 8 weeks prospective, descriptive study was therefore undertaken to explore these issues in a hospital setting.

Setting and method: Patients admitted to the psychiatric emergency department or the acute psychiatric ward had their drug use reconciled by two pharmacy students. The reconciliation was mainly based on an interview with the patient (or carer) and information from case notes. Additional sources of information, like home care personnel or unit dose dispening records, were used when required. Patients also filled out two questionnaires: one about adherence, and one about drug information and relation with their psychiatrist(s). The reconciled drug use was then compared to the patients' medication list in the hospital medical records.

Main outcome measures: Frequency, type and clinical relevance (as judged by investigators) of identified medication discrepancies; adherence according to the 8-item Morisky Medication Adherence Scale (MMAS-8); four point Linkert scale for questionnaire questions.

Standard descriptive statistics was used and χ^2-test for correlations.

Results: 131 adult patients were included. Of these, 106 (81 %) had at least one discrepancy in their medication list. A total of 440 discrepancies were identified and 95 (22 %) of these were judged as clinically relevant. A vast majority (81 %) of the clinically relevant discrepancies concerned psychotropic drugs. The most common types of discrepancies were *drug not taken* (41 %), *drug discontinued* (24 %) and *wrong dose* (20 %). Physicians corrected half of all reported discrepancies. On average the reconciliation took 12 min (range 2–45 min).

Among those who managed their medications independently (n = 101), 17 % had good adherence, 26 % average adherence and 57 % poor adherence. Patients who rated in the questionnaire that they were well informed about their drugs, had a good relation with their psychiatrist(s) or felt involved in decisions regarding drug therapy had significantly better adherence. Patients mainly got information about their medications from physicians (70 %), the pharmacy and/or package leaflet (53 %), and the Internet (46 %). Only 20 % were fully satisfied with information given about common adverse effects of their drugs.

Conclusion: Discrepancies in medication lists are common in psychiatric patients, but fortunately most are of minor importance. Not taking prescribed drugs is a common problem related to adherence, which was generally poor in this population. The study highlights a need to improve information about medications and shared decision-making, both were factors associated with better adherence.

Disclosure of interest: None declared.

HP-PC015: Severe skin reaction after high-dose intravenous polyvalent immunoglobulin infusion: discussion about a case report

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Background and objective: High-dose Intravenous Immunoglobulins (IVIG) are increasingly used to treat neurologic disorders. While most adverse effects are not severe, occasionally more severe adverse effects occur. Currently, there are no clear advices on the further treatment management of patients. The objective of this work is to report a recent case of serious skin adverse effects and the efficacy of the advised patient management.

Design: A 64-year-old man has been diagnosed with IgM anti-myelin-associated glycoprotein antibody demyelinating neuropathy. Then the patient received a first IVIG therapy. Two days later, pruriginous erythematous maculopapulovesicular skin lesions appeared on the chest then the whole body. Biopsy was consistent with a drug reaction

or psoriasis. The lesions decreased progressively with topical application of corticosteroids (clobetasol propionate ointment). A recommendation was requested to pharmacovigilance from the first IVIG infusion to help physicians on patient management. One month later, skin lesions reappeared the last day of the second IVIG infusion in the whole body, despite a corticosteroids premedication. The same topical application of corticosteroids has been used with a more slowly regression and no complete resolution of the lesions before 1 month. For the third IVIG infusion, immunoglobulins with IgA concentration decreased were used, without premedication.
Results: Clinical improvement was observed following the first two cycles. Responsibility of the polyvalent immunoglobulin was retained considering the rapid onset of the lesions after infusion with a positive rechallenge. A delayed hypersensitivity reaction was suspected with consequently no need of an antihistaminic treatment. A premedication with corticosteroids was carried out during the second IVIG infusion, without however any efficacy evidence to the best of our knowledge. It failed to prevent the skin lesions onset. No recurrent skin adverse effect has been observed after the third IVIG infusion.
Conclusion: This case has shown that despite a serious and recurrent adverse effect developed following IVIG infusions, this treatment could be reintroduced in the patient, through the substitution with polyvalent immunoglobulins with a low rate of IgA. A benefit of a substitution with another classic polyvalent immunoglobulin is not expected. The benefit of treatment has been conserved in this responder patient through multidisciplinary collaboration (neurologist, clinical pharmacist, pharmacovigilance).
Disclosure of interest: None declared.

HP-PC016: Green, amber, red: A study of the changing status of low priority 'green' patients in a clinical pharmacy patient 'triage' system

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Background and objective: NHS Greater Glasgow and Clyde clinical pharmacy (CP) service has a patient 'triage' priority system; 'red' (high), 'amber' (moderate) or 'green' (low). Once 'green' no agreed criteria for ongoing CP review had been implemented but were in development. The aim was to investigate the changing status of 'low priority' patients to characterise their pharmaceutical care issues (PCIs) patients and any changes to 'priority' status.
Setting and method: This study identified a convenience sample of patients in the Medical wards. Medical notes and immediate discharge letter (IDL) were reviewed retrospectively to determine, on each day of admission from when categorised as 'green', what if any PCIs developed. Data was collected using a pre-piloted data collection tool that was developed and reviewed by an expert panel. NHS ethical approval was not required.
Main outcome measures: The proportions of patients in each priority category and changing status over time of admission and characteristics of PCIs and related interventions.
Results: Of the 99 'green' patients 67 (67.7 %) remained low priority until discharge, 28 (28.3 %) developed pharmaceutical issues that changed their status and four (4 %) were erroneously triaged 'low priority' and excluded. PCIs were identified with 30 (73.1 %) resulting in escalation to 'amber' and 11 (26.1 %) resulting in escalation to 'red'. An expert panel reviewed the PCIs and 48.8 % were deemed potentially clinically significant and two issues were deemed potentially very clinically significant where a pharmacist could have prevented potential major toxicity and/or organ failure. At discharge 61 interventions were made on clinically reviewing the IDL, 17 (27.9 %) had been previously identified and documented in the medical notes but not actioned by medical staff.
Conclusion: The majority of 'green' patients remained so until discharge. Over half of issues identified, in the remainder, were clinically significant. Interventions were identified but not actioned by medical staff. CP resource is not available for ongoing monitoring of 'low priority' patients. This highlights the need for a referral process back to CP. The characteristics of issues identified will guide the criteria for referral.
Overall 'triage' is effective but 'green' patients developed PCIs A referral system is needed and data from this study can guide this.
Disclosure of interest: None declared.

HP-PC017: Validation of the CLEO tool for evaluating potential significance of pharmacist interventions in a centralized chemotherapy preparation unit

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Background and objective: The CLEO tool (including three independent dimensions: 7-category clinical, 4-category economic, and 4-category organizational) for evaluation of potential significance of a pharmacist intervention (PI) was validated in general practice. This study aims to test the validity and reliability of CLEO tool for PIs from pharmacist analysis of prescriptions in a centralized chemotherapy preparation unit (CPU).
Setting and method: The inter-rater reliability is a concordance between intervening pharmacists (two pharmacy residents and three senior pharmacists working in the CPU) and a peer reviewer pharmacist. The validity is a concordance between intervening pharmacists and consensus opinions of expert panels (i.e. multidisciplinary expert committees). All 237 PIs recorded from July to September 2014 were divided into four specific therapeutic domains: hematology (43 PIs), oncology–radiotherapy (146 PIs), pneumology (33 PIs), hepato-gastroenterology (HGE) (15 PIs). Four expert panels were constituted respectively. Each expert panel consists of four members: a medical specialist of the domain, a clinical pharmacy specialist, a pharmacist working in the CPU, a pharmacovigilance expert. Subgroup analyses were also conducted.
Main outcome measures: Inter-rater reliability, validity, factors affecting agreement.
Results: The inter-rater reliability was *moderate* agreement for clinical (agreement = 51 %; kw = 0.48); *substantial* for economic (agreement = 71 %; kw = 0.61); and *fair* agreement for organizational dimension (agreement = 60 %; kw = 0.27). The validity was *fair* agreement for clinical (agreement = 41 %; kw = 0.32); *substantial* agreement for economic (agreement = 68 %; kw = 0.53); and *slight* agreement for organizational dimension (agreement = 57 %; kw = 0.17). The peer pharmacist rated more consistently with expert panels than pharmacists in the CPU; pharmacy residents rated more consistently than senior pharmacists. Ratings were less consistent with the expert panel of HGE. Validity of the CLEO was higher if evaluators rated accepted PIs than refused PIs.
Conclusion: The highest strength of agreement was found for economic dimension of the CLEO classification, then clinical dimension. The lowest values were obtained for organizational dimension.

Reproductibility of validity and reliability of the CLEO in a local setting is not always obvious. Subgroup analyses is useful to target the main source of disagreement (panel experts, pharmacists or types of PIs) and further training of rating and peer-review process is necessary to improve agreement.
Disclosure of interest: None declared.

TDMP001: Phenytoin in pediatric patients: How important is the AEDs therapeutic drug monitoring?

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Background and objective: Despite de emergence of new molecules, classic antiepileptic drugs (AEDs) still ensure a prominent place in the treatment of pediatric epileptic disorders. Therapeutic drug monitoring (TDM) of AEDs has been shown to be a useful tool to optimize the therapeutic efficacy and minimize toxicity, and to improve the knowledge of the kinetic profile of PHT in specific populations such as pediatric population. The present study aimed: (1) evaluate three AEDs [valproic acid (VPA), carbamazepine (CBZ) and phenytoin (PHT)] serum concentrations (SCs) in pediatric patients; (2) characterize the pharmacokinetics of PHT in pediatric patients.
Setting and method: Patients aged from 0 to 18 years and submitted to Coimbra Pediatric Hospital between 2008 and 2012 were studied. Demographic, clinical, analytical and therapeutic data were collected. The first goal was achieved using 1971 SCs of AEDs and the second goal was performed using data from 40 patients. *Abbottbase PKS* software was used to estimate pharmacokinetic parameters (PKPs) and statistical analysis was performed by *Statistical Package for the Social Science* 20 software.
Main outcome measures: SCs were distributed according to the reference range established for each AED, as sub-therapeutic, therapeutic and supra-therapeutic. PKPs estimated for PHT were compared between two patient groups: children and adolescents.
Results: PHT was the AED with the lowest percentage (37.7 %) of SCs within the respective reference range, followed by VPA (51.3 %) and CBZ (70.9 %). PHT exhibited the highest percentage of SCs in sub-therapeutic (41.6 %) and in supra-therapeutic (20.7 %) ranges. PHT presented a volume of distribution of 0.913 ± 0.413 L/kg for children and 0.778 ± 0.455 L/kg for adolescents; a Michaelis–Menten constant of 6.709 ± 3.906 mg/L in children and 6.488 ± 3.285 mg/L in adolescents; and a maximum metabolic rate (V_{max}) of 7.885 ± 2.780 and 6.369 ± 2.449 mg/kg/day, for children and adolescents, respectively. Although no correlation between the values of the PKPs of PHT and age was found, a difference higher than 1 mg/kg/day in the mean value of V_{max} was detected between both groups.
Conclusion: High percentages of VPA and CBZ, and especially PHT SCs, were found outside the therapeutic range, which may result in lack of effectiveness or toxicity. The high variability observed in PKPs of PHT requires a increased caution when used in designing dosage regimens for patients with similar characteristics. These data clearly indicate that there is a real difficulty in the use of PHT in clinical practice and reinforce the postulated in the literature about the need for TDM of VPA and CBZ, and especially of PHT, in order to, obtained the SCs required to achieve the desired pharmacological effect.
Disclosure of interest: None declared.

HP-PC018: Evaluation of pharmacist interventions (PIs) in electronic prescribing

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Background and objective: Pharmacist review of drug prescriptions prevents errors and improves patient outcomes; add quality and safety to the drug treatment process. However, it is necessary to evaluate the effectiveness of these interventions, by analyzing the records of their activities.
Design: Prospective study of the pharmacist interventions on prescriptions' validation at an university hospital between 1 March and 31 December 2013.

All the information about interventions was obtained from the computerised physician order entry system and respective pharmaceutical database. Drug related problems (DRPs) detected were classified with adaption of the medication errors classification system of the National Coordinating Council for Medication Error Reporting and Prevention of Spain.

This classification covers the following points: wrong medicine, dose omission, incorrect dose, length of treatment, inadequate monitoring and other errors that included therapeutic duplication and exchange, the frequency, speed, route and technique of administration, preparation/handling and/or conditioning, and pharmaceutical method.
Results: During the study, 1918 interventions were recorded, of which 1096 (57.1 %) were accepted. 1265 patients with an average age of 71 years old constituted study population.

Main types of medication errors (ME) were: C12 (42 % not timely sequencing IV/oral medicines), C2 (11.7 % wrong dose), C4 (9.3 % wrong administration schedule), C16 (6.2 % inadequate serum levels monitoring), C15 (4.5 % RI and HI dose adjustment).

Main types of PIs were R10 (24.6 % change to a safer administration route), R3 (13.5 % dose changing), R2 (12.8 % medicine discontinuation), R15 (10.6 % avoiding unneeded prescribed medicine), R4 (8.5 % schedule modification), R5 (7.2 % modifying dosing form), R13 (6 % recommendation of pharmacokinetics/pharmacodynamics monitoring), R19 (5.3 % preventing omission of prescribed medicine other PIs with fewer occurrences.

56 % of PIs occurred in medical units and 44 % in surgical units with an acceptance rate of 64 and 49 %, respectively.

47 % of total interventional medicines were antibiotics, followed by medicines of gastric system (25 %), most of all anti-acid and anti-ulcer drugs.
Conclusion: The results show that antibiotics for most PIs and remain in the top of the list of the interventional medicines. This fact is due to hospital pharmacy policies in order to avoid unneeded risks for the patient and to save money with unmet needs. The PI analysis provided information on the main medicines that required intervention and the most frequent types of ME, contributing to the implementation of preventive measures in order to improve patient safety and the efficiency of healthcare provision.
Disclosure of interest: None declared.

HP-PC019: Potentially inappropriate prescription and omissions in pediatrics: detection by POPI in the emergency unit and in the ambulatory setting. POPI (Pediatrics: Omission of Prescription and Inappropriate prescription)

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Background and objective: POPI is the first new tool for potentially inappropriate prescription and omissions in pediatrics. The aim of this study was to evaluate the capacity of POPI in detecting retrospectively inappropriate prescriptions and omissions in hospital and ambulatory care. The risk factors associated with this problem are also analyzed.
Setting and method: We collected retrospective data of patients who went to the emergency pediatric (EP) unit at Robert-Debré Hospital (AP-HP, France) from 1 October 2014 to 31 March 2015. Prescriptions for pediatric patients in one community pharmacy (CP) at the same period were also collected. POPI tool was applied to identify inappropriate prescriptions and prescribing omissions. Logistic regression was used to analyze the risk factors.
Main outcome measures: The rate of inappropriate prescriptions and omissions.
Results: A total of 18,562 prescriptions for 15,973 patients at the EP and 4780 prescriptions for 2225 patients at the CP were analyzed. The inappropriate prescription rate and omission rate was respectively 3.3 and 2.6 % at the EP and 26.4 and 2.6 % at the CP. Prescription of respiratory and digestive drugs presented more inappropriate prescription and omissions. Ambulatory prescription [OR 5.2, 95 % confidence interval (CI) 5.0–6.5, $p < 0.001$], and the group age between 2 and 6 years (OR 2.4, IC 1.9–2.9, $p < 0.001$) were associated with a higher risk of inappropriate prescribing.
Conclusion: Our study demonstrated the performance of POPI to detect inappropriate prescription and omissions in pediatrics patients. Prospective and multicenter study should be realized to evaluate the impact of this tool in clinical practice.
Disclosure of interest: None declared.

POSTER DISCUSSION FORUM 3

PE003: Use of pregabalin in clinical practice: What can we do to improve appropriateness?

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Background and objective: Pregabalin consumption has increased exponentially in the last years and has reached the second drug position in spending in our region [1]. In European Union, pregabalin is authorised to treat epilepsy, neuropathic pain and generalized anxiety disorder in adults [2]. The objective was to determine and assess pregabalin treatment suitability for the indication authorised and patterns of use, in order to design interventions for improvement.
Setting and method: *Design*: A multicenter, observational cross-sectional study was performed. *Setting*: 53 primary health care centres, covering 1,250,000 inhabitants. *Population*: 10,155 patients with pregabalin prescribed.
Main outcome measures: Age, gender, source, pregabalin daily dose, patient diagnosis, glomerular filtration rate (GFR), duration of treatment, previous medication, adequate treatment according to diagnosis. Extraction of data from medical record was confidential. Statistical analysis was performed using SPSS v. 18.0.
Results: 64.2 % of total patients treated with pregabalin were female and the mean age was 62.3 years (SD ± 15.24). 29 patients younger than 18 years were found. 68.2 % (N = 6926) of patients had prescribed pregabalin for an indication authorised. 45.2 % of patients had an inadequate indication of osteoarthritis and 15.1 % had an inadequate indication of fibromyalgia. 6.9 % of unsuitable patients had no associated diagnosis. 71.9 % (N = 7299) of patients started treatment with pregabalin without using first-line drugs such as: amitriptyline or gabapentin. 66 % of the active treatments had been initiated in the previous year. The average daily dose was 151 mg (SD ± 113.33) compared with 135 mg (SD ± 93.57) for people over 65 years. The daily dose was higher than the maximum according to GFR as 0.4 % of the total. In patients with fewer GFR than 15 ml/min, the dose exceeded the maximum in a 47.4 % of the patients (N = 9).
Conclusion: Two-thirds of the treatments had an appropriated diagnosis. A small proportion of patients under 18 year-old were treated with pregabalin. Almost half of patients with GFR less than 15 ml/min exceeded the maximum recommended dose. Only a third had initiated treatment with amitriptyline or gabapentin. Interventions to improve appropriate use of pregabalin are needed.
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Disclosure of interest: None declared.

CP-PC009: Nature and frequency of drug therapy alerts generated by clinical decision support in community pharmacy

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Background and objective: In order to propose improvement strategies for clinical decision support system (CDSS), we aimed to investigate the nature, frequency and determinants of drug therapy alerts generated by a CDSS in community pharmacy.
Setting and method: A retrospective analysis of dispensed drugs and drug therapy alerts generated by a CDSS in community pharmacies.
Main outcome measures: Nature, frequency and determinants of generated drug therapy alerts.
Results: Data were extracted from the CDSS of 123 community pharmacies. After taking a 10 % random sample of patients with a prescription in the period August 2013–July 2014, 1,672,169 dispensed prescriptions from 81,742 patients were included in the analysis. Of all processed prescriptions, 43 % led to one or more drug safety alerts, most frequently drug–drug interaction alerts (15 % of all prescriptions), drug–disease interaction alerts (14 %), duplicate medication alerts (13 %) and dosing alerts (7 %). The majority of

prescriptions with alerts (80 %) were clustered in a minority of patients (16 %). The therapeutic drug group of the prescribed drug was the most important determinant of alert generation. Prescriptions for antithrombotic agents accounted for 9.4 % of all prescriptions with an alert, beta blocking agents for 7.5 % and angiotensin converting enzyme inhibitors for 6.1 %.
Conclusion: The investigated CDSS in Dutch community pharmacy generated one or more drug therapy alerts in nearly half of the processed prescriptions. The majority of alerts were concentrated in a minority of therapeutic drug groups and patients. To decrease the alert burden, CDSS improvements should be directed at the prioritization and integration of drug therapy alerts for these therapeutic groups within patients.
Disclosure of interest: None declared.

PE004: Prescription errors and associated factors in patients with oncologic and hematologic diseases in a Brazilian tertiary hospital

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Background and objective: Drug errors extend inpatient stay, increase costs and double the risk of death. Identify patients more likely to present prescription errors would be one manner that could be used to decrease the impact of such events. To identify the prevalence of prescription errors in drug prescriptions of patients with oncohematologic diseases and the factors associated with these events.
Setting and method: We performed a cross-sectional study in a large Brazilian tertiary hospital. Data regarding service (high risk chemotherapy unit), patients and their clinical condition, drug therapy and prescription errors were retrieved and analyzed according to the National Coordinating Council for Medication Error Reporting and Prevention taxonomy.
Main outcome measures: Prevalence of prescription errors and the factors associated.
Results: We identify out of 344 included drug prescriptions (n = 31 patients), 26.2 % showed at least one prescription error, mainly involving a wrong drug (48.3 %) or an improper dose (26.7 %). The errors were most frequent with the drugs dexamethasone/polymyxin B (10.7 %), vancomycin (10.7 %) and ranitidine (5.4 %). According to the logistic regression, the factors associated with errors include: presence of neutropenia (OR 1.92, 95 % CI 1.10–3.35), physicians on holiday or weekend shifts (OR 0.40, 95 % CI 0.18–0.86) and prescriptions with higher proportion of parenteral administration route (OR 1.05, 95 % CI 1.03–1.08).
Conclusion: A high prevalence of prescription errors related to wrong drug and improper dose was identified. Identifying the factors associated with errors can be useful in developing clinical tools for predicting patients at higher risk for the occurrence of prescribing errors, as well as to contribute to the optimization of health professionals' clinical performance.
Disclosure of interest: None declared.

PT005: Pentoxifylline prevents cognitive and biochemical impairments in a rat model of posttraumatic stress disorder

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Background and objective: Posttraumatic stress disorder (PTSD) is a disabling, prevalent and difficult-to-treat psychiatric disorder, which can develop after the exposure to severe traumatic events such as those occurring during wars and natural disasters. Despite the variety of pharmacological and psychological therapies, 30 % of the patients are still symptomatic 10 years after initial diagnosis. Pentoxifylline (PTX) is a potent antioxidant, which has important role in treatment of vascular dementia and improves the cognitive function among the sleep-deprived.
Setting and method: In the present study, the effect of PTX on memory impairment induced by PTSD was investigated using rat animal model. PTSD was induced in animals using a single prolonged stress rat model of PTSD (2 h restrain, 20 min forced swimming, 15 min rest, 1–2 min diethyl ether exposure). PTX was administered intraperitoneally at a dose of 100 mg/kg/day. Vitamin E was used as a positive control. Spatial learning and memory were assessed using the radial arm water maze (RAWM). Changes in oxidative stress biomarkers, brain-derived neurotrophic factor (BDNF), and epigenetics (histones) in the hippocampus following treatments were measured using enzymatic assays.
Main outcome measures: Changes in oxidative stress biomarkers, BDNF, and epigenetics (histones) in the hippocampus following treatments were measured using enzymatic assays.
Results: The result revealed that PTSD impaired both short and long term memory ($P < 0.05$). Use of PTX prevented memory impairment induced by PTSD. Furthermore, PTX normalized PTSD induced changes in the hippocampus GSH/GSSG ratio, activity of catalase, and glutathione peroxidase (GPx), BDNF, and certain histones levels.
Conclusion: In conclusion, PTSD induced memory impairment, whereas PTX prevented this impairment possibly through normalizing antioxidant mechanisms, BDNF and epigenetic changes in the hippocampus.
Disclosure of interest: None declared.

PT006: HCV first drugs generation: cost/effectiveness profile in view of new therapeutic algorithm

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Background and objective: HCV therapy has showed an exponential growth in recent years due to discovery of several new drugs, with increase in efficiency but also costs expansion. This has introduced ethical issues of treatment sustainability. Therefore in a cost-effectiveness perspective, it should re-evaluate therapies just outdated. The goal is to verify the effectiveness of the first generation drugs and their cost-effectiveness profile.
Setting and method: Effectiveness was evaluated with a perspective observational study that enrolled, from June 2012 to April 2014, 139 patients, in two groups, boceprevir (A) and telaprevir (B), treated with schedule comparable to those of their studies.
Main outcome measures: The primary end-point, SVR (sustained virological response), was compared with relative phase-III RCT. The cost-effectiveness profile was defined as cost/effectiveness ratio (RCE), meaning the cost per therapeutic success unit additional percentage. Costs included only main dugs. The population was stratified according to the characteristics of previous treatment (naive, experienced) and presence of cirrhosis.
Results: Group A consisted in 80 patients, 22 naive (including 16 cirrhotics, 72.7 %) and 58 experienced (36 cirrhotics, 62.1 %): in naive, SVR was 41 %, while in experienced 48 %. Given the cost of

boceprevir in therapy (€ 13,306), it was found a RCE of 325 in naive and 277 in experienced. Group B consisted in 59 patients, 12 naive (including 4 cirrhotics, 33.3 %) and 47 experienced (21 cirrhotics, 44.7 %); in naive SVR was 67 %, while in experienced 66 %. Considering the cost of telaprevir (€ 20,000), the RCE in this case is 299 in naive and 303 in experienced. Only one case of positivization was found after 6-month follow-up in group A (among experienced-cirrhotics). Efficacy of boceprevir declared in SPRINT-2 trial in naive patients was 68 %, while for experienced (RESPOND-2 trial) was 66 % but cirrhotic percentage was significantly lower (<30 %) in both studies. The efficacy of telaprevir, from the ADVANCE trial in naive patients was 75 %, while for experienced (REALIZE trial) was 65 %.

Conclusion: Telaprevir, compared with boceprevir, showed in clinical practice a superior effectiveness and greater adherence to the trial outcomes, although the two groups were not comparable for cirrhotic prevalence, a well-known negative predictive factor of SVR. Finally, the cost/effectiveness profile is favorable for boceprevir in experienced and for telaprevir in naive.

Disclosure of interest: None declared.

CP-PC012: Lower alert rates by thematic clustering of associated drug interaction alerts

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Background and objective: Clinical decision support systems (CDSS) in community pharmacy generate an overload of drug therapy alerts, leading to the risk of alert fatigue. The majority of drug–drug and drug–disease interaction alerts concern a minority of all potential drug interactions. These alerts accumulate in a minority of patients, with multimorbidity and polypharmacy. We aimed to investigate to which extent thematic clustering of associated drug interaction alerts would decrease the alert rate.

Setting and method: A retrospective analysis of drug–drug and drug–disease interaction alerts generated by CDSS in community pharmacies. Frequently generated combinations of multiple drug interaction alerts were analyzed for associations. All associated alert combinations with comparable management guidelines were defined as a cluster. The effect of the use of these management clusters in alert generation (simulation of a CDSS generating one alert per cluster per visit instead of separate alerts) on the total alert rate was assessed.

Main outcome measures: Alert rate in a CDSS in the current situation compared to a simulation of clustered alert generation.

Results: Data were extracted from the CDSS of 123 community pharmacies. 1,672,169 dispensed prescriptions from 81,742 patients (667,172 pharmacy visits) were included in the analysis. These prescriptions led to 544,028 drug interaction alerts. Fifty-five frequently occurring associated alert combinations were identified. Analysis of these combinations for comparable management guidelines resulted in three main management clusters: potassium/renal function (four associated drug interactions), diabetes/potassium/renal function (six associated drug interactions), blood pressure (two associated drug interactions). When only one alert would be generated per cluster per patient visit, the total number of drug–drug and drug–disease interaction alerts would decrease from 544,028 to 478,122 (minus 12 %). Including more alerts in clusters could further reduce the alert rate.

Conclusion: Clustered alerting of drug interactions with comparable management guidelines can decrease the alert rate by at least 12 %.

Disclosure of interest: None declared.

PT007: Is the addition of olanzapine effective in restoration of CINV prevention in non-responders to standard antiemetic therapy? A retrospective controlled study

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Background and objective: Olanzapine is an atypical antipsychotic drug which presents an antiemetic activity. Some studies have shown equivalent effectiveness of olanzapine to neurokinine-1 receptor antagonists or dopamine antagonists for the prevention of Chemotherapy-Induced Nausea and Vomiting (CINV) but less is known about its role in addition to standard antiemetic therapy. The present study aimed to evaluate the effectiveness of the addition of olanzapine to a standard triplet for CINV prevention for patients who experienced CINV during their first chemotherapy cycle despite a well-managed prevention.

Setting and method: A retrospective and controlled study was conducted in a population of patients at high risk emetic. The patients were allocated in two groups. Group A (OLZ group): the antiemetic protocol was reinforced by the addition of olanzapine at 5 mg/day for 5 days. Patients in this group were treated from November 2013 to April 2014. Group B: control group composed of a cohort of patients treated between November 2011 and April 2012. The inclusion criteria was that patients had to have had nausea (minimum grade 2) and/or emesis (minimum grade 1) according to NCI-CTCAE criteria (version 4.03) during the first cycle of chemotherapy.

Main outcome measures: Effectiveness of CINV prevention was assessed in both groups on cycles 2 and 3. Primary endpoint was the percentage of patients that experienced neither nausea nor emesis during delayed phase (24–120 h post-chemotherapy). Secondary endpoints were the separate evaluation of nausea prevention and of emesis during delayed phase. Data were collected from electronic health record and analyzed with the statistical software R®. *P* value of <0.05 was considered as statistically significant.

Results: Each group included 25 patients and both were comparable in age, sex, cancer type and emetic chemotherapy level [92 % (group A) vs. 96 % (group B) highly emetogenic chemotherapy]. At cycle 1, no significantly difference was shown between both groups in term of CINV control. In OLZ group, absence of nausea and vomiting was achieved by 12 patients at cycle 2 versus 4 in control group ($p < 0.05$). Absence of nausea (12 pts vs. 4; $p < 0.05$) and vomiting (18 pts. vs. 11; $p < 0.05$) were also significantly improved. In OLZ group, no adverse event was found to be linked to OLZ use, in particular, no motor disorder was observed.

Conclusion: The addition of OLZ was found to be effective in restoration of CINV prevention in non-responders to standard antiemetic therapy. In our study, the safety profile was excellent. Prospective studies are warranted to confirm these results.

Disclosure of interest: None declared.

PT009: Appropriateness of antimicrobial therapy for urinary tract infections in the Belgian psychiatric hospital UPC KULeuven: a point prevalence study

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Background and objective: There is a clear association between antimicrobial prescribing practice and the emergence of multiresistant pathogens for urinary tract infections.

The aim of this study was to describe (1) if the indication for urinary cultures could be found in patients' medical records, (2) the appropriateness in choice, posology and duration of prescribed antimicrobial therapy and (3) the compliance with antimicrobial therapy.

Setting and method: A retrospective point prevalence study was carried out in the psychiatric hospital UPC KULeuven including all urine cultures of the month February 2015. Electronic medical records, prescriptions and registrations of medication intake were retrospectively checked.

Main outcome measures: (1) Medical records were checked on the frequency of presence of symptoms according to the CDC definitions of urinary tract infections (UTI). (2) Check of appropriateness of choice, dose, posology and duration of antimicrobial therapy was based on the guidelines provided by the hospital antibiotic policy group. (3) Medication compliance was calculated by registered medication intake/prescribed medication $\times$ 100.

Results: Data from 82 urine culture samples from 64 unique patients were available.

In 51 % (42/82), no reason for sampling was found in the medical record. In 69 % (18/26), no CDC symptom of UTI was registered.

Twenty antimicrobial treatments for UTI were prescribed. Of all treatments, 85 % were associated with a positive culture and 80 % were started in the first 3 days after sampling. 55 % were appropriate in choice, dose, posology and duration of treatment.

45 % of the 20 treatments were fully administered as prescribed. Median compliance of all prescribed doses per patient was 95.9 %, with a minimum of 66.7 %.

Conclusion: Registration of indications for urine culture sampling, and registration of UTI symptoms are often lacking in medical records although these are essential for making correct clinical treatment decisions.

Improvement of compliance to the existing antibiotic policies in the hospital is necessary. Targeted interventions, such as informing prescribers on current study results, will be taken.

Disclosure of interest: None declared.

PT010: Implementation of clinical pharmacist consultant in ambulatory care and community practice in Slovenia

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Background and objective: For better management of drug side effects, drug interaction, and in particular polypharmacotherapy a Pharmacotherapy groups and clinical pharmacist–consultant was introduced in the Pomurje region by the Health Insurance Institute of Slovenia. Participation of two complementary disciplines of medicine and pharmacy allowing active participation in the quality of drug treatment. The organization on a local level provides better contact to the patient and the health care provider.

Design: The clinical pharmacist consultant had a weekly afternoon practice in Community Health Center for admission of patients, review of therapies and patient counseling. Once a month, the pharmacist consultant clinic takes place in homes for the elderly. Further, regular meetings are held every second month for sharing expertise and experiences with a focus on specific drug groups and polypharmacotherapy study case reports of the Pharmacotherapy groups which consists up to 15 physicians and 1 clinical pharmacist consultant.

Results: Between December 2012 until the end of October 2013, 165 outpatient clinics tock place and 629 patient therapies where reviewed, particularly with polypharmacotherapy. A medication reviews were undertaken by clinical pharmacist for patients being referred by their GP. All patient's medical records were available, also 213 patients were personal advised by the clinical pharmacist. On average, a pharmacist examined 3.81 therapies per afternoon. Patients had an average age of 69 years, 60 % were female. The average prescribed medication per patient was 11.18 before and 9.71 after the consulting. In total, a cessation of 925 drug where recommended or 1–2 drug per patient. Further, 1170 potential clinically significant drug interactions where identified, with a 90 % reduction after the pharmacist consulting. Most commonly, changes in the therapy with anti-hypertensive drugs (45 %), analgesics (41 %), psychiatric agents (37 %) and proton pump inhibitors (27 %) where recommended. Physician took into account the advice of 70–85 % of the recommendations.

Conclusion: Due to good results, additional outpatient clinics of clinical pharmacist where introduced also in largest Community Health Center to a total number of 16. Further implementation is expected.

Disclosure of interest: None declared.

PT011: Intervention to reduce potential events in elderly patients

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Background and objective: Prescription medication use increases with age resulting in polypharmacy. Multiple medications are associated with potential safety problems (PSP). Literature review reveals that polypharmacy increases the risk of hospitalizations or adverse drug reactions. The aim of this study was to estimate whether there is a relationship between an intervention addressed to discontinue PSP in the primary care setting and the reduction in potential events or use of health services.

Setting and method: Observational study with a retrospective control group (CG) and a prospective intervention group (IG). Participants: patients aged $\geq$65, under treatment with 5 or more drugs and belonging to seven Primary Care Settings in five different towns. Patients should at least have one of the following PSP: (a) concomitant use of an antihypertensive drug with a non-steroidal anti-inflammatory drug (NSAID), anticoagulant or antitrombotic drug; (b) use of two or more benzodiazepines. Intervention group: patients whose physicians received intervention based on clinical sessions, advice about discontinuing medication, feedback of the PSP of their patients and e-mailing of relevant information concerning current clinical evidence of the PSP. Control group: physicians did not receive any information about PSP. Intervention period: May 2013–May 2015. Control group: Mar 2009–Oct 2011.

Main outcome measures: Main outcome: potential events (cardiovascular events, falls or fractures). Other secondary measures: hospital admissions, visits to health centre and home visits by professionals.
Results: A total of 420 patients were randomly allocated to each group (intervention and control). PSP reduction was 47.1 % in IG. Falls and fractures were significantly reduced in IG (5.1 and 3.9 %) compared to CG (7.1 and 10.7 %), respectively. There was no significant difference for cardiovascular events. Contacts with general practitioners and nurses were fewer in IG (3.6 and 1.2 %) than in CG (10.3 and 4.9 %), respectively. Nursing home visits were significantly greater in IG (25.0 %) than that in CG (8.9 %). General practitioner visits showed a slight increase (IG 22.0 vs. CG 20.0 %). Hospital admissions decreased in IG (7.7 %) versus CG (10.7 %).
Conclusion: An intervention addressed to discontinue PSP showed to be successful in reducing falls, fractures, hospital admissions and use of health services in elderly primary care patients. There is an important association between sleep medication and risk of falls and fractures.
Disclosure of interest: None declared.

RD001: Assessing the homogeneousness in the use the 8-Items Morisky Medication Adherence Scale (MMAS-8)

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Background and objective: Assessing self-reported medication non-adherence requires the use of reliable instruments. The 8-Items Morisky Medication Adherence Scale (MMAS-8) demonstrated excellent psychometric properties and has been translated to more than 30 languages. MMAS-8 consists in 7 dichotomous items and a five-point Likert scale. MMAS-8 scoring system is not intuitive since requires inverting item-5 and dividing item-8 by 4. Instructions of this scoring system were not published in the original validation article, which may result in potential discrepancies in the application.
The aim of our study was to evaluate the heterogeneity of the results of the MMAS-8 by meta-analyzing the results of the studies included in a systematic review.
Setting and method: A systematic review of articles using the MMAS-8 was done searching in PubMed, Scielo and Scopus (January 2015), with a further manual search of references. Only original research articles in written Roman characters were included. Literature selection was done in two steps, following Cochrane and PRISMA recommendations. Data were extracted independently by two researchers. Three different meta-analyses (MA) (random effects model) were done: one with MMAS-8 mean score, and another two event rates MA with medium-highly adherent (score 6 and over), and with highly adherent (score 8). Heterogeneity was assessed by the inconsistency index (I-square). To identify causes for heterogeneity, subgroup analyses were done considering copyright solicitation, study design, age, and type of patients.
Main outcome measures: MMAS-8 score.
Results: A total of 93 articles resulted from the search, excluding 2 in the screening phase and 18 in the full-text phase, resulting in 67 articles included (66 different studies) for qualitative extraction and 61 articles (60 studies) for meta-analyses.

In the MMAS-8 mean score MA 36 studies were included with 26,251 patients, resulting in a pool effect size of 6.1 (95 % CI 5.9–6.3), with I-square 99.0 %. In the subgroup analysis, heterogeneity remained high (over 90 %).

In the medium-highly adherent event rate MA 47 studies were included with 30,987 patients, resulting in a pool effect size of 65 % (95 % CI 61–68), with I-square 97.1 %. In the subgroup analysis, heterogeneity remained high (over 95 %).

In the highly adherent event rate MA 40 studies were included with 27,752 patients, resulting in a pool effect size of 27 % (95 % CI 25–30), with I-square 93.7 %. In the subgroup analysis, heterogeneity remained high (over 84.5 %).
Conclusion: Although MMAS-8 seems to be a robust instrument to assess self-reported medication non-adherence, a high heterogeneity appears among different studies. This heterogeneity remains in all the subgroups. Our findings suggest potential inconsistencies in the application or the scoring system when using the MMAS-8.
Disclosure of interest: None declared.

POSTERS

CP-CE002: Training pharmacy students on providing smoking cessation at the University Pharmacy: a lesson learned from Thailand

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Background and objective: Community pharmacies in Thailand are primary sources of health care services due to the easy access, availability of drugs, and less waiting time. Community pharmacists are recognized as health care providers including smoking cessation. Pharmacy students at their fourth to sixth year pharmacy education are trained at community pharmacies as part of their clinical training. This paper reports a lesson learned on training pharmacy students to provide smoking cessation at the University Pharmacy, Faculty of Pharmacy, Chiang Mai University.
Design: The University Pharmacy is a community pharmacy, under the Faculty of Pharmacy, Chiang Mai University, to provide health care services to patients. It is also a training place where pharmacy students are trained to deliver health care services to patients including smoking cessation services. Training on smoking cessation is one activity of the clinical community pharmacy clerkship that the fourth-year and sixth-year pharmacy students have an opportunity to help smokers to quit smoking with and/or without drug therapy, depending on the condition of each patient, under the supervision of registered pharmacists. The duration of a clerkship at a community pharmacy is 5–6 weeks.
Results: During a period of 6 months from January to June 2015, ten pharmacy students from Chiang Mai University and other universities were trained at the University Pharmacy on delivering smoking cessation services to smokers. On their smoking cessation training, students were under supervision of pharmacists; they were observed while they provided counselling to smokers based on the lesson learned in their curriculum e.g. the 5A's approach (ask about tobacco use, advise to quit, assess willingness to make a quit attempt, assist in quit attempt, and arrange follow-up) for smoking cessation. Students spent about 15–20 min in delivering smoking cessation counselling to smokers at the first time, with at least 2–3 times of follow-up (5–10 min by average) through a face-to-face manner at the University Pharmacy or by telephone, depending on the convenience of smokers. The students recorded all activities that were provided to patients in a special form designed for smoking cessation services. At

the end, students made a presentation of their smoking cessation training to the University lecturers, and the discussion was facilitated to encourage students to have more experiences on helping smokers. Of ten patients received counselling from pharmacy students, three smokers could quit smoking; six patients decreased their smoking; one patient was lost to follow-up.
Conclusion: After the training, the students reported that they had more understanding of smokers and felt more confident with positive attitudes in helping smokers to quit smoking. They were happy that smokers stopped smoking as a result of their smoking counselling.
Disclosure of interest: None declared.

CP-CE003: Simulation of antibiotics monitoring as training for hospital functions of pharmacy students

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Background and objective: At the University Hospital of Poitiers, broad-spectrum antibiotic prescribing is subject to special requirement (specific order) and careful monitoring by pharmacists. Antibiotic prescriptions are ubiquitous in every hospital unit. In the clinical units, pharmacy students have to collect the necessary elements for the validation of the order such as weight and patient's renal function, therapeutic drug monitoring… However, the students are struggling to understand treatment monitoring and cannot perform their tasks efficiently. In addition, the week of training for hospital functions takes place in April, while the first internship starts in September, 5 months after formation. The Objective of this work is to compare simulation to lecture for students training.
Setting and method: During the week of students training, the course for antibiotics prescription is made in two groups: one group receives a lecture as classical approaches; the other group receives a training consisting of clinical cases simulation as innovative approaches. Clinical cases consist in validation of antibiotic prescription thanks to items that are available in real situation: drug information, elements of the patient's clinical records, and bacteriological, biochemical and pharmacokinetic data. Simulation session includes a briefing step (explanation of the exercise and objectives), sequences of several scenarios (different clinical cases) each of them followed by a debriefing (correction and commentary) and an overall debriefing to emphasize the key points to remember. A test for evaluation knowledge is carried out before and after training for each group.
Main outcome measures: The main assessment criterion is the result of the tests comparing results obtained before to this obtained after the simulation and between the simulation and the lecture groups.
Results: The class was separated into two groups of 36 students for the lecture group and 34 students for the simulation group. Comparing before to after training scores, the increased score in the simulation group (2.53 points) was significantly better than the increased score in the lecture group (2.11 points).
Conclusion: Although the simulation appeared to have a positive impact on scores, determining if the impact is also significant 5 months later in clinical units will require further assessment. The purpose of this training through simulation is to give students a working method: what to do during antibiotic prescription renewal, where to find relevant information concerning the drug prescribed (summary of product characteristics, medical society recommendations, prescription assistant software), and the patient (patient records, laboratory data). The method of work and skills acquired during the simulation session can be transposed to other drugs and prescribing.
Disclosure of interest: None declared.

CP-PC013: The sequence of administration of inhaled medications to treat patients with chronic obstructive pulmonary disease

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Background and objective: Inhalation therapies are central to the management of COPD; they include pressurised metered dose inhalers, dry powder inhalers, and nebulisers [1]. There are no well-documented, definitive answers for what's the right order to administer these devices when used in combination, which may create confusions for users. However, it has been postulated that bronchodilators should be administered prior to inhaled corticosteroids based on the rationale that "opening and dilating the bronchial tubes" would permit enhanced deposition of an inhaled corticosteroid [2]. The aim of this study was to examine how patients administer their devices and based on what.
Setting and method: A cross-sectional study design using semi-structured face-to-face interviews was conducted.
Main outcome measures: Examining how COPD patients administer their devices and based on what.
Results: Forty-six patients were interviewed. Male ($n = 24$) and female ($n = 22$), average age 81.8 years (63–100), prescribed at least two inhalation devices to be used at home. The sequence of administration of devices differed between participants. The majority ($N = 37$) used their devices randomly, with no identified sequence, having not being informed by their doctor about a specific sequence or were doubtful that the order of administration makes a great deal of difference. Others ($N = 5$) used bronchodilators first followed by steroids. This sequence was not based on scientific evidence or medical recommendations, whereas for others this was due to an advice given by neighbours or healthcare providers. Four participants had a sequence based on the age of the device and the ease of use. For example, some participants declared that the priority was given for the first prescribed inhaler because they had been using it for a long time. Few participants tended to use pMDIs first followed by DPIs because *p*MDIs were much quicker and easier to use than other handheld devices.
Conclusion: These findings suggest that there was no dominant sequence for applying the inhalation devices; each participant worked out their own preferred sequence, which was not based on scientific evidence but on patient's preference and convenience. Due to the paucity of evidence on the right sequence of administration and its effect on disease outcomes, further investigations and experimentations are needed. If any sequence has proved to alter the outcome of treatment favourably, it should be then followed and implemented to maximise the efficacy of therapy and clinical outcomes.
Disclosure of interest: None declared.

CP-PC014: Medication adherence and its associated factors among South Asian and Middle Eastern patients with chronic diseases in the UK

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Background and objective: Ethnic minority groups (EMGs) including South Asians (SA) and Middle Easterners (ME) experience higher prevalence of chronic diseases such as cardiovascular disease and diabetes than any other ethnic group. Some evidence suggests that these groups may be less adherent to medication regimen than Caucasians. Investigating the extent of adherence and factors that influence medication adherence may assist these growing populations to optimist their health and medicine use.
Setting and method: A cross-sectional study was conducted with a purposive sample of 80 participants. Patients were from SA and ME origins, aged over 18 and prescribed three or more regular medicines. Patients were identified when presenting with a prescription. The 8-item Modified Morisky Adherence Scale (MMAS) was administered to participants in seven pharmacies in London to assess the adherence rate and the reason of poor adherence. Information about patients' characteristics, healthcare of the participants, number and type of prescription and non-prescription medicines used by respondents was collected. Data were entered and analysed using Software package used for Statistical Analysis (SPSS) 21.
Main outcome measures: Assessing adherence rate and reason of poor adherence among SA and ME groups.
Results: Participants (61 % male) had mean (SD) age 58 (13.4) years and on a mean (SD) of 8 (4) medicines. Based on the MMAS-8 scale, 67 % of patients reported sub-optimal adherence (i.e. where medium and low adherences were combined) to their medication. Sub-optimal adherence levels were statistically higher in women than men (87 vs. 55 %, $P = 0.031$). Also, sub-optimal adherence levels were statistically higher in patients of Middle Eastern origin than South Asian origin (82.5 vs. 52.5 %, $P = 0.033$). The exact reasons why sub-optimal adherence occurred is difficult to specify using only 8-item MMAS, apart from those that were explicitly mentioned in the scale (i.e. forgetfulness, stopping or cutting back on medications because of feeling worse or feeling that illness is under control).
Conclusion: Sub-optimal medication adherence is a problem among SA and ME patients in the UK. These factors should be considered when planning medication regimens for SA and ME patients, to enhance medication adherence and improve patient outcomes.
Disclosure of interest: None declared.

CP-PC015: Improving medication safety in nursing homes

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Did you previously present your abstract on an international platform: Yes—the abstract has been previously presented internationally. **Abstract submitted before to:** FIP World Congress 2015, Düsseldorf, Germany.
Background and objective: Drug-related problems (DRP) are common in nursing home residents due to polymedication [1]. 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 a simple medication review, solely based on the patient's medication and performed by community pharmacists, can enhance the medication safety of nursing home residents.
Design: At the beginning, participating pharmacists attended a special training focusing on pharmacotherapy and adverse drug events in the elderly. Patients at the minimum age of 65 years insured by AOK Rheinland/Hamburg (AOK) and regularly taking at least five drugs per day were invited to participate. The AOK provided prescription data of these patients to the pharmacies where the current medication and further information from the nursing home, e.g. dose regimens, were added. If necessary, unclear or false medication data of the nursing homes was corrected. Based on the medication list, pharmacists performed a simple medication review according to a specific guideline. The detected and solved DRP were counted.
Results: So far, we tested the feasibility of this intervention in a pilot study including five community pharmacies. The medication of 28 patients was surveyed. In 89 % of the cases, the pharmacists added further medication data to the provided prescription data.

Concerning the nursing homes' medication data, 18 DRP were detected including e.g. poor documentation of dosage forms or dose regimens or even missing documentation of drugs. In average, the pharmacists identified two DRP per patient. Most frequent were drug–drug interactions (33 %) of which 40 % were considered as relevant for the residents' medication safety. 39 % of the patients took drugs considered as potentially inadequate in the elderly. The pharmacists gave recommendations to the physicians if necessary. However, the acceptance rate by the general practitioners was 15 % only.
Conclusion: A simple medication review performed by pharmacists seems to be feasible and can be performed on the basis of a complete drug anamnesis.
Disclosure of interest: None declared.

CP-PC016: Drug–drug interaction management in German community pharmacies

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Did you previously present your abstract on an international platform: Yes—the abstract has been previously presented internationally. **Abstract submitted before to:** FIP World Congress 2015, Düsseldorf, Germany.
Background and objective: In their daily practice community pharmacists deal with a multitude of drug–drug interaction (DDI) notifications. The assessment of the actual risk for the individual patient is often limited due to missing data on the practical relevance of DDI and measures actually required.

The aim of our project is to develop a DDI register that continuously collects all DDI notifications in German community pharmacies including how pharmacy staff manages DDI. This can help to estimate the incidence and relevance of DDI in community pharmacies. A DDI register also provides a basis for advanced education of the pharmacy staff in order to improve the quality of DDI management.
Design: The study is conducted in cooperation with a network of community pharmacies in Germany (LINDA AG). In participating pharmacies the pharmacy software automatically generates datasets of all detected DDI notifications, which are sent to a DDI register. In a pilot study, the total amount of DDI notifications, the distribution of the degree of severity, and the incidence of distinct DDI were analyzed. In addition, a standardized electronic system was developed for documentation of the actual DDI management by the pharmacist that will be implemented in participating pharmacies within the next months.
Results: In the pilot study, we detected more than 490,000 DDI notifications in 74 community pharmacies within 4 months. Preliminary analysis revealed that about 5 % (23,000) of these notifications were due to severe DDI. QT interval prolonging, psychotropic,

sympathomimetic, and antihypertensive drugs were most often involved in severe DDI notifications.
Conclusion: Our preliminary analysis indicates the high frequency of detected potential DDI in German community pharmacies but does not reflect their actual relevance yet. Therefore, further analysis including the documentation of DDI management will be performed to address this question.
Disclosure of interest: None declared.

CP-PC017: Community pharmacists' activities on providing smoking cessation services: Thailand

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Background and objective: In Thailand, community pharmacists play important roles in smoking cessation. Smoking cessation services provided at the community pharmacies are free to the public. This study aimed to examine the activities of smoking cessation services provided by the community pharmacists in Thailand.
Setting and method: This cross-sectional study was conducted between 2013 and 2014. The participants were community pharmacists in Thailand who provided smoking cessation services in their community pharmacies. Self-administered questionnaires were sent by post to the community pharmacists, and the pharmacists returned the questionnaires back to the research team after completing the questionnaires. Descriptive statistics were carried out for data analysis.
Main outcome measures: Main outcomes were activities related to smoking cessation services provided by the community pharmacists, measured in percentages or means.
Results: There were 152 community pharmacists, from all over Thailand, who provided smoking cessation services and returned the questionnaires; 61 % were women; 49 % had been working as pharmacists <10 years; 76 % had an assistant pharmacist; 61 % were members of the Thai Pharmacy Network for Tobacco Control. Thirty-six percent of the community pharmacies had a designated area for smoking cessation services. Activities of smoking cessation services provided to the public were (1) showing symbols in front of their pharmacies on helping smokers to quit smoking (71 %); (2) providing materials to aid smokers in quitting smoking e.g. pamphlets, brochures, posters (75 %); (3) engaging in the community activities that were related to tobacco control (34 %) e.g. organizing a camp for students to learn the dangers of tobacco and to avoid smoking, participating in the non-smoking week in late May, encouraging the community to reduce or stop smoking through the radio broadcasts or journals in the community. An average of three smokers per month, for each pharmacy, asked for smoking cessation counselling. Regarding time to provide smoking cessation counselling, 15 min per person, by average, was used for the first time of the service, and 9 min for each follow-up visit. Results of the smoking cessation services, number of smokers who stopped smoking after receiving the smoking cessation services ranged from 0 to 40 persons for each pharmacy, depending on the number of pharmacists on duty; however, by average, six smokers could quit smoking, and nine smokers could reduce their smoking. The most dispensed pharmaceutical products for smoking cessation by the community pharmacists, without a prescription, were nicotine gum (73 %) and bupropion (27 %).
Conclusion: Community pharmacists engaged in many activities to help smokers, without any additional fee, in their community pharmacies.
Disclosure of interest: None declared.

CP-PC018: Anticoagulant and antiplatelet agents prescription at admission: prospective audit of the proper use

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Background and objective: Anticoagulant and antiplatelet agents (AAA) are two pharmaceutical classes used in a large part of the population. Each one of them has serious side effects: hemorrhage or inefficiency. The first aim of this study was to evaluate if inpatients received AAA according to guidelines (French Society of Cardiology). The second aim was to evaluate the pharmacists' ability to spot these different irrelevant prescriptions.
Setting and method: Four months study with prospective inclusions and retrospective analysis, in a university hospital, among three medical (Hépatology, 2 Gastroenterology wards) and six surgery wards (3 orthopedic, 2 visceral, and 1 thoracic ward). All patients with at least one AAA was included. Medication reconciliations were done by a pharmacy student before being checked by a resident or a pharmacist. Medication indication and dosage were analyzed and pharmaceutical interventions (PI) were done if necessary.
Main outcome measures: Patient profile, glomerular filtration rate (GFR), antiplatelet and/or anticoagulant agents, indications, pharmaceutical interventions.
Results: Two hundred and seventy-four patients were included, with a 1.54 male/female ratio. Patient profile:

- Medium age: 72.1 years old; mean body mass index: 27.5; mean GFR (MDRD): 80.7 mL/min/1.73 m^2.
- Renal function: Patients' GFR stages 1, 2, 3, 4, 5 or unknown are respectively 34, 34, 18, 4, 1 and 9 %.

Antiplatelet agents concerned 186 patients (Aspirine: 158; Clopidogrel: 39; Ticagrelor: 1). Twelve patients were receiving combination therapy (Aspirine with clopidogrel or ticagrelor). Anticoagulant agents concerned 112 patients (Anti vitamin K: 87; Direct oral anticoagulants: 14; Heparine: 11). Nineteen patients were receiving combination therapy (Anticoagulant and antiplatelet agents).
Five hospitalizations had a iatrogenic origin (fluindione: 4, aspirine: 2), three of these patients had stage 3 renal failure, one hospitalization was preventable because of an unappropriate combination therapy.

Sixteen PI were done:

- Not indicated medication: 8 PI (2 were accepted).
- Indication untreated: 2 PI (1 was accepted).
- Underdosage: 3 PI (2 were accepted).
- Overdosage: 3 PI (2 were accepted).

Twenty-five prescriptions of these agents were considered irrelevant by the pharmacists team after the retrospective analysis: rate of inappropriate prescription of 6.2 % after pharmaceutical analysis. This rate drops to 4.7 % after justification by the prescriber on clinical and biological criteria.
Conclusion: This study demonstrates the role of the clinical pharmacist in medecine and surgery wards. This gain includes the revaluation of chronic medication, especially those that are considered at risk such as AAA. During these 4 months, we highlighted that there are still too many patients treated inappropriately with the studied therapeutic classes. Even if 36 % of inappropriate prescriptions were not detected by the pharmacist, a widespread clinical pharmacy activity would eliminate many errors and potentially prevent hospitalizations.
Disclosure of interest: None declared.

CP-PC019: Cardiovascular diseases prevention in the State of Qatar: a survey of pharmacists' activities, attitudes and perceived barriers

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Background and objective: In Qatar, cardiovascular diseases (CVD) are the leading causes of morbidity and mortality. Qatar pharmacists have many opportunities to prevent CVD including provision of health promotion and therapeutic management. The study objectives were to assess Qatar pharmacists' involvement in CVD health promotion, to identify the activities that they provide to patients with CVD risk factors, to describe their attitudes toward involvement in CVD prevention and to assess their perceived barriers for provision of CVD prevention services.
Setting and method: We conducted a cross-sectional survey of community and ambulatory pharmacists in Qatar. A random sample of 234 pharmacists was selected. Pharmacist characteristics, activities, attitudes and barriers were analyzed using frequency distributions. Bivariate linear regression models were used to test for associations between health promotion activity score and pharmacist characteristics. Variables with a p value of .20 or less at the bivariate level were included in the multivariate model. A p value of .05 or less was considered significant.
Main outcome measures: Qatar pharmacists' current involvement in CVD related activities, attitudes towards the management of CVD risk factors and perceived barriers for provision of CVD prevention services.
Results: A total of 141 pharmacists completed the survey. More than 70 % of pharmacists responded with rarely or never to 6 out of the 10 CVD promotion activities. For example, 87.1 and 82.5 % rarely or never invite other healthcare professionals to screen patients for CVD risk factors or to advise patients regarding healthy lifestyles respectively. 84 and 68 % always or often describe to patients the appropriate time to take each antihypertensive medication and the common medication adverse effects respectively. Yet 50 % rarely or never review the medication refill history or provide adherence interventions. Lack of CVD educational materials was the top perceived barrier (55 %). Females and community pharmacists practiced more CVD health promotion ($p = 0.046$ and $p = 0.017$ respectively). Health promotion practice increased with increasing attitudes score ($p = .012$) and decreased with increased barriers score ($p = .0001$).
Conclusion: Pharmacy practice scope in CVD prevention is limited in Qatar. Efforts need to be exerted to increase Qatar pharmacists' involvement in CVD prevention including overcoming all perceived barriers.
Disclosure of interest: None declared.

CP-PC020: Fluctuation of the renal function after discharge from hospital and its effects on drug dosing in elderly patients: study protocol

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Background and objective: Chronic kidney disease (CKD) is associated with an increased mortality rate, risk of cardiovascular events and morbidity. Impaired renal function is common in elderly patients, and their glomerular filtration rate (GFR) should be taken into account when prescribing renally excreted drugs. In a hospital care setting the GFR may fluctuate substantially, so that the renal function group and therefore the recommended dose, can change within a few days. The magnitude and prevalence of the fluctuation of renal function in daily clinical practice and its potential effects on appropriateness of drug prescriptions after discharge from the hospital is unknown.
Setting and method: This is a prospective observational study. Patients $\geq$ 70 years with renal impairment (eGFR $<$ 60 ml/min/1.73 m^2) admitted to a geriatric ward are eligible to participate. Participants undergo blood sample collection to measure serum creatinine level at three time points: at discharge from hospital, 14 days, and 2 months after discharge. At these time points the actual medication of the participants is assessed and the number of incorrect prescriptions according to the Dutch guidelines in relation to their estimated renal function is measured. In addition, for a hypothetical selection of drugs, the need for drug dose adaptation in relation to renal function is measured.
Main outcome measures: The outcome of interest is the percentage of patients that changes from renal function group after discharge from hospital compared to the renal function at discharge. In addition, the percentages of patients whose actual medications are incorrectly prescribed and for the hypothetical selection of drugs that would have required dose adaptation will be determined at discharge, 14 days and 2 months after discharge. For each outcome, risk factors which may lead to increased risk for fluctuation of renal function and/or incorrect drug prescribing will also be identified and analysed.
Results: The preliminary results showed that 12 out if 31 patients (39 %) changed from renal function group after discharge from hospital. The direction of the change was in both directions.
Conclusion: This study will provide data on changes in renal function in elderly patients after discharge from the hospital with a focus on the medications used. The benefits for healthcare professionals comprise of the creation, adjustment or confirmation of recommendations for the monitoring of the renal function after discharge from hospital of elderly patients.
Disclosure of interest: None declared.

CP-PC021: Association between necessities and concerns about medication and medication adherence in Brazilian ambulatory patients

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Background and objective: Lack of medication adherence is one of the main patient-related causes of treatment failure. Poor adherence was associated with patients' beliefs about their medication. The Necessities-Concerns framework is a theoretical model to explain intentional non-adherence.

The aim of our study was to evaluate the correlation between the components of patients' beliefs about medicines and medication adherence in a cohort ambulatory Brazilian of medicines users.
Setting and method: To validate the Beliefs about Medicines Questionnaire (BMQ) into Brazilian Portuguese, from March to June 2014, the instrument was applied to patients older than 18 years visiting a primary healthcare unit. Patients with signs of cognitive impairment (three questions of the MMSE), and patients who declined signing an informed consent were excluded. Medication adherence was evaluated with the 7 dichotomic items of the Morisky Medication Adherence Scale (MMAS). Ethics approval was obtained from the Universidade do Planalto Catarinense Ethics and Research Commission.
Main outcome measures: BMQ Necessities and concerns domains; MMAS score.
Results: Of the 355 patients approached (43.3 y/o; 78.8 % females), 299 were valid and accepted participating in the study (42.6 y/o; 79.6 females). 51.0 % completed the Elementary School, 34.7 % the High School, and 14.3 % had a University degree. Only 17 (5.7 %) scored the maximum seven points in the dichotomic items of MMAS-8, 28 (9.4 %) scored 6, and the remaining 84.9 % scored 5 or less. In average, the BMQ necessities scored 16.6 (SD = 5.2) and BMQ concerns domain scored 17.9 (SD = 4.7), resulting in a subtracted necessities minus concerns of −1.2 (SD = 6.4). Subtraction necessities minus concerns presented a significant ($p < 0.001$) correlation with the MMAS 7-dichotomic items (Pearson R = 0.227). Significant correlation ($p < 0.001$) existed also between BMQ Concerns domain and MMAS 7-dichotomic items (Pearson R = 0.232). However, no correlation was found between BMQ Necessities domain and MMAS 7-dichotomic items ($p = 0.238$).
Conclusion: A slight but significant correlation was found between medication non-adherence and the balance necessities-concern about medication in a Brazilian ambulatory adult population. Medication non-adherence was more associated to patients' concerns about their medication than to their perception of medication necessity. These findings should guide the optimal educational approach for this population.
Disclosure of interest: None declared.

CP-PC022: Implementing a service to routinely identify incorrect inhaler technique in community pharmacy

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Background and objective: Inhaled therapy is the most common pharmacological treatment of respiratory diseases such as asthma and COPD. However, literature reports a high rate of administration errors due to poor inhalation technique among these patients. The aim of this study was to test a short routine procedure for identifying patients with a poor inhaler technique in a community pharmacy.
Setting and method: Patients over 18 years old visiting four community pharmacies in Central Portugal and using asthma or COPD drugs in inhaler devices were invited to participate. The study was performed between February and May 2015. The pharmacists asked patients to demonstrate how they used their inhaler devices. Inhaling techniques were assessed using device-specific checklists.
Main outcome measures: Inhaler technique errors.
Results: The study population included 67 patients (34 male), being 52.2 % over 70 years old. COPD was twice more prevalent than asthma. As 34.3 % of the participants used more than one inhaler device, 89 inhaler techniques were evaluated, comprising 80.9 % dry powder inhalers (DPIs) and 55 % multidose DPI (Discus or Turbuhaler). Errors in the inhaler technique were identified in 85.1 % of the participants. The more prevalent errors were 'not breathing out gently away before inhalation' (58.2 %), and 'not holding breath for about 10 s after inhalation' (68.7 %). Among those using the pressurized metered dose inhaler, 42.9 % did not shake the device before the administration. About 61 % of patients did not wash their mouths after inhalation of corticosteroids. A moderate positive correlation ($r = 0.402$; $p = 0.001$) existed between the patient age and the number of errors.
Conclusion: A high percentage of individuals using asthma or COPD inhaler devices users present a poor inhaler technique that may compromise drug effectiveness and safety. Using a short routine procedure, community pharmacists could identify the inhaler technique errors each patient, which may facilitate tailoring patients' education and counselling.
Disclosure of interest: None declared.

CP-PC024: Inhaler technique in patients with asthma or chronic obstructive pulmonary disease

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Background and objective: Incorrect technique when taking inhaled medications frequently prevents patients with asthma or chronic obstructive pulmonary disease (COPD) from receiving the maximal benefit from their medications. The aim of this study was to evaluate asthma and COPD patients' inhaler technique.
Setting and method: Patients above 12 years old with asthma or COPD were recruited in the community pharmacies at the time of dispensing inhaled medications. The study was conducted in September 2014 and February 2015. We recruited 228 patients, who performed 227 uses of dry powder inhalers (DPI): diskus (78), turbuhaler (66), twisthaler (18), single-dose DPI (65) and 234 uses of metered-dose inhalers (MDI) containing solutions (132) or suspensions (102). Of that, 12 patients used MDI with a spacer device. We evaluated inhaler technique by observing their handling of the inhaler and check-list based assessment. Development of a check-list was based on consensus panel after conducting a systematic review of the literature.
Main outcome measures: Adherence with the elements of correct inhaler technique according to the pre-defined check-list.
Results: Most errors in the use of inhalers were found in preparation of the inhaler and inspiration steps. Incorrect position of the inhaler was the most common reason for improper preparation step, namely only 13 % of patients prepared the diskus properly. Moreover, 41 % of patients failed to prime the MDI when using it for the first time or after a longer period of time. Inspiration step was most problematic in the case of MDIs where half of the patients failed to perform it correctly due to the inadequately long and deep breath and failure to coordinate inspiration with actuation. Incorrect inspiration was less common in patients using spacer devices.
Conclusion: Although newer inhalers show improvement in the ease of use, incorrect use of inhalers among patients with asthma or COPD is still common.
Disclosure of interest: A. Janezic grant/research support from the study was performed as part of academic research at the University of Ljubljana, Faculty of Pharmacy. Financial stimulation of interviewers that made this study possible was provided by AstraZeneca's unrestricted grant. I. Locatelli grant/research support from the study was

performed as part of academic research at the University of Ljubljana, Faculty of Pharmacy. Financial stimulation of interviewers that made this study possible was provided by AstraZeneca's unrestricted grant. T. Morgan grant/research support from the study was performed as part of academic research at the University of Ljubljana, Faculty of Pharmacy. Financial stimulation of interviewers that made this study possible was provided by AstraZeneca's unrestricted grant. M. Kos Grant/research support from the study was performed as part of academic research at the University of Ljubljana, Faculty of Pharmacy. Financial stimulation of interviewers that made this study possible was provided by AstraZeneca's unrestricted grant.

CP-PC025: Quality of life and disease control among patients with asthma and COPD

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Background and objective: Obstructive pulmonary diseases can reduce health related quality of life as a result of physical and psychosocial complications. The aim of the study was to evaluate quality of life, asthma control and the impact of COPD on patients' lives as well as explore factors that influence patients' quality of life.
Setting and method: Patients above 12 years old were recruited by community pharmacists at the time of dispensing medication for asthma or COPD. Quality of life was evaluated by using Saint George's Respiratory Questionnaire (SGRQ), asthma control by Asthma Control Test (ACT) and the impact of COPD by COPD Assessment Test (CAT). The study was conducted in September 2014 and February 2015.
Main outcome measures: SGRQ total score, ACT score and CAT score.
Results: Of 225 patients (mean age 57.9 years; 50.9 % female) 74.6, 18.0 and 7.5 % were diagnosed with asthma, COPD and both diseases, respectively. The results showed medium impact of COPD on patients (mean CAT score 17.8). 18 % of patients had complete control of asthma in the past 4 weeks (mean ACT score 19.3). SGRQ total scores for patients with asthma, COPD and asthma + COPD were 33.7, 37.9 and 58.4, respectively. Factors that statistically significantly predicted asthma patients' quality of life were age, asthma control (ACT score) and use of oral glucocorticoids in the past year. COPD patient's quality of life was associated with CAT score, smoking status, ER visit, hospitalisation, pneumonia and use of oral glucocorticoids in the past year. Quality of life strongly correlated with asthma control ($R = 0.709$) and COPD impact ($R = 0.820$).
Conclusion: The study showed medium impact of COPD on patients' lives and inadequate asthma control in majority of patients. Patients with COPD and both respiratory diseases experienced lower quality of life compared to asthma patients. The study also confirmed the strong correlation between asthma control/COPD impact and quality of life.
Disclosure of interest: A. Janezic grant/research support from the study was performed as part of academic research at the University of Ljubljana, Faculty of Pharmacy. Financial stimulation of interviewers that made this study possible was provided by AstraZeneca's unrestricted grant. I. Locatelli grant/research support from The study was performed as part of academic research at the University of Ljubljana, Faculty of Pharmacy. Financial stimulation of interviewers that made this study possible was provided by AstraZeneca's unrestricted grant. M. Kos grant/research support from the study was performed as part of academic research at the University of Ljubljana, Faculty of Pharmacy. Financial stimulation of interviewers that made this study possible was provided by AstraZeneca's unrestricted grant.

CP-PC027: Themes of moral dilemmas of community pharmacists

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Background and objective: Pharmacists increasingly experience moral dilemmas in daily practice. This can be explained by their changing role as health care provider, an increasingly complex health care system with many stakeholders, and changing expectations of patients. International research in pharmacy ethics is sparse. During interviews pharmacists had difficulty recalling their dilemmas or recognizing the ethical dimension, partly due to lack of ethical training. Themes of moral dilemmas that have emerged seem incomplete.

This study aims to give an overview of themes of self-reported moral dilemmas experienced during daily clinical practice.
Setting and method: A qualitative study using self-reported narratives of early career Dutch pharmacists. The first researcher and a team of pharmacist experts checked the narratives against a working definition of a moral dilemma. Subsequently relevant text parts reflecting the moral problem were coded. When no consensus was reached a third researcher was consulted. Themes emerging from the coded text parts were categorised.
Main outcome measures: Themes of moral dilemmas.
Results: Of the narratives 68 % ($n = 187$) described a moral dilemma and 32 % described another problem. The majority of the moral dilemmas of pharmacists were experienced either in the relationship with the patient or with other health care providers. Remaining themes concerned sustainability and viability of pharmacy practice, dispensing without or deviating from a prescription, risk for harm in (unborn) children, palliative and end of life pharmaceutical care, lacking of relevant patient data and product quality.
Conclusion: Pharmacists recognise moral dilemmas. Themes are more diverse than previously described in international studies.
Disclosure of interest: None declared.

CP-PC028: Development of a self-administered questionnaire to identify levers and barrier of adhesion behavior to patient's medication: quilam

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Did you previously present your abstract on an international platform: Yes—the abstract has been previously presented internationally. **Abstract submitted before to:** 18th ESPACOMP Annual Meeting, 2014, Lausanne, Switzerland; 19th ESPACOMP Annual Meeting, 2015, Prague, Czech Republic.
Background and objective: As known, medication nonadherence is an economic problem and a major public health challenge. This behaviour can be influenced by many Factors which can be classified

to five dimensions according to the World Health Organization: disease, medication, patient and its close relatives, demographic and socioeconomic factors and health care system. A tool is needed to qualify medication adherence in order to adapt tailored support for individual patients to promote and optimize adherence to therapy.

The objective of this work is to present the results of the development of the grid QUILAM which is a tool to assess the barrier and levers of medication adherence in patients which suffer from heart failure, type 2 diabetes and Chronic Obstructive pulmonary disease.
Design: A literature search was performed to identify items from self-reported measures validated in several pathology.
A thematic analysis of semi-structured interviews with 30 patients and 5 healthcare providers for each pathology was conducted to complete the first grid and obtain a grid of 192 items.

An expert committee conducted a first reduction of the number of items.

After an independent translation by four healthcare providers, the grid of 62 items was administered to the study population.

An exploratory factor analysis was conducted to reduce the number of items according to the theoretical model.
Results: The literature review allows us to identify 20 generic questionnaires with 194 questions validated in several pathologies.

62 items were selected by an expert group and translated independently by four healthcare providers.

116 patients with either heart failure (39), diabetes (41) or chronic respiratory failure (39) completed the QUILAM self-administered questionnaire of 62 items.

The exploratory factor analysis allows us to obtain a grid of 15 items.
Conclusion: Next step will be to develop an external validation against clinical criterion. 600 patients will be followed up on a 12 months period to assess the link between adhesion progression on QUILAM and relevant health status criterion, depending on the targeted condition.
Disclosure of interest: None declared.

CP-PC029: An instrument to document pharmacists' interventions: the PharmDISC system

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Background and objective: Patient safety has become a major concern. During the dispensing procedure, pharmacists come across technical and clinical problems requiring an intervention. A classification system can be a helpful tool to document medication-related interventions in a structured way. Therefore, we developed an instrument, based on existing systems, and a first validation was achieved. After refinement, the objectives were now to validate the new version, called the PharmDISC system (Pharmacist's Documentation of Interventions in Seamless Care), and to explore facilitators and barriers for its implementation.
Setting and method: An observational study was conducted in Swiss community pharmacies. After online training, participating pharmacists [n = 21] collected 30 prescriptions requiring an intervention on five selected days within a 5-week period. All interventions were classified using the PharmDISC system. This allows assessing appropriateness, interpretability, and validity. Inter-rater reliability was determined using standard cases and Fleiss's kappa coefficients (κ) were calculated. Feasibility and acceptability were tested by a 48-item questionnaire on user satisfaction with 4-point Likert scale (1 = not true, 4 = true). We qualitatively analysed the facilitators and barriers for the implementation.
Main outcome measures: User satisfaction and suggestions, proportion of completely classified interventions, inter-rater reliability.
Results: The PharmDISC system reached substantial agreement for categories "problem" ($\kappa = 0.72$), "cause of the intervention" ($\kappa = 0.64$), and "intervention" ($\kappa = 0.79$), and almost perfect agreement for category "type of problem" ($\kappa = 0.86$), while the category "communication" only reached fair agreement ($\kappa = 0.29$). Of 519 interventions analysed, 430 (82.9 %) could be completely classified in all categories. Most users found the system comprehensive [median user agreement 3 (2/3.25 quartiles)], easy to use [3 (2.75/3)] and were in general satisfied [3 (2/3)]. The system raised the awareness of most users [n = 16] on medication-related problems. Most pharmacists showed willingness to use the system once integrated in pharmacy software [4 (3/4)]. To facilitate its implementation, the user wished an electronic version with an automatic connexion to the prescription and a task manager for interventions needing follow-up, while barriers could be time expenditure and lack of understanding the benefits.
Conclusion: The PharmDISC system is valid and independent of the rater. Of all documented interventions, most were completely classified. Although there were some suggestions for improvement, the pharmacists were satisfied with the new instrument and felt that it was helpful, easy to use, and practical for daily work.
Disclosure of interest: None declared.

CP-PC030: Assessment of pharmaceutical care for geriatrics in the UAE

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Background and objective: Pharmaceutical care is the responsible, direct provision of medication-related care with the rationale of achieving outcomes that improve a patient's quality of life. Medication mismanagement particularly in elderly is a growing problem because elderly have several issues that make them require extensive pharmaceutical care; e.g. alterations in liver and kidney functions, polypharmacy, and non-compliance.
Objectives: The primary goal of this study is to assess the implementation of pharmaceutical care and level of patients' satisfaction among geriatrics in United Arab Emirates (UAE).
Setting and method: An observational study was done through the dissemination of cross sectional surveys among pharmacists and geriatrics in United Arab Emirates. Two cross sectional surveys, targeting pharmacists and the geriatric population, were used. The questions used were pre-validated from previous published studies with minor modifications to make them convenient with the UAE practice setting. 308 pharmacists and 110 geriatrics were randomly selected to participate in the study. The study was completed in a period of 6 months, starting from January 2015 till July 2015. The Survey was disseminated through personal interview. The data were analysed statistically by SPSS version 20 and P value of <0.05 was taken as cut off point for statistical significance.
Main outcome measures: Cross sectional surveys that measures different techniques of pharmaceutical care implementation in geriatrics and the level of satisfaction of geriatric population toward the offered pharmaceutical care.

Results: Among pharmacists participating in the study, 32.1 % were from Abu Dhabi, 37.6 % from Dubai, and 30.1 % from Sharjah. Geriatrics who participated from Abu Dhabi were 30.0 %, 38.1 % were from Dubai, 31.8 % were from Sharjah. About 80.5 % of pharmacists reported that they use special counselling techniques to elderly. Of the total geriatric sample, 51.8 % described their relationship with their pharmacist as "Moderate". Geriatrics level of satisfaction was higher in Abu Dhabi compared to Sharjah and Dubai (P value <0.05). Pharmacists in UAE had high interest in taking special courses on how to deal with elderly patients.
Conclusion: The level of pharmaceutical care implementation for geriatric patients in UAE needs to be improved. Also, geriatrics satisfaction towards pharmaceutical care in UAE is low and is different between Emirates of the UAE. This calls for implementing of different measures such as providing training courses for pharmacists specialized in geriatrics care, which aims to provide a high quality pharmaceutical care to all geriatrics in the UAE.
Disclosure of interest: None declared.

CP-PC031: Can older people break scored tablets by hand?

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Background and objective: Older people often require a lower dose compared to younger adults. The required strengths are not always available and therefore, older people often need to break tablets. This study aimed to investigate older people's ability to break scored tablets by hand, using different techniques of breaking.
Setting and method: Twelve scored tablets were selected for this study. Thirty-six older people were systematically observed with breaking these 12 tablets. All tablets were broken by three common techniques for breaking tablets by hand: in between the fingers with the use of nails, in between the fingers without the use of nails and pushing the tablet downward with one finger on a solid surface.
Main outcome measures: The experienced pain during breaking, the ability of breaking a tablet and the capability of breaking a tablet in equal halves were measured. The results were compared to those of a younger reference group.
Results: Irrespective of the breaking technique, 38.0 % of the tablets were broken by the older people versus 78.2 % of the tablets by the younger people. 14.0 % of the older participants and 19.2 % of the younger participants experienced too much pain during breaking. There was no significant difference in the share of accurately broken tablets among the broken tablets; 70.9 % of the broken tablets were broken accurately by the older participants, compared to 77.3 % by the younger participants. The type of break-mark defined the most suitable method of breaking. For instance, tablets containing a pressure-sensitive break-mark were easier broken by the push-method.
Conclusion: Older people experience major difficulties with breaking scored tablets by hand. To ensure safe self-management of medicines, breaking tablets should be avoided in older patients. In case tablet breaking is unavoidable, a patient's ability to break tablets should be assessed by health care providers and instructions on the appropriate method of breaking should be provided.
Disclosure of interest: None declared.

CP-PC033: Medication adherence rate could vary when using different tools: a questionnaire survey within Slovakia

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Background and objective: Poor medication adherence is wide spread (estimated half of Slovak patients don't use their medicines appropriately). It affects all age groups and all classes of diseases. Adherence is a very important for pharmacotherapy success. Low and non-adherence don't result in expected therapeutic goals, disease get worse and the healthcare costs increase.
Setting and method: The study evaluated:

1. the patients' medication adherence using modified 4- and 8-item version of Morisky score (mMMAS-4 and mMMAS-8);
2. if there showed differences in the level of adherence used mMMAS-4 and mMMAS-8.

The both modified Morisky scores were used in an anonymous questionnaire survey set in one community pharmacy in Slovakia during interviews and counselling with patients. Adherence of 264 patients were evaluated given to factors as education, residence, age, number and type of diagnosis.
Main outcome measures: Questionnaires consisted the mMMAS-4 and mMMAS-8 questions with scoring scheme adapted to Slovak language version. The higher score meant the better adherence:

mMMAS-4: 0–1 = non-adherence, 2 = partial adherence, 3–4 = full-adherence;
mMMAS-8: 0–5 = non-adherence, 6–7 = partial adherence and 8 = full-adherence.

Results: The results show, that the medication adherence of patients was very low in general (mean score 2.131-mMMAS-4 vs. 4.283-mMMAS-8). The medication adherence of patients with acute conditions (mean 2.442-mMMAS-4 vs. 4.5-mMMAS-8) was higher compared to chronic conditions using mMMAS-4 (mean score 1.821) and mMMAS-8 (mean 4.066). Using mMMAS-4 showed partial adherence of patients. Using mMMAS-8 showed that almost all chronic patients were non-adherent, out of polypragmatic patients (diabetics and allergics, psychiatrics and diabetics) where the partial adherence of patients to pharmacotherapy was found (mean 6). Using mMMAS-4 we also found that patients are non-adherent to the treatment of chronic diseases (mean 1.821). In some cases were patients fully adherent—diabetics and allergics (mean 3), psychiatrics and diabetics (mean 3) and partially adherent—cardiacs and diabetics (mean 2.077). Males showed higher adherence (mean 2) than females (mean 1.721). Adherence in polypragmatic patients was higher (mean 1.975 using mMMAS-4 and 4.6 using mMMAS-8) compared to the patients' adherence with one and only diagnose (psychiatrics—mean 1.882 using mMMAS-4 and 4.16 using mMMAS-8), cardiacs—mean 1.83 using mMMAS-4 and 4.14 using MMAS-8, diabetics 1.789 using mMMAS-4 and 3.9 using mMMAS-8 and allergics—1.48 using mMMAS-4 and 2.88 using mMMAS-8).
Conclusion: The medication adherence evaluated using mMMAS-4 and mMMAS-8 showed statistical nonsignificant differences in non-adherence and partial adherence levels of medication adherence. In general, the medication adherence different groups showed to be insufficient and weak. The pharmacists could play a unique role to improve the adherence and to achieve the rational and efficient medication success.
Disclosure of interest: None declared.

CP-PC034: Medication Adherence Questionnaire Survey in the community pharmacy patients in Greece

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Background and objective: The questionnaire study seeks to estimate the degree to which patients are compliant with their medication according to different parameters in a Greek region. From the literature review, it would appear that the definition of medication adherence is adequately resolved. The preliminary evaluation revealed the degree of a number of factors that contributed to medication non-adherence. These factors could be categorized to patient-centered factors (gender, age, residence, marital status), therapy-related factors, social (life-style) and economic factors, healthcare system factors, and disease factors (acute or chronic disease, more than one diseases). For some of these factors, the impact on compliance was not unequivocal, but for other factors, the impact was inconsistent and contradictory.
Setting and method: The study was set in the community pharmacy. To evaluate adherence, we have used questionnaire based on the combination of 4-item and 8-item modified Morisky tool. The Morisky tool was added to questions of socio-behavioral factors.
Main outcome measures: The questionnaire consisted of 10 items with scoring scheme of "yes" = 1 and "no" = 0. The items were summed to give a range of scores from 0 to 10. Score "0" meant high adherence, score 1 or 2 meant medium adherence and score above 3 meant low adherence.
Results: The overall prevalence of medication adherence of the 222 participants was moderate (41.45 %). We found out that females had higher adherence than males, so as those patients aged less than 55 years and single. The residence didn't seem to affect medication adherence. In addition, smokers and those who have been exercising presented higher adherence than non-smokers and those who don't exercise, respectively. Patients with acute diseases showed high adherence, while those with chronic diseases showed moderate adherence to medication. According to the diseased system of human organism, patients with genitourinary problems were highly compliant (67.74 %), patients with cardiovascular were moderate compliant—60.61 % and with gastrointestinal problems were the lowest compliant (60.71 %). Finally, patients who were bearing two diseases complied moderately (46.67) %, while those bearing three diseases complied moderately and low simultaneously (42.86 %).
Conclusion: Medication adherence is essential to optimizing patient outcomes in nearly any disease. Non-adherence to medications is associated with worsening of disease, increased mortality, and greater health care costs. Patient non-adherence is a serious healthcare concern that poses a great challenge to the successful delivery of healthcare in community pharmacies.
Disclosure of interest: None declared.

CP-PC035: An update about the hypertension treatment in the Portuguese community pharmacy population

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Background and objective: The elderly are the biggest consumers of drugs, therefore the rational and careful use of drugs is the key to success for a better quality of life. However the high prevalence of several chronic diseases simultaneously in the same individual often leads to a risk of polypharmacy, with the resulting negative consequences, among which are the difficulties of adherence to treatment regimen. Aim: This study assess hypertension treatment in an elderly hypertensive population.
Setting and method: We performed a prospective study in 1039 hypertensive patients older than 65 years, recruited from community pharmacies, that answered a standardized questionnaire. Through interviews were applied BAI, BDI-II, the Morisky–Green test, Hypertension Health Status Inventory HYPER. Associations with participants' demographic variables and medication histories were also assessed.
Main outcome measures: This study sought to determine the daily drugs consumed, the most prevalent drug classes, adherence, beliefs, behaviour and knowledge to prescribed therapy, the scores of anxiety and depression, and quality of life in an elderly hypertensive population.
Results: The study included 1039 elderly patients, 58 % women. The group age was between 65 and 94 years-old (mean 72.69 ± 5.83 years-old). Patients were treated with an average of 5.7 different drugs, which corresponded to a daily administration of 6.34 tablets per day. The total intake of daily drugs and the number of tablets per day were higher in females. The antihypertensive drugs were an average of two (between 1 and 6) taken daily. Of the different pharmacological groups stood out the group of psychotropic drugs (428–41 %) with benzodiazepines (382–37 %), and lipid-lowering agents (419–40 %) with statins (375–36 %) and oral antidiabetics (204–20 %). It was found out that this population was anxious but not depressed, with a high intake of psychotropic drugs. Quality of life was considered good. It was determined that there was no adherence to therapy in 37 % of patients, using the Morisky–Green test.
Conclusion: This study can clarify the concept of polypharmacy in a population of elderly hypertensive patients. There is a good adherence to therapy despite forgetfulness and therapeutic experiences in many cases. Inadequate knowledge and incorrect beliefs among this population indicate a need for interventions to improve public knowledge and address misconceptions regarding medication therapy. These interventions could be initiated on both an individual and public scale, with patient interactions by healthcare professionals and mass education activities targeting the larger population.
Disclosure of interest: None declared.

CP-PC036: Medication discrepancies at outpatient clinics for mood and anxiety disorders

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Background and objective: Psychiatric patients may be more at risk for side effects as well as drug interactions than the general population because of their frequent co-use of psychiatric and somatic medications [1, 2]. A complete and accurate medication overview is essential to evaluation of the clinical status and pharmacotherapeutic treatment. An incomplete or erroneous medication overview may lead to iatrogenic harm. Little is known about medication reconciliation quality at psychiatric outpatient clinics. This study aimed at identifying discrepancies between the medication overviews of outpatient clinics for mood and anxiety disorders and the reconciled drug usage

by their patients as well as to investigate the clinical relevance of those discrepancies.
Setting and method: A cross-sectional study was conducted in patients of 18 years and older from four outpatient clinics for mood and anxiety disorders in the northern part of the Netherlands. We assessed discrepancies between the medication lists from the electronic medical records from the outpatient clinic and the actual medication use, as determined by medication reconciliation with the patient. Descriptive analysis was completed using Microsoft Excel 2013.
Main outcome measures: Primary outcome was the number of discrepancies. Secondary outcome was the clinical relevance of the discrepancies, as assessed by an expert panel consisting of a psychiatrist and a hospital pharmacist/clinical pharmacologist, who independently reviewed each discrepancy for its potential to cause patient discomfort or clinical deterioration.
Results: At least one discrepancy in the medication overview was found in 348 of 367 patients (94.8 %). The medication overview contained on average 3.9 ± 2.8 discrepancies per patient. Most discrepancies were omitted drugs that were regularly used by the patient. 22.7 % of all discrepancies, present in almost half of all patients (49.3 %), had the potential to cause patient harm.
Conclusion: To our knowledge, this is the first study on medication discrepancies and their clinical relevance in psychiatric outpatients. We found a considerable number of medication discrepancies in the medication overviews from the psychiatry outpatient clinics. A substantial part of these discrepancies were considered to be a clinical relevant risk to medication safety in outpatients with mood and anxiety disorders.
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Disclosure of interest: None declared.

CP-PC037: Quality indicators for community pharmacies: a validated set of 66 quality indicators on 10 domains and national scores

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Did you previously present your abstract on an international platform: Yes—the abstract has been previously presented internationally. **Abstract submitted before to:** PCNE, ISPE, PRISMA symposium.
Background and objective: The quality of pharmaceutical care in community pharmacies in the Netherlands was assessed annually since 2009 for the preceding calendar years. In 2013 a set was used, which had been validated and accustomed to the requirements of pharmacists and external stakeholders. Some indicators of this set had been measured up to 4 years before.

The aim of this study was to describe national scores on a validated set of quality indicators for Dutch community pharmacies and to explore the development of the national scores for indicators measured before.
Setting and method: Pharmacists in charge of a community pharmacy in 2013 were invited to provide their scores for validated set of 66 quality indicators on the previous year. From this information, national scores were calculated. For indicators that were questioned in earlier sets between 2008 and 2011, the scores from those pharmacies were linked, that had responded to the data collection in 2013. To show trends, national scores were also calculated for the previous calendar years.
Main outcome measures: National scores for categorical indicators were calculated as the percentage of pharmacies reporting a high level of quality and for numerical indicators as the mean of the given scores. To study the consistency of the reported scores within individual pharmacies, the Intraclass Correlation Coefficient was estimated for those quality indicators measured annually between 2008 and 2012.
Results: 1739 pharmacies (88 % of all Dutch community pharmacies) provided data for the validated set on 2012. Indicators on the domains 'quality management', 'continuity of care', 'clinical risk management', 'compounding' and 'dispensing processes' reached national scores above 80 %. For the domains 'patient communication', following of pharmacotherapy guidelines', 'OTC-counselling' and 'training of pharmacy staff' national scores were between 50 and 90 %. Overall scores improved during the years, but this development differed between pharmacies. The highest consistency in indicator scores for individual pharmacies during the five study years was seen for the presence of a valid quality certificate and the availability of protocols on contra-indications (ICC = 0.9). The lowest consistency was measured for the absolute number of coumarin users with concomitant use of co-trimoxazol (ICC = 0.01) and for the performance of at least 20 medication reviews annually (ICC = 0.14).
Conclusion: A validated set of quality indicators provided insight in the quality of pharmaceutical care on a national level. Reasons for differences in quality between pharmacies should be elucidated in further research.
Disclosure of interest: None declared.

CP-PC038: Reporting pharmacy staff communication for OTC medicines encounters with simulated patients

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Background and objective: Research on OTC counselling has focused primarily on adherence to pharmacotherapeutic guidelines. However, effective communication is pivotal for a successful counselling. The study aims to describe pharmacy staff–customer communication when dispensing OTC medicines.
Setting and method: Case study methodology in a purposively selected urban high street community pharmacy. Participants comprised five members of staff: one pharmacist, one pharmacy technician and three counter-assistants. Ethical approval was granted and informed consent obtained. Simulated patient visits were

conducted, using four symptom-based (SbS) and three product-based scenarios (PbS). The visits were audiotaped, transcribed verbatim, time stamped, and coded employing the eight higher level categories of a framework inspired by the Roter Interaction Analysis System (RIAS).
Main outcome measures: Relative frequencies of coded categories in percentage, according to a adjusted RIAS framework.
Results: Ten pharmacy staff–customer interactions transcripts were considered for analysis. Overall, the mean duration of an interaction was 4 min and 20 s, ranging from 1 m:08 s to 8 m:22 s. A clear predominance of closed questions (32.0 %) was found, when comparing with open questions (5.5 %). Providing advice through implicit or explicit suggestions was more frequent (23.5 %) than giving information (12.5 %). Longer interactions were not necessarily associated with more extensive symptoms evaluation or patient counselling. Comparison of information-gathering in SbS and PbS shows that more questions were asked in the former (44 vs. 31 %), which resulted in more information given by simulated patients (56 and 49 %, respectively).
Conclusion: Our study suggests an overuse of closed questions. This may jeopardize effective information gathering, especially if closed questions are used in the initial stages of patient consultation. The prevalence of advice giving versus the provision of information is hardly surprising, considering the framework in which pharmacists and other staff are trained. Nonetheless, in the absence of effective information gathering, tailoring advice to patients' needs and desires may prove challenging. In conclusion, our study suggests that pharmacy staff needs to be encouraged to engage in more patient-oriented communication. A larger study is warranted to confirm this finding. Patients' perspectives on effective communication when dispensing OTC medicines deserve also exploration.
Disclosure of interest: None declared.

DI006: Determination of potentially drug–drug interaction in oncology patients

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Background and objective: Oncology patients are particularly vulnerable to drug interaction, that can occur due to chemotherapy–chemotherapy interaction, chemotherapy–supportive therapy interaction or chemotherapy–chronic therapy interaction. The interaction can increase or decrease the effectiveness or increase the side effects of the chemotherapy drugs. The likelihood of drug interactions increases as the number of drugs being taken increases. Our Objective is to determine the incidence of drug interaction in oncology patients who receive chemotherapy and identify the potential sources of the interaction in order to develop a strategic plan to prevent these interactions in the future.
Setting and method: Observational Prospective Study was conducted at Marmara University Pendik Education and Research Hospital in Istanbul Turkey. Patient profile and demographic variables were taken from 81 patients who received their first chemotherapy cycle, full medication histories was taken, and the patient chemotherapy protocols and supportive therapy were completely investigated to determine the incidence and potential sources of drug–drug interaction. The data collected within 40 days started from the eleventh of May to the nineteenth of Jun 2015.
Main outcome measures: The significance of the interactions was evaluated by using a Medscape drug interactions checker and doubled checked using a Rx-list drug interaction checker. The action that is done to avoid the interaction was observed by reviewing the doctor and nurse's notes and the chronic treatment was evaluated from the Patient's medication histories.
Results: 62.9 % of the 81 patients had significant drug interactions, 6.1 % had minor drug interactions. The major source of the significant interactions was the interactions between the supportive therapy itself and between supportive therapy and chemotherapy agents. Where aprepitant interaction with chemotherapy agent such as doxorubicin, etoposide and dexamethasone interaction with chemotherapy agents such as paclitaxel, etoposide and doxorubicin were frequently seen. Although these significance interactions require close monitoring and dose modifications in some cases, serious drug interactions were not detected.
Conclusion: Drug–drug interaction incidence is highly detectable in oncology patients, identifications of potential drug interactions related problems may help in developing a strategic plan which incorporate clinical pharmacist with other medical team in the medication prescription process. Studies have shown that clinical pharmacists effectively can identify, solve and prevent clinically significant drug related problems especially the drug–drug interaction.
Keywords: Drug interaction · oncology · clinical pharmacist · chemotherapy.
Disclosure of interest: None declared.

DI007: Prescribing pattern of PPI and clopidogrel in community pharmacies in Turkey

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Background and objective: Proton pump inhibitors (PPIs) are among the most prescribed medications in Turkey. The use of proton pump inhibitors is one of the risk factors associated with treatment failure or unresponsiveness for clopidogrel therapy. Our objective is to describe the prescribing patterns of proton pump inhibitors among the cardiovascular patient in Turkish population.
Setting and method: A retrospective study was conducted, 100 patient's prescriptions that contain clopidogrel were collected in a period of 3 months from three community pharmacies. Demographic variables were collected from the pharmacy online system and indications for both proton pump inhibitor and clopidogrel were identified. Patterns of drug prescriptions were evaluated and the change in prescription with time was also taken into account.
Main outcome measures: The use of PPI like lansoprazol, esomeprazol, pantoprazole, omeprazole, rabeprazole, and clopidogrel were evaluated by using pharmacy medication record system within 6 months period. Prescriptions that include PPI and clopidogrel simultaneously was highlighted. Drug–drug interaction was checked using Medscape drug interaction checker.
Results: In the current study, findings showed that, 74 % of patients receiving clopidogrel and PPI simultaneously where 26 % of patients had received clopidogrel with PPI at the same prescription. The prescription patterns of PPI were found as 25, 13, 28, 8 % for lansoprazole, esomeprazole, pantoprazole and rabeprazole, respectively. Significant drug–drug interaction between PPI and clopidogrel was detected in 38 % of patients, 31.7 % of these patients received both drugs at the same prescription. 22.9 % of the patients had different PPI in the medication histories, 16 % of these changes were incorrectly and 6.9 % were correctly done.

Conclusion: Although most of the prescriptions contain pantoprazole or rabeprazole, there are still some prescriptions that contain lansoprazole in combination with clopidogrel, may reduce the effectiveness of clopidogrel in preventing heart attack or stroke. Community pharmacist must be aware of these types of interaction and must play a role in preventing and monitoring them by calling the prescribers if possible. Increasing the community pharmacist's knowledge towards these types of interactions will lead to decrease the negative economic and health impacts of drug interactions.
Keywords: Proton Pump Inhibitors, Clopidogrel, Prescription pattern.
Disclosure of interest: None declared.

DI008: Ranitidine prescription in children parenteral nutrition

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Background and objective: The Gastroenterology unit is responsible for the management of pediatric patients on Home Parenteral Nutrition (HPN), most of them for neonatal short bowel syndrome (NSBS). In cases of gastric hypersecretion and/or high intestinal losses, some patients require ranitidine. Since November 2014, availability of ranitidine has been restricted, leading to the reassessment of the prescriptions. Our goal was to evaluate the clinical utility of this molecule by monitoring patients after ranitidine administration suppression.
Design: A literature review on the pharmacodynamics of ranitidine was performed. Clinical practices were analyzed by reviewing prescriptions and patient records, interviewing various actors in PN, participating in meetings and outpatient visits.
Results: Our comprehensive literature review demonstrates the efficiency of ranitidine in decreasing the gastric hypersecretion observed in SBS. Ranitidine intravenous administration significantly reduces fluid and electrolyte losses from these patients. Compatibility of ranitidine with mixtures of PN is well known and positively improves patient's condition. Continuous infusion is more efficient and requires lower daily dose compared with intermittent injections. Finally, two factors appear to be associated with a basal gastric hypersecretion: extensive small bowel resection and initiation of enteral feeding. Some studies conducted in adults aimed to compare ranitidine and proton pump inhibitors (PPIs) without showing difference. No study has defined the stability of PPIs as added to PN bags.

On January 1st 2015, 109 patients were followed in our HPN program. The cohort includes patients aged from 4 months to 21 years (54 % male), most of them (48 %) having SBS. Since December 2014, all ranitidine prescriptions were reviewed. Initially, 64 patients were receiving ranitidine in association with PN. The final assessment was performed in 23 patients (36 %): two failures led to reverse to the initial prescription. The change to the oral route involved 22 patients (34 %) with four failures. These failures occurred shortly after prescription's modification, with nausea/vomiting, increase of diarrhea, mainly in patients with SBS. On 19 patients (30 %), ranitidine was maintained, due to insufficient intestinal absorption from children with extreme SBS, extended Hirschsprung Disease, and Chronic Intestinal Pseudo Obstruction.
Conclusion: The literature data and clinical experience confirm the interest of ranitidine in primary or secondary gastric hypersecretion in PN-dependent pediatric patients. PPI's don't have the same anti-secretory effects and no stability study is currently available. A review of ranitidine prescriptions was conducted according to specific clinical profiles of patients. Nevertheless, about a third of the cohort remain still dependent. Considering clinical consequences when raniditine administration is stopped, it should not be interrupted in these cases.
Disclosure of interest: None declared.

DI009: Creation of a synthetic document about never events: evaluation of its impact on healthcare professionals' knowledge

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Background and objective: The notion of "Never Events" has been introduced in France in 2012 by the French Healthcare authority. To enhance safety of patients' drug therapy in our French Cancer Centre, a multi-professional working group realized an educational document on the core list of never events. This pocket size leaflet contains 13 key points adapted to the care of adult cancer patients. To assess its impact on healthcare professionals' knowledge, a quiz has been largely diffused.
Design: The online quiz was available before and after diffusion of the tool on the intranet site of the hospital. The filling was anonymous but each healthcare professional had to declare his professional category (nurse, physician…). The quiz consisted of 13 questions related to each topic of the Never Events document. There were five possible answers for each question. The scoring system was as follows per question: 1 point if all the answers were right, 0.5 point if there was one mistake and no point for more than one mistake. The results were expressed as the percentage of correct answers and discussed considering a 50 % threshold.
Results: 58 professionals answered the first quiz and 56 answered the second one with no significant difference in the professional repartition between the two quizzes. Five questions had a rate of good answers >50 % in the first quiz and ten questions in the second one. The topic with the best progression was related to the right route of administration (before: 47 %–after: 74 %). The theme where the professionals were the best (scores between 65 and 87 %) after the diffusion were: administration of a potassium-containing solution, oral administration of chemotherapy, use of the right route of administration, administration of medicine used in anaesthesia, programming of the devices for administration, allergic risk. Five themes had a score between 49 and 56 %: management of patients under anticoagulants, preparation of high risk injectable medication, intravenous administration of epidural medication, overdose of chemotherapy, administration of gas for medical use. The two themes with the worst score concerned management of patients treated with chemotherapies requiring particular precautions (44 %) and administration of insulin (20 %).
Conclusion: The evaluation showed first a need for training and then a global improvement of healthcare professionals' knowledge. This document can be considered as a useful training tool. However some questions have still a low rate of correct answers. Such results warrant further investigations to improve the Never Events leaflet and to develop additional training tools.
Disclosure of interest: None declared.

DI010: Securing the injectable potassium's circuit: which communication media to inform?

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Background and objective: The medication use system involves many actors at each of its steps. An action plan concerning injectable potassium was engaged within our hospital. One of its axis focuses on sensitizing actors.
Design: A literature review was performed to search national documents on minimizing risks during injectable potassium's use and to highlight communication media that can be used. A multidisciplinary reflexion allowed to adapt, to create and to spread these media throughout the hospital.
Results: A logo identifying "high-alert medications" was created. It appears on every communication media and storage areas. An institutional document, validated by the medication committee, exposes guidelines to minimize risks at each step. A colorized and plasticized poster summarizes the important points. Its presentation is diverted from the French national sanitary agency poster, already known from the care units. A flyer, aiming at initiating discussions between care professionals, was sent to every care units. It announces formative sessions led by a health executive/pharmacist duo and in which a quiz of 10 essential questions encourages the exchanges between participants. The institutional document is also presented and the poster is delivered to display into the care units. 27 sessions have concerned 29 departments and sensitized 213 healthcare professionals. The intranet was used to support the diffusion of the flyer, to announce trainings, to convey the assessment and to promote the institutional document (162 clicks along the training period). Every documents are available in the documentary management.
Conclusion: Several communication media were used to inform about our action plan. The returns from the care units are very positive. However, impact of these media remains difficult to assess. This methodology will be used for other action plans relating to high-alert medications.
Disclosure of interest: None declared.

DI011: Linguistics metrics of package leaflets: estimating effects on users' comprehension of medicines information

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Background and objective: According to the pharmaceutical regulations, package leaflets (PLs) must be linguistically simple and clear to assure patients' comprehension. Independent studies with European Portuguese PLs are not known. Written documents composed of few words ($\leq$ 1500), with a higher proportion ($\geq$75 %) of smaller words ($\leq$3 syllables), and containing a higher percentage of the 10 most frequent syllabic types (>96 %) are more likely to be better understood. This study aimed to evaluate if PLs with reading favourable linguistic features were better understood compared with those not containing such features.
Setting and method: Twelve PLs purposively selected, i.e. six pairs of PLs with opposed linguistic features, were assessed for participants' comprehension using an anonymous and self-administered questionnaire (August–December 2014), developed according the European readability guideline. Selected participants were older than 18 years, with at least 4 years of formal education and recruited from city councils, educational and social institutions, firefighters and military forces. A total of 503 individuals (53 % males), from two Portuguese regions (49.3 % Lisbon, 50.7 % Centre region), provided valid responses. Participants' education was homogeneous: 31.9 % (4–6 years of education), 36.3 % (7–12), and 31.9 % (>12). Statistical associations were tested with Chi square for a p value of less than 0.05.
Main outcome measures: Linguistic metrics and the acceptable readability level set to $\geq$75 % of correct questionnaire answers.
Results: Considering the PLs classified as linguistically more appropriate, the proportion of participants demonstrating a more favourable understanding of PLs was significantly higher than the proportion of those with lower scores (<75 % correct answers), as follows: (1) PLs containing 1500 or less words (59.8 %) ($\chi^2 = 11.687$, $p = 0.009$), (2) PLs containing a percentage of smaller words (62.2 %) ($\chi^2 = 93.783$, $p < 0.001$), and (3) PLs containing a high percentage of the 10 most frequent syllabic types (57.5 %) ($\chi^2 = 23.608$, $p < 0.001$).
Conclusion: There are a number of orthographic and phonetic variables that clearly influence the readability of PLs, which can be used as initial readability indicators. It is advisable to check these linguistic metrics during the development and approval of package leaflets and to update pharmaceutical regulation on this issue.
Disclosure of interest: None declared.

DI012: Implementing medicines information into French hospital pharmacists activities: checking CPD files to evaluate pharmacists skills to put guidelines for searching literature and answering information enquiries into practice

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Background and objective: For historical and organizational reasons, medicines information was first considered as a discipline by French hospital pharmacists only a few years ago. For the first time in 2014, a course was accredited as a national continuing professional development (CPD) program [1]. Graduating specialists in hospital pharmacy (''interns'') were not usually taught methods in medicines information either, except in few regions. As an example, some training has been done at Rennes University Regional Hospital for about 25 years. We attended this 2 days monthly course from December 2014 to April 2015. Our personal work (M.C and S.V) was to evaluate skills and appropriateness of registered CPD senior pharmacists in performing literature searches and answering drug information queries.
Design: Fifteen hospital pharmacists completed their 2014 CPD program in medicines information by attending a 2 h workshop, and by applying the recommended guidelines to 10 actual medicines information requests within their areas of practice. All cases had to be recorded over a standard form, 3 files of which were sampled per participant. The four of us checked these 45 files towards the main methodologic rules explained during the workshop and our lessons. Phone interviews were also conducted with nine participants. First, we did our own literature searches, and compared them to those recorded on the files. Then, we evaluated the reliability, accurateness, practical applicability of the given answers, format and need for follow up.

Results: Forty-two files could be analysed. Appropriate tertiary information was recorded for 38 of them. Among the 4 missing, we found 2 sources that would have been relevant. Selected sources were adequate in 83 % of cases. One essential source was omitted in 29 %. Data were generally properly analysed, except for 1 file (recorded drug doserelating to mice, not humans). Regarding responses, 38 % lacked precision, especially about drug reconstitution. Twenty-one enquiries were answered only orally, what we considered as inadequate for 12 of them. Follow up was planned in 28 % of the cases.
Conclusion: This study raises areas for improvement. It's essential to provide as much detail as possible so that the caller doesn't have to run additional searches. Oral responses increase risk of transmission error, while written answers should be prioritized and exploited to be reused. Some reference sources are rarely consulted, like NICE Guidelines, the BNF, or books about specific topics (e.g. lactation). Reinforcing CPD programs and generalizing the teaching of this discipline to all French pharmacy students is essential to ensure more efficient and safer medicines information.
Disclosure of interest: None declared.

DI013: Use of mitomycin C as complementary treatment in recurrent laryngotracheal stenosis

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Background and objective: Severe laryngotracheal stenosis (LTS) is a progressive and permanent narrowing of the laryngotracheal lumen disabling and potentially fatal which often recurs despite treatment. Mitomycin C, due to its antifibrotic properties has shown utility in the prevention of restenosis. Our objective was to analyse the clinical outcomes of seven patients with recurrent and severe laryngotracheal stenosis (LTS) treated with adjuvant topical mitomycin C and its safety.
Design: A mitomycin C dilution of concentration 0.4 mg/ml was prepared using aseptic technique in the citostatyc unit. It was applied topically with cotton swab to seven patients with LTS to the wound site following laser surgery and dilatation with bronchoscope. To assess the treatment efficacy they were taken as variables the absence of respiratory symptoms (dyspnoea) and recurrence of stenosis after 6 months of treatment.
Results: After 6 months of treatment five patients remained asymptomatic from a respiratory perspective, and treatment failed in two cases. In any case systemic reactions or adverse effects to medication and/or techniques used were observed.
Conclusion: LTS treatment is complex due to the continuous development of granulation tissue and fibrosis following injury to the airways. Topical mitomycin C seems to be the ideal adjuvant agent thanks to its powerful antifibrotic effects and absence of any significant systemic effects.
Disclosure of interest: None declared.

DI014: Nab-paclitaxel utilization pattern and safety profile in patients with metastatic breast and pancreatic cancer

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Background and objective: Nab-paclitaxel (nab-P) monotherapy is indicated for the treatment of metastatic breast cancer in adult patients who have failed first-line treatment for metastatic disease and in combination with gemcitabine for the first-line treatment of metastatic adenocarcinoma of the pancreas. This work is an assessment of the use and safety profile of nab-P in a third level hospital in Spain.
Design: Descriptive observational study in a third level hospital. We included patients under treatment with nab-P. Data was compiled through the electronic prescription program. Variables included demographic (age, sex); clinical data (diagnosis, treatment, and adequacy to datasheet, causes of dose reduction and treatment discontinuation) and adverse reactions. Data were obtained from medical records.
Results: The study concerned 14 patients; 10 women and 4 men. Mean age was 52.3 (34–71). Diagnoses were breast cancer in eight patients (25 % outside the licensed indications) and pancreatic cancer in six patients (83 % outside the licensed indications). Breast cancer patients received nab-P 260 mg/m^2 q3w (two patients with $\geq$4th-line therapy); five pancreatic cancer patients received nab-P 100 mg/m^2 weekly (two patients with $\geq$4th-line therapy) and one pancreatic cancer patient received nab-P 100 mg/m^2 days 1, 8, and 15 of each 28-day (4th-line therapy). Most common adverse reactions included: In breast cancer: 21.4 % diarrhoea, 7.14 % skin and subcutaneous tissue disorders; in pancreatic cancer: 50 % neutropenia grade 4, 33.3 % pancytopenia. Causes of dose reduction were 2 pancytopenia's and 1 neutropenia (25 % of dose reduction according to datasheet), and 1 scalded skin syndrome (10 % dose reduction outside of datasheet recommendations). Causes of treatment discontinuation were progression (35.7 %), death (14.3 %) and 50 % patients remain under treatment.
Conclusion: 75 % of breast cancer patients were treated accordingly to data sheet but only 16.7 % of pancreatic cancer patients. Most serious and frequent adverse effects were given in patients with pancreatic cancer, but were resolved with a dose reduction. In breast cancer, nab-P treatment was well tolerated.
Disclosure of interest: None declared.

DI015: Evaluation of drug interactions in the treatment with oral cytostatic

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Background and objective: The aim of this work is the detection and assessment of drug interactions produced in clinical practice in the treatment of oncological diseases with oral cytostatic drugs dispensed in unit dosage outpatient care.
Setting and method: Retrospective descriptive study in which patients who had retired oral cytostatic at hospital between February 2015 and March 2015 from dispensations listed in Abucasis software is included. Through the same application current medication dispensing in community pharmacies was collected. The interactions were tested in the review tool Medscape interactions.
Main outcome measures: The variables were: cytostatic dispensed, number of concomitant medications, number of interactions and severity: mild, intermediate (requires monitoring) and severe (absolute contraindication for simultaneous use).
Results: In the study period it was dispensed oral cytostatic treatment to a total of 83 patients were divided as follows: 11 abiraterone, 33 capecitabine 1 crizotinib 7 erlotinib, 3 everolimus, 6 imatinib, 7 sorefenib, 7 sunitinib and 8 temozolomide. Each patient received an

average of 6 ± 3 drugs. Mild 124 (35.20 %), intermediate 207 (58.8 %) and severe 21 (6 %): After studying these patients a total of 352 interactions (mean 4.25 ± 6.88) as follows classified detected. However in only 28 (7.9 %) of these interactions a cytostatic intervened. These interactions in turn 28 were classified as mild in one patient (3.5 %), moderate in 18 (64.3 %) and severe in nine cases (32 %).

These interactions that involved an oral cytostatic led to the following results: 6 (21.4 %) interactions provoked provides reduction in plasma concentration of cytostatic, while 4 (14.3 %) caused an increase. A total of three interactions (10.7 %) increased the QT interval. Finally, most interactions 13 (46.4 %) led to an increase in levels not cytostatic drug interactions and remaining 2 (7.2 %) caused the opposite effect.

Conclusion: In view of the data found that drug interactions is an important factor to be taken into account in the treatment of oral cytostatic include or not the patient, although it is true that gravity is greater if the cytostatic is involved. Periodic review of pharmacotherapy in patients with oral cytostatic is recommended.

Disclosure of interest: None declared.

DI016: A priori risk analysis of the drug management process in clinical trials at the Institut de Cancérologie de l'Ouest

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Background and objective: Adverse events associated with care are frequent, sometimes serious, and often avoidable. Since 2009, French legislation requires a global risk management. Clinical trials are a field with specific risks related to investigational drugs. Adverse event involves patient safety and the trial's quality. A risk management adapted to clinical trials is essential. The goal of our work is to secure the drug's circuit and ensure the safety of trial's data.

As the ICO is divided into two sites (René Gauducheau in Nantes, and Paul Papin in Angers), a second objective is to harmonize the practices between the two sites.

Design: We chose the failure modes, effects and criticality analysis (FMECA). It is a preventive method included in a process of continuous improvement. We described the drug management process in clinical trials for each ICO site. For each part of the process, we identified potential failure(s). Risks are then prioritized using scales of severity, frequency and detectability. The multiplication of these three factors defines a scale of criticality of three levels. Low criticality is acceptable and does not require any corrective action. High criticality is unacceptable and is considered as a priority. Prioritizing the risks allows to define a risk reduction and management plan.

Results: The drug management process in clinical trials includes 59 potential failures out of 69 elementary tasks in the site of René Gauducheau; 52 potential failures out of 57 elementary tasks in the site of Paul Papin. 3 out of 4 potential failures have a low criticality, approximately 20 % have an intermediate criticality and 4 % a high criticality. Each centre has two failures of high criticality, 3 of them concerning drug dispensation: the circuit's securisation needs to focus on this step.

Conclusion: The FMECA is a simple method on paper. It has the interest to be collective. But as it relies on the experience of each, it is necessary to have a representative working group to get a comprehensive process. It does not allow a transversal vision of failures and their consequences and must be completed by other methods such as fault trees. The FMECA must not be considered as a purpose but as a step in a process of continuous improvement.

Disclosure of interest: None declared.

DI017: Checking CPD files to evaluate pharmacists skills to put guidelines for receiving information enquiries into practice

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Background and objective: For historical and organizational reasons, medicines information was first considered as a discipline by French hospital pharmacists only a few years ago. For the first time in 2014, a course was accredited as a national continuing professional development (CPD) program [1]. Graduating specialists in hospital pharmacy ("interns") were not usually taught methods in medicines information either, except in few regions. As an example, some training has been done at Rennes University Regional Hospital for about 25 years. We attended this 2 days monthly course from December 2014 to April 2015. Our personal work (H.H and G.A) was to evaluate skills and appropriateness of registered CPD senior pharmacists in receiving drug information queries. Meanwhile, S.V and M.C worked on quality of literature searches and of answering the same drug information queries.

Design: Fifteen hospital pharmacists completed their 2014 CPD program in medicines information by attending a 2 h workshop in May, and by applying the recommended guidelines to 10 actual medicines information requests within their areas of practice by the end of November. All cases had to be recorded over a standard form, three files of which were sampled per participant. The four of us checked these 45 files towards the main methodologic rules explained during the workshop and our lessons. Phone interviews were also conducted with nine participants. Either a yes/no or a 1 (poor) to 5 (very good) scale grading was used to measure fulfilment.

Results: Forty-two files could be analysed. Results were satisfactory on average. Pharmacists were able to liaise closely with the main concerned person in more than 80 % of situations, and full contact information was filled in for 66 % of them. Qualitative results ranked from 3.81 for documenting complete context, and not thinking by intuition or knowledge (2–5), to 3.21 for considering medical conditions and not focusing on medications (1–5). Most items obtained at least a 3.50 level: to get aware of the sequence of events that prompted requesters to ask for information; to agree on real needs, objectives, suitable deadlines, etc.

Conclusion: Results were presented during the CPD workshop in May 2015. Consequently, 48 participants decided to enter the program this year. Following our suggestions, the question/answer standard form was reviewed to facilitate guidelines implementation. However, a 2 h workshop is too short to grasp the entire basis, compared to what we were taught via simulation and application techniques for several days at the university. This CPD workshop duration will be doubled in 2016, and specializing students should remain associated to the training. Juniors can be useful and proactive in helping peers to develop new professional skills.

Disclosure of interest: None declared.

DI018: Alcohol–antibacterial drug interactions: comparison of three drug compendia

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Background and objective: Research on information about drug interactions has shown significant discrepancies between commonly

used compendia [1]. The purpose of this paper, which is part of a larger study, is to compare information on alcohol–antibacterial interactions in three compendia and to summarise information on interactions with greater concordance among sources.
Setting and method: Data on interactions between alcohol and antibacterial drugs were retrieved from three standard compendia: Stockley's Drug Interactions (2010 edition), Hansten's Drug Interactions Analysis and Management (2013 edition) and Micromedex system (accessed June 2014). Drugs with an ATC code J01 were considered, plus metronidazole and nitroimidazole-related compounds, which are regularly used in bacterial infections. Data on the interaction mechanism, severity and management were extracted for interactions documented in at least two of these sources.
Main outcome measures: Number of alcohol–antibacterial interactions in each compendium. Mechanism, severity and management of interactions documented in at least two compendia.
Results: Stockley's documented 17 interactions while Micromedex and Hansten listed seven and six, respectively. Interactions between alcohol and cefamandole, metronidazole, tinidazole, doxycycline, erythromycin, ciprofloxacin, cefmenoxime, cefoperazone and cefotetan were documented in at least two of the three drug interaction sources. Only the first three drugs had interactions listed in all compendia. There was concordance among Stockley's and Hansten that ciprofloxacin does not appear to interact with alcohol. The remainder eight drugs interact with alcohol via pharmacokinetic mechanisms. Micromodex rated interactions severity as major for six drugs and contraindicated for metronidazole; Hansten graded all interactions as class 3 (minimize risk), except for ciprofloxacin (class 5). Avoiding alcohol consumption was the most common advice for interaction management.
Conclusion: Interactions with alcohol seem to occur with only a limited number of antibacterial drugs but documented interactions have generally clinical relevance. This has implications for practice, as restricting the moderate consumption of alcohol in the absence of evidence for interactions is of doubtful benefit and may jeopardise adherence to antibacterial therapy and aggravate the burden of antibacterial resistance. More than one source should be used to identify and manage alcohol–antibacterial interactions in clinical practice, as there are discrepancies among compendia.
References

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Disclosure of interest: None declared.

DI019: Medicines information: license to make the best decision!

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Background and objective: The rapidly growing therapeutic treatment regimen has the consequence that education and training may not always be enough to support clinical decision making. Medicines information provides the knowledge that a professional lacks and has to access to make the best clinical decision.
The crucial task of the Information Pharmacist is to find and critically appraise relevant references, databases and literature. Reliability and usefulness of the information found are essential concepts for assessing data quality. It is obvious that the Medicines Information Centre needs to ensure qualification of the pharmacists and ensure consistent standard and high quality in the handling of cases.
Design: All Information Pharmacists must complete the "Guided Qualification Process" to become an approved caseworker. To ensure that each pharmacist handles the cases with the same professional approach, an academically adopted reference list is used and every case needs to be sparred and finally approved by a qualified caseworker. During case handling interdisciplinary sparring, with pharmacist and physician, is an option and the final approved case needs to be personally presented at an interdisciplinary meeting. An audit every sixth month ensures that the overall case process meets the agreed requirements.
Results: To support and ensure the qualification of each pharmacist and the consistency of case handling we have developed the following guidelines:

- Guided Qualification Process.
- Case sparring process.
- Final case approval procedure.
- Sparring and case handling, including daily mandatory interdisciplinary conference, with pharmacists and physicians.
- Reference list.
- Audit procedure.

Conclusion: Using the guidelines, we manage to qualify Information Pharmacists indistinguishable, resulting in case handling of a sufficiently high standard. This practice ensures that all the Information Pharmacists undergoes the same Guided Qualification Process and at all times work in accordance with the current instructions, guidelines and policies. During this training the caseworker learns, based on academic references, to make a pharmaceutical assessment that support the professional in the clinical decision making.
Disclosure of interest: None declared.

DI020: Ketogenic diet: the challenge of collecting adequate information on excipients

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Background and objective: Knowledge of the exact composition of medicines can be crucial for a patient who is prescribed ketogenic diet for epilepsy. Hence information of both qualitative and quantitative contents of excipients is important. Collecting this, often confidential, information from the manufactures, requires that the caseworker use a specific and concrete questioning techniques.
Design: Given that the prevalence of patients on ketogenic diet is low in Denmark, it is difficult to obtain routine in the procedures and processes of a case.

Variations in the composition of generic and parallel imported medicines, leaves an identified pitfall for the caseworker, because the dietitian often does not know exactly which brand of medicines the patient is taking.

Another pitfall is lack of knowledge in regards of which excipients that contribute with carbohydrates.

This emphasizes the importance of guidelines to support consistent standard and high quality in the case handling.
Results: To support the caseworker we have produced the following guidelines:

- A guide to interview the questioner.
- Main object is to ensure that the caseworker collect adequate information on the specific brand of medicine and dose regimen.
- A guide to interview the manufacturer.
- Main objective is to ensure that the manufacturer understands how important it is to the patient, that they disclose information on qualitative and quantitative composition of the medicines.
- Positive/negative list of excipients.

- E.g. that isomalt or maize starch contributes and that cellulose does not contribute in the calculation of carbohydrates in the diet.
- References list.

Conclusion: Using the guidelines, we manage to collect information and process a case consistently and swiftly, despite lack of routine. Questioner receives the desired information quickly, allowing the patient to commence the medical treatment. This practice ensures that patient safety is in focus.
Disclosure of interest: None declared.

DI021: Four steps towards comprehensible written patient information material

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Background and objective: In studies that investigate different pharmaceutical interventions to improve patient knowledge, the interventions' quality has a considerable impact on their efficacy. Particularly written information materials need a thorough analysis of their suitability for the target population. While the content of such material is often well-researched, standardized assessment of its comprehensibility is frequently lacking in the research setting. We therefore aimed at deducing a development procedure for high-quality written patient information material.
Design: In January 2015, we searched Pubmed to retrieve quality assurance strategies in the development of written patient information materials. The feasibility of the suggested procedure was tested with seven leaflets providing information about correct administration of different dosage forms.
Results: The literature search identified the suitability for the target population as the key attribute of written patient information materials. In harmonization of pertinent quality assurance strategies, we suggest a consecutive four-step procedure to develop written patient information leaflets, i.e. (a) an initial requirement analysis specifying the needs and constraints of the target population and evidence-based preparation of the leaflets, (b) a readability assessment, (c) the Suitability Assessment of Materials (SAM) instrument, and (d) iterative consumer tests in the target population.
Conclusion: The suggested four-step procedure combines already validated and well-established quality assurance principles and thereby provides feasible guidance on how to develop comprehensible patient information leaflets. In particular, when preparing written information materials for the research setting, the combination of thorough at desk assessments and subsequent consumer tests facilitates the development of comprehensible written materials in a reasonable time.
Disclosure of interest: A. Lampert Other Personal scholarship from "Dr. August und Dr. Anni Lesmüller Stiftung". K. Wien: None declared, W. E. Haefeli: None declared, H. M. Seidling: None declared.

DI022: Direct oral anticoagulants: patient zare and haemorrhage risk management

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Background and objective: An antidote to Direct Oral Anticoagulants (DOA) is not yet commercially available in case of haemorrhagic risk.

Due to the lack of reference framework to prevent or manage haemorrhages in patients treated with DAO, the Hospital Drug Committee (DC) has set a haemorrhaging risk protocol based on the use of PPSB or FEIBA according to the recommendations of the experts [1, 2].

The purpose is to asses PPSB and FEIBA treatment in practices on the DOA haemorrhaging risk and to follow the rules put in place by the DC.
Design: We have sorted out the files of patients treated with rivaroxaban or dabigatran and who had been given PPSB or FEIBA within the year 2014.

We have collected the following data, which is: therapeutic indication of PPSB or FEIBA, posology, Prothrombin Time (PT), Activated Cephalin Time (ACT), specific dosing test when initiating treatment [Anti-Xa Activity (AXA) for rivaroxaban and Modified Thrombin Time (MTT) for dabigatran].
Results: Seven patients treated with DOA were treated by PPSB or FEIBA either for cerebral haemorrhage ($n = 5$) or necessitating an urgent surgery (=2). At the onset of the treatment, all patients were tested for PT or MTT for 6 patients for the latter. A specific dosing test revealed a concentration higher than 30 ng/ml, a threshold required to apply the 25 UI/kg PPSB antagonist therapeutic recommended by the DC. Four patients were given a recommended dose of PPSB (25 UI/kg). One was given a 50 UI/kg dose, a posology that has not been chosen by the DC. One patient received a 50 UI/kg dose of FEIBA, a possibility envisaged by some experts but not the first option according to the DC. One patient tested for PT only was given PPSB for high haemorrhagic risk despite a PT range higher than 95 % (recommendation starting under 80 %). Antagonization was efficient in all cases.
Conclusion: DC recommendations are compatible with the urgency and have been followed in the majority of cases (5 on 7). Therapeutic strategy depends on the opportunity to perform quick specific dosing tests (AXA and MTT). In most cases of emergency, specific dosing tests results are quick enough. In life-threatening situation, it is not possible to wait for the results. First-line treatment selection criteria are not well documented. Practitioners however give priority to PPSB thanks to the perspective that has been gained through their experience of the molecule in vitamin K antagonist overdose. Moreover, FEIBA suffers from its bad cost efficiency.
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Disclosure of interest: None declared.

DI023: Caspofungin and voriconazole prescriptions: evaluation of practice in a general hospital

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Background and objective: The incidence of invasive fungal infections as candidiasis and aspergillosis increases more and more.

The management and diagnosis of the disease are difficult to realize. The aim of this study was to assess adequacy and conformity of Caspofungin and Voriconazole prescriptions according to French, European and International guidelines.
Design: A retrospective study of prescriptions of these two antifungals has been conducted during 15 months (from 01/14 to 03/15) in a General Hospital (1100 beds). All adults patients who received these two drugs were included, even those who were neutropenic (<0.5 G/L). An evaluation grid with the useful characteristics was established to analyse prescriptions according to the type of treatment such as prophylaxis, empirical, pre-emptive, documented or inadequate. The treatment was considered inadequate when none criteria were fulfilled.
Results: Thirty patients were included in the study: 21 in Intensive Care Unit (ICU), 5 in Haematology, 3 in Internal Medicine and 1 in Pneumology. Caspofungin was given to 70 % (n = 21) of patients: 14 % of them were inadequate (n = 3) (2 in ICU and 1 in Haematology). Voriconazole was given to 30 % (n = 9) of patients: 22 % of them were inadequate (n = 2) (1 in Haematology and 1 in Pneumology). Caspofungin prescriptions were compliant with French recommendations: 10 % (n = 2), and 57 % (n = 12) with European and International guidelines. Voriconazole prescriptions were compliant with French recommendations: 56 % (n = 5) and in 22 % (n = 2) with European and International guidelines. According to the different recommendations, the treatment plan didn't respect in 19 % (n = 4) of Caspofungin prescriptions and in 33 % (n = 3) for Voriconazole prescriptions.
Conclusion: The study highlights a high rate of non-compliance against French recommendations. The main of causes of misuses were: the use of Caspofungin in prophylaxis instead of Fluconazole, non-respect of treatment plan and the use in the empirical treatment of febrile neutropenia whereas patients were not neutropenic. In order to improve the two antifungals prescriptions, actions will be implemented: present the results to prescribers and remind the different recommendations.
Disclosure of interest: None declared.

DI024: Information about iatrogenesis to reduce the risk of drugs error related to insulins

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Background and objective: Insulins are identified as high-alert medications in our institution. A program to fight drugs iatrogenesis was set up by the risk manager. In this context, and following a drug error involving confusion between two insulins close of name, the securisation of their circuit was undertaken.
Design: The analysis of their circuit, returns of experience, and literature data about error related to their use, defined our action plan, in collaboration with our risk manager and a endocrinologist. Its main axis were: revision of storage and referencing, harmonization of practices and prescriptions, awareness of care professionals about their good use and their iatrogenic risk.
Results: An observational audit into three care services enabled to identify storage's non-conformities: unidentified or similar storage place of insulin and tuberculin syringes with a risk of confusion between the two, unidentified pen and multi-patients pen with a risk of biological contamination. The storage compliance was undertaken. Syringes with smallest needle were referenced as well as a more readable glucometer, chosen by its users which received an education on its operation. Five insulin therapy protocols existed, their harmonization and their computerization were proposed. The prescription units were reparameterized. An institutional education was made by a pharmacist and a endocrinologist to 38 agents (doctors, managers, nurses, pharmacy technicians), pointing the risks of error during prescribing and administration, and recalling the instructions for a good use. A quiz distributed at the beginning and the end of the presentation highlights 39 % of correct answers before the session against 76 % of correct answers after. A "good use" poster presenting the main points is also available on the intranet. A warning label was created and placed on the storage areas and integrated on the prescriptions software to enhance awareness on their iatrogenic risk.
Conclusion: Each step and each actor of the circuit was considerated. The information given through the education sessions, the warning labels, the posters should help actors in the good use of insulins. Communication with caregivers will be pursued at the institutional level with a second education session. The development of reconciliation is also seen as track of action to reduce medication errors, especially when prescribing.
Disclosure of interest: None declared.

DI025: Changes in guidelines for perioperative management of NOACs since their introduction

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Background and objective: New oral anticoagulants (NOACs) are increasingly used in long-term treatment of patients with non-valvular atrial fibrillation for stroke prevention. In 2011 routine use of NOACs was still limited and early guidelines for perioperative management of NOACs were rather based on theoretical concepts and findings of phase I and II studies in healthy subjects than on clinical experience in diseased patients. As a first approach we prepared an evidence-based recommendation in 2011, which was more or less grounded on published PK/PD studies. However, since 2011 the clinical experience with NOACs has grown rapidly and new guidelines have been published. The objective of this study is to analyse changes in recommendations of perioperative management of NOACs during the last 5 years.
Design: PubMed and Cochrane Library were searched during June 2015 to identify new clinical guidelines for perioperative management of NOACs. The new guidelines were compared to our early recommendations from 2011 and potential causes of amendments identified.
Results: New guidelines for management of perioperative treatment of NOACs have generally become more cautious with longer discontinuation periods prior to surgery compared to our early recommendations. Possible reasons for prolonged discontinuation times include increasing awareness of the influence of frailty, co-morbidities, co-medications and impaired renal function on the pharmacokinetics of NOACs causing increased bleeding risk. Especially dabigatran is highly dependent on renal clearance affecting the time needed for normalization of coagulation status after discontinuation.
Conclusion: With growing clinical experience with NOACs physicians have become increasingly aware of higher bleeding risk in multi-morbid patients treated with NOACs prior to surgery. The timespan needed for complete recovery of coagulation function after discontinuation of NOACs under clinical real life conditions is longer than previously anticipated.
Disclosure of interest: None declared.

DI026: Assessment of attitude and knowledge in patients utilized disposable insulin pens at community pharmacy setting

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Background and objective: The aim of this study is to assess of attitude and knowledge in patients utilized disposable insulin pens at community pharmacy setting.
Setting and method: This study was conducted at 25 community pharmacies located in Istanbul between March and May 2015. Patients were eligible if they came to community pharmacy with any reason during the present study, were 18 years or older, utilized at least one disposable insulin pen for at least 4 weeks, and accepted to participate to the present study.
Main outcome measures: The steps for proper administration and storage were evaluated in utilization of disposable insulin pens. The four items (Morisky, Green and Levine) medication adherence scale was also evaluated.
Results: A total of 256 type 2 diabetic patients (mean of age: 57.8 ± 14.1 years old; female: 49.8 %) were evaluated in this study. Of them, 80.8 % were aware of the importance of removing needle on the disposable insulin pen between each injection and 84.0 % thought that they administered disposable insulin pen correctly. Nearly half of them (50.9 %) were failure to discard the insulin pen before expire date reported by manufacturer, failure to prime needle (45.1 %), right utilization to store in-use pen at room temperature (35.4 %) and failure to hold needle adequate period before withdrawal of pen needle from skin (53.3 %). When evaluated discard pen needle after each injection, 57.7 % of them stored their disposable insulin pen with needle. Most of them used a new needle for each injection (75.9 %). Of them, 41.8 % were adherent to their medications. Patients adherent to their medication have more likely applied priming needle before utilization of disposable pen when compared non-adherent them ($p < 0.01$). Only 6.6 % of them followed correctly in all instructions about administration and storage of disposable insulin pens and these patients had statistically high education level ($p < 0.05$).
Conclusion: Although patients had high knowledge regarding disposable insulin pen in the present study, poor attitude has been determined towards utilization of disposable insulin pen in them at community pharmacy.

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Disclosure of interest: None declared.

DI027: Regulatory differences among Brazilian, European and American official drug labelling

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Background and objective: Drug labelling are official documents that guide the prescription/utilization of a specific drug. Drug labelling, targeted at health professionals, should guide the therapeutic decision process by compiling clinical information about the use of the drug under specific situations, balancing drug efficacy and safety. Guidelines and instructions to create drug labelling vary among regulatory agencies of different countries. This study aimed to identify the qualitative differences among the regulations and guidelines for Brazilian, American, and European drug labelling.
Setting and method: Regulations and guidelines for the creation of drug labelling for health professionals (bula, summary of product characteristics, and labelling) in regulatory agencies of Brazil (ANVISA), European Union (EMA) and the United States (FDA) were qualitatively compared. To assess similarity, they were considered 28 different items (identification, indication, dosage, dosage in special populations, contraindications, adverse drug reactions, drug interactions, warnings and precautions, mechanism of action, pharmacokinetics, pharmacodynamic, pre-clinical safety, overdose, recommendation on breastfeeding and pregnancy, ability to operate machinery, clinical studies, storage–conservation, abuse–dependence, box warning, incompatibilities, excipients, storage container, discard, patient counselling, chemical product description, instructions for preparation of radiopharmaceuticals, data product registration holder, shelf life).
Main outcome measures: Differences among Brazilian, European and American official drug labelling.
Results: Analysis showed significant differences in the specifications provided by the FDA [four norms and twelve guidelines (381 pages, about 180,000 words)], EMA [four norm/guideline (49 pages, about 17,850 words)] and ANVISA [a general norm (6 pages aimed at professional labelling, bula, about 2100 words)]. In addition, differences were observed regarding organization and requirements in the labelling: American (17 items, 13 sub-items), European (12 items, 19 sub-items), Brazilian (10 items). Out of 28 items in the content checklist of 73.4 % appear in the three (Brazilian, American and European) drug labelling. About 10 % of items of included in the FDA regulation and 20 % of EMA are not included in Brazilian regulations.
Conclusion: Important differences among the instructions for preparing drug labelling for health professionals in Brazil, the United States and the European Union exist. Greater level of detail is provided by the FDA regulations, while Brazilian labelling have greater subjectivity, producing a potential bias of interpretation.
Disclosure of interest: None declared.

DI028: Assessment of drug safety communications published by medicines agency during the last 4 years

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Background and objective: Learning about the safe and proper use of medications is necessary even after a new medicine is approved [1]. According to the European Medicines Agency, adverse drug reactions (ADRs), noxious or unintended responses to a medicine, caused around 197,000 deaths per year in the EU. Because of this, new pharmacovigilance legislation was adopted (Directive 2010/84/EU) and was applied from July 2012. Finally in our country, the new legislation came into effect in 2013 [2].

The objectives were, first, to assess the drug safety communications published by the medicines agency of our country and second to compare the results obtained before and after the implementation of pharmacovigilance legislation.

Setting and method: A descriptive, retrospective study about drug warnings of medicinal products for human use was conducted. Period of study: 4 years, from 2011 to 2014 (separated into two periods: 2011–2012 and 2013–2014). Source of information: medicines agency website.
Main outcome measures: Drug safety communications were classified as one of the following: type 1 (inform health care professionals or patients about ADRs and preventive measures); type 2 (modify the conditions of use of the drug) and type 3 (vary, suspend or revoke the marketing authorization as appropriate). The data were analysed using the statistical software package Deducer (R. version 3.0.2, on Mac).
Results: A total of 100 drug safety communications were published during the period of the study (mean ± SD: 25 ± 6.34 per year). These communications generated 108 regulatory actions from the medicines agency: 45 (41.67 %) of type 1 (from which 16 % were addressed to the patients), 50 (46.30 %) of type 2 and 13 (12.04 %) of type 3.

53 different active substances or combinations of them were listed. 20 (37.74 %) of them generated more than one drug safety communication and 9 of all active substances caused ADRs resulting from medication errors.

According to the Pharmacovigilance Risk Assessment Committee, 14 of these active substances were contained in medicinal products under additional monitoring (black inverted triangle).

No significant statistical differences were found between the two groups previously defined (p value = 0.92).
Conclusion: In the light of the results obtained, it became clear that the pharmacovigilance tasks include taking actions in order to characterize, prevent or minimize risks relating to a medicine. However, more years are needed to demonstrate significant change in the provision on more and better information to the healthcare professionals and patients according to new pharmacovigilance legislation.
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Disclosure of interest: None declared.

DI029: Plasma-derived products: dosage guidelines for paediatric use

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Background and objective: Lack of information about paediatric doses is frequent in the summary of product characteristics. Off-label or unlicensed drug use is very common in paediatric practice, and is one of the predisposing factors for adverse events. Plasma-derived products are no exception.
The aim of this study is to elaborate an aid for health professional in hospitals: to develop a summary table for plasma-derived products in paediatrics (therapeutic indication, usual dosage, and administration method).
Design: Plasma-derived products studied are: serum albumin, polyvalent immunoglobulins (intravenous, subcutaneous), specific immunoglobulins, biological fibrin glue, blood coagulation factors, coagulation inhibitors and immune modulators.

The first step is to take an inventory of the most frequent therapeutic uses of plasma-derived products in paediatrics: admitted uses with drug marketing approval and equally temporary therapeutic protocols, relevant uses, or indications with evidence based literature (guidelines, drug databases, Pubmed®). For each plasma-derived products, the tool will provide usual dosage, reconstitution, dilution, rates and routes of administration.
Results: Results will be presented in a table for the 23 plasma-derived products selected (those referenced in a paediatric university hospital formulary). For example, specific data will be detailed and available online by uploaded data file via a QR code: specific dilution of Albumin20 % for neonatal hyperbilirubinemia, paediatric dose for the prothrombin complex, specific use of antithrombin concentrates in acquired antithrombin deficiency following L-asparaginase administration or specific use of polyvalent immunoglobulin in narcolepsy with cataplexy.
Conclusion: The table will be a support for hospital paediatric practices about plasma-derived products' prescriptions and pharmaceutical advices, in order to reduce medical errors (prescription, administration) and improve quality practices. However, regular updating is required to follow practice evolution.
Disclosure of interest: None declared.

DI030: Storage of medicine—and savings by using Medicine Information Centre

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Background and objective: Large amounts of medication are discarded every year due to improper storage on hospital wards. When drugs are not stored according to manufacturer's specifications, it could result in potential therapeutic failure.

To prevent unnecessary disposal of expensive drugs the Medicine Information Centre offer hospital staff guidance concerning queries regarding incorrect storage of refrigerated medicine. This poster presents savings made by Medicine Information Centre, in queries determining whether the medicine could still be deemed suitable for administration or should be discarded.
Design: All data concerning queries on improper storage from Januaty 2013 to December 2014 are retrieved from the National question and answer database.

Queries are further divided into "Refrigerator Failure" and "Incorrect Handling", in order to distinguish between technical and human error.
Results: Savings made by conducting pharmacist guidance in Medicine Information Centre was estimated to:

2013: minimum DDK 13 mill (11.2 mill human error and 1.8 mill technical Failure).
2014: minimum DKK 37 mill (3.3 mill human error and 0.4 mill technical Failure).

"Human error" represents the vast majority of cases, however only a few of these amounts to very large sums in terms of money; this is why great attention on improper storage caused by human error has focus.

Conclusion: Improper storage of medicines is a frequent problem at hospital wards, thus there is a need for pharmaceutical assistance performed by the Medicine Information Centre, as this guidance can contribute to large savings on hospital budgets.
Disclosure of interest: None declared.

DI031: User satisfaction survey data from medicines information centre

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Background and objective: A survey investigating user experience and satisfaction with the Medicines Information Centre (MIC) hotline were performed. Data from this survey were compared with results from previous surveys undertaken in 2003 and 2008.

MIC answers queries on medical and pharmaceutical topics from doctors, nurses, clinical pharmacist, and other clinical staff from the hospitals and psychiatric services in The Capital Region of Denmark. The hotline is primarily manned by clinical pharmacists, and since 2009 it has been a corporation between Department of Clinical Pharmacology and The Hospital Pharmacy.
Setting and method: In this survey we used a web based questionnaire. The questionnaire was sent as a link by e-mail for each answer given in a period of 4 weeks. The questionnaire included 14 questions regarding the user satisfaction with the MIC service. Key questions covered timing, relevance; usability and professional level of the answers were monitored.
Main outcome measures: User satisfaction in relation to timing and usability of the answers, impact on the medical treatment and adequate professional level were surveyed.
Results: The response rate was 84 %, which is higher than in previous surveys. 61 % of the questions were directly related to a specific medical treatment, respectively 68 % in 2008 and 82 % in 2003. 95 % found that our answers were highly useable which is also higher than in previous surveys.

97 % evaluated the answers to have an adequate professional level, respectively 90 % in 2008 and 94 % in 2003. 100 % (2015), 99 % (2008), 91 % (2003) of users were satisfied with our timing of the answers given, and at least 59 % (2015) found that our answer has an impact on the medical treatment, respectively 57 % in 2008 and 58 % in 2003.
Conclusion: The survey found that users were at least as satisfied with MIC services now as in earlier surveys. The usability of query answers is now higher. The numbers of questions related to specific treatment/patients have reduced but the impact has not changed.
Disclosure of interest: None declared.

DI032: Changed approval procedure and the effect on approval times in a Medicines Information Centre

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Background and objective: In the Medicines Information Centre (MIC) all questions/answers (cases) are registered in a database for documentation, statistics, for information retrieval and for sharing knowledge. It is possible to share information from the database with other Hospital Pharmacies in Denmark. Before sharing information, each case has to be approved. Because of increasing approval times and consequently delay in sharing information, we changed the approval procedure. We wanted to reduce approval times, thereby saving time and sharing information faster.
Setting and method: The questions received in MIC are divided into simple or complex cases. The simple cases can be answered by fingertip knowledge or by using a single reference and are therefore not approved. Earlier all complex cases were approved by another employee to assure the quality. We changed this in November 2012, by dividing complex cases into those requiring approval by another employee and those requiring approval by the employee solving it. Cases requiring approval by another include calculations, cases that are patient specific or procedures applicable for more patients, were assessment is made.

The number of cases in each of the following periods is drawn from the database: September 2012 (before changing the approval procedure), March 2013, March 2014 and March 2015 (3 months, 1 and 2 years after). The approval time for all cases within these periods are recorded manually. The following categories are used: A: <1 day, B: <1 week, C: <1 month, D: ≥ 1 month, E: Unknown.
Main outcome measures: Did the approval time decrease after changing the procedure?
Results: The amount of cases in category A increased from 8 to 35 % from September 2012 to March 2014, and then decreased to 28 % in March 2015. The amount in category D decreased from 30 to 17 % in the same time period.
Conclusion: Generally the approval time decreased after changing the approval procedure, but increased slightly over the past year. The relevance in each case and possible causes for the increase needs to be evaluated.
Disclosure of interest: None declared.

DI033: Highlights on the vitamin K antagonists and therapeutic information within a medication reconciliation program

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Background and objective: A national project implemented in our general hospital has for objective to optimize the global care for the polymedicated elderly. This project includes medication reconciliation at both steps of admission and discharge. We have decided to study the process of our patients treated with a vitamin K antagonist (VKA), considered as high risk medications, to increase the therapeutic safety.
Design: This retrospective study was conducted from January to June 2015. The eligible patients for the medication reconciliation are over 75 years-old with at least three chronic diseases ± 1 oral anticoagulant ± 1 diuretic and able to return home after the hospitalization. Their global medication adherence was assessed by a MMAS-4. The therapeutic information about VKAs was carried on by a graduate pharmacist or a resident pharmacist thanks to an information book given to the patient. During the interview, the use of a notebook to collect laboratory data of INR, optimal target INR and adapted dose was also explained to optimize the management of the VKA after the discharge.
Results: During the 6-month study, 170 patients were reconciled. 46 of these patients were treated with a VKA at admission. The INR at admission was out the therapeutic range for 30 of them: 9 underdoses (average INR $= 1.56 \pm 0.24$), 21 overdoses (average INR $= 5.09 \pm 2.40$). Their general adherence was assessed good. The VKA information cannot be given for 26 of these 46 patients, because the discharge was not planned and the pharmacist not informed. The VKA has been stopped during the hospitalization for 3 of these patients because of 2 inappropriate pursuits detected through medication review, and 1 iatrogenic event. The INR of 15 patients persists

out of the therapeutic range at discharge. A VKA has been started for five patients: four discovered arrhythmias, one deep vein thrombosis. The INR at discharge was within the target interval for 2 of these five patients. The VKA information was carried on for 4 of these patients.
Conclusion: This work highlights that less than a half of patients are balanced at admission, despite a good assessed adherence probably overestimated because too general. This unbalanced INR can be bind to the acute disease, variations of albuminemia, coprescriptions with antibiotics. This study shows that several patients return home with an INR out of the therapeutic range; we have to sensitize prescribers to reassess before discharge. We must encourage prescribers to contact us to increase the proportion of VKA information. With this aim, we have also adapted our practices by providing these information during the hospitalization, and not waiting the day of discharge. Patients showed interest in this information underlining the importance of this value-added pharmaceutical intervention, which makes them actors of their treatment. Furthermore, we intend to check patients' long-term knowledge with a phone call 1 month after discharge.
Disclosure of interest: None declared.

HP-CE001: Educational pharmaceutical sessions within a therapeutic education programme for patients presenting with pulmonary arterial hypertension

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Background and objective: A multidisciplinary therapeutic education programme is being implemented for patients with pulmonary arterial hypertension (PAH) in the pulmonology department of a university hospital. This project builds on the programme established in 2011 by the national reference centre in France and validated by the regional health agency. Educational sessions on treatment knowledge and adherence are offered by pharmacists. This study aims at describing the validation process of these sessions.
Design: Every newly diagnosed patient receives information on his medicinal therapy via information sheets issued by the pharmacist. An educational session is offered to previously diagnosed patients already undergoing treatment. During the session, we assess patient recognition of specific tablets (tablets identified on a poster), patient knowledge of the name of his treatment and its dosage, what to do in the case of vomiting or forgetting to take medication, adverse effects and adherence. At the end of the session, the patient assesses the content of the workshop.
Results: The interviews offered by the pharmaceutical team focus on four molecules administered orally: bosentan, ambrisentan, tadalafil, sildenafil. Five patients were given information on newly initiated treatment. Twelve previously treated patients received an educational session. The average length of the session (information or educational session) was 29 min (20–40 min). During educational sessions, knowledge on the name of the treatment and its dosage was known for 12 patients. One patient did not recognise his treatment on the poster. Three of the 12 patients reported having forgotten to take medication. The appropriate conduct in the case of vomiting or forgetting to take treatment were unknown respectively for five and nine patients. The importance of adherence and what to do in the case of vomiting or forgetting treatment were repeated to the patient when necessary. Only 35 % of the most common adverse events of treatment were found by patients and difficulty was exacerbated for the nine patients receiving bi-therapy. All 12 patients found the session beneficial, entertaining and easy to understand. Seven of them reported that they had learned new information on their treatment.
Conclusion: Other programme educators (dietician, nurse, psychologist, physiotherapist) also tested their sessions with patients. These tests validate the content of educational sessions in an aim to ultimately offer them to all 40 PAH patients currently treated in pulmonology in the form of a coordinated programme.
Disclosure of interest: None declared.

HP-CE002: Exploring the attitudes, beliefs, behaviours and experiences of health care professionals in the United Arab Emirates on medication error reporting

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Background and objective: Medication errors are a major challenge to patient safety and are prevalent in the all healthcare organisations. Effective and efficient medication error reporting systems are necessary to allow for review, learning and change following errors. There is a lack of qualitative studies investigating the perspectives of health professionals in this field. The objective of this research was to explore the attitudes, beliefs, behaviours and experiences of health care professionals in the United Arab Emirates (UAE) on reporting of medication errors.
Setting and method: The design was a qualitative interpretative phenomenological study of face to face semi-structured interviews with doctors, nurses, and pharmacists; the study was conducted in three tertiary public hospitals' in Abu Dhabi. Purposive sampling was employed to interview nine physicians, nine nurses and ten pharmacists, at which point saturation was achieved. Interviews were audio recorded, transcribed verbatim and analysed by two independent researchers using the theoretical domains framework (TDF) to identify themes relating to key behavioural determinants around reporting.
Main outcome measures:
Results: The key themes which emerged were around the behavioural determinant domains of: (1) their belief of consequences of reporting: primarily lack of feedback on reporting and the potential impact on their professional reputation, working relationships and career progression; (2) their awareness of goals of reporting around patient safety and healthcare system improvement; (3) their knowledge of reporting: primarily a lack relating to policy and the reporting system; (4) social professional and role identity relating to their emotions of reporting, mainly fear and worry; (5) environmental context and resources issues of time commitment and lack of familiarity with the electronic system.
Conclusion: Using a behavioural framework of the TDF has allowed for greater understanding of the facilitators (e.g. goals) and the barriers (e.g. fear, beliefs of consequences) relating to medication error reporting. These determinants can now be used in the consideration and development of interventions to target the improvement of medication error reporting, which can ultimately impact patient safety. While these qualitative findings relate to the UAE, it is likely that they will be transferable and relevant to other geographical areas.
Disclosure of interest: None declared.

HP-CE003: Use of medicines and devices by adults for the management of type 2 diabetes mellitus in Kuwait

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Background and objective: To document how do patients with type 2 diabetes mellitus (T2DM) manage their disease, and to identify the impact of knowledge, beliefs and culture on their medicine-taking behaviour, and treatment outcomes. Also, to investigate whether the use of insulin devices (pens and pumps) have a supplemental role in improving patients' adherence to treatment and providing better management.
Setting and method: The study was conducted in secondary-care units, the Ministry of Health (MOH) in Kuwait. It applies a mixture of quantitative and qualitative approaches. The quantitative part involved the completion of MMAS and BMQ questionnaires. In the qualitative part, semi-structured interviews were employed to obtain information from 43 patients about their beliefs, views and experiences regarding their medicines/devices use and lifestyle. This was followed by conducting interviews with healthcare professionals, in order to validate findings and propose for service development.
Main outcome measures: Describing patients' adherence to treatment, recognising the impact of health awareness; beliefs, culture, and the use of pens and pumps on management of T2DM and health outcomes.
Results: More than half of patients with T2DM in Kuwait have uncontrolled disease. Of 43 patients, 26 (60 %) identified as poor adherers. Lack of health awareness, beliefs, culture and lifestyle factors have an impact on patients' medicine-taking behaviour and health outcomes. Insulin devices improve patients' quality of lives, satisfaction, and consequently provided better management of T2DM. Healthcare providers mentioned the demand for improving patients' health awareness with the cooperation of the MOH.

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Conclusion: Several factors contribute to patients' medicine misuse and poor management of T2DM in Kuwait. Particularly, the health awareness of patients must be improved by increasing education efforts and modifying physician–patient communication to accommodate health beliefs and culture. Also, the advantages of using insulin devices should be recognised. A collaborative approach between MOH, healthcare providers and patients must be adopted, in order to improve patients' care and consequently health outcomes.
Disclosure of interest: None declared.

HP-CE005: "REIN ne m'échappe": an educational tool for kidney post-transplant treatments in paediatrics

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Background and objective: The nephrology department at the Robert Debré hospital, Paris is the first centre for paediatric renal transplant in AP-HP. The complexity of the therapy requires giving support to transplant patients and their families. Since 2010, a Patient Therapeutic Education program (ETP) has allowed various topics on kidney transplant to be addressed in individual sessions, which are adapted to the needs of participants. The objective is to create a tool focused on learning about post kidney transplant treatments, to be integrated into a collective educational session.
Setting and method: In university children hospital, reflection sessions with everyone involved in the program (the coordinating nurse, pharmacists, physicians) have enabled the treatment's constraints to be defined. Visiting the department and attending the ETP sessions has enabled the challenges and needs of patients to be identified by pharmacists. Anonymous satisfaction questionnaires were prepared to test the tool.
Main outcome measures: Creation of the education tool: "REIN ne m'échappe"*.
Results: The multiplicity of molecules, the rigorous drugs taken and the frequency of side effects have been identified as areas requiring work. The variety of the public (children of all ages and their families) and the variable mastery of the French language have led us to draw inspiration from the popular game, Jungle Speed©.

"REIN ne m'échappe" is a card game with simple rules: being able to match drug cards with the mechanism of action cards, with side effect cards and with the corresponding drugs taken cards. A game lasts 45 min (the duration of an ETP session) with 5–10 players of the same age group. They also have the opportunity to express themselves on their knowledge and their feelings about the use of this medication at the beginning and the end of the session.

This tool was tested on a group of seven teenagers (12–16 years old). The positive aspect is satisfaction with the attractiveness of the tool and the possibility of learning. The weak point is that selecting participants by age, and not by level of schooling, tends to restrict their exchanges.
Conclusion: This fun tool enables patients and their families to acquire knowledge on post-renal transplant treatment in order to enhance patient compliance. It encourages exchanges between families and educators. A booklet containing all the information mentioned is being compiled and will be given out at the end of the session.
*: "Nothing escapes me".
Disclosure of interest: None declared.

HP-CE006: Inpatient home medication procedure: adherence in the Cardiology Unit

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Background and objective: A hospital procedure, published in 2010 regarding multidisciplinary management of patient's home medication at admission and during hospitalization, was applied to all Units in the Hospital. The objective of the procedure was to guarantee patient safety preventing medication errors associated with potential drug interactions, duplicate drug therapies and abrupt treatment discontinuation. The aim of the study is to assess the application of the procedure in the Cardiology Unit through an audit and to identify corrective measures if necessary.
Design: In June 2015, face-to-face interviews (22-item questionnaires) were conducted by a pharmacist among nurses of the Cardiology Unit. The questions focused on knowledge of the official document and actual application of the procedure, patient management, general medication management and traceability in medical records.

Results: A total of 39 surveys were conducted among nurses with mean nursing experience of 6 ± 4.7 years and mean experience in the hospital of 4 ± 3.9 years. Only 13 nurses (33 %) were aware of an official procedural document but 29 (74 %) systematically ask patients to hand over medication at admission. Thirty-four nurses (87 %) correctly put patient's home medication in a sealed labelled bag which is stored in the pharmacy (85 %) or in the medication trolley (15 %), while five nurses (13 %) leave home treatment in the patient's room committing a procedural deviation. At discharge fifteen nurses (44 %) give medication back to the patient, 2 (6 %) do not and 17 (50 %) do not always remember. Nurses declared that in 85 % of cases all medications taken by patients are prescribed and in 51 % of cases a doctor recommendation is given when inpatients self-administer medication but it is not reported in medical records (30 %). Patient autonomy is always evaluated and re-evaluated for deterioration of cognitive capacity by nurses but assessments are seldom recorded (33 %).
Conclusion: The analysis of the data obtained through the oral questionnaire highlighted the critical issues and the suboptimal adherence of the procedure (declared rate 34 %). Therefore, educational programs are necessary as corrective actions to apply the procedure as a matter of routine and inter-professional collaborative efforts are paramount in order to enhance patient outcomes.
Disclosure of interest: None declared.

HP-CE007: Effect of mobile phone short messages on antiretroviral treatment adherence among HIV infected patients

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Did you previously present your abstract on an international platform: Yes—the abstract has been previously presented internationally. **Abstract submitted before to:** EAHP Congress, 2015, Hamburg, Germany.
Background and objective: Non-adherence to antiretroviral treatment (ART) regimens is closely related to treatment failure, so, in response, researchers have developed interventions to improve adherence. The objective is to determine the effect of sending mobile phone text messages (SMS) to remind patients to get more medicines on the adherence to ART in HIV-infected patients.
Setting and method: Observational retrospective study carried out in HIV-infected outpatients who got their medicines from a hospital pharmacy service from 1 January 2009 to 31 December 2013 in a health management area. Data collected included: age, gender, plasma viral load, T-CD4, type of ART, adherence, number of dates in the consulting room of pharmaceutical care, non-attendance dates, whether or not receiving SMS.

The type of ART was classified as: (a) two nucleoside reverse transcriptase inhibitors (NRTI) plus 1-non-nucleoside reverse transcriptase inhibitor (NNRTI); (b) two NRTI plus 1 ritonavir-boosted protease inhibitor (PI/r) and others.
Main outcome measures: ART adherence was measured through pharmacy dispensing records. Patients were considered adherent if adherence was ≥95 %.

To determine the effect of sending SMS on the adherence to ART, we performed a univariate logistic regression. Subsequently, variables that showed statistical significance in the univariate analysis and those with $P < 0.25$ were included in a multivariate model (confidence interval = 95 %). Validity of the model was evaluated by the Hosmer and Lemeshow test. Data analysis was performed using the statistical package SPSS Statistics® 22.0.
Results: 120 patients were included. The mean age was 47.2 ± 10.6. 68.3 % of patients were men. The majority had an undetectable viral load (85.8 %). Higher levels of T-CD4 were more frequent in adherent patients. The most frequent regimen was the combination of NTRI plus NNRTI (42.5 %). The percentage of non-adherent patients was 25.8 %.

In the univariate analysis, the variables that showed statistically significant relationships with ART adherence were non-attendance to the consulting room of pharmaceutical care, as well as not receiving SMS. The multivariate analysis showed that the receipt of SMS was an independent predictor of adherence [OR 0.347 (0.138–0.800); $p = 0.025$].
Conclusion: SMS can improve adherence to ART in HIV-infected patients.
Disclosure of interest: None declared.

HP-CE008: What educational tools to use in a therapeutic educational session for PAH patients?

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Background and objective: Our hospital's pneumology department is a regional reference centre for Pulmonary Arterial Hypertension (PAH). Guided by the *HaRPe* (*Hypertension Artérielle Pulmonaire et Education*) national program, a multidisciplinary work team was formed to set up its own therapeutic education programme for PAH patients. The pharmaceutical team have developed some tools for the *Understanding of the treatment and compliance* session.
Design: Some specific educational tools inspired by the *HaRPe* program were designed and adapted to the constraints of the session. Each tool was tested one by one with some patients in order to identify any changes that needed to be made. After adjustments, the whole session was tested on several more patients. At the end of these tests, the prototypes and the structure of the session were approved by the project group.
Results: Six tools were developed:

- **5 empty boxes:** Revatio®, Adcirca®, Tracleer®, Volibris®, Adempas®.
- **A treatment identification poster** *(HaRPe):* the patient has to identify his/her pill(s) and give its name and dosage.
- **A diagram** that sums up the mechanisms of action of every therapeutic class (one colour per therapeutic class).
- ***Action* cards** *(HaRPe)*: 19 *Adverse Effects* cards (*AE*), 8 *Treatment* cards, 9 *What to do in case of…* cards (*WTD*).

The *Treatment* card, with the medicine's name, is placed in the center. The patient has to place the corresponding *Adverse Effects* cards around it. Then, next to each of the *AE* cards, the appropriate *WTD* card(s). Some "fake" *AE* and *WTD* cards have been added.

- **5 medicine fact sheets:** Revatio®, Adcirca®, Tracleer®, Volibris®, Adempas®.

They are all constructed using the following eight items: Presentation of the medicine, Dose/When to take, What to do if you miss a dose, What to do if vomiting occurs, The main adverse effects (in the form of emoticons), What to do if such effects occur, Interactions and contraindications, In case of pregnancy.

- **A compliance evaluation** *(HaRPe).*

Four patients took part in the first phase of the test.

Twelve patients tested the whole therapeutic educational session.

All patients liked the session and one of them wishes to attend another one to enhance his knowledge of his adjuvant treatments. Two patients say they didn't learn anything new.

The patients really appreciated the *Action* cards, which contain the same emoticons as the treatment fact sheets they had been given beforehand (ensuring a consistency in the training).

The *Mechanisms of action* diagram is too complex to be used routinely during the session. It was always accessible, though, because it allows some of the patients to fulfil their need for additional knowledge.

Conclusion: The *Understanding of the treatment and compliance* pharmaceutical session was approved in its entirety by the multidisciplinary work group.

It will be part of a program with 5 other types of sessions that went through the same development and validation process. The first patient will be involved in the educational program in July 2015.

Disclosure of interest: None declared.

HP-CE009: Patients satisfaction with education program on new active drugs in hepatitis c

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Background and objective: Given the high costs of new Direct-Acting Antiviral drugs (DAAs) in hepatitis C treatment, a new care pathway was implemented in our teaching hospital in March 2014: requests to initiate treatment have to be approved in multidisciplinary consultation meetings (MCM) and an education program (EP) with a pharmacist or a nurse is suggested to patients for best rational use and compliance with DAAs. EP include at least one individual session to explain the disease and the treatment management before its initiation. This study propose to assess the EP.

Setting and method: Telephone survey interviews were carried out with all patients of the EP by four pharmacy resident or students in January 2015. 11 questions were developed and pretested to collect patients' satisfaction and perceptions on the program's relevance, changes applied in day-to-day life and impact of price awareness provided in the EP.

Main outcome measures: patients' satisfaction rate.

Results: 47 patients initiated DAAs treatment after 11 MCM. 41 of them (41/47, 86 %) have participated in EP. Because of language issues, only 37 patients could be interviewed and 30 of them (30/37, 81 %) replied to the survey. 28 patients (28/30, 93 %) were very satisfied with the program. Information provided by educative pharmacist or nurse were clear (27/30, 90 %) and useful (22/30, 73 %). Patients mentioned several benefits of EP: knowledge acquisition about treatment (22/30, 73 %) and disease (10/30, 33 %), and self-expression of lived experiences with hepatitis C (4/30, 13 %) and previous therapies (2/30, 7 %). 5 patients (5/30, 17 %) said having adopted new sanitary and dietary measures or addictions therapy. A larger proportion of patients with treatment still ongoing (4/8, 50 %) would like an additional educational session at treatment's end, than patients who have finished it (6/22, 27 %). 73 % of interviewed patients (22/30) felt involved in DAAs' price. Price awareness during EP had no impact for nine patients, was source of best compliance for eight patients and source of guilty feeling for five patients because of costs to society and unequal access to these drugs around the world.

Conclusion: EP is a satisfactory tool to improve patients knowledge and involvement in their treatment success. However, uneven impact of price awareness should make healthcare professionals caution before focusing patients EP on drugs costs.

Disclosure of interest: None declared.

HP-CE010: Surgical antibiotic prophylaxis in a Belgian teaching hospital: a retrospective evaluation

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Background and objective: Antibiotic prophylaxis in surgery is one of the most important actions to prevent post-operative surgical site infections (SSI). When administered correctly infection rates can be reduced with 40–60 %. Because correct use of antibiotic prophylaxis is so important, guidelines were introduced in the University Hospital Ghent in 2014. The aim of this study was to review and evaluate the compliance of the prescribers to this guideline.

Setting and method: Prophylactic use of antibiotics was retrospectively (3 December 2014–17 December 2014) evaluated using six quality indicators. Data were collected from the electronic medical record and pharmacy files. Results were compared to data from a previous evaluation and statistical analysis was done using IMB SPSS Statistics 21.0 (New York, USA).

Main outcome measures: Evaluation was done using six quality indicators (antibiotic administration necessary and administered/total surgeries in need of prophylaxis; registration of prophylaxis 60–0 min before incision/total surgeries in need of prophylaxis and administered; prophylaxis ended within 24 h after first administration/total surgeries in need of prophylaxis and administered; prophylaxis was according to local guidelines/total surgeries in need of prophylaxis and administered; unnecessary prophylaxis administered/total surgeries with unnecessary prophylaxis; administration of an extra dose of antibiotics when necessary/total surgeries in need of an extra dosing of antibiotics).

Results: A total of 1025 consecutive surgical interventions were evaluated. Seven surgical interventions were excluded, because of lack of information. Prophylaxis was necessary in 682 surgical interventions, only 510 patients (75 %) received antibiotic prophylaxis and had it documented in their electronic medical record. 336 surgical interventions did not require antibiotic prophylaxis, but 62 (18 %) received unnecessary antibiotic prophylaxis. Only 267 patients (52 %) received antibiotic prophylaxis within the correct administration window (60–0 min before incision). Antibiotic prophylaxis was terminated within 24 h after the first administration in 387 patients (90 %), after exclusion of patients receiving therapeutic antibiotic treatment. Only 221 patients (49 %) received correct antibiotic prophylaxis according to the implemented guidelines. 81 surgical interventions required an extra dose during surgery, only reight patients (10 %) received the extra dose.

Conclusion: Compared to previous results, five out of six indicators scored worse in this evaluation. Evaluation of the use of antibiotic prophylaxis in surgical interventions is based on registration in the electronic medical record. If this registration is incomplete or documented later than effectively administered, data are influenced. Extra lessons and new implementation strategies seem necessary to improve the compliance to the guideline.

Disclosure of interest: None declared.

HP-CE011: Educational program for patients undergoing liver transplant: pharmaceutical aspect in a French teaching hospital

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Background and objective: In November 2013, a pharmaceutical education program was set-up in the liver transplantation unit (100 transplantations per year). It is part of a multidisciplinary training program, in connection with physicians, nurses, dieticians and psychologists to improve patient compliance with medication. The objective of this study was to evaluate the influence of this program on liver transplant patients' knowledge in the management of immunosuppressive therapy.
Setting and method: All patients received individualized education during four sessions: (1) Medication reconciliation in connection with the community pharmacist, patient and family, (2) Delivering to the patient general information about post-transplant medication: name and management of immunosuppressive drugs, lifestyle changes including dietary counselling, therapeutic advice, drug management in case of travel, (3) Evaluating patient's understanding of his immunosuppressive drugs, (4) At discharge: providing the patient with a drug administration plan and preparing a 24-h pill organizer with all his medications. All information linked to the drug management during the hospitalisation is transmitted to his community pharmacist in addition to the prescription sheet. After each session, the pharmacist added a detailed reporting in the patient file.
Main outcome measures: Information memorized during the meeting by patients following the four steps educational program.
Results: 124 patients (98 male, mean age of 53) were eligible to this education program. Median length of stay in the transplant unit was 15.9 days. Among the patients, 13 % could not complete the four steps (no effective communication, patient transfer…). Between the third and fourth session, knowledge improved from 34 to 77 % for the drug name, from 81 to 92 % for drug management, from 83 to 93 % for lifestyle interventions and from 80 to 93 % for therapeutic advice. To ensure the optimal compliance 38 % were accompanied by relatives (spouse, parents, …). The clinical pharmacist spent 2 h in average with each patient during the four steps of the program.
Conclusion: This pharmaceutical support is fully relevant for liver transplant patients with lifelong treatment. Pharmacists joining the liver transplant clinic provide pharmaceutical care with a positive impact on compliance, which is a determining factor for the success of the transplant.
Disclosure of interest: None declared.

HP-CE012: Implantable medical devices: implementation of an indication tracking network

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Background and objective: In our hospital, no prospective monitoring of implantable medical devices (IMD) indications, which are not included in DRG (diagnosis related group) tariff, has been established yet. The institutional medical coding tool is the only system listing those indications. They are classified into three groups and group I is selected by default. In order to match therapeutic use guidelines, a control of indications compliance is decided. An upgrade of the current IMDs traceability form is adopted.
Design: A prescription pattern elaborated according to HAS (French National Authority for Health) recommendations has been approved in August 2014. To evaluate this network implementation, pacemaker implantation indications are analysed before and after tracking paper upgrade approval. So, data have been extracted from CCAM (Joint Classification of Medical Procedures) to get a list of patients who received a cardiologic IMD. Investigating the proper reports in our database has completed data concerning implanted patients.
Results: During the first half of 2014, 42 pacemakers were implanted. Medical reports showed: 26 (62 %) matched to a group I indication, 10 (24 %) reports permit no conclusion and for six patients (14 %), no cardiology reports were found.

From September 2014 to February 2015, 38 pacemakers have been tracked by adding the prescription pattern to patient files as legally required. Implantation indication has been specified in 78 % of prescriptions, one not matched with group I. In 22 % of prescriptions, indications were not specified, what highlights the necessity of prescription continuous control. But they all matched with group I after cardiologist questioning. 92 % of implantations were dual chamber pacemakers according to European Society of Cardiology recommendations to prevent pacemaker syndromes.
Conclusion: Upgrading a well-known document allowed fast appropriation from caregivers, thus permitting a straight improvement of indication traceability. Transition to upcoming tools, with exhaustive control as required by regional health agencies, is facilitated.
Disclosure of interest: None declared.

HP-CE013: Development of e-learning platform about biologic drugs with focus on monoclonal antibodies

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Background and objective: Biologic drugs such as monoclonal antibodies are complex and their use requires careful consideration. With the advent of biosimilars of reference monoclonal antibodies, many HCPs were presenting doubts regarding manufacturing, clinical development, legal requirements and also post marketing commitments and pharmacovigilance of these drugs. Online resources on this subject exist but are dispersed are mostly in English language and don't meet the educational needs of the Portuguese public. In order to fill the knowledge gap in a short period of time and to a broad audience in an effective way an e-learning platform covering the main topics was developed.
Design: In close partnership with key experts of Academia, Medical Societies (Rheumatology, Gastroenterology, Oncology and Haematology), an e-learning program containing 10 modules covering the main topics on biologic drugs was designed. It starts with the basic science regarding immunology and biotechnology of protein products and develops into more specific topics regarding monoclonal biosimilars such as regulatory requirements by EMA. Each module is comprised of one or more video talks. Each key expert delivers a talk

in Portuguese for about 20 min combined by a dynamic projection of reading material. Target audience is composed of registered hospital pharmacists, physicians and hospital administrators. Baseline knowledge will be assessed. Success will be measured by number of logins, engagement score (like and share), successful completion and overall feedback. A booklet containing the slide decks and bibliography is also provided to complement the talks. A test assessment is done upon completion and successful candidates get CPEs, if applicable. The e-learning is free of charge. All legal requirements are in place regarding privacy and copyright.

Results: The program is being developed and is not implemented. Launch is expected in October and duration will last until the end of February. Access to the platform will be monitored and aggregate data will be collected.

Conclusion: This is an example of how the cooperation of different experts from medical care and academia can result in a project that can deliver a high level of science in a practical way in order to meet the specific needs of the HCPs and contribute to a deeper and wider understanding of biologic drugs, helping to more informed decisions and contributing to a more rational use of these medicines.

Disclosure of interest: None declared.

HP-CE014: The room: an original play-based training scenario error checking for nurses

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Background and objective: The continuous training of health care professionals has a key role on preventing medication errors (ME). Based on a preliminary study regarding ME reported in our hospital[1], we choose three medications (insulin, potassium chloride injectable, heparin) to developed an original play-based training scenario error checking in a standardized patient room in order to increased nurses safety culture on medication administration.

Design: A multidisciplinary team work (MTW) developed a scenario error checking using the failure modes, effects and criticality analysis (FMECA) focused on Human factor. Four meetings were necessary to develop the training: (1) Determination of the failure modes and effects. (2) Criticality analysis: determination of three scales (Severity S, Occurence O and Detectability D) from 1 to 5 points. For every failure modes a risk priority number score RPN = S × O × D was calculated. (3) Scenario development based on the RPN: errors were selected if the RPN was above the mean RPN. (4) Training session development.

Results: We determined 12, 11, 14 failure modes and 22, 24, 15 effects for potassium chloride, heparin and insulin, respectively. The RPN were above the mean RPN in 29 situations and the MTW choose 14 situations among them to be included in the scenario error checking. Were chosen: 1 identification error, 4 potassium chloride errors (dilution volume error, storage error, labelling error, patient with hyperkalaemia), 4 heparin errors (dilution volume error, labelling error, infusion flow rate error, sampling for Partial Tromboplastin Time collected too early), 5 insulin errors (open date missing, wrong insulin, wrong syringe, no capillary blood sugar level measured, wrong dose regarding the capillary blood sugar level). The scenario construction needed to create a standardized patient room with a mannequin, a fake prescription, medication and medical devices. The training structure was design in three parts: briefing (5 min), nurses observation and checking errors in the simulated patient room (15 min) and debriefing on medication errors (15 min). Practical documents were developed for each session parts.

Conclusion: Learning from our mistakes is one of the first steps towards a safer care system. The FMECA method allowed us to develop a structure and targeted training that suited ours issues. This playful training is accessible by a great number of nurses due to the short duration of the training session and the crosscutting topics chosen. Establishing a training program based on error detection will not only raise nurses awareness to administration errors but also enhance their knowledge.

Disclosure of interest: None declared.

HP-CE015: Optimization of drug prescribing in acute and rehabilitation patients with stroke

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Background and objective: Stroke is responsible for a quarter of all deaths in Denmark. Twelve thousand Danes (mean age 75) are hit by stroke each year, and are associated with the highest number of care days among somatic patients. Medical treatment of stroke is specialized, but does not include a medication review. The pilot study was a further development of daily pharmacy-service.

The objective of this pilot study was to investigate whether a medication review by a pharmacist can optimize drug prescribing for patients hospitalized with stroke.

Design: Patients admitted from October 13th 2014 to May 8th 2015 were included. Once a week, medication reviews were conducted, on all patients. Regional and national medication guidelines were applied as a part of the medication reviews. Suggested interventions were presented to the physician orally and documented as a part of the evaluation. Only interventions accepted by physicians led to drug prescribing change. The suggested interventions were categorized as having either potentially immediate or long-term impact. The categorization was conducted separately by two pharmacists, who subsequently reached consensus on the categorization.

The pilot study was performed in cooperation between The Capital Region Pharmacy, and Neurological apoplectic clinic on Rigshospitalet, Glostrup Copenhagen. The clinic covered two acute sections and two rehabilitation sections. Main outcome was physician acceptance rate of suggested immediate and long-term drug recommendations.

Results: The study included 1544 patient-reviews (49 % female, mean age 72 (range 35–97)). The pharmacist made recommendations in 22 % (195 of 899) of the acute and 13 % (86 of 645) of the rehabilitations patients. Seventy-eight percent (242 of 309) of the suggested interventions were accepted and resulted in an average of 1.14 drug changes per patient. Of these, 104 (43 %) were classified as having potential immediate impact and 138 (57 %) as having potential long-term impact. Thirty-six (35 %) of the accepted immediate impact interventions were reported in acute units and 71 (51 %) in rehabilitation units.

Conclusion: A medicine review by a pharmacist can optimize drug prescribing for patients hospitalized with stroke, since a reduction of drug-related problems with potential immediate and long-term term impact was detected.

Disclosure of interest: None declared.

HP-CE016: Implementing and assessing active-learning in a remedial infectious diseases pharmacotherapy course

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Background and objective: A remedial infectious diseases pharmacotherapy course with emphasis on active-learning was offered to students who failed the required infectious diseases pharmacotherapy course at the Lebanese American University. The objective of this study was to describe the development, implementation, and assessment of the remedial course.
Design: Active learning strategies used in this course accounted for 80 % of the class time and included: case-based learning, problem-based learning, and debates with follow-up discussions. Students who failed the required infectious diseases pharmacotherapy course were enrolled in the remedial course. Direct assessment methods used were the students' grades on exams, presentations, and post-presentation quizzes. Indirect assessment methods used were course evaluations and a 5-point likert scale student survey.
Results: All fifteen students who were enrolled in the remedial course achieved a passing grade. The mean final students' score was 77.37 ± 2.97 in the remedial course versus 62.73 ± 6.17 in the required course. Students agreed that the techniques used in this course improved their critical thinking process, literature evaluation skills, self-learning abilities, and communication skills (averages of 4.2, 4.6, 4.4 and 4.6 out of 5, respectively). Students also agreed that active-learning should be implemented in the pharmacy curriculum (average of 4.5 out of 5). However, they indicated that the course sessions were more intense and required significant preparation time before class compared to traditional lectures (average of 4.6 out of 5).
Conclusion: A remedial infectious diseases course with emphasis on active-learning was shown to improve students' performance, critical thinking, and communication skills. Pharmacy educators should consider implementing similar active-learning strategies to a greater extent in all the pharmacotherapy course series.
Disclosure of interest: None declared.

HP-CE017: Use of a patient education tool: the knowledge questionnaire with confidence degrees

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Background and objective: Educational sequences intended for patients with chronic hepatitis C have been implemented in our hospital. Patients are seen by pharmacists at the initiation of treatment (day 0 and day 15) on a monthly basis until the end (M1, M2, M3 $\pm$ M4, M5, M6). The objective of this study is to follow patient's adherence and to assess the impact of these consultations on their knowledge and skills.
Setting and method: The study was conducted in five steps: (1) Patients with chronic hepatitis C, treated by new direct-acting antiviral medications since January 2015, were prospectively included. (2) Patients were received by a pharmacist at day 0. (3) A knowledge questionnaire (True/False) with confidence degrees (either 50, 60, 80 or 100 %), addressing the main themes of the infection (mode of contamination, medications…), was performed at day 15 or month 1. (4) Educational sequences were carried out using education tools like images and conceptual map. (5) The knowledge questionnaire was repeated at the end of the treatment (M3 or M6). Adherence was measured at each consultation using a validated survey form for medication adherence consisting of six questions.
Main outcome measures: Analysis of degrees of certainty and adherence scales.
Results: Thirteen patients were included. The collection of degrees of certainty allowed the classification of each answer into the following categories: perfect performance, partial knowledge, recognized ignorance, recognized misconceptions and serious misconceptions. The rate of correct answers has increased significantly (from 84.62 % at day 15 to 99.23 % at M3 or M6). At M3 or M6, the perfect performance rate was higher than at day 15 (27.69 % increase) whereas the partial knowledge was lower (10.77 % decrease). The serious misconceptions rate was severely reduced (from 7.69 % at day 15 to 0.77 % at M3 or M6). Patient adherence was mostly good (perfect for 90 % of patients).
Conclusion: The use of degrees of certainty is informative and can refine the measurement of knowledge. The simulations and self-assessments of patients, through questionnaires, facilitate the establishment of cognitive and metacognitive diagnosis. This enables to consider educational interventions repeatedly adapted to the needs of each patient. The attempts to enhance patients' learning improve their self-care and psychosocial skills.
Disclosure of interest: None declared.

HP-CE019: One year of clinical pharmacist service

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Background and objective: Ziv Medical Centre is a governmental 322 beds' hospital in Upper Galilee. Recently a clinical pharmacist (ClinPh) commenced her job there. No clinical pharmacy services were provided before.
Our aim is to show that with merely one ClinPh with access to online databases, we are can improve our institutional medication utilization.
Design: The ClinPh was provided with access to library online databases, such as: Micromedex, and Up-to-date. After she was presented to hospital departments, she started to review medical records and joined physician rounds or meetings in two internal medicine departments (IMDs) and in the intensive care unit (ICU). Later on, she integrated in her work institutional guidelines preparing, while being available by phone—answering questions and providing consultation for all the departments. Simultaneously, her work included 5 months of intensive cooperation with the infectious disease consultant, in order to improve the appropriate use of antimicrobial agents.
Results: In 1 year, the ClinPh reported 781 interventions in the IMDs and ICU, and 335 interventions during antimicrobial stewardship.

Guidelines to improve use of IV medications including: immunoglobulin, proton pump inhibitor, colistimethate sodium, albumin and vancomycin were established, spread and implemented.

Numerous questions by staff members from other departments, were answered.
Conclusion: A ClinPh who is well-qualified in extracting and efficiently utilizing medical databases, can play a pivotal role in supplying a safe and effective treatment.

Establishing institutional guidelines is a prerequisite for sharing clinicians with updated knowledge and ensure suitable implementation.

ClinPh's service helped physicians and other staff members to make judicious decisions, improved medication usage and prevented errors. The ClinPh's consultations were directed towards clinicians. Consequently these consultations can be applied to other patients the clinicians treat.

Our next step is to broaden our collaboration with physicians and nurses. Thus, we built a form with criteria (for adult patients) according which the staff can identify a risk to drug related problems or polypharmacy and ask for ClinPh's consultation.
Disclosure of interest: None declared.

HP-CE020: The reality of outpatient discharge decisions: clinical and non-clinical influences

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Background and objective: Despite being a routine daily phenomenon of outpatient clinics, discharge decision taking is a critical but neglected process. Consequently, little is known about the extent of the clinical and non-clinical influences on it. The aim of the study was to understand in depth the factors influencing clinicians' thought processes when taking discharge decisions.
Setting and method: Semi-structured interviews were conducted with 26 consultant dermatologists from eleven different hospitals across England. The interviews were audio recorded, analysed and transcribed verbatim.
Main outcome measures: Clinical and non-clinical factors influencing outpatient discharge decisions taking.
Results: Forty dermatologists (17 males, mean age 48.8 years) participated in the interviews. The 148 identified different subthemes were grouped into five main themes/categories—one clinical theme is "disease based" with influences such as the type of diagnosis (mentioned by 100 % participants), type of treatment needed (100 %) and the conscientious use of guidelines (95 %). "Nonclinical" subthemes included patients' socio-cultural–demographic factors such as age (55 %), mobility (32 %), English language proficiency (40 %) and ethnicity (27 %). "Emotion" based influences included clinicians' empathy for patients (47 %), trust and confidence in the general practitioner's (GP's) skills in handling dermatology problems (52 %), feeling pressured by hospital managers (57 %), feeling irritated with "difficult" patients (25 %) and feeling overstretched under clinic time constraints (25 %). Attitude based influences include GP's willingness to share care (12 %), patients' initiative to re-access hospital care (35 %). Perception based influences include clinician's perception of the carer–patient relationship (38 %) and perceptions of their role in patient care (10 %). Service based influences include the presence of community nurses (42 %) and skin support groups (17 %). Clinicians (23 %) were cognisant and surprised at the wide range of nonclinical influences as they were being interviewed.
Conclusion: This study has demonstrated that factors influencing discharge are manifold. Whether or not these factors are clinically real or illusory, it is evident that some clinicians are oblivious to the hidden influences impacting their decisions. This information provides the basis for further training to improve discharge decisions in the outpatient setting.
Disclosure of interest: None declared.

HP-CE021: Medication review of older inpatients: a case discussion for clinical education

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Background and objective: High drug consumption in older patients and the presence of many drug related problems requires careful and structured assessment of drug therapy. We aim to evaluate chronic drug therapy of older polymedicated inpatients in order to formulate recommendations to avoid over-, under- and misuse of drugs.
Setting and method: We perform medication reconciliation for older hospitalized patients (unplanned admissions). Afterwards, a medication review is executed by a clinical pharmacist, by scoring eight questions per drug (based on an adapted version of the Medication Appropriateness Index or MAI). We report the results of such a medication review for a polymedicated older patient with many comorbidities. Examples of medication review serve as cases for training of clinical pharmacists.
Main outcome measures: Scores per drug based on eight questions revealing underlying drug-related problems: indication, contra-indication, right choice, dose, modalities, adverse drug reactions, drug–drug interactions and duration of treatment. Total score per patient. Number and type of recommendations.
Results: Case description: A 84 year old woman is admitted to the hospital after a fall at home, presenting with rhabdomyolysis, acute renal failure and hemarthrosis of the elbow without a fracture. Her medical history consists of diabetes, hypertension, orthostatic hypotension, Parkinson's disease, fibromyalgia, neuropathic pain, and depression with psychosis. She is taking 13 medications, with MAI scores ranging from 0 (totally appropriate) to 6.5 (six drug related problems), total MAI score was 38.5. In total 10 recommendations were given for this patient, prioritized by the MAI scores.
Conclusion: Structured medication review by means of implicit questions is useful in order to detect clinically relevant drug related problems and to prioritize recommendations to optimize drug therapy.
Disclosure of interest: None declared.

HP-CE022: Quality of medication reconciliation performed by nurses after completing a teaching programme by pharmacists

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Background and objective: Clinical pharmacists with experience in medication reconciliation (MR) developed a practical and theoretical teaching programme on MR for nurses in hospital wards. The objective was to investigate the effect of the teaching programme on the quality of MRs performed by nurses.
Design: Both theoretical and practical training in MR was given to eight nurses in surgical wards at two different hospitals in South-Eastern Norway. Subsequently, the nurses were to perform MRs regularly as part of their work during a 12-week period (February to June 2015).
A pharmacist evaluated the quality of MRs performed by the nurses in three ways, by:

- Assessing material from performed MRs retrospectively, using a quality assessment tool.
- Repeating MRs already done by the nurses, and evaluating discrepancies of findings and the use of sources for information.
- Observing the nurses when performing MRs, using a quality assessment tool.

The quality of the wards' medication lists was also evaluated; both at baseline and after the nurses had completed their 12-week training.
Results: The quality of the MRs performed by nurses were overall good. Assessment of the quality of the MRs showed room for improvement in some areas. When repeating MRs performed by the nurses, the pharmacist found that the nurses had disclosed most

medical discrepancies (MDs). Some of the MDs disclosed only by the pharmacist may be explained by nurses' lesser knowledge about drugs. When being observed in the performance of a MR the nurses showed great skills both in communicating with patients and in collecting information needed. The quality of the wards medication lists did improve, which shows that the nurses did present MDs to the physicians.

Conclusion: The nurses who took part in the teaching programme mainly performed MRs of good quality. They mastered the technical aspects of performing a MR, and disclosed most of the MDs in the medication lists. The nurses' seem to be particularly good at communicating with patients, which is an important aspect of MR. However, there might be some shortcomings in connection to knowledge about drugs and drug use, which potentially could be a challenge and lead to medication errors.

Disclosure of interest: None declared.

HP-PC021: Pharmacist involvement in multidisciplinary care for chronic hepatitis C patients treated with Viekirax® and Exviera® (AbbVie): using an online patient database can facilitate a better drug therapy and patient follow-up

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Background and objective: Viekirax® (Ombitasvir + Paritaprevir + Ritonavir, V) and Exviera® (Dasabuvir, E) have been approved for oral treatment of chronic hepatitis C virus (HCV) infection of genotype 1 and 4. These direct-acting antiviral agents are more likely to cause drug interactions. A good adherence is required to produce a sustained virologic response. The objective is to assess the effects of pharmaceutical care interventions in HCV patients treated with V and E.

Design: 38 patients received V ± E for free during 12 weeks via an "ATU de cohorte". Electronic patient records were available instantly and securely to pharmacists, physicians, AbbVie medical team. An individualized pharmacist's patient care process has been realized every month to involve patients in their drug therapy and enhance the adherence. Morisky 4-Item Medication Adherence Questionnaire (MMAQ) has been used to assess adherence in the 28 patients who have completed 12 weeks of treatment.

Results: Patient characteristics: 63 % men, mean age 61 years, 16 % cirrhotic, 90 % advanced fibrosis (F3, F4), 63 % treatment-naïve, 37 % who failed after PegIFN-α and Ribavirin (R) combination treatment. 66 % take concomitant drugs. HCV infection: 58 % G1b (V + E; +R for 24 %), 29 % G1a (V + E+R), 13 % G4 (V + R). Drug interactions detected by the pharmacist: 2 contraindications (Lopinavir/Ritonavir, Colchicine), 2 "not recommended use" (Emtricitabine/Rilpivirine/Tenofovir, Amlodipine). 39 % of the 28 patients had ADEs: 55 % tiredness, 18 % nausea, 18 % nervousity, mean dropping haemoglobin level for patients taking R after 4 weeks (46 %): 1.8 ± 0.9 g/dl. MMAQ results: excellent (score 0): 26 patients.

Conclusion: A secure access to patient information in real time maximizes the cooperation between pharmacists and physicians. The pharmacist can assess and enhance medication adherence through a patient care process: collecting patient information, setting patient's needs, creating an individualized care plan, distributing pillbox, monitoring care plan efficiency, interpreting blood tests, assessing potential drug interactions with concomitant treatment. Two patients have forgotten their regular treatment, two have stopped it without any medical advice, six taking R think that they take too much drugs but consider it to be necessary. These patients require a closer follow-up. The excellent level of MMAQ after 12 weeks underlines the efficiency of the pharmaceutical interview and the nurse consultation. Pharmacists' interventions have a positive impact on the outcomes for patients. An extensive knowledge of drug therapy and skills to involve patients in their treatment make the contribution of the pharmacist essential. An online access to medical records allow healthcare providers to secure and organize the care of patients taking new and complex treatments that require a good adherence.

Disclosure of interest: None declared.

HP-PC022: A pre-evaluation study to improve pharmacists' patient care process in elderly with multiple myeloma included in a clinical trial

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Background and objective: Good clinical practices (ICH-GCP 4.6) strongly recommend to take drugs in accordance to the clinical trial drug regimen. Instructions of use must be provided to patients to achieve this objective. Patient diaries offered by the sponsor and numerous follow-up should guarantee that GPC are respected. The objectives of the study are: to assess if the current methods used in clinical trials to promote a long-term patient and protocol compliance are sufficient and to determine how the pharmacist could improve it.

Design: This study has been conducted among 12 elderly with multiple myeloma included in a clinical trial for 1 year in average. Experimental drugs must be taken on different days, at different times, according to specific modalities and require different conditions of storage. An investigation has been realized during a pharmaceutical interview to make sure that patients take experimental drugs in accordance with the clinical trial protocol. Main outcome measures: intake drug modalities (day, time of drug intake, number of pills, with/without food).

Results: Patient characteristics: mean age 75 years, all patients take concomitant drugs, n = 10/12 are helped at home (caregiver, spouse). Global patient compliance score is satisfying: n = 7/12 perfectly follow the protocol recommendations, n = 2/12 don't respect fasting conditions, n = 3/12 don't respect the time of drug intake. Pill count measures show that none of the patient has forgotten to take drugs.

Conclusion: There are some discrepancies between the protocol guidelines and the way patient really take drugs. It can be explained by the complexity of drug intake modalities and patients' old age. Despite a close and multidisciplinary follow-up, these deviations have never been detected before the pharmaceutical interview. They may modify drug tolerance and efficiency. Patient life comfort could be affected too. Elderly patients are more compliant when helped at home.

Clinical trial strategies to educate vulnerable patients with chronic illness on how taking medications are currently not sufficient to guarantee full medication compliance. The pharmacist plays an essential role to improve it by encouraging patients and making them be involved in their treatment. He gives advices and enhances medication adherence through a patient care process. We recommend to organize an evaluation of the protocol and patient compliance every 3 months.

Disclosure of interest: None declared.

HP-PC023: Medical decision-making tool for managing clostridium difficile infections: assessment of fidaxomicin prescriptions

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Background and objective: Clostridium difficile infections (CDI) are treated with metronidazol, vancomicin or fidaxomicin depending on infection severity or the type of episode (first episode, recurrence or reinfection). Patients with CDI may be admitted to any care unit and not necessarily a unit specialising in infectious diseases. This study aims at demonstrating the contribution of prescription tools for the selection of appropriate CDI treatment by prescribers, particularly in care units that are not specialised in infectious diseases. Due to the cost of treatment, a specific assessment was conducted for fidaxomicin.
Design: A fidaxomicin prescription evaluation worksheet was drafted in collaboration with infectious disease specialists to assist prescribers in their management of CDI. This evaluation worksheet aims at establishing the pertinence of fidaxomicin prescriptions with regard to ESCMID criteria (March 2014): indication, duration of treatment, recurrence risk factors. From December 2013 to June 2015, the evaluation worksheet was sent by the pharmacy to prescribers each time fidaxomicin was dispensed, and infectious disease specialists were advised of the initiation of treatment in order for them to duly advise non-specialised prescribers.
Results: During the 18 months of the study, 33 patients were monitored. The average patient age was 72 years (22–94 years). Twenty-eight evaluation worksheets were completed for a total of 33 prescriptions. The duration of prescription did not comply with ESCMID guidelines for six patients. For three of these six patients, prescription duration was limited to 10 days following intervention by the antimicrobial stewardship team (pharmacist, microbiologist and infectious disease specialist). For eight patients, fidaxomicin prescription did not comply with ESCMID guidelines in that all eight patients presented signs of severity and two presented their third episode of CDI. For one of eight patients, prescription was stopped by the infectious disease specialist and treatment with vancomycin was initiated due to severity. However, for two of the eight patients, fidaxomicin prescription was subsequent to advice from an infectious disease specialist following failure of prior treatment with vancomycin. Finally, recurrence risk factors were not corrected for 10 of 33 patients (continuation of proton pump inhibitors or anti-motility medications), despite advice from infectious disease specialists to interrupt such treatment. A CDI care protocol was drafted via a multidisciplinary approach and validated by our university hospital's Anti-Infective Committee in December 2014 in order to provide improved information on CDI management.
Conclusion: This study demonstrates that implemented tools (protocol and evaluation worksheet) helped prescribers make the right clinical decision. The protocol has been integrated within infectious disease treatment protocols available on the hospital's intranet.
Disclosure of interest: None declared.

HP-PC024: Medication reconciliation in the emergency department

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Background and objective: It is known worldwide that medication information is incomplete when patients come to the emergency department. There are only a few studies carried out on this subject. The aim of the study was find out differences between home used medication and the medication record in the hospital. We also tried to find out possible connections between medication and the reason for hospital admission.
Setting and method: The research was carried out in the emergency department of the Kuopio University Hospital from April 2014 to February 2015. The study was accepted at the Ethical Committee of North Savo hospital district. Inclusion criteria were age over 65, home-dwelling, Finnish speaking and at least six medicines per patient. We had a multidisciplinary team which included nurses, doctors and clinical pharmacists. Clinical pharmacist and nurses chose the patients for the study. The patient's medication information was stored into the patient document prior to interview and was then compared with the outcome of the interview. The medication interview form was constructed with consensus method together with pharmacology lecturer from University of the Eastern Finland, clinical pharmacists and doctors of internal medicine from the University Hospital of Kuopio. The reason for each hospital admission was checked from patient document. Side-effects or symptoms were taken from patient documents and interviews. The differences between home medication and the medication used in hospital, possible connections to side-effects or symptoms and hospital admission were checked together with doctor of internal medicine.
Main outcome measures: The differences between home used medication and the medication record in hospital.
Results: A total 75 patients participated in this study, 43 (57 %) women and 32 (43 %) men. Patient age ranged from 66 to 98 years (mean 79). There were altogether 428 differences (range 0–19, median 5) between home used medication after interview and hospital medication data. The most common differences associated with omission, extra medicines and wrong dosage. Possible connection between medication and hospital admission was found 31 patients (41 %).
Conclusion: There is obvious need to renew medication reconciliation practices in emergency department. To increase the patient safety, it is very important to find out correct home medication. The study shows that there is a need for more time and resources to ensure the validity of medication. Medication interview form tested in the study proved helpful in medication reconciliation.
Disclosure of interest: None declared.

HP-PC026: Canakinumab and macrophage activation syndrome: treatment, complication and follow-up of systemic juvenile idiopathic arthritis. A case report

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Background and objective: Macrophage Activation Syndrome (MAS) is a rare and potentially fatal complication commonly associated with systemic-onset juvenile idiopathic arthritis (SoJIA). The aim of this study is to describe the management and follow-up of MAS complicating SoJIA in a patient finally treated with canakinumab (CNK).
Design: 18-month follow up case report of a patient diagnosed with MAS complicating SoJIA.
Results: A 10-year-old girl was admitted in our hospital because of suspected hemophagocytic syndrome in May 2013. She presented persistent fever, generalized exanthema, hyperferritinemia, elevated

liver enzymes, drop in the acute phase reactants (APR) and organomegaly. Bone marrow biopsy was performed with no evidence of hemophagocytosis. Finally she was diagnosed with MAS probably induced by SoJIA and treated with 3 pulses of methylprednisolone 30 mg/kg/day and cyclosporine (CsA) 2 mg/kg/day.

Her symptoms and clinical signs did not improve, evolving with multiple organ failure, coagulopathy and bilateral pleural effusion requiring treatment in intensive care unit (ICU). HLH-2004 treatment protocol (etoposide + dexamethasone + CsA) was established for 8 weeks.

Concurrently, anakinra (6 mg/kg/day) was added to the treatment due to steroid-refractory active disease. 1 month later anakinra was discontinued because of poor efficacy and tolerability (local site reactions). At the end of the treatment protocol, analytical parameters were within normal limits (excepting APR), symptoms and clinical signs of MAS remitted and the patient was discharged.

Due to sustained increase of APR, tocilizumab 8 mg/kg biweekly was started in July 2013. She received six cycles achieving clinical and analytical complete response until September 2013 when a severe infusion reaction (hypotension, bronchospasm and generalized erythema) lead to treatment interruption.

CNK 4 mg/kg subcutaneously once every 4 weeks was proposed as a third-line option. She was scheduled for outpatient, office-based administration of CNK in October 2013 without any injection site reactions. At the 10-day control visit, the patient was asymptomatic except for mild joint pain secondary to physiotherapy. After 1 month, corticoids and CsA were discontinued due to the complete remission of all clinical features (fever, organomegaly, rash and arthralgy). CNK was continued until January 2014 (5 doses). The therapy was well tolerated without adverse events or side effects. After 18 months of follow-up (June 2015), the patient was still in clinical remission with no flare-up and returned to normal life.

Conclusion: In our experience, CNK was effective and safe leading to 18-month-long remission without any flare and adverse effects in a patient with disease refractory to several treatments.

Further long-term studies are needed to establish the role and the risk profile of CNK in refractory disease.

Disclosure of interest: None declared.

HP-PC027: Evaluation of antibiotic prescribing for adult inpatients at Sultan Qaboos University Hospital: Sultanate of Oman

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Background and objective: *Background*: Little is known into the prudent use of antibiotics in hospitals in Oman. *Objective*: To evaluate antibiotic prescribing by measuring the overall compliance with the local guidelines using the antimicrobial prescribing care bundle of the UK as a standard. To describe the diagnosis and the types of antibiotics prescribed (class and spectrum).

Setting and method: *Setting*: The study was conducted in Sultan Qaboos University Hospital (SQUH)/Sultanate of Oman; 500-bed tertiary teaching hospital, admitting approximately 7300 adult patients in the medical and the ICU wards annually. *Methods*: This was an observational study involving 366 patients' admission episodes of patients (18 years and above) admitted for 72 h, were on oral and/or parenteral antibiotic on admission in a 10-week period (1st February–15th April, 2014) in the medical and the intensive care units. The adapted audit tool of the Barking, Havering and Redbridge University Hospitals NHS Trust was used for this study. Analyses were performed using descriptive statistics.

Main outcome measures: The compliance with local guidelines and the overall adherence with the SQUH restricted antibiotic policy were evaluated.

Results: Compliance with local guidelines was in 63 % of antibiotic prescriptions, and adherence to restricted antibiotic policy was only in 46 % of restricted antibiotics prescriptions. The highest rate of infections reported was the respiratory tract, in 33 % of the cases; mainly pneumonia, in 22 %. The majority of antibiotics prescribed were broad spectrum, in 90 % of prescriptions; mainly penicillines, in 31 %, and cephalosporins, in 17 %.

Conclusion: antibiotic prescribing practice in SQUH is sub-optimal. Rational antibiotic use can be achieved by establishing and implementing a multidisciplinary antimicrobial stewardship committee.

Disclosure of interest: None declared.

HP-PC028: Management of retinitis by an association of intravitreal and intravenous injection of antiviral drugs

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Background and objective: In the Pharmacy, sterile treatments are reconstituted. Antiviral drugs used for retinitis are part of these preparations.

Different options are available for the management of a retinitis and intravitreal injection (IVI) of antiviral drugs is one of them.

We aimed to describe the management of retinitis and assess their efficacy.

Setting and method: We carried out an observational descriptive study including patient with a positive diagnosis of retinitis due to a virus, treated by an antiviral drug.

Data collection was performed through the patients care records.

Variables of interest: patient's background, disease's history, biological data (creatinine; viral load VL), medicine treatments.

Main outcome measures: The efficacy was assessed by the reduction of VL and/or the modification of the ocular tonus.

Results: The study was implemented during 7 months from December 2014 to June 2015. 3 patients were concerned: 2 male, 1 female; middle age = 76 yo.

Patient 1 treated for a lymphoma: Cytomegalovirus (CMV) retinitis. The treatment was ganciclovir administrated as an infusion (5 mg/kg/12 h; 23 days). Intravitreal media was also used with a loading dose (2 mg/0.1 mL) twice a week during 2 weeks then maintenance dose (0.4 mg/0.1 mL) twice a week.

After 3 weeks the VL decreased by 79 %.

The ocular tonus decreased from 33.5 to 27 mmHg at the end of the assessment. An improvement of refraction of the media was observed.

Patient 2 without immunodeficiency: Varicella Zoster Virus (VZV) retinitis. The infusion treatment was a combination during 3 weeks of ganciclovir (5.5 mg/kg/12 h) and forcarnet (3 g/12 h). The foscarnet was also administrated by IVI 2.4 mg/0.1 mL twice a week.

The necrosis decreased; the ocular tonus decreased from 27 to 10.6 mmHg.

Patient 3 treated for endometrium carcinoma: Herpes simplex virus (HSV) retinitis. Initially the infusion treatment was aciclovir 10 mg/kg/8 h (3 days), but then it was stopped for inefficiency. A ganciclovir treatment was introduced by infusion (5 mg/kg/12 h) and also by IVI (loading dose of 2 mg/0.1 mL then maintenance dose of 0.4 mg/mL twice a week) during 1 month. After 1 week, due to a persistent hyalitis, foscarnet (6 g/day) was introduced as an add-on therapy by infusion during 4 weeks. After 5 weeks an increasing of

VL was observed, evidencing a virus resistance. IVI ganciclovir was switched by IVI foscanert 2.4 mg/0.1 mL twice a week.

The hyalitis decreased; the ocular tonus decreased from 24.2 to 7 mmHg.

The treatments were well tolerated.

Conclusion: With a well-conducted monitoring of the tolerance, antivirals association leads to substantial improvements, although a disparity of efficiency. It seems promising but it requires a larger number of patients in order to specify more precisely the therapeutic schema.

Once the infection is under control IV administration can be stopped, allowing an outpatient treatment for IVI with the benefits of a shortened hospital stay.

Disclosure of interest: None declared.

HP-PC029: Pharmaceutical Care Impact on Certain Biochemical Levels in Diabetic Cancer Patients

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Background and objective: Pharmaceutical care approaches in diabetic cancer patients aims at improving and optimizing supportive care strategies. Oxidative DNA damage have been extensively related to the development of cancer and diabetes mellitus and urinary 8-hydroxydeoxyguanosine 8-OHdGhas been observed as a sensitive biomarker of oxidative stress and DNA damage in both of diabetes mellitus and cancer. This clinical study was designed to demonstrate the determination of urinary 8-OHdG in correlation with certain biochemical parameters in predicting the intensity of DNA damage and assessment the provision of pharmaceutical care services in diabetic cancer patients.

Setting and method: A randomized, controlled prospective study was carried out on (100) cancer patients with diabetes admitted at the Oncology Unit. Patients are divided into two groups, one was served as control group, and the other group was served as intervention or pharmaceutical care group. Certain biochemical parameters regarding diabetes mellitus were observed at the baseline before the administration of chemotherapy and at the end of the study.

Main outcome measures: Patients' demographic data were collected according to the patient data sheet and certain biochemical parameters associated with DM including serum cholesterol, triglycerides, glucose levels and glycelated A1c level were observed at the baseline before the administration of chemotherapy and at the end of the study.

Results: Results of the study presented that the provision of PC services to the intervention group were associated with improvement of biochemical assessments including a significant reduction ($p < 0.05$) in serum levels of cholesterol (212.68 ± 30.22) versus (176.42 ± 28.27) mg/dl, triglycerides (187.44 ± 23.11) versus (156.78 ± 15.40) mg/dl, blood glucose (133.16 ± 40.14) versus (118.98 ± 29.10) mg/dl and glycelated A1c (6.26 ± 1.395) versus (5.72 ± 1.02 %). Concerning the detection of urinary 8-OHdG level, there was a significant increase ($p < 0.05$) within the control group (26.05 ± 4.09) versus (30.86 ± 4.13) ng/dl, but a slight significant increase ($p < 0.05$) within the intervention group (28.02 ± 4.38) versus (30.68 ± 5.12) ng/dl compared with that of the control group.

Conclusion: These findings suggested the essentiality of pharmaceutical care provision for diabetic cancer patients to improve patient-reported outcomes as well as of urinary 8-OHdG as a specific biomarker of oxidative DNA lesions for both of DM and cancer.

Disclosure of interest: None declared.

HP-PC031: Thrombocytopenia induced by pantoprazole: a result of therapeutic substitution at hospital

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Background and objective: To report a case of thrombocytopenia associated with pantoprazole and discuss existing serious consequences of therapeutic substitution at hospital.

Design: Case report.

Results: A 71 year-old man, dialysis and diabetic patient, was admitted at hospital for an *Enterococcus faecium* bacteremia associated with a highly probable endocarditis. During his hospitalization, platelet counts dropped from 453G/L to 5G/L in 6 days with externalized haemorrhagic syndrome (rectal bleeding, subcutaneous haemorrhage). The differential diagnosis eliminated a central thrombocytopenia and other causes of peripheral thrombocytopenia, leading to consider an iatrogenic effect. All suspected medications (piperacillin/tazobactam, furosemide, atorvastatin, pantoprazole, sitagliptin, pancreatin) were stopped. A treatment by platelet transfusion and oral corticosteroid therapy (60 mg of prednisolone daily) was introduced with an increase of platelet count at 168G/L. A recurrence of thrombocytopenia (platelet count at 2G/L) was observed 2 days after re-exposure to pantoprazole and corticosteroid dosage decrease (60–10 mg of prednisolone daily). Thrombocytopenia resolved 9 days after proton pumps inhibitor (PPI) discontinuation and oral corticosteroid therapy (platelet count at 223G/L).

In this context, it has to be highlight that the outpatient treatment by esomeprazole, indicated for prevention of gastric ulcer associated with nonsteroidal anti-inflammatory drug (acetylsalicylic acid), was switched by pantoprazole at admission (46 days before thrombocytopenia onset) because of unavailability in the hospital drug formulary. Therefore, based on chronological arguments with a positive rechallenge, pantoprazole appears as the prime suspect in this event. Nevertheless, we expect the decrease of corticosteroid dosage to observe the evolution of platelet count.

Conclusion: PPIs are known to induce thrombocytopenia. This side effect might be an individual drug effect rather than a class effect, as suggesting in our case. Therefore, it has been hypothesized that this adverse effect may be immune mediated.

Although thrombocytopenia induced by pantoprazole appears to be rare, it represents a potentially severe adverse effect. This case report raises the question of therapeutic substitution at hospital in terms of impact on patient healthcare.

Disclosure of interest: None declared.

HP-PC034: To crush or not to crush, that is the question

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Background and objective: Swallowing disorders or psycho-behavioural distress interfere on oral drug administration in elderly inpatients. In our hospital, a guideline for "crushing drugs" is available in geriatrics ward to help nurses to check whether or not a drug could be crushed. Is this document useful for physicians and nurses?

The aim of this study is to assess the crushing practices in our hospital.

Setting and method: A prospective study was performed, in April 2015, in 7 units.
Main outcome measures: Reasons for crushing, drugs crushed, and the technique used for preparation and administration were recorded.
Results: 149 observations were gathered. Among them, 22.8 % of patients have difficulties to take their oral drug. The reasons were the presence of enteral feeding tube in 52.9 %, difficulties in swallowing/psycho-behavioural distress in 41.2 %, and rejection of oral drug in 5.9 %. Physicians and nurses indicate the reason in the medical record in 50 % of cases. 134 drugs were crushed: 25 % concerned Nervous system group, 19 % concerned cardiovascular system group, and 13 % concerned Alimentary tract and metabolism group.

Nurses use guideline in 2.9 % of cases. In 100 % of cases, washing hands before preparation and after administration are met. But none of them was wearing mask and gloves during this operation. Finally, for each patient, drugs are systematically crushed together and then mixed with the patient's meal.
Conclusion: Crushing drugs expose both to iatrogenic hazards and professional risks. According to the results in our hospital, three immediate actions were performed:

- A pocket size list, with top 10 of drug not to crush (and alternatives) has been provided to nurses and physician.
- Wearing mask and gloves during the operation of crushing is now mandatory.
- In case of doubt, think to call the pharmacist to choose the appropriate galenic form for the patient.

Disclosure of interest: None declared.

HP-PC035: Human normal intravenous immunoglobulins (IVIG): tools to inform and secure our practices

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Background and objective: France is one of the countries where IVIg are the most prescribed in Europe (around twice the mean European consumption). The widely used of these expensive drugs and pharmacovigilance concerns about highly purified protein extracted from human plasma (venous thromboembolism, acute kidney injuries…) led us to implement tools for health professionals.
Design: To promote the appropriate use of IVIg to health professionals, the regional university hospitals of Paris (AP-HP) and the regional Observatory of Drugs, Medical Devices and Therapeutic Innovations (OMEDIT) broadcast different actions.

For this purpose and to limit off label and insufficiently justified prescriptions, we issue, for prescribers and pharmacists, recommendations and standardized prescriptions, via the web site "La Juste Prescription (JP)". These documents are based on validated official information such as summaries of product characteristics, opinions of the Transparency Commission of the French High Authority for Health (HAS), recommendations and health alerts from the National Medicine Agency (ANSM) or the European Medicine Agency (EPAR, CHMP opinions), as well as HTA agencies (NICE, KCE, CADTH…), on the results of literature analysis (Medline, Cochrane review,…). All the sources are daily watched for the update of our database.

More recently, for nurses and in order to secure administration of IVIg, a specific working group, with pharmacists, doctors and nurses, was organized.

Results: For prescribers and pharmacists, medical prescriptions and bibliographic justifications for off label indications are requested by French health insurances. To that end, the updated documents (recommendations, notices, standardized prescriptions) are weekly published online. They also allow to revise the database included in prescription software. A quick evaluation reveals that around 18 % of IVIG prescriptions are made off label.

For nurses, the working group draw up a short information document about IVIG (administration leaflet) and a check-list describing the nine steps to follow in order to make a safe administration.
Conclusion: In spite of the implementation of the tools for prescribers and pharmacists, a high level of off label prescriptions still remains: a further analysis is required in order to identify which utilisations rely on evidence based medicine.

About the safety concerns, the nurses tools will be widely implemented in the region and an evaluation is currently planned.
Disclosure of interest: None declared.

HP-PC036: Proper use of biotherapies in the treatment of systemic vasculitis

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Background and objective: Biotherapies are increasingly prescribed for off-label autoimmune diseases including systemic vasculitis. Their prescriptions have to be controlled by hospital pharmacists before dispensing.

This work presents a retrospective analysis focused on off-label prescriptions of biotherapies for primary systemic vasculitis, in our hospital during 2014.
Design: Following data were collected from each patient who received biotherapy in 2014: treatment duration, posology, type of vasculitis (based on the Chapel-Hill consensus conference). In parallel, an overview of scientific publications on Medline database was performed (keywords: type of vasculitis + biotherapy involved).
Results: Three biotherapies are involved which represents an amount of 162,868 € in 2014 (12 % of off-label indications): infliximab (IFX), rituximab (RTX) and tocilizumab (TCZ). Eighteen were treated with biotherapies for: Behçet's disease [IFX (N = 7); TCZ (N = 1)], Takayasu's disease [TCZ (N = 4); RTX (N = 1)], giant cell arteritis [TCZ (N = 2)], and cerebral vasculitis [RTX (N = 2); IFX (N = 1)]. Dosages are in accordance with standard doses recommended in marketing authorizations. The mean duration of treatment was 47.0 ± 34.3 weeks with 31.5 ± 20.1 related to IFX; 75.5 ± 32.9 to TCZ; 40.6 ± 50.3 to RTX showing a high variability. The average cost per patient is 15,600 ± 3400 € with RTX, 8300 ± 6400 € with IFX and 11,500 ± 6300 € with TCZ. Medline database analysis shows that, except IFX in Behçet disease (>200), few publications (mean = 9.7 patients) are available in which there is no comparative study (1 ongoing clinical trial, TCZ in GCA). Sizes of cohort are small and all of them are single centre studies.
Conclusion: Off-label vasculitis represent 12 % of all off-label indications of biotherapies which confirms that their prescriptions have to be monitored. Moreover, there is a great variability in patient's treatment durations showing that there is no consensus on an optimal regimen. All off-label indications are supported by publications but the lack of statistical power of studies (i.e. monocentric, cohort follow-up, no comparison) requires clinical trials to compair harmlessness.
Disclosure of interest: None declared.

HP-PC040: A retrospective study of anticoagulants prescriptions: errors and risk reduction strategies in a teaching hospital

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Background and objective: Anticoagulants (ATC) are one of the most frequently involved drug class in iatrogenic events and can be potentially preventable by a closer monitoring and practical knowledge of recommendations. We observed that this pharmacotherapeutic group has the most frequent warning from the pharmacists who analyze daily computerized prescription. Indeed, new target-specific oral anticoagulants (TSOACs) were introduced and their managements are not already well known. The aim of this study is to detect the most common errors prescriptions in order to establish guidelines for new junior physicians.
Design: Clinical pharmacists controlled every day prescriptions' services of 678 beds in our hospital (65 % of Medicine, 18 % of Surgery and 17 % of others). After analyses, they can alert physicians by messages across the software for advices, optimization of prescriptions or warning alerts (major interaction, over dosage, wrong duration or wrong route…) All messages are archived and evaluated by pharmacists in the software. We study all pharmacists' messages from January 2014 to May 2015 and collect all that concerns ATC with a focus on the numerous and the most important messages according to the pharmacist opinion for each drug.
Results: Among all messages (11394), 8.7 % (996) concerned ATC; 63 % for injectable ATC (iATC) and 37 % for oral ATC (oATC). For iATC, 78 % concerned Low Molecular Weight Heparin (LMWH) and 22 % Unfractionated Heparin (UFH). For oATC, 43.4 % were for fluindione (the most oATC prescribed drug in France: 62 % in 2013), 41 % for warfarin (9.8 % in 2013), 4.4 % for dabigatran (9.1 % in 2013) and 3.8 % for rivaroxaban (12.6 % in 2013).

14.7 % of interventions were for the adaptation to the renal function, 14.7 % for asking of monitoring biologic examination (platelet…) and 16 % for more information (weight, renal function or target INR).

8.8 % of all ATC's messages were identified to prevent high risk situations (5.7 % for iATC and 3.1 % for oATC) and were accepted in 84 % of cases by physicians. For iATC, pharmacist's message concerned adaptation to the renal function (ask for a switch from LMWH to UFH), monitoring examination and over dosage. For oATC, it was for over dosage, requirement for monitoring examination and others (wrong dosage form, computerized errors or asking for information) for vitamin K antagonists and concomitant treatment with other ATC for the TSOACs.
Conclusion: The pharmacist's interventions contribute to decrease adverse drug events especially for junior's physicians. However, a target booklet for each ATC drug documented by local guidelines (COMEDIMS/APHP) and by this observational analysis can be very useful to propose a template for monitoring (INR, TCA, platelet, renal function…), schema of switch from a form or a drug to a another, most important interactions and contraindications and information for the patient education.
Disclosure of interest: None declared.

HP-PC041: Usual drug presentations not adapted for the administration to patient require pharmaceutical validation: a case report of overdose of somatostatin analog

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Background and objective: Osler Weber Rendu disease can be treated by long-acting Lanreotide acetate (use outside the marketing authorization) due to anti-angiogenic effects, which reduce the risk of hemorrhage [1].
Design: We report the case of an overdose of long-acting Lanreotide acetate in hospitalized adult patient. ORION [2] analysis was performed by pharmaceutical staff in order to prevent these mistakes.
Results: Patient is 54 years old. His medical history was: Osler Weber Rendu disease, depression and sleep apnoea syndrome. He had been hospitalized in reanimation department for gastrointestinal haemorrhage due to a duodenal angiodysplasia and his Olser Weber Rendu disease. A treatment with long-acting Lanreotide acetate 90 mg (somatostatin analog) administered by deep subcutaneous (SC) route once a month, was prescribed by doctor. Only the long-acting Lanreotide acetate 30 mg is available in our hospital, so three long-acting Lanreotide acetate 30 mg was mistakenly dispensed by a member of our pharmaceutical staff (a therapeutic alternative should have been suggested: 30 mg by IM route at 10 days intervals). Nurse administrated these three syringes by intramuscular (IM) injection (which is consistent with the Summary of Product Characteristics of this drug dosage) in single injection, causing an overdose. A declaration of pharmacovigilance was realized; clinical and biological monitoring were strengthened (especially glucose monitoring). Seven days after administration, no notable consequences were observed. The main propositions after ORION analysis were: add a comment in the drug dispensing software, train pharmacy technicians about the necessary pharmaceutical analysis concerning medications require special safeguards such as "usual drug presentation not adapted for the administration to patient".
Conclusion: In spite long-acting Lanreotide acetate doesn't appear in the High Alert Medication list of the Institute for Safe Medication Practices, an error of dispensation can induce important damage. Indeed, administration routes (IM or SC injection) and therapeutic indication of all drug dosage forms are not equivalent. Although there were no clinical consequences for this patient, this case illustrates a new "at risk situations" that could need a pharmaceutical analysis.
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Disclosure of interest: None declared.

HP-PC042: Preliminary analysis of risks related to implementing an automated dispensing system in emergency unit

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Background and objective: In a context of securing reduction of medication errors in French hospitals, the institution AP-HP has lead a deployment of an automated dispensing system for the storage and the drug distribution.

The benefits of this equipment are well described. However, by generating a new drug dispensation organization, it is useful to

consider the level of security provided by this technology. In this context, a preliminary risk analysis was conducted to measure and control the potential risks associated with the implementation of an automated dispensing Omnicell® system in the Emergency unit.
Design: The risk analysis was conducted in five working sessions managed by a multidisciplinary team: three pharmacists, a doctor, and paramedics of Pharmacy department and Emergency unit. The method is the Preliminary Risk Analysis.

Severity and probability scales have been defined to assess the criticality: Level 1 acceptable, level 2 tolerable under control and level 3 unacceptable.
Results: 63 priority dangerous situations were identified with 67 developed scenarios of which 64 % had a non-acceptable initial risk without control (levels 2 and 3). After proposal for risk-reduction measures, all the scenarios became acceptable (72 %) or tolerable under control (28 %). The proposed measures essentially concerned the acquisition of a new software and the interfaces with existing systems. The analysis revealed that the "Political", "Technical", and "Information system" hazards had an acceptable initial risk, whereas the initial risks related to "Management", "Human", "Functional", "Operational", and "Environmental" were unacceptable. By risk-reduction actions, the risk became acceptable ("Operational") or tolerable under control ("Management", "Human", "Functional", and "Environmental").

Regarding the analysis by phase, only the "automated dispensing system implementation" (S1) had initially an acceptable risk whereas "picking" (S2), "resupply" (S3), and "stock control and narcotic's management" (S4) had an unacceptable initial risk. After preventive measures, the risks of S3 became acceptable whereas for S2 and S4, were reduced to a level of tolerable under control.
Conclusion: This study showed the automated dispensing systems limits when it was not interfaced to a prescription software, to a patient management software, or to the Pharmacy management software. This analysis also proved the importance of the human factor whose risks are specially difficult to control. Nevertheless, this work allowed to the two services to work closely for the proposal of risk control measures to ensure the optimal and safe use of this automated dispensing system.
Disclosure of interest: None declared.

HP-PC043: Clinical implications of the equivalent replacement for therapeutic alternatives

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Background and objective: The need to establish protocols that provide care work makes the clinical practice guidelines are more in use than ever now. Replacing with therapeutic equivalent alternatives is absolutely necessary because it is not possible to have all existing drugs in the market available in the hospital. We conducted a study to determine the prevalence of off-label use of therapeutic equivalent alternatives (TEA) included in the pharmacotherapeutic groups inhibitors angiotensin converting enzyme (IACEs), calcium antagonists (CAANs) and angiotensin receptor antagonists (ARAs) from a therapeutic exchange program (TEP). Secondary objectives were to identify drugs used as TEA and which require dose adjustment for renal impairment (RI) and liver failure (LF); to estimate the prevalence of need for dosage adjustment for cardiovascular disease (CVD).
Setting and method: A retrospective observational study of all patients admitted from 1 January 2014 until 15 May 2015 to a replacement pharmaceutical intervention with TEA for IACEs, CAANs and ARAs was performed. The data were obtained from the computer program "Unidosis" of Farmatools and the Computerized Medical History (CMH) of the patients.
Main outcome measures: The variables studied were: age, sex, income CVD, TEA used, TAE adjusted indication of the ACV, dose adjustment for IR and IH of the TEA according to data sheet and requirement for dose adjustment depending on the patient's CVD.
Results: Total patients enrolled: 31. Average age: 78 years. Gender: 53 % female, 47 % male. CVD: essential high blood pressure in 20 patients, hypertension associated to diabetes mellitus in 10 patients, hepatic impairment (HI) in 1. Eight patients with hypertension and diabetes had developed diabetic nephropathy and the exchange for TEA was made in 7 of these eight patients. ATE used: amlodipine in six patients, enalapril in 2, irbesartan in 2 and losartan in 22. Setting indication: 100 % of TEA kept the medical indication for the original treatment was instituted. IR setting: only enalapril needs dosage adjustment for RI of the considered medicines; however, no patients were treated with enalapril. LF setting: losartan and amlodipine require dosage adjustment in LF. Only one patient presented LF and was treated with losartan not performing any adjustment.
Conclusion: Exchange by TEA is a spotlight of scientific societies, patient associations and professional groups. The sustainability of the health systems require the existence of clinical practice guide exchange but they must ensure the effectiveness and safety of proposed TEA. With this work, we show that no ATE off-label use for IACEs, CAANs and ARAs is applied in our hospital. Also, the knowledge of drugs required for dosage adjustment in RI/HF is basic in clinical daily practice of pharmaceutical. Although it can be concluded from this study that the prevalence of the need for this dose adjustment is low, it is absolutely necessary to study each replacement individually with the revision of the CMH.
Disclosure of interest: None declared.

HP-PC045: Imatinib effectiveness and toxicity in chronic myeloid leukaemia

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Background and objective: Evaluate the effectiveness and toxicity associated with treatment with imatinib in patients diagnosed with chronic myeloid leukaemia (CML).
Setting and method: Retrospective observational study in which patients diagnosed with CML treated with imatinib, between January 2014 and March 2015, were included.
Main outcome measures: The variables were: sex, age, stage of disease, prior to imatinib therapy, dosage, reason for change in dose or discontinuation of imatinib, duration of treatment, response to treatment (blood BR, cytogenetics CR, molecular MR and free survival progression), adverse reactions to treatment and exitus. The data were obtained from the Electronic Health Record (SIAS®) and application dispensing outpatient Abucasis®. Toxicity was evaluated according to the criteria of Common Terminology Criteria for Adverse Events (CTCAE v. 4).
Results: During the study period, 17 patients diagnosed with CML treated with imatinib, 53 % male and 47 % female, mean age 71 ± 10 years. All patients were in the chronic phase of the disease and had Philadelphia chromosome positive.

All patients started treatment with imatinib in first line, at a dose of 400 mg/day. The mean treatment duration was 55 ± 45 months (range 3–143 months). Only one patient required a dose reduction to

100 mg/day for the appearance of adverse effects. Of the 17 patients treated with imatinib, 82.4 % of patients achieved complete hematologic response, 76.5 % complete cytogenetic response and 64.7 % complete molecular response. The median progression-free survival was 60 months (range 3–143 months). At the end of the study, 15 patients (88.2 %) followed by treatment with imatinib.

Fifteen patients have adverse reactions: 73 % palpebral edema G2 and/or the lower limbs G2, 47 % skin toxicity G2–3, 53 % gastrointestinal toxicity G1–2 and 33 % paresthesias G2. Two patients discontinued therapy with imatinib due to the occurrence of skin rash G3, one patient to develop acquisition mutation imatinib and dasatinib resistance, and one patient by choice. One exitus patient was during the study.

Conclusion: Imatinib reaches a high response rate, with an acceptable profile of side effects, manageable in most patients. This makes it a safe and effective drug in the treatment of CML.

Disclosure of interest: None declared.

HP-PC046: Thermosensitive drug management in care units to improve patient safety

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Background and objective: A controlled thermosensitive drug circuit is necessary to avoid patient, financial and regulatory risks. Every year, cold chain failures entail a financial loss of € 20,000 for our hospital. The aim of this study is to analyse failure reasons to elaborate tools to help health professionals with the use of thermosensitive drugs in order to improve patient safety.

Setting and method: A study on thermosensitive drug management in care units was conducted over 2 months (July–August 2014) in a University hospital. Evaluation criteria were: compliance with refrigerator temperature (2–8 °C), drug storage in refrigerator, presence of frost on refrigerator wall and reporting of thermosensitive drug delivery within the care unit. Tools were then developed by a multidisciplinary work group (pharmacists, hygienists and nurses).

Main outcome measures: Determine gaps in thermosensitive drug circuit to focus the tools on them.

Results: Over 2 months, 50 care units were inspected. 95 % of refrigerators were designed to store food. Temperature readings did not conform in 22 % of cases [−1 °C, +10 °C]. Frost was observed in 14 % of cases. Improper storage was reported in 48 % of cases: door storage (54 %), vegetable compartment storage (33 %), and wall storage (13 %). These observations led to the creation of appropriate tools. A temperature worksheet was developed to educate nursing teams. A guideline on thermosensitive drug storage was distributed and displayed in each hospital care unit. Each thermosensitive drug delivery is now registered. The golden rules on thermosensitive drugs have been affixed to each refrigerator used for medicinal drug storage, together with an alert sticker on the refrigerator mains cable.

Conclusion: Establish tools has helped to secure the use of thermosensitive drugs and optimise patient safety. An awareness programme for health professionals has been initiated to ensure improved patient care.

Disclosure of interest: None declared.

HP-PC047: Advantages of incremental dispensing of post exposure prophylaxis (PEP) drugs and comparison of two care pathways (CP)

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Background and objective: Potentially exposed to HIV infection patients usually go to the emergency department (ED) and get a 5 days prescription for PEP drugs. A part of them tend to get lost to follow-up in our hospital.

The aims of the study are: (1) to evaluate how a different CP can improve patient follow-up and (2) to estimate cost savings of PEP drugs allowed by incremental dispensing strategies.

Design: Retrospective study of 370 patient's medical records who received PEP drugs in 2014 in a public hospital in Paris.

They followed CP 1 or 2: (1) The ED prescribes a 5 day-course of PEP drugs. Then an antiretroviral specialist prescriber (ASP) decides if the PEP must be prolonged for the following days and (2) An ASP directly prescribes a full course of PEP drugs (28 days).

Day and night, the pharmacist provides a 5 (CP1) or 8 (CP2) days starter pack of PEP drugs. The full course of PEP is given in 3 times through an incremental dispensing (initiation, tolerance, compliance): 5, 8 and 15 days (CP1) or 8, 8 and 12 (CP2). Cost savings were calculated from the difference between the 28 days of the treatment and days of PEP drugs dispensed.

Results: Patients characteristics: 92 % male, mean age: 33 years, receiving PEP drugs for the first time (67 %), main cause of exposure: unprotected sex (48 %), unknown status of the source patient (62 %). Mean time before starting PEP is 18 h for CP1 compared with 22 h for CP2 ($p < 0.03$). Initial prescription is emtricitabine/tenofovir and lopinavir/ritonavir for 98 % of patients in CP1 compared with 80 % in CP2 ($p < 10^{-8}$). For both CPs, 7 % of the initial drug association is switched to another one. 71 % of patients follow the CP1. Among them 46 % received only the starter pack of 5 days because the ASP stopped the PEP (53 %) or they never came back for a medical interview in our hospital (47 %).

Without considering the CP1's patients who stopped the PEP after 5 days because of a medical decision: (1) average duration of PEP drugs dispensed is 20 days for CP1 and 23 for CP2 ($p < 0.02$), (2) percentage of patients who received a 28 days course of PEP drug is 59 % for CP1 and 69 % for CP2 (not significant) and (3) cost savings on PEP drugs for the French healthcare system (1 day of PEP drugs $\approx$ € 30) for incremental dispensing versus full course dispensing is € 49,500 (€ 248/patient) for CP1 and € 17,500 (€ 163/patient) for CP2.

Conclusion: Patients following CP2 are less likely to be lost to follow-up and are treated longer. The direct management by an ASP allows a better adaptation of treatment and further explanation for a better understanding of the treatment by the patient. However CP1 allows a faster management of patients and remains essential. The interview with the patient during each dispensing allows monitoring the compliance and the tolerance of the treatment. This study has shown that incremental dispensing allows significant cost savings versus non incremental dispensing.

Disclosure of interest: None declared.

HP-PC048: Patient's own medication during hospitalization: stakeholder involvement

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Background and objective: Since 2005, each hospital in France must engage with the Regional Health Agencies (ARS*) and the Health Insurance (AM*) a contract of proper use of medication and medical devices. This contract, signed for 5 years, is designed especially to improve and secure the medication circuit and sterile medical devices, ensuring their proper use.

It is particularly requested these hospital to realize an evaluation of professional practices based on Patient's Own Medications (POMs) procedures. The Public Hospitals of Paris (AP-HP*) organized and coordinated audit practices across the institution on this subject, and suggested this tool to his 37 hospitals (24,000 beds). The objective was first any teaching, and allowed to promote good practice by offering shared, accessible and easy to use tools.

Design: From different french regulatory texts, few procedures on the recording, storage and transport of POMs in different hospitals of the AP-HP*, three separate questionnaires were developed: one for doctors, one for nurses, and the last one for patients.

Questions focused on taking into account of POMs during the admission to the hospital, information given to the patient (addition, deletion, substitution of medications etc.) during hospitalization and discharge, how and where POMs will be stored in the medical unit.

To raise a maximum of health professionals, the questionnaires were short (6–7 questions), available online for 5 months.

Results: At the end of this period, we had a good participation in the survey with 2969 validated questionnaires (953 doctors, 1713 nurses and 303 patients).

94 % of the nurses inform the patient that he should not take his POMs without medical advice. 83 % of the nurses removes the POM's and keeps it regarding terms and conditions of the hospital (more than 90 % with a patient label on the bag or container, and approximately 50 % in the medication storage device in the medical unit).

During the hospitalization, the doctor doesn't systematically prescribe drugs including in POMs in 25 % of cases.

About the patient survey, when the treatment received is not the same name as usual, 62 % of them report not receiving the explanation of this change.

Conclusion: Overall, health professionals are aware of the importance of taking account of the POMs, and this despite an ignorance of the procedure. Improvement actions will be set up with particular information on all changes to the treatment regardless of the patient and the drug, during hospitalization and discharge.

Disclosure of interest: None declared.

HP-PC049: Developing an informatic tool to assist drug reconciliation process: an original experience in an acute care for the elderly unit

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Background and objective: Drug reconciliation remains a top safety priority especially in geriatrics due to polymedication and patient's frailty. It has been demonstrated that such a process was efficient in reducing drug adverse effects. However time requirements was identified as a barrier to complete the process. It may be reduced especially for data management and managing information traceability. Our study presents an original experience regarding drug reconciliation in an Acute Care for the Elderly (ACE) Unit assisted by a homemade management software.

Design: A prospective study was conducted during 2 months (January/February 2015) including all patients admitted in the ACE unit. Drug reconciliation was led by a pharmacy resident among three steps: realizing the Best Possible Medication History (BPMH); detecting/analysing/notifying Drug Discrepancies (DD) (i.e. unexplained differences among documented regimens across different sites of care); anticipating patients discharge by taking part in the discharge prescription redaction.

A software was developed using Microsoft excel VBA language in order to assist the whole process. Standardized document were set (BPMH sheet/drug reconciliation table/drug reconciliation discharge letter [to explain drug modifications/adding]) and automatically generated according the filled values.

Data collection concerned the mean number of drug identified thanks to the BPMH; quantitative and qualitative aspect of DD; rate of prescription modifications after the pharmaceutical interventions.

DD were classified among their therapeutic ranking value (according to the French health authority ranking system) and among a three level gravity scale involving two senior physicians and pharmacists.

Results: 62 patients were included [sex ratio (w/m) = 0.42:1; median age = 87.1 ± 7.4 yo]. The average number of drugs identified was 9.9 at admission [vs. 8.1 drugs before any BPMH ($p = 0.02$)].

189 DD were identified. 54 % (101) were non-intentional and 76 % (77) linked to a prescription omission due to a lack of information.

55 % (55) of these unintentional DD led to a prescription correction.

36 patients included a drug proactive discharge process and received a drug reconciliation discharge letter.

DD concerned 69 % (70) of the higher therapeutic ranking value drugs. Therapeutic ranking value level was correlated with the prescription correction rate ($p = 0.032$). According to the pharmacists, discrepancies' gravity level reached the lower, the medium and the higher rank in respectively 42 % (42), 42 % (42) and 16 % (16) of cases. Physicians agreed with pharmacists DD gravity ranking in 54 % (55) of cases.

Conclusion: Our experience in drug reconciliation process was efficient and permitted to improve pharmaceutical involvement and the quality of care. Our approach has been facilitated and perpetuated through our homemade software. Such a tool could easily attend a similar process performed by another team.

Disclosure of interest: None declared.

HP-PC050: Establishment of a clinical pharmacy activity in a cardiovascular pole: predictive criteria for pharmaceutical interventions

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Background and objective: Present human resources are insufficient to offer all inpatients a high quality pharmaceutical service. This study aims to evaluate the benefits of providing clinical pharmacy expertise in complete hospitalization wards of a cardiovascular unit. Secondary goals are to identify predictive criteria for pharmaceutical interventions (PI), to optimize the activity of clinical pharmacy while prioritizing groups with higher risk for medications errors.

Design: This prospective and randomized study will be run for a year in a university hospital (2000 beds) starting in November 2015. Patients will be randomly assigned to an intervention or an observational group. In the intervention group, a pharmacist, assisted by two students, will ensure medication reconciliation at entrance, pharmaceutical analysis during hospitalization and medication reconciliation at discharge. The study will be divided in three phases of 4 months each:

1. Phase 1 will be conducted in rythmology, thoracic surgery and vascular surgery wards (51 beds). Expected workforce: 1270 stays, 14.6 entrances a day (including 7.3 in the intervention group).

2. Phase 2 will be conducted in cardiology and cardiac surgery wards (44 beds). Expected workforce: 1164 stays, 13.6 entrances a day (including 6.8 in the intervention group).
3. 4 months to analyse data: 2 months after phase 1 and 2 months after phase 2.

We will provide medical caregivers with pharmaceutical services: pharmaceutical information during medical rounds, training staffs (planned interventions or during previously scheduled staff meetings), eased link between wards and pharmacy with constant interlocutor availability.

Results: At the end of the study we expect 2434 stays (888 in surgery wards, 1546 in medical wards). Consistent with the literature, and in order to demonstrate a decrease of 29.3 % from the rate of rehospitalisation within 30 days and/or to demonstrate a decrease of 4.5 % from transfer rate in an intensive care unit, the number of subjects required is 2108.

The potential impact of PI will be analysed by an independent trio of experts (a pharmacist, a cardiologist and a nephrologist) will rate PI on a scale from 0 to 3.

We will compare the generated PI in different patients groups: planned versus unplanned hospitalizations, medical versus surgical wards, age, renal function, social situation, number of medications in the chronic treatment, number of comorbidities, and any other criteria that will seem relevant.

Finally we will measure the economic impact of the pharmaceutical service provided on the length of stay, readmissions and transfers to intensive care.

Conclusion: This study will be a new and original work. Its prospective and randomized feature enhances its potential great interest for our upcoming clinical practice. Additional resources could be allocated to this study, allowing us to expand our data collection capacity.

Disclosure of interest: None declared.

HP-PC051: Assessment of impact on the implementation of a protocol for pegfilgrastim use in patients with breast cancer

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Background and objective: Granulocyte colony-stimulating factors have been prescribed frequently outside the recommendations of the main guidelines in clinical practice. A protocol of pegfilgrastim administration criteria was developed in our hospital, so an evaluation of its achievements was needed. The aim of this retrospective study was to assess the impact of the implementation of a protocol for proper use of pegfilgrastim in improving health outcomes of patients with breast cancer by tracking the reduction of neutropenic events.

Setting and method: Quasi-experimental study consisting on the analysis of the percentage of febrile neutropenia before and after the implementation of a pegfilgrastim use protocol in patients with breast cancer. The protocol was based on the recommendations of current clinical guidelines. The study was developed in two phases: Observation phase before the implementation of pegfilgrastim protocol and intervention phase when pegfilgrastim was administrated under protocol. We included patients with breast cancer (stages I, II or III) who began treatment with four cycles of epirubicin-cyclophosphamide followed by four cycles of docetaxel during the study period. Patients with HER2-positive or prior chemotherapy or radiotherapy, were excluded. We studied myelotoxicity data from medical records.

Main outcome measures: Percentage of Neutropenic Events defined as the percentage of episodes of febrile neutropenia and grade 3/4 neutropenia according to the Common Toxicity Criteria of the National Cancer Institute in its 2010 update, version 4.0.

Results: Observation phase: lasted 7 months, 28 patients of whom 43 % suffered neutropenic events (all hospitalized) were monitored. The findings were reported to Gynaecologic Oncologist and a protocol of use of pegfilgrastim was agreed. Intervention phase: lasted 16 months, monitoring was performed on 62 patients and 29.4 % had neutropenic events. The percentage of neutropenic events has been reduced from 43 % in the observation phase to a 29.4 % in the intervention phase (a 40.51 % reduction).

Conclusion: The implementation of a protocol for pegfilgrastim proper use has reduced the percentage of neutropenic events in patients with breast cancer treated with chemotherapy-epirubicin-cyclophosphamide followed by docetaxel.

Disclosure of interest: None declared.

HP-PC053: Cutaneous adverse drug reactions due to antiretroviral drugs: skin tests and impact on therapeutics

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Background and objective: The occurrence of cutaneous adverse drug reactions for HIV-positive patients treated with antiretroviral drugs (ARV) can be harmful to following care. Patch tests and skin prick tests (SPT) are compounded by the pharmacy department, and carried out in the dermatology department to determine the nature of the reaction and to optimize therapy.

The aim is to estimate the prevalence of true allergic reactions to ARV and the impact of tests' results on following care.

Design: An observational retrospective study has been conducted on every patient tested with at least one ARV between January 2007 (first compounded tests for the dermatology department) and June 2014. From health records and tests' prescriptions, we analysed types of skin reactions, involved medications, types of carried out tests, achieved results and treatment adjustments.

Results: In the dermatology department, 17 patients were explored because of skin reactions under ARV. Fourteen patients (7 rashes, 4 maculopapular eruptions, 3 undetermined hypersensitivity reactions) had patch tests and SPT for a suspected delayed hypersensitivity reaction. Three patients (2 urticaria, 1 rash) had SPT for a suspected immediate hypersensitivity reaction. Different ARV were tested (on average 4 per patient): ritonavir (n = 13), darunavir (n = 12), raltegravir (n = 5), efavirenz (n = 4), tenofovir (n = 4), atazanavir (n = 3), lamivudine (n = 2), emtricitabine (n = 2), nevirapine (n = 2), zidovudine (n = 1), atazanavir (n = 1), lopinavir (n = 1), and combinations emtricitabine/tenofovir (n = 14), abacavir/lamivudine (n = 4), emtricitabine/efavirenz/tenofovir (n = 4), lopinavir/ritonavir (n = 1). For 12 patients, skin tests were negative and oral provocation tests have thus been performed. The ARV was restarted without reaction, except for two patients for which skin rash reappeared without severity (ritonavir, darunavir). Five patients had a positive reaction to at least one test (2 to lamivudine, 1 to combination lamivudine/abacavir, 1 to raltegravir), leading to a contraindication. These skin tests allowed to adjust treatment in 35 % of cases and to confirm ability to use a suspected drug in 65 %.

Conclusion: This study demonstrates the interest of skin tests related to ARV cutaneous adverse reactions. Negative tests allow the reuse of a molecule of therapeutic interest. However, the oral form of these drugs limits us to compound intradermoreaction and may lead to false negative in cutaneous tests.

Disclosure of interest: None declared.

HP-PC054: Assessment of fluoroquinolones appropriate use in a French hospital centre

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Background and objective: Over-prescriptions of fluoroquinolones (FQ), broad-spectrum antibiotics, lead to intensive selection pressure and emergence of bacterial resistance. In our hospital centre, in 2014, FQ consumption reached 54.5 DDD (Defined Daily Dose) per 1000 days of hospitalization (DH) [interregional consumption from Coordination Centre of the Campain Against Nosocomial Infections (CCLIN Sud-Ouest) survey in 2013 in France: 54.2 DDD/1000DH]. In order to improve the appropriate use of antibiotics and to master their consumption, an evaluation of professional practices has been carried out to assess the prescriptions conformity to our local guidelines of antibiotic therapy.
Design: All the FQ prescriptions were gathered during 1-week prospective study conducted in our hospital in November 2014 (except those of Hospital at Home programme). Data were collected using CCLIN Sud-Ouest methodology and then analysed by the antibiotics medical specialist according to our local guidelines of antibiotic therapy and CCLIN Sud-Ouest grid.
Results: 42 prescriptions were gathered and analysed in 17 hospital departments. Prescribed FQ were ciprofloxacin (43 %), ofloxacin (29 %), levofloxacin (21 %) and norfloxacin (7 %). 60 % of prescriptions (n = 25) had their indications in accordance with local guidelines. When FQ were indicated, selected FQ molecules were quite well adapted to the indication, the type of germs and the antibiotic susceptibility (84 % conform prescriptions, n = 21), and chosen doses have also been appropriately adjusted (90 % conform doses, n = 19). However the duration of antibiotic therapy was often inappropriate (47 % non-conform prescriptions, n = 9).

Among conform prescriptions, intravenous route was used in 13 prescriptions, but only 7 were justified. Finally, only nine prescriptions were in compliance with all the criteria, so the non-conformity rate was of 79 %.
Conclusion: This audit reveals an inappropriate use of FQ. In order to improve the prescriptions relevance, different areas of work have to be implemented, such as: prescribing physicians training in the appropriate use of antibiotics and raising awareness campaign promoting the proper FQ use, changing the nominative antibiotics prescriptions (get better readability), giving justification for the FQ use, achievement of an informatics protocol by pathology. The impact of these new measures will be assessed during a second audit at the end of 2015.
Disclosure of interest: None declared.

HP-PC055: Optimization of pharmaceutical management of patients infected with loiasis

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Background and objective: Loiasis is a cutaneous parositosis caused by a nematode worm called loa loa and transmitted through repeated bites of deerflies (chrysops). It is a strictly African parasitosis. Rare cases observed in France are imported cases. In 2014, two cases of loiasis have been diagnosed in our care units during a short period. This work aims to describe the medicinal care of two patients infected with loiasis in our hospital and to optimize the management of future patients.
Design: The two Cameroonian patients were staying in France for a few years. Diagnosis was established on clinical and biological criteria. The chosen treatment was diethylcarbamazine (DEC), which kills the microfilariae and adult worms. This drug is supplied as 100 mg tablets. It must be started under hospital monitoring during the first week of treatment to avoid anaphylactic event caused by a massive filarial lysis. Initial recommended dosage is 3 mg/day. The following days, the dosage is doubled until a maintenance dose of 400 mg/day for 3 weeks, which can be managed by patients at home.
Results: This dose-escalade requires production of capsules by the hospital pharmacy. These capsules are equivalent to 1/32 of a 100 mg DEC tablet. A therapeutic protocol of loiasis initiation treatment has been created with a prescription software (USV2-CROSSWAY®). This protocol includes the 3.125 mg of DEC capsules (day 1–4), the 100 mg DEC tablets (day 5–8) and prednisone and cetirizine to avoid allergic reactions which can be induced by DEC. DEC is not available in community pharmacies. On the hospital discharge prescription, a note specifies that patients have to get their treatment (day 9–28) at the hospital pharmacy when they return home. For future distributions, the hospital pharmacy expected to dispense the DEC capsules in four separate sachets, identified with the day of treatment and the medication administration date.
Conclusion: Creation of a therapeutic protocol using a prescription software enabled to optimize the initiation of loiasis DEC-therapy through securing his prescription, his distribution and his administration. It was also beneficial for the patients' medicinal management when they leave the hospital.
Disclosure of interest: None declared.

HP-PC056: Ensuring continuity of therapeutic drugs in patients admitted at the emergency department

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Background and objective: In 2012, our pharmacy department developed the nominative dispensation of oral drugs for patients admitted in emergency department. With the exception of drugs which must be stopped when an iatrogenic event is suspected, usual patient chronic treatment is continued with the aim to ensure a continuum of care from city to hospital. Quite often, drugs prescribed in ambulatory care are not available in the hospital formulary of selected drugs: in such a situation a therapeutic equivalence is suggested to the clinician.
Design: "Equivalence forms" are designed for most commonly prescribed classes of compounds, updated at every change in the market and approved by the Drugs and Medical Devices Committee. Equivalences are proposed in accordance with Anatomic, Therapeutic and Chemical classification, with indications and with the pharmacokinetic of the unavailable drug, by taking into account existing patient's comorbidities.

Therapeutic equivalence is subsequently codified by Pharmaceutical Intervention (PI) according to the framework of French Society of Clinical Pharmacy (Standardization and exploitation of clinical pharmacy's activities, June 2004). Every PI concerning these actions is finally recorded in an Excel® table in order to memorize if the PI was accepted by the clinician or not.
Results: The study was conducted on 839 medical prescriptions of patients admitted in emergencies between 3rd November 2014 and 31st April 2015. The mean age of the patients was 81 years [35–101]. Of the 839 prescriptions screened, 49 % (407/839) resulted in at least one PI "non-compliance with the hospital formulary". 259 of the 407 PI dealt with 5 ATC classes. (a) 33 % of these PI concerned angiotensin II antagonists (ARAII): 72 % of outpatient treatments were not referenced in the hospital formulary. (b) 16 % benign prostatic

hypertrophy drugs: 46 % not referenced. (c) 6 % HMG Co-A reductase inhibitors (statin): 10 % not referenced. (d) 5 % angiotensin converting enzyme inhibitors: 12 % not referenced. (e) 4 % proton pump inhibitors: 3 % not referenced.

In total 97 % (251/259) of the PI concerning these five ATC classes were accepted by the physician. Two PI that weren't accepted involved a proposal of equivalence for one ARAII (reason: no oral treatment was administered) and one statin (reason: "rhabdomyolysis medical record" with an another unknown statin that would contraindicate the switch).

Conclusion: This work is part of the quality and continuity of care program of our hospital. The proposal of therapeutic equivalents by the pharmacist reduces the time spent by physicians and nurses. Hence, for the five ATC classes identified in this study, a switch to the available equivalent could be proposed automatically to the emergency department by the pharmacist. Literature and multidisciplinary meetings will enable us to choose the most appropriate equivalent in order to make the best decision.

Disclosure of interest: None declared.

HP-PC057: Evaluation of hematologic complications in patients treated linezolid

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Background and objective: To determine the proportion of hematologic complications in patients treated with linezolid. Identify risk factors associated with haematological toxicity of linezolid.

Setting and method: We evaluated linezolid treatments over 14 days duration between January 2007 and December 2012. Classified patients according to sex, age, duration of treatment and infectious focus was done. Thrombocytopenia considered $\times$ 103/μL values under 100. The criterion of anaemia was haemoglobin at baseline. Statistical analysis was performed using SPSS v 15 software, considering $p < 0.05$ as statistically significant.

Main outcome measures: A total of 200 patients received linezolid during 14 days. The mean treatment duration was 38 days. In 52 % of the cultures was isolated methicillin–resistant *Staphylococcus aureus*. The age and duration of treatment were related to the development of anaemia (30 % in patients >65 years and 40 % in treatment greater than 84 days).

Results: No variable was correlated with the onset of thrombocytopenia. The anaemia appeared in 17 %, thrombocytopenia in 7 %.

Conclusion: A high percentage of patients treated with linezolid present hematologic complications. The risk of anaemia increases with duration of treatment and is more common in elderly patients. Given the high rate of hematologic complications, any treatment with linezolid should be combined with regular analytical monitoring.

Disclosure of interest: None declared.

HP-PC059: Drug interactions between antiepileptic drugs: elaboration of a tool to optimize drug therapy

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Background and objective: Drug interactions between antiepileptic drugs (AEDs) represent a common clinical problem which has been compounded by the introduction of many new drugs in recent years. When two or more drugs are prescribed together, clinically important interactions can occur. The neurologists can be confronted with difficulties identifying interactions and anticipating the evolution of plasma concentrations during a change in treatment, so as not to destabilise the patient.

The objective of this work is to provide a practical tool to help physicians for patient management.

Setting and method: Literature review (PubMed database and French recommendations), design and validation of drug-interaction tool, before examining physicians satisfaction.

Main outcome measures: Selection in vivo and in vitro (if it was very relevant) studies for identify significant interactions. The medications were classed in a double-entry table where the grid allows identification of potential interactions. Red boxes inform of a significant clinical drug interaction. They are systematically associated with a number which refers to the description of the affected interaction. Green colour is used when there is no significant drug interaction.

Results: Twenty-four AEDs were reported. Thirty-one interaction types were identified in 114 red boxes. One hundred and sixty-two green boxes inform of lack ok significant clinical interaction. The tool has been tested with several patients.

Example: A red box inform of an interaction between lamotrigine and valproic acid. The number assigned to this box is linked with the mention "risk of increased lamotrigine toxicity, in particular serious skin lesions like Lyell syndrome. Moreover, increase of lamotrigine plasma concentration, because of his hepatic metabolism inhibition: necessary dose changes."

Neurologists are satisfied with this "user-friendly and fast" tool, adapted to a useful during medical consultations.

Conclusion: The propensity of antiepileptics to interact depends on their metabolic characteristics and action on drug metabolic enzymes. The use of this tool could lead to a better detection of drugs interactions between antiepileptic drugs and could provide help during medical consultations and patient's hospitalisation.

The clinical pharmacist and the neurologist have a key role in the patient management: awareness of these possible interactions is necessary to avoid epileptic attacks in individual patients and helps to reduce the incidence of antiepileptic side-effects. Careful monitoring of clinical response is recommended whenever a drug is added or removed from a patient's AED regimen.

Disclosure of interest: None declared.

HP-PC060: Human prothrombin complex in paediatrics: How to use it?

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Background and objective: In France, 1 % of the population (600,000 patients) are treated with oral anticoagulant Vitamin K Antagonist (VKA) including some 500–1000 children. A total of 17,000 hospitalizations per year are due to a haemorrhagic stroke during VKA therapy. In some cases, the over dosage of VKA requires a human prothrombin complex treatment (PPSB). The use of this medicine in paediatrics has limited data but there is no therapeutic alternative. The objective is to show the management of over dosage of VKA in paediatrics with the administration of PPSB.

Setting and method: We describe here the case of a 4-year old patient with VKA over dosage. The PPSB dose and administration data were from the drug database (Theriaque® CNHIM, Micromedex® solutions…), literature review and health professionals' expertise.
Results: The 4-year old patient was treated with VKA (warfarin 3 mg per day) because of a stent implantation for obstruction of intracardiac lateral tunnel Fontan pathways. She was admitted to the Hospital Robert Debré, AP-HP for a hematoma on his left leg. A compartment syndrome is suspected, requiring surgery. On arrival, the International Normalized Ratio (INR) is higher than 10 and prothrombin rate (TP) below 10 %. The VKA is stopped. A dose of 10 mg of vitamin K1 is administered in direct intravenous (IVD). The PPSB vials and reconstitution mode were presented by the pharmacists to the nurse. A PPSB drip (Confidex®) 820 IU (50 IU/kg/dose) and a maximum flow of 0.12 ml/kg/min is achieved. The INR is normalized in 3 h.
Conclusion: PPSB has been used off-label marketing authorization for this patient. The management of over dosage of VKA was the same as for adults. We are surprised to find so little data about PPSB in paediatrics. This work will be followed up by drafting a protocol on the use of PPSB in paediatrics.
Disclosure of interest: None declared.

HP-PC061: The activity evolution of an outpatient pharmaceutical care unit

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Background and objective: To analyse the evolution of healthcare activities and the economic impact of an Outpatient Pharmaceutical Care Unit (OPCU).
Design: Retrospective observational study from January 2008 to December 2014. Indicators: (1) activity: patients/year, dispensations/year, average dispensations/day; (2) pharmaceutical care: pharmaceutical care (PC) consultations, average reports of adherence to antiretroviral therapy (ART)/year, pharmacoeconomic reports/year, (3) consumption: annual spending, patient's expense and (4) human resources. Data collected from the APD-ATHOS® program.
Results: In 2008: 2099 patients were treated, and 15,237 dispensations were done versus 3899 patients treated and 44,021 dispensations done in 2014. In 2008, we developed a PC program in patients with hepatitis C and by informing doctors of adherence's degree to ART in HIV+ (average 722 reports/year), we improved this adherence. In 2011, after an Andalusian legislative change (resolution 403/10), oral cytostatic drugs and assisted reproductive hormones began to be dispensed in hospital pharmacies, implanting a new PC program in these patients. This year, it becomes clear a major increase in health care activity, from 431 to 1542 PC consultations in 2014 and tripling the average dispensations/day (63 vs. 175). In 2013, the PC consultation scheduled began in order to manage the care and outpatient dispensation, average 10,227 citations/year. Annual spending increased from 11,041.00 euros in 2008 to 18,275.309 in 2014, resulting in the largest increase in 2011 (15.5893 million vs. 11.915 million euros in 2010). However, patient's expense/year annually descends from 5260 to 4577 euros. The number of pharmacoeconomic reports tripled in recent years (5–16). Unit's staff is the same throughout this period, a hospital pharmacist and a nurse's aide.
Conclusion: A significant increase in health care activity is observed, increasing the number of patients, dispensations/year and PC consultations. Despite 65 % increase in annual spending, patient's expense has decreased over these years. Increased healthcare activity has not been proportional to the staff that works in the OPCU.
Disclosure of interest: None declared.

HP-PC062: Changes due antiretroviral treatment adverse reactions in HIV+

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Background and objective: To analyse changes in antiretroviral treatment (CT) due to adverse reactions (ADRs) in HIV+ patients and/or co-infected with HCV/B, as the reason for pharmaceutical care (PC) in a outpatient pharmaceutical care unit (OPCU).
Design: Retrospective, observational, analytical study. Period: January 2013–June 2015 (inclusive). The selection of patients was based program Prisma-Athos®. ADRs were recorded prospectively in the program from the medical report provided by the patients who come to pick antiretroviral (ART) drugs, identifying the drug responsible for the ADRs. Patients seen in pharmaceutical consultation, being informed of the new regimens, ADRs and interactions with the new ART treatment.
Results: 141 CT by ADRs in 128 patients were recorded. The most common ADRs that motivated CT were 21.3 % (30/141) altering the glomerular filtration rate (TDF), 19.9 % (38/141) dyslipidemia associated with IP (57.14 % with LPV/r) and 19.1 % (27/141) CNS disorders (EFV). 9.9 % (14/141) gastrointestinal disorders associated IP (50 % with LPV/r) and NNRTIs (75 % with ETR), 9.2 % (13/141) metabolic disorders (53.6 % for EFV), 5.7 % (8/141) for osteopenia (TDF), 3.6 % (5/141) for vitamin D deficiency (EFV). Four patients (2.8 %) for skin reaction (75 % ABC). 2.1 % (3/141) for fatigue and in two cases (1.4 %) for the occurrence of painful breast lumps related to DRV/r. The remaining 5 % (7/141) were by dysgeusia (ETR), tremor (ETR), hair loss (EFV), joint pain (3TC), liver failure (RAL) and insomnia (MRV), respectively. It is important to note that the majority of CT for dyslipidemia occurred at the beginning of the study period and were related to LPV/r. In all cases the pharmacist intervened informing the patient of the new drug and promoting adherence to it.
Conclusion: Most ADRs detected were described in the summary of the drugs, which allowed us to identify your appearance. Pharmacovigilance is important in these patients and detection in OPCU those drugs most often presented ADRs, as EFV, TDF and IPs probably due to the durability of these.
Disclosure of interest: None declared.

HP-PC063: Drug-induced hepatitis with propylthiouracil leading to an emergency liver transplantation

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Background and objective: Propylthiouracil (PTU) is a thiouracil-derived drug used to treat hyperthyroidism by decreasing the amount of thyroid hormone. The drug is generally well tolerated: rash, agranulocytosis and hepatitis were commonly reported and decrease after PTU stopped. We describe a patient who developed severe hepatocellular impairment while receiving PTU requiring a liver transplantation.
Setting and method: A 52 year-old French woman with Grave's disease was referred by her general practitioner to hospital for

abdominal pain and feeling of faintness. Disease was diagnosed in 2000 and PTU have been added to levothyroxine since 10 month. Life style study had shown neither alcohol abuse, travelling or liver toxic medication. The medication reconciliation didn't highlight any other home medication. Approximately 3 weeks prior to her emergency admission, the patient was prescribed an increase dose of PTU. Also phloroglucinol was given to treat her abdominal pain recently appeared.

Main outcome measures: liver disease evolution, clinical data and patient becoming.

Results: During hospitalisation, scanner and liver biopsy were performed and demonstrated hepatocellular insufficiency with cytolysis and cholestasis. Lab results showed: Quick test 18 %, ALAT 310U/l, ASAT 650U/l and PAL 540 U/l. Etiological investigation (Hepatitis A, B, C serology and auto immune aetiology) was performed and revealed to be negative. The patient was referred to the liver transplantation unit for a pre-transplant assessment and registered on the waiting list for decompensated cirrhosis. 5 days after entrance, orthotopic liver transplantation was realised and followed by a thyroidectomy few days later. Cytolytic hepatitis decreased 3 days after surgery and patient was returned home 20 days after transplantation. This case has been reported to the pharmacovigilance system—key role in the safety monitoring of medicines in the European Union (EU)—which designated the PTU-related hepatic complications as "highly probable".

Conclusion: A direct relationship between hepatotoxicity and propylthiouracil was revealed. The patient receiving PTU must require monitoring liver function. According to the risk of fulminant liver failure, the clinical pharmacist must increase awareness of a rare potential side effect of propylthiouracil.

Disclosure of interest: None declared.

HP-PC064: Factors influencing physician's use of pharmacist notes

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Background and objective: Since January 2013 clinical pharmacists have conducted medication history and review (pharmacist notes) in the Emergency Department at Bispebjerg Hospital (BBH). The aims of these services are to identify drug-related problems, increase patient safety and contribute to an overall safer medication process.

In order to ensure that the physician see and use the recommendations made by the pharmacist, the pharmacist aims to complete the pharmacist note before the physicians admission note. When possible the pharmacist note is delivered to the physician by hand.

Purpose: The purpose is to identify factors affecting the physician's use of pharmacist's notes.

Setting and method: Number of pharmacist notes in the period January 2014 to July 2015 was included. Two factors that might have affected the usage by the physicians were investigated.

For every note it was registered whether or not (1) the note was made before or after the physicians admission note, (2) the pharmacist delivered the information to the physician by hand.

Main outcome measures: The physician's usage was determined by monthly analysis of approximately 15 % of the produced pharmacist notes. The notes were compared with the physician's prescriptions of prescribing habit to establish the usage/application rate.

Results:

- 63 % of the pharmacist notes were used by the physician when the pharmacist note was made after the physicians admission note, and information was delivered to the physician by hand.
- 83 % of the pharmacist notes were used by the physician when the pharmacist note was made before the physicians admission note, and information was delivered to the physician by hand.
- 49 % of the pharmacist notes were used by the physician when the pharmacist note was made after the physicians admission note, and information was not delivered to the physician by hand.
- 63 % of the pharmacist notes were used by the physician when the pharmacist note was made before the physicians admission note, and information was not delivered to the physician by hand.

Conclusion: The physician's usage of pharmacist notes was fund to be at the highest level, when the pharmacist note was made before the physician's admission note, and when the information was delivered to the physician by hand.

Disclosure of interest: None declared.

HP-PC065: Evaluation of adherence to hospital guide lines (gl) on antibiotics for their better usage and best hospital care

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Background and objective: In a highly specialized hospital with a yearly means of 12,000 surgical cases, infections represent a major health issue on the surgical site. The scientific literature describes the procedures to reduce the odds of infections that go from cleaning the surgical room to antibiotic usage. The hospital multidisciplinary medical team works, since 2009, on producing GL procedures for an antibiotic prophylaxis prior surgery to reduce the odds of surgical infections from multi-drug resistant germs.

To evaluate the adherence to the GL suggestions on antibiotics usage.

Design: The hospital medical multidisciplinary team is composed by the Hospital manager, orthopaedics, anaesthesiologists, infectious disease specialists and a pharmacist. The GL considered of: lasting of the antibiotic protection against infections; first generation cephalosporin as first choice (gold standard cefazoline); prophylaxis dose infused in 30–60 min; Adjustment of the dosage based on body weight; re-dosing every 3 h of surgery or when bleeding exceeded 2 L. Before the introduction of such GL the number of days of antibiotic treatment were not defined, in 2010 was introduced the description of the antibiotic coverage for 24 h (four dosages plus one in the surgical room), in 2014 was promoted the single shot dosage. The trend of cefazoline use (main antibiotic used in non-oncological surgery) was taken as an indicator of antibiotic use to the established number of dosages to be administered. Other indicators were used from clinical recording such as: recording of antibiotic administration, other kinds of antibiotic used and number of doses administered during the surgery.

Results: In 2011 started the control of the adherence to the GL administration suggestions. Clinical recording not in line with the Hospital guide lines suggestions were 28.1 % in 2001, 22 % in 2012, 19 % in 2013 and 8.7 % in 2014. The daily dose was reduced by 44 % from 2010 to 2014.

Conclusion: A better use of antibiotics, as suggested from the GL, was observed during the period of observation from the clinical

recording and from the daily dose of cefazoline. The multidisciplinary medical team approach to the issue of surgery infections was important to delineate GL for antibiotic use and to understand the critical points in each area of surgical intervention.
Disclosure of interest: None declared.

HP-PC066: Assessment of the antifungal prophylaxis management strategy in acute leukaemia patients with chemotherapy induced neutropenia

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Background and objective: Children with haematological malignancies are at risk of fungal invasive infections due to chemotherapy induced neutropenia. The antifungal prophylaxis in neutropenic children colonized with candida species in digestive tract was oral amphotericin B or mycostatin, badly tolerated by young patients. A new strategy is currently tested using intravenous micafungin at prophylaxis dosing (1 mg/kg) when candida colonization in digestive, genital and ear, noise and throat areas is proven and when expected neutropenia exceed 15 days. Whatever the therapeutic strategy, the prophylactic treatment is switched for empirical antifungal (predominantly caspofungin or liposomal amphotericin B) if the patient becomes febrile. The aim of this study is to check that the new guidelines are correctly applied and to evaluate its efficiency based on the number of switches for an empirical treatment. Finally, given the high prices of these treatments, the cost of this new strategy was evaluated.
Design: We conducted a retrospective study focused on all children who received prophylactic micafungin between November 2014 and June 2015. For each patient, bacteriological and haematological data justifying the antifungal treatment were controlled. We also collected the duration of micafungin treatment, the reason for discontinuation of the treatment, the possible switch for an empirical treatment and the presence of a candidemia. The pharmacoeconomic study consisted on the comparison of the spending of antifungal drugs and more generally of anti-infectious drugs between the study period and the same period on the previous year.
Results: From November 2014 to June 2015, 27 patients were contaminated with candida spp on digestive, genital or Ear Noise and Throat areas. 24 patients received micafungin, in four patients treatment was stopped because of suspected systemic fungal infection and switched to caspofungin or liposomal amphotericin B, 2 had developed invasive candidiasis. Treatment successes in 18 patients. Since the implementation of the new guidelines, the general costs of antifungal drugs increased by 25 %. Among them, micafungin increased by 33 % while liposomal amphotericin B cost fells by 26 %. Surprisingly, the consumption of caspofungin increased by 69 % within the study period. However, the global cost of anti-infectious drugs was stable.
Conclusion: This study confirmed that the new therapeutic strategy is well applied. Micafungin is efficient to prevent candidemia in the majority of patients. The increase of the consumption of mycafugin was expected. The others antifungal agents are broad spectrum drugs and the evolutions of their consumption may have different explanations. However it is not only explained by an increase of invasive candidiasis. This new strategy of antifungal prophylaxis is a part of a general evolution of our practices and globally the cost of anti-infectious drugs remains stable.
Disclosure of interest: None declared.

HP-PC067: Annual evaluation of the impact of medication reconciliation led by clinical pharmacists in a rehabilitation and addictology centre

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Background and objective: Drug safety is one of the first concerns in transition of care. Since November 2013, clinical pharmacists were integrated in the wards of a rehabilitation and addictology center. The main activity was to perform Medication Reconciliation (MR) at patients' admission. Clinical pharmacists realized the Best Possible Medication History (BPMH) which was compared with the Admission Medication Order (AMO) in order to detect potential Unintended Medication Discrepancies (UMD). The aim of this study was to evaluate the impact of the MR performed by clinical pharmacist in a rehabilitation and addictology center.
Design: Data collection was performed between April 2014 to March 2015 in a 205-bed centre composed of five wards: Disease Nutrition and Diabetes unit (DND), Musculoskeletal Rehabilitation Unit (MRU), Neurological Rehabilitation Unit (NRU), Short Stay Addictology unit (SSA) and Care Suites and Addictology Rehabilitation (CSAR). All patients admitted to these wards and benefiting from a MR were included in the study. The UMD detected were analysed and their potential clinical impact was assessed.
Results: In this study, 1442 patients whose 48 % of women were included. They were aged of 56 ± 14 years old. They came from home (64 %), from other facilities (24 %) and from the same health facility (12 %). Over a year, 75 % of inpatients benefited from a MR (89 % in DND, 79 % for SSA, 76 % in CSAR, 68 % in RRL, 48 % in RNR). The BPMH was made from patient interview (83 %), call to community pharmacists (69 %) and medication order (58 %).

UMD were detected for 24 % of patients. Of the 563 UMD detected by the MR, there were 57 % of omissions, 13 % of overdoses, 13 % of under-doses, 8 % of medication errors, 8 % of scheduling errors. Finally, 87 % of UMD were corrected, 9 % were not corrected because they were documented, and 4 % were undocumented and not corrected by physicians. UMD mainly concerned medications prescribed for nervous system (23 %), cardiovascular system (22 %) and alimentary tract and metabolism (19 %). Of the 563 UMD, 69 % were minor errors (i.e. without potential harm to the patient), 29 % were significant errors (i.e. monitoring or intervention potentially required to preclude harm) and 2 % were major errors (i.e. causing potential harm).
Conclusion: Implementation of MR in a rehabilitation and addictology centre improved drug safety by intercepting many UMD. Most of UMD detected were corrected before any damage occurs to the patient. Health Information Technology could help to focus MR on patients at high-risk of adverse drug events.
Disclosure of interest: None declared.

HP-PC068: Impact in antimicrobial prescription of a communication strategy triggered by a prescription conditioning and notification system

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Background and objective: Resistance to antimicrobials is a complex problem that all hospitals face today. Antimicrobial use is the main factor driving resistance and antibiotic prescription benefits from being a team effort. The purpose of this study is to analyse changes in antimicrobial prescription in inpatients, after implementing a communication strategy triggered by e-mail notification.
Setting and method: We developed an electronic tool that allows for automatic prescription conditioning (choice of antimicrobial and duration of therapy), according to selected type of infection, as well as real time e-mail notification to infection control and antibiotics committee of all prescriptions of conditioned antimicrobials (including carbapenems and quinolones) and antibiotics that don't follow local guidelines. A program to analyse prescriptions outside local guidelines and to communicate with the prescriber was implemented in February 2015. E-mail notifications from March 2014 and March 2015, as well prescriber's response to intervention, were analysed.
Main outcome measures: Number e-mail notifications and number of interventions.
Results: Antimicrobials used in treatment of infection represented 88 % of all prescriptions in March 2014 and 89 % in March 2015. We observed a decline in the total number of e-mail notifications from 1374 in March 2014 to 1222 in March 2015. The majority of prescriptions was made in the Emergency Department (ED). There was a decline in March 2015, compared with March 2014, in e-mail notifications in the most frequent diagnosis: respiratory tract infections (RTI) (from 296 to 264) and urinary tract infection (from 161 to 115); but not with skin and soft tissue infections (from 162 to 167). The most frequent e-mail notification, was for levofloxacin in RTI and in uncomplicated cystitis. On the other hand, in cystitis associated to urinary catheterization, most e-mail notifications were for Ceftriaxone. The reasons to contact prescriber were: switch to another antibiotic (34 %), correct formulary filling (24 %), to stop antimicrobial therapy (20 %), to change treatment duration (5 %), to add another antimicrobial (4 %). There were 100 interventions in a total of 1222 prescriptions (12 %) and 41 of those led to a change in prescription.
Conclusion: Intervention after notification led to a decrease in antimicrobial prescription of conditioned antibiotics. Quinolones were the main antimicrobial class prescribed outside local guidelines, making this class a target for future focus. ED seems to be the most evident place to implement measures to promote rational antimicrobial use. The results from this start model will allow us to implement directed interventions in order to improve antimicrobial prescription in our hospital.
Disclosure of interest: None declared.

HP-PC069: Major bleeding events in elderly patients with atrial fibrillation and vitamin k antagonists

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Background and objective: Bleeding is one of the main concerns in patients undergoing oral anticoagulation therapy. The objective is to analyse the characteristics and main factors related to major bleeding episodes in elderly patients with atrial fibrillation (AF) being treated with vitamin K antagonists (VKA), hospitalized in a General Internal Medicine Unit.
Setting and method: Retrospective study that included patients over 75 years old, admitted to an Internal Medicine Unit for 6 months (June–December 2014). All of them had previously been diagnosed for AF and were receiving VKA (acenocoumarol) and had a major bleeding event during this period.
Main outcome measures: We analysed demographic data, comorbidity indexes (Charlson and Charlson-age comorbidity indexes), the risk of bleeding by the HASBLED index, polypharmacy, overdosage of acenocoumarol (INR > 3) at the time of the major bleeding episode and death.
Results: A total of 125 patients with AF were admitted to Unit during this period and 98 (78.4 %) of them were receiving acenocoumarol. 12 (12.24 %) had a major bleeding episode. Mean age was 81.4 ± 6.4 years and 6 were males (50.0 %). AF was classified as permanent in 12 (100 %). Seven patients (58.3 %) had a Charlson index ≥ 3 and mean Charlson-age index was 6.7 ± 1.7. The most commonly associated diseases were diabetes mellitus, hypertension and chronic heart failure. 4 (33.3 %) patients were following treatment with 3–4 oral-drugs plus acenocoumarol, and 8 (66.6 %) with 5 or more. All of them had CHADS-VASC index ≥ 3 (mean CHADS-VASC was 4.96 ± 1.48). Six patients (50.0 %) had ≥ 3 HASBLED index. The bleeding origins were as follows: upper gastrointestinal tract four patients (33.3 %), lower gastrointestinal tract 3 (25.0 %), intracranial 3 (25 %), muscular or subcutaneous 1 (8.3 %) and haemoptysis or epistaxis 1 (8.3 %). Six patients (50.0 %) had an INR > 3 at the time of the episode. Overall mortality during admission was 2 (16.6 %) and one patients (8.3 %) died as a direct result of bleeding (he presented intracranial bleeding).
Conclusion: Major bleeding episodes have a high incidence and mortality in elderly patients with AF and VKA. This complication may be influenced by excessive anticoagulation but also by other factors inherent in them (comorbidity, polypharmacy, etc.). Nevertheless, this population may need a careful INR and clinical control. We suggest that new oral anticoagulants may play an important role in elderly patients with AF and high risk of bleeding, as VKA can be associated with high complication rates due to pharmacological interactions and individual INR fluctuations.
Disclosure of interest: None declared.

HP-PC070: Traceability system of cancer drug administration. Pilot program

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Background and objective: Oncology clinical advances have resulted in an exponential increase in the volume of patients receiving cancer treatments and schemes managed complexity. This increase in healthcare activity requires monitoring of the therapeutic process.
The objective is to evaluate the implementation of pilot program: traceability of parenteral cancer drugs in the oncology outpatient.
Setting and method: Implementation of a traceability pilot program through a bar code scanner, including a triple checking: Registration of nurses with identification card, for the patient identification bracelet associated to treatment and administration order. The services involved are the Pharmacy (SF) and the Oncology Outpatient. The modus operandi is based on the use of PDA (bar code scanner) who first identified the nurse, second the patient and then the drug (in order of administration). Once the process, the PDA sends a message of right and wrong treatment detecting any errors in administration.
The oncology outpatient is connected with SF via WIFI by PDA. All process is recorded in the oncology program of Farmatools®. This program is where the PDA find the database to verify that each patient has been administered treatment correctly.

Once this process has finished, we analysed the number of treatments administered correctly and degree of acceptance of oncology outpatient.
Main outcome measures: acceptance of patients and nurses.
Results: The pilot program had a month-long, in this time, 688 patients were identified. A third of these patients was prescribed two or more intravenous mixtures. The number of patients identified by nurses gradually increased. From day 1 to day 30 in 314 patients, the administration of treatment was correct, regarding project monitoring from Oncology Outpatient was from 0 to 46 %. So we can say that the safe administration system of cytostatics, using PDAs has been highly accepted by both nurses and patients.
Conclusion: The chemotherapy treatments are often narrow therapeutic drugs and high toxicity, as a consequence any mistake can be potentially serious, both in the preparation and administration of the drug. Reading the bar code on monitoring the traceability of the medication is an effective measure that allows us to establish control among nursing–patient–drug-administration order.
Disclosure of interest: None declared.

HP-PC071: Canakinumab in cryopyrin-associated periodic syndromes (caps). A clinical case

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Background and objective: CAPS is a rare disease which variant is more severe CINCA/NOMID. Together with the major symptoms that characterized the syndrome, neurological, cutaneous and articular manifestations, others have been added, pre and perinatal symptoms, outbreaks of fever and biological abnormalities which reveal a persistent inflammatory background.

In this study we will observe the evolution of paediatric patient with low-dose of Canakinumab treatment.
Setting and method: In April 2014, in the pharmacy department we received the request to treat a patient with 5 years and 15 kg of weight with canakinumab. The patient is in good condition, with stable ocular involvement without notable symptoms. The patient had completed clinical trial recently with canakinumab. The doctor suggests administering 8 mg/kg/every 4 weeks. The doctor suggests treatment with canakinumab dose of 150 mg/month, and according to the patient's progress, gradually increase the dose.

From pharmacy decided to take the case in special situations medicines commission. The commission suggest treatment with stable doses of canakinumab, without increasing doses even though increase the weight of the patient, can only increase doses to the patient's progress.
Main outcome measures: Relapse to disease.
Results: From April 2014 until June 2015, the patient has increased his weight from 15 to 21.5 kg. The canakinumab has been administering 150 mg/month. The patient every 2 months, has clinical reviews and in this period has not presented any recurrence of his illness.
Conclusion: We can two conclusions from this study. First, to manage a stable dose canakinumab, it does not result in a worse outcome of the disease. The patient of treatment at a dose of 150 mg/every 4 weeks, was found stable for 1 year and 2 months. And secondly, there has been saving money, considering that the vial of canakinumab costs 10,500 €, if the patient increased his weight would have to gradually increase the dose, and be using more vials in each administration. Until now it remains with the administration of a vial every 4 weeks.
Disclosure of interest: None declared.

HP-PC072: Improving clinical practice in heart transplant recipients managed by a multidisciplinary heart transplant team with the support of mHealth

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Background and objective: Non-adherence to immunosuppressive medications generally ranges from 20 to 40 % and is associated with acute rejection episodes and graft loss.

We propose a new pharmaceutical care programme to improve medication adherence in heart transplant recipients. This programme is conducted by the clinical pharmacy service in cooperation with the multidisciplinary heart transplant team and supported by mobile health (*mHealth*).

The secondary objectives are first, to clinically validate a new *mHealth* application, and second, to evaluate drug-related problems and clinical events, practical barriers to adherence, patient quality of life and satisfaction, and reductions in healthcare costs with the new programme.
Setting and method: We are currently performing a single-centre, randomized study in heart transplant recipients at least 18 months post-transplant. We will need to include 136 patients to achieve an improvement of 25 % in adherence to immunosuppression treatment. These patients will be randomized to the intervention group using the pharmaceutical care programme supported by the mHealth application, or to the control group who will receive routine healthcare by the transplant team. All patients will be followed up for 12 months.

The intervention group will be managed by the transplant pharmacist based on information obtained at follow up visits every 3 months and from data recorded daily by the patients on an outpatient basis using the mHealth application. Data collected include treatment compliance, blood pressure, cardiac frequency, exercise, glucose level, diet, clinical symptoms, and new drugs or alternative therapy.

The aim of this follow-up programme is to detect non-adherence, analyse attitudes to therapy, identify drug-related problems, and detect clinical events in order to prioritise patients needing personalized pharmacotherapeutic interventions.
Main outcome measures: We will measure medication adherence using immunosuppressive blood levels and data from clinical interviews, validated adherence scales, dispensing medication rates and self-reported mHealth medication.

Using validated scales, we will measure stress, anxiety, depression, interpersonal support, use of the new technologies, and quality of life and satisfaction with the programme.
Results: This currently underway programme expects to improve medication adherence, patient engagement and informational and social support to heart transplant patients.

If the results are positive for the patient and the healthcare system, we plan to integrate this mHealth programme into daily pharmacy activities and adapt it for use in other chronic diseases as a way to improve pharmacy practice.
Conclusion: Evidence supporting the use of mHealth in pharmaceutical care is limited.

This study will analyse the potential of mHealth to improve healthcare and therapy management in real clinical practice in heart transplant patients.
Disclosure of interest: None declared.

HP-PC073: Admission medication reconciliation in emergency and geriatric departments

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Background and objective: Medication reconciliation is a multi-professional process to ensure continuity of the drug therapy for inpatients and outpatients during hospitalisation. The medication reconciliation requires a systematic review of all the medications a patient is taking known as the Best Possible Medication History (BPMH). BPMH is compared to admission medication order (AMO). The emergency admission and transfer to other cares units have been identified as a risk situation in the care pathway. So, our study was performed in the emergency and geriatric departments. The aim of this study is to evaluate the impact of medication reconciliation by assessing the decrease detected medication errors.
Design: We are included patients aged over 65 years old. The BPMH and AMO are collected on a medication reconciliation sheet within the first 24 h following the admission. For BPMH, the information is collected by patient or his family interview, by research in medical record and by General Practitioner (GP) or pharmacist interview. Intentional or unintentional discrepancies are notified.
Results: In 2011, a first study was conducted in emergency department. Nine patients have been included. The average age was 73 years old. The number of drugs prescribed was from 5 to 21. At least one discrepancy was observed for each patient. In 2014, a second study was conducted in emergency and geriatric departments. Ten patients has been included. The average age was 79 years old. The number of drugs prescribed was from 4 to 17. An unintentional discrepancy has been detected in a third of cases. The main unintentional discrepancies are omissions re-transcriptions (90 %) related to difficult interview or GP's prescription not present in the medical record. Then we detected errors of dosage units and a medication not found in database of computerized provider order entry. Antidiabetics, diuretics and antihypertensive drugs are concerned. The time required is 30–45 min per patient.
Conclusion: Medication reconciliation is an important step in the care pathway and to secure the drug supply chain. But it requires a lot of human resources. The establishment of a pharmaceutical file to hospital will improve and develop the medication reconciliation. This file will enable the development a better link between the community pharmacy and the hospital departments and, thus, allow easier access to the medication history of patients.
Disclosure of interest: None declared.

HP-PC074: Optimization of a pharmaceutical service to improve patient safety in an orthopaedic department

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Background and objective: Since 2013 clinical pharmacists have conducted medication histories and reviews (pharmacist notes) in the orthopaedic department, North Zealand hospital (NZH). Inclusion criteria are newly admitted patients using more than two drugs. The aim of the service is to identify drug-related problems (DRPs), increase medication reconciliation between the medicine the patient is admitted with and the medicine in the electronic medication system (EMS).

The objective is to determine if the pharmacy notes are used by the physicians. In addition to see if pharmacist interventions increase the acceptance rate.
Setting and method: Data is collected at two orthopaedic wards at NZH (capacity of 50 beds). Data consists of pharmacist notes conducted from November 2014 to May 2015. Pharmacist notes were compared with the patient record and EMS to identify if pharmacist notes were used by the physicians. The pharmacist notes were entered into a national drug related problems database (DRP-database) which is an electronic tool to document and standardize the documentation of DRP. Data were analysed by frequency distribution.

Additionally the pharmacists intervened according to the Model for Improvement in order to increase the accept rate. In March the pharmacists participated in a management meeting where the acceptance rate was discussed. From April focus was on oral delivery of the pharmacist notes to the physicians and from May the pharmacists participated in interdisciplinary meetings.
Main outcome measures: Acceptance rate.
Results: 632 DRPs and 558 discrepancies between the patients' actual medication and EMS at the hospital were identified on 427 patients. In average 41.4 % of the pharmaceutical interventions were accepted and 57.6 % of the discrepancies between patients' actual medication and the EMS were corrected by the physicians. In March the pharmacists were only present few days at the wards therefore data is omitted. Pharmacist interventions contributed to an increase in acceptance of DRP from 31 to 50 % and acceptance of discrepancies from 37 to 77 %.
Conclusion: In average 41.4 % of the pharmacist notes were used and 57.6 % of the discrepancies were accepted and corrected by the physicians. All interventions contributed to an increase in acceptance rate.
Disclosure of interest: None declared.

HP-PC075: Assessing the implementation of a strict control over carbapenems prescription in a teaching hospital

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Background and objective: The increasing use of carbapenems has led to the emergence of resistance to antimicrobial agents, more commonly referred to as carbapenemases. The recent guidelines recommend limiting their use. Indeed, Carbapenems should be restricted to infections caused by multidrug-resistant bacteria when there is no other alternative treatment option. The objective of our study is to establish a multidisciplinary framework for controlling carbapenems prescription.
Design: Since April 2014, carbapenem prescriptions are controlled by pharmacists in direct relationship with referring physicians.

The treatments are initially delivered for 3 days. Following this period, any case of infection must be documented since any renewal carbapenems prescription must receive the agreement from referring physicians. They also define the new treatment duration.

Thus, the agreement from both the referring physician and pharmacist is essential to continue the regimen with carbapenems. A

computerized follow-up is then performed, where information such as bacteria responsible for the infection, antibiotic sensibility testing, referring physician's agreement, and treatment duration are implemented.

Results: Between April 2014 and April 2015, 1104 infectious episodes were treated by carbapenems. Most cases took place in intensive care units with 50 % of prescriptions.

Among the carbapenem prescriptions, 48 % of treatments did not exceed 3 days, of which 50 % were due to referring physician intervention. Among the remaining 52 % of prescriptions that exceeded 3 days, 73 % were approved by referring physician, who defined the treatment duration. However, this means that despite a control dispensing system, in 27 % of cases treatments were continued, which shows the necessity to pursue this activity.

When infection was documented, the most common bacteria found were: *Klebsiella pneumoniae* ESBL (25 %), *Enterobacter cloacae* ESBL (15 %), *E. coli* ESBL (10 %) and *Pseudomonas aeruginosa* (10 %).

Conclusion: The implementation of a restrictive control measures over carbapenems prescription seems to be effective, since carbapenems consumption has decreased by 25 %. However such activity is time-consuming and can only work if both pharmacists and physicians continue to be involved.

Disclosure of interest: None declared.

HP-PC076: Analysis of clinical pharmacist's interventions in a geriatric unit of a university hospital

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Background and objective: The pharmaceutical analysis and the pharmaceutical validation of drug prescriptions are conducted daily in a geriatric unit by a clinical pharmacist since November 2013. The pharmaceutical interventions performed in the unit aim at securing and optimizing drug prescriptions. This work provides an analysis of pharmaceutical interventions performed in the geriatric unit of a university hospital by a clinical pharmacist.

Design: A pharmaceutical interventions extraction on 810 prescriptions was conducted between January 2, 2014 and February 26, 2015 (424 days) in the geriatric unit. Each pharmaceutical interventions is entered on the prescription software and is encoded according to the method for recording interventions developed by the French Society of Clinical Pharmacy. Pharmaceutical interventions made in the course of drug conciliation were excluded from the study.

Results: There is an increase in the pharmaceutical interventions by 330 % since the intervention of a clinical pharmacist. 333 procedures were performed in service versus 109 made on the same period before the setting up of clinical pharmacy. The top three drug classes were antibiotics, anticoagulants and cardiovascular drugs. They represented respectively 20.1 % (67/333), 15.6 % (52/333) and 10.2 % (34/333) of pharmaceutical interventions. Only 1.5 % (5/333) of interventions involved potentially inappropriate medications in the elderly. The main reasons of pharmaceutical interventions were in order of frequency: overdosage (81/333 being 24.3 %) underdosage (58/333 being 17.4 %), inappropriate administration or mode of administration (56/333 being 16.8 %), non-compliance with standards or physiological contraindications (54/333 being 16.2 %) and wrong drugs (44/333 being 13.2 %). Only 0.6 % (5/333) of pharmaceutical interventions were for therapeutic drug monitoring. The resolutions of the problems consisted of dose adjustments for 37.5 % of pharmaceutical interventions (125/333), drug discontinuation for 21.3 % of pharmaceutical interventions (71/333), changes in drugs for 18.6 % of pharmaceutical interventions (62/333) and optimizations of administration for 12 % of them (40/333). Finally, 2.4 % of pharmaceutical interventions (8/333) resulted in changes of mode of administration.

Conclusion: This work reveals an important activity of pharmaceutical analysis in the geriatric unit by the clinical pharmacist. The acceptance of pharmaceutical interventions helps optimize and secure the medicinal treatment of frail and multi-medicated elderly. Moreover, the discontinued treatments contribute to drug budget savings. This work will be soon presented to the medical team to improve prescribing practices.

Disclosure of interest: None declared.

HP-PC077: Implementation of medication reconciliation: an important step to secure admission orders

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Background and objective: Medication reconciliation (MR) has become a regulatory requirement for hospitals. A MR process has been implemented in eight acute care wards (310/947 beds) since December 2014. Best possible medication history (BPMH), evaluation of medication adherence and medication counselling were performed by pharmacy students under the supervision of skilled clinical pharmacists. The objective was to assess the feasibility of this activity and to define ways of improvement. We also analysed the influence of advanced age and number of medications on unintended medication discrepancies (UMDs).

Design: A 3-month quantitative and qualitative prospective survey was performed between January and March 2015. Inclusion criteria were to be conscious and over 18 years old. Data were collected regarding: time consumed, number of MR, reasons for patient's noninterview, number and type of UMDs, number and type of counsel given, medication adherence level (Morisky's questionnaire), type of sources used to conduce BPMH.

Results: 1498 patients were admitted and 568 MR were realized [38 % (min = 19 %; max = 74 %)]. Reasons for non MR (991) were: patient unable to be interviewed (277), length of stay <48 h (228), lack of time (191), unknown (138), no medication (75), MR already done (21). The mean number of sources was 2.48 and source types were: interview (568), hospitalisation report (338), general practitioner's orders (229), home medications brought (137), other ward prescription (23), pharmaceutical electronic record (11), anaesthesia record (8), community pharmacy (6). The mean time to perform a MR was 33 min (min = 1; max = 160). 477 MR were done within 72 h of patient's stay. 166 UMDs were identified: 100 omissions, 50 dose errors, 7 wrong medications, 4 additional drugs, 4 wrong administration plans and 1 wrong medication form. Prescribers corrected all UMDs. 531 patients answered to the Morisky's questionnaire and 480 of them declared to be adherent to their long-term medications. 72 medication advices were given to 44 patients: way of administration (38), drug monitoring (9), maximal doses (8), interactions (8), side effects (5), others (6). There was no significant difference between the percentage of patients with at least 1 UMD over and below 75 years (21.8 vs. 19.4 %). However, there was a significant difference between patients with at least 1 UMD and over and below 10 medications (27.5 vs. 18 %, $p < 0.01$).

Conclusion: The MR process can be lead by a tandem pharmacy student/clinical pharmacist. Patient's medication counselling and evaluation of adherence can be part of the MR process. In light of these results, some improvements can be achieved: first, to increase the number of MR we could mix proactive and retroactive MR

process. Furthermore, the accuracy of the BPMH could be improved by increasing the number of sources. Finally, the use of specific leaflet could quantitatively and qualitatively improve the medication counsels given.
Disclosure of interest: None declared.

HP-PC078: Computerized process of prescription and administration with the Image-Pharma® software: risk analysis by using FMEA method

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Background and objective: Computerization of the hospital drug circuit secures the different steps composing it and allows to fight against drug iatrogenesis. But, new medication errors occur due to complexity of used software and lack of formation of health professionals. That's why it's important to identify and analyse these errors thanks to an a priori risk analysis method. We choose to focus on prescription and administration steps in the Emergency department presenting high level of risk for patients. The purpose of our work is to list and quantify potential failures present at those steps in our software by applying a failure mode and effects analysis (FMEA) and finally propose improvement actions.
Design: The FMEA method consists in identifying potential failures of the system and defining their causes and consequences. Each listed dysfunction is rated on a scale of 1–5 according to three criteria: gravity (G), frequency of occurrence (F) and detectability (D). A criticality index (CI) is calculated: $G \times F \times D$. After prioritization of potential failures, actions can be initiated and monitored in order to reduce high risks.
Results: Among the eight main stages listed in computerized prescription, we identified 50 potential failures distributed mainly on the medication choice (42 %). Thirty-two of them (64 %) exceed the criticality limit defined at 27 and concern medication choice (44 %), posology prescription (16 %) and definition of administration period (19 %). About computerized administration, four stages were described and 21 potential failures found whose 12 (57 %) exceed $CI = 27$. These were concentrated in administration validation stage (67 %). After proposing improvement actions, the risk level decreased of 74 % for prescription and 79 % for administration.
Conclusion: With this work, we established a risk management plan focused including training and user awareness, and the establishment of help documents supporting the prescription and administration: posology adaptation in case of renal failure, reconstitution and administration of injectable drugs, etc. The need for improved ergonomics and the software design are two key areas to also consider. The FMEA is a time consuming method, but allows to carry out a quantitative study of risk during a multidisciplinary work. The dynamic enhancement has to be continued with the inclusion of pharmaceutical validation by pharmacists in clinical pharmacy.
Disclosure of interest: None declared.

HP-PC079: Computerized process of prescription and administration with the Image-Pharma® software: review and evaluation of risks thanks to experience feedback

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Background and objective: Computerization of the hospital drug circuit secures the different steps composing it and allows to fight against drug iatrogenesis. But, new medication errors appear due to complexity of used software and lack of formation of health professionals. That's why, it's important to identify and analyse these errors thanks to review and evaluation of risks. The purpose of our work is to list and quantify failures occurring during the prescription in order to finally propose improvement actions. The other aim of this study is to describe an interesting way to promote the daily activity of clinical pharmacy.
Design: We choose to focus on prescription since this step presents a high level of risk for patients. During 1 month, a pharmacy resident analysed the admission prescriptions for hospitalisation written by doctors of the Emergency department in our software Image-Pharma®. Medication errors were described by using validated coding grids extracted from the French Society of Clinical Pharmacy.
Results: Among the 194 hospitalisations in 1 month, 334 pharmaceutical interventions were proposed by the pharmaceutical team whose 126 (38 %) were accepted by prescribers with a delay of 1, 2 day. In those interventions, 105 (31 %) were linked to the software use. Errors categories were: omission prescription (58 %) (e.g. personal treatment not available in the hospital and brought by patients but dedicated box unchecked in Image-Pharma®), wrong dose (28 %) (e.g. unit error, unadapted dosage), wrong posology (6 %). Main causes are Image-Pharma®'s rigidity, not optimal setting software, misuse of prescribers: insufficient training, lack of interest and investment in the grip of computers.
Conclusion: With this work, we established a priorised risk management plan focused including training and user awareness, and the establishment of help documents supporting the prescription: posology adaptation in case of renal failure, reconstitution and administration of injectable drugs, etc. The need for improved ergonomics and the software design are two key areas to also consider. The dynamic enhancement has to be continued with the inclusion of pharmaceutical validation by pharmacists.
Disclosure of interest: None declared.

HP-PC080: Computerized process of prescription and administration with the Image-Pharma® software: risk analysis

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Background and objective: Computerization of the hospital drug circuit secures the different steps composing it and allows to fight against drug iatrogenesis. But, new medication errors occur due to complexity of used software and lack of formation of health professionals. That's why, it's important to identify and analyse these errors thanks to risk analysis methods. The purpose of our work is to list and quantify failures by combining complementary methods of a priori and a posteriori risk analysis. The final objective is to propose concrete solutions in order to reduce risks related to the software use and improve quality of medicinal care for patients.
Design: We choose to focus on prescription and administration steps in the Emergency department presenting high level of risk for patients. The a priori method selected is the failure mode and effects analysis (FMEA). A multidisciplinary team was composed including emergency doctors and nurses, pharmacists and a computer scientist. The a posteriori method consists in a review and evaluation of risks

by using an experience feedback based on computerized pharmaceutical interventions in Image-Pharma®.
Results: By applying FMEA, lots of risks were inventoried in the eight main stages defined in computerized prescription: 50 potential failures were listed, concentrated in medication choice (42 %), posology prescription (14 %), definition of administration period (12 %). During 1 month of experience feedback, 334 pharmaceutical interventions were proposed in Image-Pharma®, whose 105 (31 %) linked to the software utilisation (e.g. unit error, unadapted dosage, etc.). About the four stages described in computerized administration, 21 potential failures were possible and mainly found in administration validation stage (62 %) (e.g. not taking account by nurses of treatment discontinuation). Risk criticisty decreased with improvement actions: 74 % for the prescription and 79 % for the administration.
Conclusion: Combining complementary risk analysis methods permitted to build an exhaustive risk map. With this work, we established a priorised risk management plan focused including training and user awareness, and the establishment of help documents supporting the prescription and administration: posology adaptation in case of renal failure, reconstitution and administration of injectable drugs, etc. The need for improved ergonomics and the software design are two key areas to also consider. The dynamic enhancement has to be continued with the inclusion of pharmaceutical validation.
Disclosure of interest: None declared.

HP-PC081: Assessment of pharmaceutical analysis: from carrying out a regional audit to setting up a regional protocol

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Background and objective: The pharmaceutical analysis (PA) of prescriptions is an act being an integral part of clinical pharmacy. As well, the contract of safe use of medicines—signed by each health establishment and the regional health agency with the health insurance—aims a process of continuous improvement of the medication circuit and requires that health establishments evaluate their PA activity. In this context, a regional audit was conducted in 2010 and renewed in 2014, in order to identify trends by providing data on practices, see their evolution in 4 years, and identify the persistent difficulties.
Setting and method: An assessment grid has been developed by a working group and validated by a quality specialist. Besides typological information of the establishment, the number of beds with nominative dispensation and the number of beds benefiting from a PA, the survey includes 18 closed questions (answered by yes, no or partially) about the following themes: available IT (information technology) tools for PA, level of analysis and follow-up of pharmaceutical interventions.
Main outcome measures: Rate of beds with nominative dispensation; rate of beds benefiting from a PA; rate of positive answers to the different questions.
Results: In total, 44 health establishments contribute to the survey (to wit 15,243 beds). On the whole establishments, 25 % of beds are in nominative dispensation (66 % for establishments from 153 to 316 beds; 12 % for establishments from 316 to 2294 beds); 51 % of beds benefit from a PA (97 % for establishments less than 88 beds; 42 % for establishments more than 316 beds). A strong improvement is noted for some issues: quality improvement of PA by consideration of drug interaction in 82 % of establishments (35 % in 2010); better pharmacotherapeutic analysis (analysis of relevance of prescriptions, pharmacotherapeutic redundancy, dosage, drug interactions…) carried out in 59 % of establishments (20 % in 2010). These improvements are notably related to a rise of the usage of IT tools for PA (84 % of establishments in 2014; 45 % in 2010). However, some points need to be improve: targeting drugs and/or patients at risk when a better level of PA is not possible for all prescriptions (review of therapeutics of patients, access to the medical and biological records of patients) (30 % of establishments); qualitative and quantitative following-up of pharmaceutical interventions (18 % of establishments) and following-up of their clinical impact according to a rating scale (0 %); and to finish conciliation.
Conclusion: The compared results between 2010 and 2014 showed an important improvement of practices in health establishments thanks to the development of tools and thanks to an improvement policy, but difficulties remain. With the aim of reinforcing this improvement, a regional protocol of PA targeted on a "couple" "anticoagulants/elderly patients" is in progress in 2015.
Disclosure of interest: None declared.

HP-PC082: Audit of practices of crushing tablets in six care departments

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Background and objective: In 2013, health care teams were sensitized to the problems related to crushing tablets. A book with a colour code identifying the crushable medicines was made available, printed or in electronic format. Tablet-splitters and tablet-crushers, after trials in some departments, were also distributed.

Two years later, we conducted an audit to evaluate the practical application of the instructions given in the book, and the nurses' satisfaction with the tablet-crushers and tablet-splitters.
Design: Six departments were audited (three long-stay, two medicine, and one surgery department) during 2 days, so we could follow the nurses for six medication distributions in each.
Results: If the nurses always checked if the patient was able to swallow his medication, we noticed that half of the prescriptions didn't consider possible swallowing disorders.

When tablet needed to be crushed or split, the nurses of only three departments looked at the book to check if it was possible. In one of these, when they would see that the tablet could not be crushed or split, they still would crush it. So in 4 out of 6 services, tablets were often wrongly crushed, although all the nurses were able to tell why crushing a medicine could be dangerous.

In all departments, the nurses washed their hands before crushing or splitting the tablets. But they never washed the tablet-crusher between tablets, and they washed it between patients in only 2 departments out of 6. In four departments, they preferred to use a mortar rather than a tablet-crusher, and they crushed all the tablets at the same time instead of crushing one after the other.
Conclusion: After warning the teams (physicians and nurses) about all the risks, and explaining them that there is almost always an alternative (drinkable form, other molecule that can be crush…), we attached a book of crushable/cleavable medicines to all the care carts. A new evaluation will be done, as a part of an evaluation of professional practices.
Disclosure of interest: None declared.

HP-PC083: Tablet-splitters, tablet-crushers and book of crushable medicines: good tools for the nurses?

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Background and objective: In 2013, health care teams were sensitized to the dangers of crushing tablets. A book with a colour code identifying the crushable medicines was created, available printed or in electronic format. Tablet-splitters and tablet-crushers, first tried in some services, were also distributed.

Two years later, we wanted to evaluate the frequency of use of the book, and the satisfaction of the nurses regarding the tablet crushers and splitters.

Design: 50 surveys were sent to all the drug referent nurses, to know their practice about crushing tablets.

Results: 45 surveys could be analysed, one department didn't answer and 4 said they were not affected.

41 out of 45 knew the printed book but only 16 knew the electronic book.

In the medium and long-stay departments, 20 % of the nurses used the book more than 10 times in a year, 13 % 5–10 times in a year, and 67 % less than five times. Considering that patients stayed for a long time with little change in their prescription, it was a relatively good frequency of use of the book. In the short-stay departments, it was much worse: 34 % never used the book, 38 % less than five times, 7 % 5–10 times, and 21 % more than 10 times.

64 % of the nurses used the tablet-splitters but 21 % of them said it was not essential because there is a divisibility cross-bar on the tablets.

78 % of the nurses needed the tablet-crusher, but 59 % would like to have a tool that requires less strength in the hands.

It appeared that physicians rarely consider the swallowing disorders of their patient when they prescribed a medicine.

Conclusion: The book is a good tool but we could improve its accessibility and use by attaching one to all the care carts. We completed it by adding a "divisibility" column. We re-educated the health care teams about the effects of crushing tablets, and warned the physicians about swallowing disorders.

Disclosure of interest: None declared.

HP-PC084: Pipettes and measuring spoons for drinkable medicines: are they used and stored properly?

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Background and objective: In November 2013, the French National Agency for Medicines and Health Products Safety (ANSM) launched a campaign to reduce the risks of errors due to delivery devices of orally ingested liquid drug products, called "Don't mix up the cups". Posters were sent to all the nursing managers. A year and a half later, we decided to evaluate the practices regarding the use of delivery devices in two departments which often use liquid drugs: the paediatric and the geriatric departments.

Design: A survey was sent to the nurses in the paediatric and the geriatric departments, to know how the delivery devices were used, washed and stored.

Results: 16 surveys in total were returned back to the Pharmacy.

Only four nurses out of 16 stored the delivery device in the medication box. The others preferred storing all the delivery devices together in a drawer.

At the end of the treatment, 12 nurses kept the delivery device in case it could be used for another patient.

Two nurses said they didn't always use the delivery device provided with the medication, they often used syringes they found more suitable. When the delivery device was a spoon, no one used another spoon.

For washing, 4 used only water, 6 used water and soap, 2 used water and Surfanios® and 4 put the delivery device in the dishwasher.

Only one had heard of the campaign of the ANSM.

Conclusion: This investigation showed us that the risks of misuse of delivery devices of orally ingested liquid drugs is not well known. The storage, in particular, is a source of error. We warned the teams and wrote a process to standardize the procedures and reduce the risk of error: the delivery device must be stored in the medication box, labelled with the name of the patient. When the treatment is finished, the delivery device must be thrown away. As for washing, we recommend the use of water only.

Disclosure of interest: None declared.

HP-PC085: Drugs used in metabolic disorders and vitamin therapy in a pediatric intensive care unit: a work of standardization

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Background and objective: The intensive care unit (ICU) at Robert-Debré Hospital, AP-HP, admits many patients for acute decompensation of metabolic diseases. The neurology department of this hospital is the national reference centre for the diagnosis and treatment of these diseases. The prognosis, sometimes not well known, depends on the quickness and effectiveness of treatment. The aim of this work is to create a simple and accessible tool, gathering the several drugs commonly used in metabolic disorders and their specific features.

Setting and method: A practice gathering was conducted between pharmacists, paediatric neurologists and ICU doctors. Drugs information was collected via several databases: Thériaque (CNHIM), Micromedex (Thomson Healthcare), Pediatric Dosage Handbook (Lexicomp), Stabilis v4.0. Treatment recommendations were taken from scientific literature, including pubmed analysis, Vademecum Metabolicum, Orphanet Journal of Rare Diseases, Reanimation.

Results: A total of 16 drugs were selected (such as carbamyl Glutamate, riboflavin for example) and presented in a table. The items are: International Nonproprietary Name (INN), trade name, presentation, dosage, way of use and remarks. The possible pharmacy-made preparations are also presented. We systematically mentioned if the intravenous forms could be used orally. The "remarks" item contains important dilution data (including solvent incompatibilities) and preservation as well as the drug status (especially the Temporary Authorization for Use for non marketed drugs). This item also mentions the emergency need of the drug. In fact, when selecting these products, in correlation with scientific references and doctors practice, it was agreed that 8 of them (arginine hydrochloride, sodium benzoate, for example) were extremely important in the management of critical cases and have to be delivered immediately. They are now kept in constant stock at the pharmacy.

Conclusion: This multidisciplinary tool permits to standardize practices and ensure optimum responsiveness, which is particularly

needed in the treatment of metabolic disorders. After a consensual validation, this table will be provided to prescribers, distributed in the concerned departments and made available on the hospital intranet site. As it is approved by a reference centre for these diseases its diffusion to other hospitals has to be considered.
Disclosure of interest: None declared.

HP-PC087: Mepacrine shortage for a giardiase infection resistant to previous treatments: a case-report

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Background and objective: We describe the case of a patient highly resistant to treatment for a chronic giardiasis diagnosed in 2012. He was previously treated by four previous lines including metronidazole, metronidazole + albendazole, albendazole followed by paromomycin and had still symptoms (dysenteric syndrome and vomiting). *Giardia intestinalis* parasites were found in stools. A recent meta-analysis considers the use of mepacrine, for which no Active Pharmaceutical Ingredient (API) sourcing and manufactured drug is available on the European market. The main difficulty is to provide mepacrine API and to compound it. This work aims to describe this issue.
Setting and method: The study has been performed in a university hospital. API sources were searched among usual hospital and industry API providers. French Health Authority (ANSM) and the parasitology society were questioned. Analytical techniques from international Monographs and bibliography were searched concomitantly to permit the quality control of supplied API. Finally, the formulation was studied to compound capsules.
Main outcome measures: Number of API sources and easiness of supply; therapy efficacy and tolerance.
Results: Three hospital API providers and two industrial sourcing have been contacted. Only one manufacturer (Vifor, India) was identified and API was imported by Nexscape (UK). No authorization is required by ANSM to import API in the frame of drug compounding. The API has been provided in a sealed bag with a certificate of analysis. Quality controls, performed according to British Pharmacopeia 1980 have been conformed to expected values. Supplemental analyses (e.g. thin-layer chromatography, Nuclear Magnetic Resonance and Infrared spectroscopy) have been carried out. These tests conform to expected values from literature. After, capsules have been compounded with microcrystalline cellulose by the hospital pharmacy, and were administered to the hospitalized patient at 100 mg three times a day, for 10 days, associated with albendazole. Parasites have disappeared after 1 week in stools, and still absent after 3 months. No serious adverse event has been reported. Refractory transit troubles have been reported.
Conclusion: This case highlights the difficulties to obtain API in last alternative when no drug is marketed. Full quality controls and compounding activity remains indispensable when no therapeutic alternative is available.
Disclosure of interest: None declared.

HP-PC088: Repackaging of capecitabine per treatment cycle as a strategy to minimize errors in drug administration cancer patient

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Background and objective: To minimize errors that occur in the administration of capecitabine in cancer patients. These are fairly frequent because the cycle of capecitabine consists of 14 days of treatment and 7 days of rest. Besides, cancer patients usually take many drugs at the same time and are featured by an advanced age. Thus, mistakes in capecitabine administration are frequent and cause major adverse effects and even hospital admissions.
Setting and method: Treatment with capecitabine for 14 days of treatment and 7 days of rest is used in patients with colorectal cancer and metastatic breast cancer. Containers capecitabine 500 mg are 120 tablets and 300 and 150 mg containers are 60 tablets, a number that exceeds that needed for a regular treatment. The repackaging is done in the pre-chamber preparation intravenous chemotherapy by a pharmacy technician protected by gloves, mask, cap and gown suitable for this purpose, according to the standard operating procedure handling cytostatics. Containers shall be properly repackaged well identified with the drug name, dose, take daily tablets, lot number and expiration. It repackages once a week, having a minimum stocking to never miss repackaged capecitabine. The accurate number of tablets are dispensed to the patient and he also received a piece of advice regarding on how to behave in case of vomit or any other kind of incidence.
Main outcome measures: The variables studied were dose and the number of tablets per carton.
Results: Capecitabine 500, 300 and 150 mg are repackaged in quantities corresponding to the most common dose used by patients: capecitabine 500 mg packs of 56 tablets are repackaged for dosage of 2000 mg/day, 70 tablets for dosage of 2500 mg/day, 84 tablets for dosage of 3000 mg/day, 98 tablets for dosage of 3500 mg/day and 112 tablets for dosage of 4000 mg/day (dose of capecitabine to day always split into two doses). Capecitabine 300 mg packs of 14 tablets are repackaged for dosage of 300 mg/day and 28 tablets for dosage of 600 mg/day. Capecitabine 150 mg packs are of 14 tablets are repackaged for dosage of 150 mg/day and 28 tablets for dosage of 300 mg/day (150 mg in 2 doses if desired instead of a 300 mg). Repackaged containers capecitabine 150 and 300 mg are complementary to the packaging repackaged 500 mg when dose to the patient cannot be dosed with the 500 mg tablets.
Conclusion: Capecitabine repackaging and accurate dosaging provided the exact treatment and significantly reduced errors in the administration. Besides, this alternative had a great acceptance among patients because it reduced the waiting time in the dispensation thanks to a larger stock of repackaged capecitabine.
Disclosure of interest: None declared.

HP-PC089: Clinical decision supports based on data analysis

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Background and objective: Iatrogenic events are one of the most important cause of mortality, among which the rate of preventable medication errors is alarming.

Computerization of drug management allows the development of systems that can detect and reduce the probability of situations that might lead to ADE (Adverse Drug Events).

The aim of this study is to detect and prevent injuries from ADE. Therefore, we have developed a clinical decision support system (CDSS) that alerts pharmacists about potential ADE during the review of medication orders.

Design: We targeted three associations of drug and clinical parameters that might lead to ADEs. We studied the frequencies of these iatrogenic situations and set up the CDSS. The three identified associations were: hypoglycemia and sulfonylurea agent, bradycardia and beta blockers, hyponatremia and carbamazepin or oxcarbazepin. Finally, in order to evaluate the relevance of the CDSS, the pharmaceutical interventions performed before and after its introduction were analysed.
Results: Over 2 years, we found 16.53 % of hypoglycaemias for 3958 administrations of sulfonylurea agents. During 1 year, there were 9.56 % of bradycardias for 32,589 administrations of beta-blockers that were indicated for the treatment of heart failure (bisoprolol, nebivolol and metoprolol). Similarly, there were 22.12 % of bradycardias for 8709 administrations of other beta-blockers. Bradycardia associated with bisoprolol, nebivolol and metoprolol decreased by 8.6 % after the implementation of the developed system. Finally, the association between hyponatremia and carbamazepin or oxcarbazepin was not selective enough and additional parameters such as haematocrit and protidemia should be included. Therefore we have not been able to set up the alert yet.
Conclusion: The frequency of these iatrogenic situations and the increase of pharmacist interventions allowed by the set up of these alerts confirm the relevance of the targeted situations and encourage us to set up new alerts. Extra data analysis should be performed in order to determine the link between the bradycardia rate decrease and the CDSS. This CDSS provides intelligently filtered information (presented at appropriate times) that can enhance health care. It allows us to precisely detect iatrogenic situations and offers promising prospects in various fields such as epidemiology.
Disclosure of interest: None declared.

HP-PC090: Pharmaceutical interventions: to secure drug therapy in Paediatric Departments

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Background and objective: Valenciennes Hospital in France is an 1800 beds facility, half the beds being medicine, surgery and obstetrics beds.

The Pharmacy Department is working on securing the drug therapy of high risk patients, especially in Paediatric (PD) and Paediatric Surgery Department (PSD). For PD, actions have been organized: securing of storage and drugs delivery, creation of quick orders. To increase the level of securing, we have implemented pharmaceutical analysis in these wards. However, two medication errors related to paracetamol overdose occurred in PSD despite pharmaceutical interventions (PI). So, we listed PI to evaluate their pertinence and identify key areas for improvement.
Design: From the electronic patient record, we retrieved PI thanks to a query working on an 11-month period. We focused on several criteria (type of problem, therapeutic class, future of the PI and criticality of the drug related problem (DRP)) to identify recurrent problems.
Results: 110 PI in PD and 85 PI in PSD were retrieved with overdose problems (34.5 % in PD; 17.6 % in PSD) and duplicate prescription problems (25.5 % in PD; 57.6 % in PSD). 43.6 % of PI in PD and 69.4 % in PSD involved analgesics, mostly non-opioid analgesics. In 76.4 % of cases in PD and in 70.6 % in PSD, there was no change in the prescription by the physician. The level of criticality of DRP was categorized as high (10.9 % in PD; 15.3 % in PSD), medium (41.8 % in PD; 44.7 % in PSD) or low (47.3 % in PD; 40 % in PSD) by the pharmacist. In PD, the leading cause of overdose was the prescription of paracetamol every 4 h exceeding the recommended daily dose. In PSD, problems with computerized prescription were identified: switch from intravenous to oral route for paracetamol were responsible of the majority of duplicate prescriptions.
Conclusion: So, several areas for improvement are possible: to create paracetamol prescribing order sentences based on weight, to renew physicians training on computerized order entry and raise their awareness on pharmaceutical interventions and harmonize pharmacist's practices on the criticality assessment. These actions aim to improve communication between Pharmacy Department and PD and PSD, to secure prescriptions of paracetamol and decrease the risk of medication error.
Disclosure of interest: None declared.

HP-PC091: Evaluation of physician's satisfaction towards the clinical pharmacy in a French regional hospital

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Background and objective: In our hospital a clinical pharmacy has been progressively developed since 2012 in order to optimise the management of patients' medications. Many activities were established including the systematic analysis of all medical prescriptions and the multidisciplinary analysis of prescriptions of elderly patients. Many studies have shown the benefits of the clinical pharmacy, especially the reduction of the iatrogenic risk of medications. Few studies however have analysed the perceptions of physicians towards the clinical pharmacy in France [1]. The purpose of this study is to evaluate physicians' satisfaction towards the clinical pharmacy in our hospital.
Setting and method: A questionnaire was developed to evaluate the physicians' satisfaction. It consisted of 3 open questions and 18 closed Likert-scale questions examining satisfaction in (a) clinical reasoning, (competency of clinical pharmacists, pertinence of communications), (b) logistics, (c) professional relations (reactivity, availability, communication). Data collection took place over a 1 month period in 2015. A resident in Public Health administered the questionnaires to the physicians during a face to face interview.
Main outcome measures: Using linear interpolation, values between 0 and 10 were assigned to each closed question response. 0 representing not at all satisfied, 10 representing completely satisfied. All the scores for a given question were then averaged. The scores for the questions from each of the above three sections (a–c) were then averaged resulting in an overall average score for each of the above three sections.
Results: All services where the clinical pharmacy was in operation were evaluated. This included 10 medical specialities and four surgical specialities. Of the 78 physicians belonging to these specialities, 62 replied (79 % response rate), this included 37 % residents (n = 23), 19 % senior residents (n = 12) and 44 % MDs (n = 27). Satisfaction levels were high in the following categories (a) clinical reasoning, 7.9/10, (b) logistics 8.0/10 and (c) professional relations 8.5/10. 94 % of the physicians were satisfied with the multidisciplinary analysis of the prescriptions for elderly patients. The analysis of the open questions showed a considerable demand for

further development of the clinical pharmacy, most notably increased presence in clinical departments.
Conclusion: This study shows the pertinence and acceptance of the clinical pharmacy amongst physicians. The results showed a very positive attitude towards the clinical pharmacy and high levels of general satisfaction. As the clinical pharmacy evolves and develops, it would be important to re-evaluate the satisfaction of physicians in order to ensure developments are pertinent and high satisfaction levels are maintained.
Reference

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Disclosure of interest: None declared.

HP-PC092: Therapeutic strategy for biotherapies in inflammatory bowel disease (IBD)

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Background and objective: Anti-tumor necrosis factor α (TNF) have revolutionized the treatment of IBD. Due to the emergence of new active biotherapies in these field, we have developed, within the drug committee of our university hospital, a care strategy for patients who have to be treated by biotherapies. The aim of this work is to draw up an inventory of biotherapies used in IBD indicating their place in the therapeutic strategy.
Design: A decision tree was developed according to the profile of patients and previous treatments.
Results: (a) In case of resistance to "classical", treatment with anti-TNFα are prescribed to usual doses. There are infliximab, adalimumab, and golimumab. (b) To increase its effectiveness, Infliximab is often associated with azathioprine in case of bad factors threatening. (c) In case of partial response, treatment failure or lack of response, optimize anti-TNFα treatment is performed by increasing the anti-TNFα doses and/or bring cures forward. It is possible to dose the residual concentrations of anti-TNFα order to adjust administration schemes. Thus, infliximab can be used at doses up to 10 mg/kg every 4–6 weeks. (d) In the absence of response, an anti-TNFα change is considered, motivated or not by the presence of anti-TNFα autoantibodies, whose dosage is possible. (e) In case of anti-TNFα treatment failure, vedolizumab, anti-α4β7 integrin antibody, is used in ulcerative colitis (currently 22 patients treated in our hospital). It is administered intravenously at 300 mg every 8 weeks. In Crohn disease, vedolizumab (currently 13 patients treated) or ustekinumab, anti-IL12 and IL23 antibody, can be used. (f) Ustekinumab is preferably used for patients with severe disease (currently 15 patients treated). The dosage is 90 mg subcutaneous at week 0, w2, w4 and every 8 weeks. The cost of these new biological therapies is sometimes higher than anti-TNFα [more than 20,000 euros per year per patient for vedolizumab and ustekinumab versus 11,000 euros per year per patient (60 kg) for infliximab] but their efficiency improves the care of patient with anti-TNFα failure before surgery.
Conclusion: Thanks to the emergence of new biotherapies, the care of patients IBD will be modified and optimized during the current year. A new tree decision will be proposed.
Disclosure of interest: None declared.

HP-PC093: Implementation of medication reconciliation and medication review services conducted by pharmacist in hospitalized COPD patients

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Background and objective: The present study was undertaken in order to illustrate the implementation of medication reconciliation service conducted by a pharmacist and retrospectively drive of medication review to detect possible drug-related problems (DRPs) in hospitalized COPD patients.
Setting and method: This study was conducted in internal medicine ward between 1 April and 1 July 2015. COPD patients hospitalized with any reason were eligible if they were 18 years and over, regularly used at least one medication at home. Potentially inappropriate medications (PIM) according to Beers Criteria 2012 and Pharmaceutical Care Network Europe (PCNE) DRPs were also investigated. Utilization of high-risk medications has been investigated according to ISMP (Institute for Safe Medication Practices).
Main outcome measures: Potentially inappropriate medications (PIM) according to Beers Criteria 2012 and Pharmaceutical Care Network Europe (PCNE) DRPs, high-risk medications according to ISMP (Institute for Safe Medication Practices).
Results: A total of 75 patients (mean age 75.14 ± 10.00 years old; 47 male) included in the study. 41.3 % of them are smokers. When evaluating appropriateness of dosage adjustments in COPD patients, it was determined that although 30 % of the patients had 30–49 ml/min GFR and 24.3 % of them had 0–29 ml/min GFR, the required dose adjustments have not been assessed in these patients. The mean of drugs used at home was 5.98 ± 2.33 (2–11), however, the mean of the drugs used at the hospital was 12.08 ± 3.75 (4–20). Of them, 87.93 % was exposed to polypharmacy. PIM was found in 57.3 % of patients. Utilization of high-risk medication was observed in 92 % of patients and the most commonly used high-risk medications were low-molecular-weight-heparin and parenteral nutrition preparations. Serious drug–drug interactions were determined in 46.6 % of them. A total of 288 DRPs among 75 patients were identified. The doctor acceptance rate of the clinical pharmacist's recommendation towards to DRPs was calculated as 87.10 %.
Conclusion: As a conclusion, it was found that pharmacists could contribute reducing DRPs and utilization of PIMs in hospitalized COPD patients with pharmacy services (such as medication reconciliation, medication review). These positive effects could be more clinically essential if the collaboration of pharmacist and medical teams is available.
Disclosure of interest: None declared.

HP-PC094: Management of oral problems associated with radiochemotherapy in patients with head and neck cancer

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Background and objective: Carcinomas of the head and neck (HNC) are a heterogeneous group of neoplasms, located in the upper aerodigestive tract. HNC patients undergoing high-dose radiotherapy over large areas including oral cavity, maxilla, mandible and salivary

glands. Radiotherapy is effective against tumors with high rate of replication but affects fast renewing cells and is not without undesirable reactions. The aim of the study is to present the oral problems associated with treatment of HNC and the importance of collaboration of various professionals involved.
Design: A literature searching was performed until April 2015 in different databases: Embase, Cochrane Library and PubMed-Medline. The descriptors used were: Systematic [sb] AND (head and neck cancer) AND adverse reactions and radiotherapy and chemotherapy.
Results: The literature shows a survival rate maintained despite diagnostic and therapeutic advances, due to the many complications associated with treatment, Turner et al. (2013). As described by Rahman et al. (2013), the most common adverse effects occurring in the oral cavity are classified as: Immediate: mucositis and xerostomia glossodynia. In the medium term: bacterial, fungal and viral infections. Dysphagia and soft tissue necrosis. Long term: osteoradionecrosis of jaws and dental and skeletal alterations. The systematic review conducted by Nabil and Samman (2011), exposes an incidence of osteoradionecrosis after tooth extractions in patients previously treated with radiotherapy of 7 %. Management of patients on radiochemotherapy: pre-treatment phase, remove all active oral disease to prevent future complications. Starting treatment, avoid invasive procedures being primarily palliative, analgesic, anti-inflammatory and antibiotic. Once treatment is completed, a comprehensive monitoring, will identify possible recurrences early. It is essential to avoid administering xerostomizing drugs responsible for the appearance of rampant caries, which may cause extractions, with the risk of osteoradionecrosis, Martinez et al. (2013).
Conclusion: Patients with HNC, exhibit a high susceptibility to develop oral complications. The therapeutic approach should be multidisciplinary, individualized, being of vital importance that health professionals involved in the prescription, validation, preparation and administration of treatments, identify the problems that can result from cytotoxic therapy, ensuring an adequate response to treatment, which will improve the overall health and quality of life in this population.
Disclosure of interest: None declared.

HP-PC095: Compliance with guidelines on antibiotic prophylaxis and treatment in acute appendicitis at paediatric ages

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Background and objective: The lack of efficacy of antimicrobial therapy has increased appendicitis morbidity so we decided to provide up-dated guidelines of the appendicular disease at paediatric ages.
The objective of this study is to describe new guidelines, to assess compliance of paediatrics surgeons in antibiotic prophylaxis and treatment after implementation of these new guidelines, to establish if our infectious morbidity rate has improved and also if early discharge has been possible.
Setting and method: In 2015 there were reviewed and implemented new guidelines about prophylaxis and treatment antibiotic in appendicitis surgery in paediatrics. Retrospective review of medical records were obtained of all patients undergoing appendicitis surgery from two different years [2014 as Historic cohort (HC) and 2015 as current cohort (CC)].
Main outcome measures: Number of medical history, date and type of surgical procedure, recommended surgical prophylaxis applied, if prophylaxis received agreed with the recommendations of the protocol (dose, duration and timing) and outcomes in terms of discharge and readmission.
Results: There were analysed a total of 45 patients (22 in 2014, 23 in 2015). There were no differences among cohorts in terms of population (54 vs. 56 % boys and a mean of 7.6 $\pm$ 3.17 years old), interval to intervention, staff of surgeons or number of complicated appendicitis 64 % (HC) versus 61 % (CC) ($p = 0.24$). The use of surgical procedure was different: laparoscopic 68 % (HC) versus 26 % (CC) ($p = 0.007$). The choice of antibiotic was consistent with the guidelines in 87 % (2015) in terms of antibiotic election, dosage and duration (4.5 $\pm$ 1.4 days). In 100 % of cultures we had not found antimicrobial resistance. The relative risk of developing intra-abdominal abscess was 0.26; $p = 0.02$ and readmission rate was reduced from 50 (HC) to 13 % (CC) ($p = 0.018$). Admission rate was reduced in 5 days, from 10 $\pm$ 2 days in HC to 5 $\pm$ 2 in CC. The cost/patient was reduced in 2200 €/child.
Conclusion: Surgeons sensitized to the implementation of local antibiotic prophylaxis and treatment guidelines showed a high degree of compliance. New guidelines are good tools to improve in the patients' safety (reduction in infectious morbidity rate) and saving costs. It is possible to be discharged early without an increasing of readmission rate.
Disclosure of interest: None declared.

HP-PC096: Adequacy of antibiotic treatments in clinical practice

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Background and objective: The creation of multidisciplinary groups to optimize use of medicines in general and in particular antibiotics is a good tool for promoting rational use. In this line, we created a team to assess the suitability of antibiotic treatments prescribed in the hospital and to establish the rate of acceptance of the recommendations to optimize treatments made by the team. Also we recorded and quantified the activity of this team in order to establish a quantitative and qualitative assessment of the interventions made, registration and evaluation of the problems related to the drugs detected.
Setting and method: A prospective study conducted during 1 month. Through the electronic management system for hospital patients, all the prescriptions of antibiotics prescribed during the last 24 h were assessed. The treatments prescribed in medical intensive care units, paediatrics and haematology were excluded. An internal medicine physician specialized in infectious diseases and a resident of the pharmacy service assessed the adequacy of the antibiotic treatment according to the patient's clinical situation. If the antibiotic treatment was not suitable, a recommendation to change the antibiotic was made to the physician in charge of the patient. The treatment was checked 24 h later to find out the recommendation had been accepted. All this information was recorded in a database for subsequent statistical analysis.
Main outcome measures: Medical record number, service, recommended treatment, if treatment received agreed with the recommendations.
Results: During the study period 158 patients with prescriptions for antibiotics were evaluated (100 %). 38 % (60) treatments could be optimized. 62 % of them were in surgical patients (Vascular Surgery 18.3 %, General Surgery 15 % Orthopaedics 10 % and Urology 11.7 %) and 27 % were infections in soft tissues. The causes of unsuitability were: antibiotic not necessary in 13.3 %, unsuitable route of administration 5 %, 16.3 % insufficient spectrum, 18.3 % dose adjustment and 33.3 % change for a less cost-effective

treatment. 68 recommendations were made, 100 % of which were accepted.

In a 13.3 % the change was directed to improve the efficacy, 53.4 % toward security and the rest 33.3 % to save costs.

Conclusion: The assessment of the prescribed therapies ensures a more rational use of antibiotics and maximum efficiency in health care.

Disclosure of interest: None declared.

HP-PC097: Implantation of a management protocol goserelin (zoladex) with a local anaesthetic

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Background and objective: Development of a protocol subcutaneous administration Goserelin (Zoladex) to prevent pain and swelling at the injection site in patients with prostate cancer, breast cancer, endometriosis or assisted reproduction.

Design: The area of the study is to consult outpatient pharmacy service. The patient attended to collect their corresponding dose of goserelin either monthly or quarterly, and then they were an interview about the drug. A nurse was responsible to administrate the drug. The technique was: (1) Clean the puncture site with an alcohol swab 70. (2) Take a fold of skin and to add a local anaesthetic known as ethyl chloride (chloroethyl) at a distance of about 10 cm and wait about 10–15 s. (3) Take the syringe and injecting perpendicular to the puncture site. (4) After the injection clean the area again with an alcohol swab 70. At the end, the same interview was made to patients to compare the answers given before and after using the protocol.

Results: The operation was performed in a total of 125 patients, of whom 83 % received the quarterly Zoladex® and the rest were given monthly Zoladex®. They answered in the interview "after" the pain decreased significantly by adding to the protocol of the local aesthetic administration.

Conclusion: In the consult outpatient pharmacy service, patient care is improved, because of good dispensing of medication including providing information about the prescribed treatment, but there is a real concern for the safety and adherence to treatment. The administration of Zoladex is a painful process because it is a subcutaneous implant, causing pain and reaction injection point and this technique has improved the administration of the medication, providing a better quality of life the patient.

Disclosure of interest: None declared.

HP-PC098: Vancomycin: an old well-known antibiotic? Prescriptions review in a university hospital

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Background and objective: Vancomycin was the first marketed glycopeptide antibiotic (1959). This drug is nephrotoxic (5 % with no other risk factor), has a narrow therapeutic range and consequently requires a monitoring of renal function and plasmatic drug amounts. Fifty years later, vancomycin is widely used to treat inpatients gram-positive cocci infections. The objective of this study was to assess whether vancomycin was well prescribed and in which cases it led to overdoses and renal degradation.

Setting and method: Six-month retrospective study. Prescriptions lasting over 3 days, clinical and biological data were collected to perform prescriptions' analysis. The daily dosage was considered right if $\leq$30 mg/kg (max. 2 g); a dose reduction was regarded as necessary when the MDRD-calculated glomerular filtration rate (GFR) was <60 mL/min/1.73 m^2.

Main outcome measures: Medical or surgical ward, patients' age, weight and renal function; initial dose of vancomycin, treatment duration; renal failure occurrence or aggravation, overdose.

Results: 193 patients were included; medium age 62.0 years, medium weight 75.8 kg. 20 patients (10.4 %) had a renal failure at the treatment initiation. The median treatment duration was 7.5 days [3; 52]. 19.2 % initial doses were wrong regarding weight or renal function. Overdose occurred in 21.2 % cases; it was more frequent for patients with a wrong initial dose ($p < 0.001$), a weight <60 kg ($p = 0.002$), a GFR <60 mL/min/1.73 m^2 ($p = 0.006$) or in a medical ward ($p = 0.018$). Renal failure happened or worsened in 10.4 % cases, with a higher frequency if GFR <60 mL/min/1.73 m^2 ($p < 0.001$) or for medical wards' patients ($p < 0.001$). Globally, adverse events were more frequent in medical units, where initial doses were more often wrong than in surgical units ($p = 0.047$). It must be noticed that in 7.3 % cases, vancomycin plasmatic amounts were not monitored.

Conclusion: These results confirm that 19 % vancomycin dosage errors lead to overdose or renal insufficiency in more than 10 % cases, even after 56 years of commercialisation. This highlights the importance for clinical pharmacists to check such prescriptions, particularly for patients with a low weight or GFR.

Disclosure of interest: None declared.

HP-PC099: Assessment of the traceability of the medicine administration or not administration in the patient record: regional audit in home hospitalisation

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Background and objective: The home hospitalisation (HH) must implement, as other health establishments, a security and improvement policy of the therapeutic management of patients. In order to satisfy the requirements of the contract of "safe use" of medicines (signed by each health establishments, the regional health agency and the health insurance), a regional audit of the traceability of the administration of medicines has been conducted by a multidisciplinary regional working group (including pharmacists, doctors, nurses, directors). Traceability of administration allows to find in the patient records if the medication is taken or not taken and its reason (refusal, no patient's compliance, inappropriate galenic form, …).

Setting and method: The audit carried out by the multidisciplinary regional working group is a retrospective assessment of prescription/administration file. Each HH shall draw lots 30 records. The questions focus on the keeping of this file, on the quality of traceability (for each administration the nurses must note the date, drug name, its dosage, the posology, the moment when the medication is taken and their name and/or initials) and on the quantification of the traceability gaps, their nature and their justification.

Main outcome measures: The keeping of prescription/administration file, quality of traceability and the percentage of traceability of the administration or not, the nature of the gaps and their justifications.

Results: In total, 7 HH contribute to the survey in eight regional establishments concerned. The prescription/administration files are archived in the patient record in 97 % of cases. For each traced administration, appears the date and the drug name to 94 %, the

dosage to 93 %, the posology to 89 %. On the other hand, the nurse's name and/or initials and the moment when the drug is taken are only traced in respectively 80 and 78 % of records. In case the patient and/or the family environment involve to treatment delivery, this one is traced by nurses in 65 % of cases. The theoretical number of administration during the period and the number of traced administrations reveal gaps in 61 % of records. This gaps are due to an oversight on traceability (80 %), prescribed medicine but not administrated (16 %), not prescribed medicine and administrated (1 %) or others causes (3 %). The variances were explained in 4 % of the case.

Conclusion: The organisation of medicines' administration in HH does not facilitate the real-time traceability. Following this assessment, a regional reflection aims to find the issues required for the administration security and quality of traceability and focuses on improvement of traceability supports.

Disclosure of interest: None declared.

HP-PC100: A regional harmonization of chemotherapy protocols achievable in home hospitalization

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Background and objective: The increased incidence of cancer and its evolution towards a trend of chronicity causes an evolution of care offers for all cancer patients. In this context, the national authorities encourage the development of chemotherapy in home hospitalization in order to increase the efficiency of medical cares and to improve quality of life of patients. However the anticancer drugs are highly toxic and administration in home hospitalization requires guidelines and strict organization.

At regional level, a working group leads a reflection on the feasibility of chemotherapy in home hospitalization considering the circuit of preparation, transport and administration of anticancer drugs and constraints related to the place and the living environment of patients. The objective is to produce a regional thesaurus of chemotherapy protocols which can performed in home hospitalization.

Setting and method: First, the working group has collected all the work done in the other French regions on chemotherapy in home hospitalization. These data were used to establish a listing of anticancer drugs achievable in home hospitalization at national level. Then, a working group composed of oncologists, pharmacists and nurses of regional establishments met to define anticancer drugs eligible to home hospitalization in region with eligibility criteria and national listing. The group defined eligibility criteria before selecting anticancer drugs from the national listing.

Main outcome measures: Eight eligibility criteria have been defined: the respect of the Marketing Authorization, administration of day one of each cycle of chemotherapy in hospital, the stability of the preparation, ease of administration of anticancer drugs (intravenous and subcutaneous administration), duration of administration and monitoring fixed at 2 h, well tolerance of anticancer drug, monitoring and cares after administration and medico-economic criteria.

Results: From these criteria, five anticancer drugs were selected and validated by oncologists at regional level: azacitidine, bortezomib and cytarabine (haematology indications), gemcitabine (digestive and pneumology indications) and topotecan (gynaecology indications).

Conclusion: For each protocol, a document is being prepared and should define the day of chemotherapy administration in home hospitalization and in hospital, the clinical and biological parameters they have to check before the administration and who validates the administration of chemotherapy (Oncologists? General practitioners?).

In parallel to the thesaurus, procedures must be written in order to guarantee the quality and safety of the care of these patients in home hospitalization.

Disclosure of interest: None declared.

HP-PC101: Medication errors record as an improving measure on patient safety at a university hospital

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Background and objective: Medication errors (ME) have a major impact on the patients' healthcare, ranging from minor discomfort to substantial morbidity that may prolong hospitalization or lead to death. A way to improve this field is to report errors and use this information for designing strategies to prevent them. The aim of this study is to describe the incidence and categories of ME in a university hospital.

Design: Observational, retrospective analysis of the voluntary reported ME in the pharmacy database since March 2010 until April 2015. The National Coordinating Council for Medication Error Reporting and Prevention taxonomy was used for classifying ME according to the severity of the outcome and for analysing the most harmful (E, F, G, H, I).

Results: 1350 ME were registered. The errors reported occurred in the hospitalization wards (65.6 %), pharmacy (10.7 %), outpatient services (7.2 %), intensive care unit (6.1 %), emergency (4.3 %), operating theatre (3.5 %) and day-care hospital unit (2.7 %). 87.9 % occurred at working days and 12.1 % at the weekends. ME were notified by pharmacists (76.7 %), nurses (18.3 %), physicians (3.6 %) and other healthcare professionals (1.4 %). 6.5 % were circumstances that may cause errors (category A). More than half of ME (57.9 %) didn't reach the patient (category B), whereas 26.9 % reached the patient but didn't cause harm (category C) and 6.0 % required patient monitoring (category D). The remaining ME (2.7 %) caused harm to patients and were distributed in categories E (required intervention), F (prolonged hospitalization), G (permanent harm) or I (contributed to death). It was found that 47.2 % of the most damaging ME occurred at the hospitalization wards and 25.0 % at the anaesthesiology department. Moreover, reporters suggested measures to prevent these errors in 55.6 % of the cases and were analysed by Medication Errors Prevention Committee and implemented whenever possible.

Conclusion: ME that cause harm to patients are mainly related to hospitalized and anaesthesiology unit inpatients. New strategies need to be accomplished, monitored and periodically assessed in order to improve patient safety. The benefits of notification is well known but further encouragement on registration, especially among physicians, is necessary so as to gather as many errors as possible and implement solutions.

Disclosure of interest: None declared.

HP-PC102: Determination of potential drug–drug interactions by using various drug interaction software programs at hospital pharmacy setting

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Background and objective: The aim of the study is to determine potential drug–drug interactions by using various drug interaction software programs at hospital pharmacy setting.
Setting and method: This study was conducted between February and May 2015 (2 days in a week) at a hospital pharmacy. All electronic prescriptions including at least two medications were included.
Main outcome measures: Potential drug–drug interactions were determined by using 'Micromedex 2.0® Software Drug Interactions', 'Medscape Drug Interaction Checker®', and 'drugs.com'. The high-risk drugs were determined in all electronic prescriptions according to The Institute for Safe Medication Practices (ISMP) list.
Results: A total of 135 electronic prescriptions have been ordered during the study. Electronic prescriptions including drugs that are not involve in the software programs (n = 35) and electronic prescriptions of newborns (n = 19) were excluded. As a result, 81 electronic prescriptions were evaluated. It was found that 96.3 % of them had at least a drug–drug interaction according to at least one software programs. The rate of drug–drug interactions were determined in Micromedex 2.0® Software Drug Interactions', 'Medscape Drug Interaction Checker®', and 'drugs.com' at 75.0, 85.2, 96.3 %; respectively. It was found that the number of drug–drug interactions statistically increased when the numbers of medications in electronic prescriptions elevated ($p < 0.05$). Of them, 51.9 % included at least one high-risk medication and in all of these prescriptions, at least one potential drug–drug interactions has been obtained. The concordances of rating regarding clinical importance of potential drug–drug interactions in each software programs have been obtained as statistically different ($p < 0.05$).
Conclusion: A high rate of potential drug–drug interactions at hospital pharmacy setting and difference rate of potential drug–drug interactions when used various software programs have been determined as results of the present study. Concurrently various software programs could be used by pharmacists in detecting and managing of potential drug–drug interactions at hospital pharmacy.
Disclosure of interest: None declared.

HP-PC104: Infective endocarditis due to *Staphylococcus aureus*: an evaluation of professional practices

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Background and objective: Infective endocarditis (IE) is defined as an infection of the endocardial surface of the heart and could affect one or more valves. This condition generally occurs in a context of bacteraemia due to Gram-positive cocci in 80 %. Among them the proportion of causative organisms such as streptococci has decrease compare to staphylococci (Coagulase-negative staphylococci and *Staphylococcus aureus*) which have increased sharply. Appropriate antibiotic therapy quickly implemented remains the cornerstone of an effective management of IE. The initial choice is empiric but the emergence of methicillin-resistant *S. aureus* (MRSA) has led to a change in practice. Within this context, an observational study assessing the professional practice for the management of IE has been carried out. The main objective of this study was to describe the quality of the drug management of IE due to *Staphylococcus* sp.
Setting and method: The identification of cases was performed from the 1st January, 2013 to the 31st July 2014 in three main hospitals of the study area. The inclusion criteria were a positive diagnosis of IE and *Staphylococcus* sp. as causative bacteria. Data collection was carried out through a validated collection grid with close-ended questions.
Main outcome measures: The primary endpoint was defined by the relevance of the drug management of the IE according to the European Society of Cardiology (ESC) guidelines. Two different managements were considered: empirical and curative approach. The relevance was defined by using composite endpoints that have been weighted. Some were defined as mandatory criteria (e.g. "At least two over three antibiotics must fulfil the ESC guidelines") and some were defined as associated criteria considered with a lower weighting in the management of IE (e.g. "The dose should be the same as recommended the ESC").
Results: A total of 34 patients were included. Empiric therapy was found in 73.5 % (25) of patients. Only 8.0 % (2) of them have been defined as a relevant treatment. Curative therapy was considered relevant in 27.3 % (9) of patients. First-line curative treatment has been established in 100.0 % of cases after obtaining antibiogram results. The two main criteria less followed in the curative therapy were drugs administrations features in 62.5 % (15) and an inadequate dosage in 83.3 % (20) of cases. Drugs mainly concerned were gentamicin and daptomycin. The average dose of gentamicin was 6.8 mg/kg/day compare to 3.0 mg/kg/day recommended in ESC guidelines. Concerning daptomycin the average dose was 9.2 mg/kg/day instead of 6.0 mg/kg/day recommended by ESC.
Conclusion: The results of this evaluation have shown that the management of IE is far from the guidelines (especially for gentamicin). However, some elements of the non-relevance have to be weighted. In conclusion, several outcomes suggest an update of the guidelines, and highlight that a multidisciplinary meeting expertise is needed and essential.
Disclosure of interest: None declared.

HP-PC105: Evaluation of potentially inappropriate medication use and drug burden index in elderly patients with cancer

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Background and objective: The aim of study was to evaluate potentially inappropriate medication (PIM) use and drug burden index (DBI) and determine the possible association between cognitive and daily functions and DBI scores in elderly patients with cancer.
Setting and method: This descriptive and cross-sectional study has been conducted in outpatient oncology clinic between January and March 2015. Patients were eligible for the present study if they were 65 years old and older; they were diagnosed with cancer and came to oncology outpatient clinic to take their chemotherapy agents, and were willing to participate study.
Main outcome measures: The STOPP/START criteria were used to identify PIM use in elderly patients [1]. DBI was also calculated according to patients' anticholinergic and sedative medications. 'Standardized Mini mental test (SMMT)' [2] and 'Nottingham Extended Daily Activities Index (NEADL)' [3] have been also measured.
Results: Among 114 cancer patients, 44.7 % of them were female and the mean age of them was 71.78 ± 5.50. The most common concurrent diseases were hypertension (n = 45) and diabetes (n = 26). The polypharmacy (≥5 medications) was seen in 94.7 % of them. Nineteen patients (16.6 %) utilized drugs inappropriately according to STOPP criteria. The STOPP criteria was found statistically more common in the women when compared with men ($p < 0.05$). The mean of drugs used was statistically high in patients

determined PIMs ($p < 0.05$). The most common PIM was endocrine system attributed to use of sulphonylureas with a long duration of action. The rate of DBI exposure was more than a half (56.1 %) in elderly patients with cancer. The DBI scores were between 0 and 1 in a hundred patient and more than one in 14 patients. The mean of SMMT and NEADL was 25.13 ± 4.60 (4.00–30.00) and 38.14 ± 15.02; respectively. The DBI score was negatively correlated with the mean of NEADL ($r = -0.286$; $p < 0.01$) and SMMT ($r = -0.075$; $p > 0.05$).

Conclusion: Clinical pharmacists could improve the current prescribing practices in elderly patients with cancer by assessing utilization of PIMs. When considering elderly patients with cancer who exposed to DBI drugs had poorer daily activities; pharmacists should evaluate and reduce the usage of anticholinergic and sedative medications.

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Disclosure of interest: None declared.

HP-PC106: Parenteral Nutrition regards recommendations in critical cardiac patients

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Background and objective: Parenteral nutrition (PN) is the most complex form of artificial nutrition. It should be used only in patients whose metabolic and nutritional needs cannot be supplied by oral or enteric route. Patients after cardiac surgery may have oral or enteric route committed and may need PN support. PN supply should be in accordance with the recommendations in order to obtain a nutritional therapy optimization with improved morbidity and mortality.

Setting and method: Descriptive and retrospective study with evaluation of PN regimen prescribed to cardiac surgery patients from hospital clinical prescribing process. Data collected: patient demographic and PN characterization regarding energy, protein lipid and glucose intake.

Main outcome measures: PN characterization in ICU cardiothoracic service in Hospital de Santa Cruz, with information of caloric, protein, lipid and glucose intake from January 2014 to March 2015, with the aim of ensuring that the results follow the guidelines of PN for critical cardiothoracic patients.

Results: The study included 38 patients, 24 male with the average age of 70 years (±9.2) with diagnosis of endocarditis, myocardial infarction, aortic and valve obstruction and comorbidities diabetes, hypercholesterolemia and acute renal failure. PN support average was 1.15 g/kg/day of protein; 24.6 kcal/kg/day of total calories, 0.87 g/kg/day of lipids and 2.84 g/kg/day of carbohydrates. All patients had a daily intake of micronutrients, trace elements, water and fat soluble vitamins. The average of parenteral nutrition duration was 12.8 days. Total calories, lipid and glucose intake were in agreement with the recommendations, unlike proteins whose amount was not performed according to the guidelines.

Conclusion: With this study we conclude that there is a need to optimize protein requirements regarding recommendations. Clinical practice guidelines provide a basis for consistent care and improve security in PN support. The multidisciplinary nutrition team can promote adherence to PN recommendations, in order to improve the appropriate use of PN therapy and protein target guidelines. An ideal and correct PN support is important to promote clinical results and cost control.

Disclosure of interest: None declared.

HP-PC107: The role of clinical pharmacist in identifying risk factors for PIM prescriptions using PRISCUS criteria

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Background and objective: There are many potentially inappropriate medications (PIM) for elderly patients because of their potential adverse drug events. The aim of our study was to evaluate the appropriateness of therapies in elderly patients before admission to the hospital and after hospital discharge, to optimize the therapy in cooperation with physicians and to identify the risks factors for PIM prescriptions.

Setting and method: A prospective study between June and August 2014 was performed. We included 100 patients aged 65 years or over, who have been admitted to the internal medicine ward of a teaching hospital. Data were obtained from patients and from medical records. Each patient's home medication was revised after patient admission using PRISKUS criteria. The proposals were presented to physicians on the second half of patient hospitalization.

Main outcome measures: frequency of PIM, frequency of patients receiving PIM at admission/at discharge from the hospital, risk factors for PIM.

Results: The average age of patients was 79 years (65–100), sex ratio F/M was 1.5. The average number of hospital stay was 8.6 days; the average number of medicines per patient at admission for chronic therapy was 6 ± 3.1. Polypharmacy (≥5 drugs) was detected in 67 % of patients. The PRISKUS criteria identified 39 PIMs in 33 patients at admission (84.8 % women; average age in men 76 ± 11, in women 81 ± 15, average number of drugs 6.7 ± 3.3). The frequency of main PIMs: long acting benzodiazepines: 10 (25.6 %), zolpidem > 5 mg: 8 (20.5 %), methyldigoxin: 7 (17.9 %), alpha-blockers: 4 (10.3 %). During hospitalization 10 patients died, 6 patients were transferred to another ward (at admission they had 8 PIM prescribed). Excluding this patients, we identified at discharge from the hospital 16 PIMs in 15 patients (physicians -before talking to the clinical pharmacist reduced 10 PIMs, -after discussion they reduced 5 more PIMs). Women had higher risk for PIM (OR 6.531; 95 % CI 2.038–20.934; $p = 0.002$). Age, receiving ≥5 drugs, history of falls, hypertension, diabetes, myocardial infarction, stroke and length of hospital stay were not statistically significant predictors for PIM.

Conclusion: The physicians in cooperation with clinical pharmacists reduced the number of PIMs and the number of patients receiving PIM at discharge. Multidisciplinary approach is important for safer therapies in elderly patients. Especially elderly women might have a higher risk of PIM.

Disclosure of interest: None declared.

HP-PC108: Supportive care: creation of practical tools for patient advice

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Background and objective: Cancer and its treatments generate side effects that could have a significant impact on patients' daily lives (pain, body changes…). Supportive care should enable a comprehensive and coordinated support to patients' home. Nurses administering chemotherapy are often questioned by patients to obtain additional information or advice about their treatment. Our goal is to standardize and secure the advice that nurses could give to patients.
Design: After meeting nurses and doctors to define their needs and expectations, literature searches were conducted. A practical guide about the use of analgesics and a booklet about mouth care of patients receiving chemotherapy were created. These tools have been validated by the hospital pain commission and the palliative care team.
Results: The practical guide about the use of analgesics is in the form of leaflet (pocket size). Commercialized DCI (with the corresponding trade names) are listed in a table as indicated by the new analgesics classification (Beaulieu et al. 2010). It shows which combinations are possible (immediate-release forms with sustained release form, no possible association…). Inside the document, practical information is found to help giving simple advices to patients: peak and duration of action, medicine intake advice, interests of different pharmaceutical forms… Treatment of neuropathic and visceral pain and tips on the use of local anaesthetics are also explained in the table.
The mouth care booklet presented in A5 (15 pages) is divided into chapters corresponding to problems (pain, bleeding, mycosis…). General recommendations for achieving oral care introduce the booklet. Each chapter is presented in the same way: the nature of the injury or observed symptom, definitions to identify the problem, relevant photographs, local and general treatments available and finally the helpful advice for patients.
Conclusion: These supports will be provided to nurses during a training conducted by the pain team. They complement the arsenal of documentation already available in our establishment. A regional program of therapeutic education for painful patients with cancer is planned and these documents could become a tool for a workshop on drugs.
Disclosure of interest: None declared.

HP-PC109: The pharmaceutical record: is it a good source for medication reconciliation?

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Background and objective: Pharmaceutical record (PR) lists drugs dispensed to a patient in the last 4 months, through a server accessible with "carte vitale" (CV) (personal health insurance card), whether prescribed by a doctor or self-medication. PR was established in 2008 for community pharmacies. It helps to secure medicines' dispensation: to avoid redundant dispensations and drug interactions. Since 2012, hospital pharmacies can access PR. It's an additional source to fight against drug adverse events in hospital through its use in medication reconciliations. But is PR a good and informative source? Is it easy to use in everyday life?
Design: A survey was carried out 1 month in 3 care units in which medication reconciliation is made by pharmacy students: emergencies, gastroenterology and internal medicine–geriatrics unit. Patient's CV and prescription were systematically recovered during medication reconciliation. After patient's agreement, the pharmacist was checking if a PR was opened by connecting to the server via CV and a professional card. In this case, he checked the concordance of the PR with prescription given by the patient.
Results: 91 medication reconciliations were performed. 72.5 % (66) of patients had their CV with them and 60.4 % (55) had their prescription. Among those who had their CV, 12.1 % (8) of CV could not be read because of problems connecting to the PR server and 89.7 % (52) had a PR opened.

28.6 % (26) of patients had their CV only. For 69.8 % (18) of them, a PR had been opened that allowed to collect information about their medication without prescriptions.

45 % (41) of patients had their CV and their prescriptions with them. In 1 case (3 % of PR compared to prescriptions), differences had been revealed between the PR and patient's prescription.

PR is a powerful tool for medication reconciliation. It informs about the need to find a new source in case of a difference between PR and prescription. Moreover, patients have more often their CV than their prescriptions with them.

However, PR is not as informative as a drug prescription. Some information is not available in it: dosage, treatment duration, management plan… It has been noticed that the PR is sometimes completed with abbreviations that can lead to errors. It's also necessary to have a professional card to access to it. So its access is restricted to senior practitioners and not to students who usually perform medication reconciliations.
Conclusion: PR is a good and informative source but it shouldn't be used alone. In the context of an experiment, some hospital doctors may have access to PR since 2014. It can help them to secure medical consultations, in anaesthesia for example, and can be used too in emergencies to have a quickly available source. Currently, the PR server and consultation, prescription and/or dispensing software are independent forcing a double connection for practitioners. Plans are under way to integrate access to the PR server via these software to facilitate and encourage its consultation.
Disclosure of interest: None declared.

HP-PC110: Geriatric medication review: assessment and improvement

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Background and objective: Many studies developed inappropriate medication lists in the eldercare (STOPP/START criteria, Beers criteria, Laroche criteria…). But other issues are raised in homes for the aged and long term care units such as administration difficulties, optimization of drugs' intake planning to facilitate daily care providers' work, … To address these problems, medication reviews in geriatrics were implemented. The objective of this work was to measure the impact on prescriptions: what kind of changes? On which therapeutic classes?
Design: Medication reviews in geriatrics began in February 2015 at a rate of one per month. They bring together general practitioners, geriatricians, pharmacists and students. Each practitioner sends a week before the case he wishes to talk over (mostly the incoming months). Then, pharmacists can work on it. During the review, each case is taken and each pharmaceutical proposal is studied leading to a collective decision on whether to continue the treatment. A detailed report is sent to all participants. An assessment is made after five medication reviews taking up the quantity of cases studied and

pharmaceutical proposals made, therapeutic classes of drugs involved and the nature of the proposals made (qualified under the criteria of the French Society of Clinical Pharmacy, SFPC).

Results: Seventeen cases were treated, patients with an average of 82 years (sexratio: 1.13). Forty nine proposals have been made (an average of 2.9 proposals per file). Forty two of them were accepted (85.7 %). It affords us to reduce the number of rows in the order of 9.9–9.4 patient lines. The proposals mainly affect nervous system drugs (24 %: antidepressant drugs like serotonin uptake inhibitors, antipsychotics…) and cardiovascular system (20 %: antihypertensive drugs in particular beta blockers). Changes are requested more often following an inappropriate way of administration (31 %), prescription of non indicate treatment (14 %), prescription of medication not available in the establishment (10 %) or an inadequate dosage (10 %). It follows that the main changes are optimizations of drugs' intakes (changing time of intake, medicine's form) (29 %), an equivalent alternative (22 %) or stopping treatment (18 %).

Conclusion: Medication reviews have a significant impact on geriatric patients' prescriptions but also on pharmaceutical forms available at the hospital pharmacy. Indeed, consultation doctor/pharmacist helped highlight service needs. That's why, the orodispersible forms are more numerous, equivalent medicines' booklets (for eye drops among others) are now available. This impact remains to be confirmed by longer term economic study: drug economy but also time saving during drugs' dispensation and administration. To complete this action, a pharmacist resident participates in patient visits. Furthermore, pharmaceutical validation of geriatrics prescriptions takes into account the requirements of STOPP/START and Laroche criteria.

Disclosure of interest: None declared.

HP-PC112: Off-label prescribing prevalence of clinical justification medicines at a university hospital

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Background and objective: Many drugs are prescribed outside the terms of the marketing authorization ("off-label"). Several studies have shown that this is a common practice in various European healthcare settings. Better information to support decisions and monitor use, is needed. We purpose to evaluate the prevalence of off-label prescription of clinical justification medicines and related medical situations.

Setting and method: This study was performed at a Portuguese university hospital. Off-label prescription was assessed by retrospective review of 2351 clinical justification prescriptions during 2014. For purposes of this study off-label prescribing was defined only as the utilization of a medicine at an indication different from those recommended in the Summary of Product Characteristics.

Main outcome measures: A descriptive study including a sample of 248 prescriptions classified as off-label indication was conducted. Data included the number of prescriptions (NP) and expected treatment cost (ETC) regarding medicines, indications, medical situation (MS) and physician's specialty that justify the prescription.

Results: The prevalence of off-label prescriptions was 10.5 % (248NP; 3.3 million Euros ETC) for 234 patients, mainly feminine (57.6 %) and aged above 45 years (>45 to $\leq$65 = 35.9 %; >65 = 33.9 %). All prescription for patients >65 years were for cancer disease, having the eldest 85 years.

Off-label was highest prescribed by oncologists (49 % NP; 79.8 % ETC) for 25 different medicines, neurologists (5 % NP; 6.7 % ETC) and haematologists (12 % NP; 4.5 % ETC). There were 79MS for which off-label use was prescribed. The more prevalent was multiple myeloma (15.3 %) followed by precursor B-cell malignancy (14.9 %) and multiple sclerosis (4.4 %).

The review of 2351 clinical justifications showed a total of 50 medicines prescribed off-label for eight drug classes, with high prevalence for antineoplastic and immunomodulating agents (89 % NP; 97 % ETC), followed by antibiotics for systemic use (5 % NP; 2 % ETC). Rituximab had the highest prescription prevalence (29 % NP; 18.9 % ETC) and was prescribed for more different medical situations (20 MS). Bortezomib had the highest ETC (37 % = 1.2 million euros) and was prescribed for 3 MS, mainly multiple myeloma (one million euros).

Conclusion: These study shows that the most prevalent MS are cancer diseases' related and the more prevalent prescribed medicines being antineoplastic and immunomodulating agents. Off-label use is particularly widespread in oncology for many reasons, including the wide variety of cancer subtypes.

Disclosure of interest: None declared.

HP-PC113: Safe use of medicines: reporting systems analysis in a hospital pharmacy service

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Background and objective: The Portuguese Institute of Oncology of Coimbra (IPOC) for more than a decade has been running a medication incidents reporting system. From 2003 until 2012 the Hospital Pharmacy Service held an internal system of voluntary incident reporting related to medicines, established with the Clinical Risk Management based on National Coordinating Council for Medication Error and Prevention (NCC MERP). In 2013 a new system for reporting incidents was adapted, according to World Health Organization and national guidelines. In 2015, with the transition to a new notification system it is important to review the data obtained from the two previous methods to evaluate the gains obtained at patient safety level.

Setting and method: Retrospective study of incidents involving medication registered in a Hospital Pharmacy by two previous reporting systems. Data collection analysis from the implemented method of incidents records involving drugs from January 2003 to October 2012 (Method A), and the method implemented from January 2013 until April 2015 (Method B). Categorizing and comparing the incident types and characteristics were presented.

Main outcome measures: Data collection analysis of incidents reports involving medicines from two different register methods.

Results: Were reported by Method A (118 months), 335 incidents involving medication and by Method B (28 months), 33 incidents. The process step "Prescription" had the largest number of reports in both methods (69 % in Method A and 37 % in Method B). The decrease observed between A and B is attributable to the new electronic prescription software, including prescription for hospital outpatient pharmacy, at the beginning of 2013.

The most frequent problems registered were "Wrong Dose" (27.5 %, Method A and 30.3 % in Method B) followed by the "Wrong Drug" (16.7 %, Method A and 24.2 % in Method B). The major patient outcome found was "No Harm" (79 %, Method A and 84.9 % in Method B).

Conclusion: Although volunteer, event reporting is relevant. The extracted data are related to the points of the medicine use system

where the hospital pharmacists take part. The vast majority of cases does not reach the patient. It is understood that some circumstances may lead to error with damage to the patient, risks, and that these can be minimized or stopped by the intervention of other health professional. The adoption of a new electronic prescription software resulted in a great impact in preventing a more frequent occurrence, leading to an effective lower incidence events.

The report produced by these findings can be a useful tool for generating safety signals and improvement for a future model for reporting incidents in order to adjust the real practical needs.

The continuous cycle of improvement and the implementation of medication safety practices in a hospital setting involve all relevant stakeholders working synergistically to reach all the branches of this complex and demanding structure.

Disclosure of interest: None declared.

HP-PC114: Use of Rituximab in refractory myositis in a teaching hospital

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Background and objective: Rituximab (RTX) is increasingly prescribed for all off label autoimmune disease including myositis. Because such prescriptions need to be justified by literature data, hospital pharmacist control everyone of them before dispensing. This work presents a retrospective analysis of use of RTX in myositis during 2013 and 2014.

Design: Following data on 2013 and 2014 were extracted from the computerized dispensing system: name of patient, treatment duration, dosage and type of myositis. An overview of scientific publications related to myositis has been performed on the Medline database (keyword: each type of myositis + RTX) to determine the power of evidence of the use in Myositis.

Results: Twenty nine patients were treated with RTX: 10 polymyositis including 3 myositis associated to antisynthetase syndrome, 1 overlap myositis (association of myositis and connectivitis), 8 Myositis with anti JO1 antibodies, 6 Myositis with anti SRP antibodies, 3 necrotizing myositis with anti HMG-Coa antibodies, 1 dermatomyositis. Drug regimen is the same to all patients: 1 g D1 and D15 and after every 6 months. This regimen is not in accordance with those founded in literature data (375 mg/m^2/week). The mean treatment duration was 20 weeks with a wide SD [17.96] showing a great variability. But analysis of online medical records of the patients shows a global efficacy with significant improvement in muscle symptoms and a well tolerance, except for two patients who had failure with RTX and were switched to another biotherapy Abatacept (500 mg every 6–8 weeks). Medline analysis shows some references but mostly case reports or prospective single centre studies (<100) carried out on a small number of patient (6–18 patients). Only one randomized double blind controlled trial (195 patients) has been founded in which treatment duration is ranging from 18 to 52 months. All studies highlight a benefice of RTX in myositis. Two studies are about the use of abatacept. The average cost per patient is € 7150 ± 4823 (RTX) and € 2424 ± 2373 (abatacept).

Conclusion: Rituximab can be considered as a therapeutic option in refractory myositis. It's a lengthy and costly therapy. In scientific literature there are not sufficient controlled studies which prove its effectiveness on myositis. To make sure that this biotherapy is efficient, randomized controlled trials should be performed.

Disclosure of interest: None declared.

HP-PC115: How the pharmacist have to give warning about antibiotic reassessment in psychiatric hospital

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Background and objective: Inappropriate antibiotic use is frequent and has led to a significant increase of morbidity and mortality, additional costs for health care systems and bacterial antibiotic resistance. Because of lack of dedicated functionality in the computerized physician order entry (CPOE), our psychiatric hospital antibiotic commission wanted to know the frequency and the quality of antibiotic therapy reassessment. All orders are analysed daily by a pharmacist or a resident pharmacist, and an individual drug dispensation is then made for each patient.

Setting and method: In order to evaluate professional practices, two audits were conducted, the first in December 2013 and the second in May 2014 after application of corrective measures. Adults from all psychiatric wards receiving curative and systemic antibiotics were included in this study. Each period was considered ended when at least 30 patients were included for each audit.

Main outcome measures: The aim of our study was to assess (a) the quality of the antibiotic reassessment and then (b) the impact of pharmacist residents and pharmacist students involvement for the antimicrobial stewardship.

Results: During the first audit, concerning 32 patients, 48 % of antibiotic prescriptions were reassessed, often within 72 first hours (85 %). The patient's clinical evaluation was noted in 52 % of cases and microbiological arguments in 29 % of cases. This reassessment allowed an adjustment of antibiotic therapy in 7 % of patients and discontinuation of treatment in 14 % of cases. Following the first audit, several improvement actions were considered: dispensation for 72 h only and then the rest of the treatment after reassessment by physician, specific prescription support, specific insert in patient's medical record. Finally, when pharmacists or pharmacist residents received medication prescription, the entire treatment was dispensed and a reminder was made to the physician concerning the antibiotic reassessment's deadline: (a) via an email or (b) via pharmacist students, present in the care unit and able to discuss with the physician the patient's therapy and to remind him the deadline of reassessment. The second audit, analysing 34 prescriptions, showed an increase of reassessment, with 68 %, often within 72 first hours (70 %). The patient's clinical evaluation was indicated in 65 % of cases and microbiological arguments in 24 % of cases. This reassessment allowed an adjustment of antibiotic therapy in 11 % of patients and the discontinuation of treatment in 26 %.

Conclusion: The actions proposed, involving pharmacists, resident and students, to send an alert and discussing therapy with the physician, have improved the traceability and quality of the reassessment of antibiotic prescriptions. This highlights the importance of our communication tools and of the presence of pharmaceutical community specially in psychiatric wards for antimicrobial stewardship.

Disclosure of interest: None declared.

HP-PC116: Short-term inhaled colistin adjunctive therapy improves survival of patients with ventilator-associated pneumonia

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Background and objective: Ventilator-associated pneumonia (VAP) is an important cause of prolonged intensive-care stay and mortality, particularly with the emergence of multi-drug resistant gram-negative bacteria. The aim of this study is to investigate the role of inhaled colistin on the outcome of patients diagnosed with gram-negative VAP.
Setting and method: Eighty-five patients with gram-negative VAP were recruited in this study. We compared use of inhaled colistin (3×10^6 IU/day, for 5 days) as an adjunctive therapy to conventional treatment of VAP (n = 52 pts) with a control group on conventional therapy alone (33 pts).
Main outcome measures: The outcomes to be compared between the study and control groups included microbiological parameters (culture and sensitivity on day 1 and day 6) as well as clinical ones (clinical pulmonary infection score—CPIS). Mortality and days on mechanical ventilation were the primary outcome measures.
Results: Microbiological assessment on day 6 showed higher organism clearance rate in the colistin compared to the control group ($p = 0.02$). Resistance was higher in the control group ($p = 0.03$). There was statistically significant difference in (CPIS) between both groups. A score > 6 represented 21.2 versus 45.5 %, of colistin versus control groups, ($p = 0.01$). A smaller number of patients required mechanical ventilation >15 days in the colistin versus control group, ($p = 0.013$). The ICU mortality was 40 versus 69.7 %, in the colistin versus control group, ($p = 0.008$). No significant change of renal function or occurrence of bronchospasm were observed in the colistin group.
Conclusion: Short-term inhaled colistin is safe and effective as an adjunctive therapy in patients with gram-negative ventilator-associated pneumonia.
Disclosure of interest: None declared.

HP-PC117: Compatibility of neonate medications and parenteral nutrition at infusion tubing Y-site

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Background and objective: As a substitute of enteral nutrition, parenteral nutrition (PN) plays a major role in the management of the preterm babies born after <30 weeks of gestation and for babies with birth weight lower than 1000 g. An aggressive and early PN significantly impacts the clinical status and the prognosis of neurological development. In case of a simultaneous administration of PN and intravenous drugs of, compatibility at the Y-site must be known to avoid physicochemical interactions between products likely to endanger patient's safety. We have studied the compatibility of PN with the most used intravenous medications in Neonatology Departments.
Design: The study focused on the 56 most used intravenous medications based on prescriptions from our Department of Neonatology, 2 solutes NS and W5, and PN. Compatibility on potential PN-drugs or drug–drug couples was classified as: Compatible, Variable compatibility, Incompatible, or no data available.
Analysis was made using UpToDate, Stabilis, and VidalHoptimal as pharmaceutical databases.
Results: Medications included 22 antimicrobials, 15 cardiopulmonary medications, 6 electrolytes, 3 narcotics, 3 hepatogastric medications, 2 curares, 2 neurologic medications, 2 antidotes and insulin rapid representing 1708 potentials couples.

For the overall, 25.1 % (431) were compatible, 1.7 % (28) were with variable compatibilities, 6.6 % (112) were incompatible and 66.6 % (1137) had no data available.

In the 56 PN-drug couples: 21.4 % (12) were compatible, 19.6 % (11) were incompatible (for example Aciclovir—PN, Ceftriaxone—PN, Furosemide—PN) and 59 % (33) had no data available.
Conclusion: Incompatibility of drugs or PN mixing at the Y-site of infusion tubing is frequent phenomenon, rarely anticipated by physicians. Considering lack of data as incompatibility, compatible mixes occurred on only a fourth or a fifth of the total prescriptions in this study. Most potential drug–drug or drug–PN interactions in the Y-site infusion tubing are not described in the literature, as simultaneous administration is not recommended. Nevertheless, real life situations often require such practice guided by nurse time sparing or injection burden for the preterm. Warnings along with strong mobilization among nurses, physicians, and pharmacists are to be made to improve this neglected area of patient care.
Disclosure of interest: None declared.

HP-PC118: Drug allergies: incidence and recording; development of a method for patient questioning

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Background and objective: Drug allergies occur in 0.5–5 % of patients and can lead to serious adverse reactions. In order to avoid repeated administration, a decent patient questioning and registration in the patient file is essential.

At Ghent University Hospital, drug allergies can be recorded in a specific part of the electronic patient file, i.e. drug (or drug class) and previously occurred symptoms, and afterwards, prescription of this drug (or drug class) leads to a warning or a stop message. In this study, we aimed to analyse the number and type of recorded drug allergies. Since we presumed that a part of the recorded allergies would be adverse reactions, we aimed to develop a standardized method for patient questioning.
Setting and method: In the first part of the study, drug allergies recorded by nurses (for 525 patients) and by pharmacy technicians (234 patients) were retrospectively analysed. In a second part, a method for patient questioning was developed by the same multidisciplinary panel. The new patient questionnaire was tested by the pharmacy technicians in 83 patients.
Main outcome measures: Number and correct recording of drug allergies in the retrospective analysis, and assessed to be 'real' allergies by a panel. Feasibility and evaluation of the scoring method for the patient questionnaire.
Results: Retrospective analysis showed that for 50.9 % of the patients, data about drug allergies were absent. Pharmacy technicians recorded drug allergies for 8.5 % of the patients, nurses for 12.6 %. It seemed that 42 % of the allergies were recorded at the wrong place of the patient file, 33 % of the allergies were recorded in the wrong drug class and 33 % were recorded without symptoms. Furthermore, 12 % were adverse reactions (not allergies). The number of incorrect registrations did not differ between nurses and pharmacy technicians, although pharmacy technicians recorded more allergies at the right place in the patient file.

A questionnaire was developed, with six questions each accounting for a number of points.

The questionnaire was tested for 83 patients revealing 22 drug allergies. Although a more complete picture of the drug allergy was available, for 5 of these reactions (23 %), the conclusion of the total score was not the same as the conclusion of the panel.

Conclusion: This study shows that many the majority of drug allergies was recorded incorrectly and a formal hospitalwide procedure for questioning and recording should be installed. A questionnaire (part of the medication reconciliation process) could reveal a more complete picture of the allergy but should be refined and conclusions should be evaluated by an expert panel.
Disclosure of interest: None declared.

HP-PC119: Patients' understanding of health related questions in a self-assessment questionnaire

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Background and objective: Drug-related problems (DRPs) constitute a frequent issue among hospitalised patients. To identify patients at high risk for DRPs a self-assessment questionnaire (drug-associated risk tool, DART) has been developed. The DART should guide clinical pharmacists to patients in need of intensified pharmaceutical care.

To ensure the questionnaire's capability as a self-assessment, we tested the reliability of its 35 questions and refined the wording where necessary.
Setting and method: We identified questions with low reliability (specificity, sensitivity) and possible poor patient understanding by comparing patients' answers in the questionnaire to medical records. These questions were revised using patient information leaflets (PILs) of drugs, which are limited in use when the risk factor tackled by the question is present. We compared the information for health care professionals and the wording within the PILs, hence performing a matching of medical expressions and the wording used for patients. To evaluate the refined questions, we again recruited patients on the medical and geriatric wards presenting one or more risk factors with the changed wording.
Main outcome measures: We assessed the sensitivity and the specificity of each refined question by comparing patients' answers to medical records.
Results: We identified the questions about heart insufficiency, renal insufficiency and hepatic insufficiency as items with low reliability and possible poor patient understanding. We used the PILs of 134 drugs, either contraindicated or in need of dose adaption in presence of these risk factors, to re-word these questions in the self-assessment questionnaire.

A total of 31 patients [median age: 82 years (range 59–96 years), 61 % female] filled out the revised questionnaire. The sensitivity of the re-worded item "heart failure" improved from 0.43 to 0.82, while the specificity dropped from 0.96 to 0.60. Similarly, the sensitivity for "renal insufficiency" ameliorated from 0.29 to 0.39, while the specificity was lowered from 0.98 to 0.80. The refined question "liver insufficiency" could not be assessed.
Conclusion: We identified questions with possible poor patient understanding by testing for their reliability early in the development of the self-assessment questionnaire. Using a sophisticated re-wording process, we were able to include a statement covering heart failure with an acceptable sensitivity, whilst introducing more false positive answers. The reliability of patients to answer questions about renal insufficiency remains a challenge to be investigated. Symptoms with a modest impact on daily activities and quality of life may lower disease awareness in patients. The small sample size combined with the low prevalence of liver insufficiency prohibited the evaluation of the refined statement covering liver insufficiency.

The use of PILs in questionnaire development promises to increase patients' understanding of health-related questions.
Disclosure of interest: None declared.

HP-PC120: Determination of pharmaceutical care needs in patients with colon cancer at an ambulatory setting

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Background and objective: To determine pharmaceutical care needs of colon cancer patients and to solve drug related problems.
Setting and method: 36 patients newly diagnosed with cancer and treated in Marmara University Education and Research Hospital, Outpatient Chemotherapy Unit (İstanbul/Turkey) were included in this study. Study was conducted between April–October 2013. Before chemotherapy, patients characteristics were obtained by patient profile records and pharmaceutical care plans were performed. Patients were followed during three courses of treatment.
Main outcome measures: Before every three treatment courses face to face interviews were performed with patients and verbal and written information were given. After every three treatment courses at least one face to face or telephone interview was performed. Drug related problems (side effects, drug–drug interactions, polypharmacy etc.) were identified. Pharmacological and non-pharmacological recommendations were given to patients for drug related problems. Pharmaceutical care plans for each patient were created individually.
Results: In this study 63.9 % of patients ($n = 23$) were male and 36.1 % of patients ($n = 13$) were female. Average age was 57.89 ± 12.86 and 69.4 % have only primary education. 50 % of patients has at least 1 comorbid disease. A total of 370 interviews were performed during three courses of treatment and average number of interview with each patients was 10.27 ± 2.93 ($n = 36$). A total of 147 pharmacological and non-pharmacological recommendations were given to 36 patients during three courses of treatment. For pharmacological recommendations patients were consulted to a physician. Patients compliance rate for these recommendations was 98 % ($n = 144$). 91.7 % of the recommendations ($n = 132$) resolved the drug related problems while remaining 8.3 % ($n = 12$) recommendations patients were consulted to the doctors again for further investigations.
Conclusion: The pharmaceutical care, applied to colon cancer patients by clinical pharmacist specialized in oncology, was shown to have an important role in the identification and resolving of drug related problems in these patients. This study highlighted the main roles of oncology pharmacist in oncology outpatient treatment units as; patient education, drug counselling and patient follow up.
Disclosure of interest: None declared.

HP-PC121: Incidence, nature and causes of medication errors in hospitalised patients in Middle Eastern countries: a systematic review

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Background and objective: Medication errors (ME) are a major global issue, adversely impacting patient safety and health outcomes. Promoting patient safety through minimizing medication errors is therefore a key global healthcare objective. This study aims to systematically review the incidence, nature and causes of MEs in hospitalised patients in Middle Eastern countries.
Design: A systematic search of studies related to MEs originated from Middle Eastern countries was performed using the following databases: MEDLINE, EMBASE, International Pharmaceutical Abstracts, Cumulative Index to Nursing and Allied Health Literature, PsycINFO, Cochrane Database of Systematic Reviews (CDSR), Centre for Review and Dissemination (CRD) database, Joanna Briggs Institute Library). A systematic review protocol was developed and registered with the Centre for Reviews and Dissemination (CRD). The title, abstract and full article were screened for inclusion. The search string included: incidence, cause, medication error, and Middle Eastern countries. Each paper was assessed by two reviewers for methodological quality prior to inclusion in the review. Studies were critically appraised prior to data extraction and findings synthesized using a narrative approach.
Results: Database searching identified 2611 studies; 51 met the inclusion criteria and originated from nine of fifteen Middle Eastern countries, largely Iran, Saudi Arabia and Israel. Preliminary review results indicate error incidence rates between 11 and 90 % of patients (depending on the method of data collection), with the categories of errors reported being mostly prescribing errors followed by administration, dispensing and transcribing. Deficiencies in staff knowledge, lack of experience, insufficient training, excessive workload, poor adherence with protocols and policies and miscommunication were identified as major causative factors.
Conclusion: MEs occur at high rates of incidence in the Middle East. Causes of errors are multifactorial and should be targeted in future interventions, which are likely to be complex interventions at varying levels within the healthcare systems.
Disclosure of interest: B. Thomas grant/research support from this project is funded by QNRF (NPRP-388-3-095). P. Abdulrouf: None declared. M. AlHail: None declared. W. Elkassem: None declared. R. Singh: None declared. D. AlSaad: None declared. J. McLay: None declared. K. MacLure: None declared. V. Paudyal: None declared. D. Stewart: None declared.

HP-PC122: Electronic monitoring feedback to improve medication adherence and clinical outcomes

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Background and objective: Non-adherence to medication might worsen clinical outcomes and will eventually lead to increased health care costs. Personalized feedback based on results from electronic devices, also known as electronic monitoring feedback (EMF), might be an effective strategy to improve medication adherence. Although individual studies suggest a positive effect of EMF on medication adherence and clinical outcomes, results from these studies have not yet been summarized. This study aims to systematically synthesize the evidence obtained in randomised controlled trials for EMF to improve medication adherence in adult patients and to summarize the effect of EMF on clinical outcomes.
Setting and method: A systematic review was performed in MEDLINE, EMBASE, PsychINFO and Web of Science using PRISMA guidelines. Randomized controlled trials comparing EMF as only intervention (without interfering co-interventions) with usual care were independently selected by two reviewers. Additional inclusion criterion was self-administration of prescribed medication. Quantitative findings on medication adherence were integrated in a meta-analysis, whereas the quality of the body of evidence was assessed with the GRADE approach.
Main outcome measures: Medication adherence (i.e. dose or full compliance) was used as primary outcome to assess the effectiveness of EMF as intervention.
Results: Of 3969 initially-identified studies, seven studies (2 high- and 5 low-quality) were included. The sample size of the included studies varied from 18 to 97 patients. Forest plots based on dose and full compliance demonstrated that EMF tends to have a positive although not significant effect on dose compliance [RR 1.26, 95 % CI (0.89–1.77)] and full compliance [RR 1.25, 95 % CI (0.88–1.76)]. The effect of EMF on clinical outcomes was inconclusive.
Conclusion: Based on the positive although not significant effect of EMF on medication adherence, EMF might be a promising intervention to enhance medication adherence. However, the effect on clinical outcomes was inconsistent. Prior to implement EMF in clinical practice, future research with high-quality studies (e.g. adequate sample sizes, follow-up periods and power-analyses) is required to confirm the effectiveness of this intervention and to study the long term effects of EMF on adherence level and clinical outcomes over time.
Disclosure of interest: None declared.

HP-PC124: Identification of possible drug related problems (DRPs) in patients on oral anticoagulants. A systematic review of medication charts by pharmacist

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Background and objective: The purpose of this study was to identify and manage drug related problems (DRPs) related to the treatment with oral anticoagulants in hospitalised patients.
Design: 100 patients, above 18 years of age, from eleven departments of internal medicine were included. The patients were on medication with or would start treatment with oral anticoagulants.

Based on information from the medication chart, journal and laboratory values, each patient's drug regimen was then systematically reviewed by a pharmacist to identify DRPs.

Identified DRPs with proposed solutions were presented for the physician after the physician's visit. The physician's response and possible actions to manage the DRPs were registered.
Results: A total of 100 patients were included, 51 on warfarin (51 %) and 49 patients on direct oral anticoagulants (DOAC).

Overall, 118 DRPs were identified in 71 of the included patients (71 %). Of these, 75 DRPs (1.47 DRPs per patient) were related to warfarin treatment and 43 DRPs (0.88 DRPs per patient) related to treatment with DOAC (difference not statistically significant). However, a significant difference was observed in the number of drug interactions in the warfarin group compared to the DOAC group, 1.37 and 0.41 interactions per patient ($p = 0.0002$), respectively.

The pharmacist discussed 40 of the 118 DRPs with the physician, of which 8 DRPs were related to warfarin and 32 DRPs to DOAC.

Corresponding changes to the patient's medical treatment were performed in 18 cases for DOAC and 3 for warfarin.
Conclusion: This study indicates a lower incidence of DRPs among patients treated with DOAC compared to warfarin. This is probably due to a significantly higher incidence of drug interactions related to warfarin compared to DOAC. Furthermore, the results indicate that physicians change the prescribing to a higher degree for DRPs related to DOAC compared to warfarin.
Disclosure of interest: None declared.

HP-PC125: Impact of imported medicines under exceptional use; authorization at a university hospital

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Background and objective: Medicines without Marketing Authorization (MA) by the Portuguese Medicines Agency (INFARMED) can be acquired through importation procedure. There are other reasons to import medicines: loss of MA due to license revocation/caducity, shortage in national market, unavailability (temporarily) and not commercialized. To acquire them we need a special/exceptional use authorization of INFARMED.

We purposed to study the development of this acquisition process through 2012–2014.
Setting and method: Descriptive study of imported medicines during 2012–2014 at Pharmaceutical Services of a Portuguese Hospital. Allergens and radiopharmaceuticals were excluded. Data was collected from the hospital's electronic Integrated Drug Circuit Database.
Main outcome measures: Issues studied were: number of medicines; economic value; therapeutic areas; reasons for importation; wholesalers; countries of origin.
Results: Through 2012–2014, 116 medicines were imported with an average of 85 medicines/year [formulary (54 %); extra-formulary (46 %)]. Wholesalers increased from 27 to 36 and countries of origin from 17 to 28. Medicines' cost was 0.6 million euros (2012), 1.3 million euros (2013) and 0.9 million euros (2014). The 10 medicines with greater economic impact were mainly antineoplastic agents [4 (2012); 4 (2013); 5 (2014)] and antibiotics [3 (2012); 2 (2013); 2 (2014)]. Pegaspargase (extra-formulary) presented the most significant cost of all [18 %/(2012–2013); 14 %/(2014)]; dexamethasone (formulary) was the fourth most relevant medicine (2013–2014).

Besides MA lack (72 %), other reasons to import included shortage in national market (5.2 %), caducity and/or revocation (17.2 %) and no commercialization (9.5 %).

From 2012 to 2013, the number of different medicines increased 37.6 % and economic value 129 %; to notice that in 2013 three central hospitals were merged. The variation of unit price was +20.10 € (in average).

From 2013 to 2014, a slight decrease in the number of different medicines (6 %) occurred along with a substantial economic reduction (−64 %). The variation of unit price was −7.25 € (in average).
Conclusion: In 2012–2013, due to hospitals' merger, an increment in different medicines occurred along with a huge economic impact, also attributed to price unit variation. Performing an intensive procurement process was essential to be able to face the unpredictability of imported medicines (with recurrent shortages) along with the price fluctuation of international market. With this procedure we managed to lower the total cost of imported medicines in 2014 while maintaining their availability.
Disclosure of interest: None declared.

HP-PC126: Majority of patients do not store their biological disease modifying anti-rheumatic drugs within recommended temperature range

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Did you previously present your abstract on an international platform: Yes—the abstract has been previously presented internationally. **Abstract submitted before to:** EULAR congress 2015, Rome, Italy.
Background and objective: Proper storage and controlled distribution of biological disease modifying anti-rheumatic drugs (bDMARDs) is essential to ensure drug quality. Deviations from the manufacturers' Summary of Product Characteristics (SmPC) recommended temperature range (2–8 °C) at patients' home may lead to protein aggregation which has been associated with an increased immunogenicity. This could result in decreased clinical efficacy and increased risk of adverse drug reactions. The objective of this study is to evaluate whether patients' home storage temperatures for bDMARDs comply with SmPC recommended storage temperature range.
Setting and method: This observational study included adult patients from eight Dutch pharmacies who received their bDMARDs with a validated temperature logger in a seal bag and were instructed to store their packages according to standard label instructions and to return the temperature logger(s) after use.
Main outcome measures: Primary outcome was defined as the proportion of patients that stored their bDMARDs within the SmPC recommended temperature range. In addition, the proportion of patients storing bDMARDs below 0 °C or above 25 °C for longer than two consecutive hours was estimated.
Results: 255 (87.0 %) of all patients (mean age 53.2 (SD 13.1) years, 51.4 % female) returned their temperature logger(s) to the pharmacy. The mean storage time was 82.2 days (SD 42.6) and the proportion of total storage time between 2 and 8 °C was 54.8 %. 17 patients (6.7 %) stored their bDMARD within the recommended temperature range. The proportion of the patients that stored their bDMARD for more than 2 h consecutive time below 0 °C or above 25 °C was respectively 24.3 % [median duration: 3.7 h (IQR 2.2 h; range 2.0–1.097, 1 h)] and 2.0 % [median duration: 11.8 h (IQR 44.3 h; range 2.0–38.1, 9 h)].
Conclusion: The majority of patients do not store their bDMARDs within the SmPC recommended storage temperature range. To what extent moderate and extreme deviations in storage temperatures could affect product quality and influence efficacy and occurrence of side-effects of bDMARDs needs further investigation.
Disclosure of interest: None declared.

HP-PC127: Rectal ulcers after using disodium monophosphate (Normacol®): a rare but serious adverse event

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Background and objective: Many we'll describe one of the most serious but rare adverse effect of disodium monophosphate.

Design: We present the case of a 77 years old man, admits in Urology for a cystoprostatectomy with Bricker urinary derivation, as part of a bladder carcinoma. His history mentions arterial hypertension, hyperuricemia, a carotid artery stenosis and a gastric ulcer in 2001. His usual treatment includes lisinopril, allopurinol and clopidogrel.
Results: Surgery is performed and the patient is transferred to Intensive Care Unit for postoperative monitoring. Ten days later, considering a transit delay, a rectal enema is done with disodium monophosphate (Normacol®). Immediate pain appears, such as burns during drug administration, leading to perianal ulcers. A rectosigmoidoscopy is performed, with no abnormality. Local care with physiologic serum is proceeded after each stool. Thereafter, perianal suppuration appears, making local care difficult. A debridement under general anesthesia is performed, enabling to remove a large amount of necrotic tissues. We note a perineal abscess, communicating with ulcers. A digestive surgeon advice is immediately taken, indicating a digestive derivation such as discharge colostomy. It can't be made on the same operating time, because of the lack of informed consent from the family. The colostomy will finally be set up 3 days later. The patient receives oxygen therapy sessions in a hyperbaric chamber in order to help wound healing. One month later, the patient is again hospitalized for a pyelonephritis. The rectal wound is clean and non inflammatory, the healing appears really satisfying. Local care with packing is kept up, and the patient leaves the hospital. Again 1 month later, he presents an acute renal failure, caused by dehydration and diarrhea. A severe sepsis on bacteremia with urinary origin is diagnosed, and progresses well with an appropriate antibiotic therapy. The rectal wound is stable but still not healed. Few weeks later, a *Clostridium difficile* colitis appears, with secondary renal failure and metabolic acidosis, despite vancomycin and metronidazole treatment. A colectomy is decided, associated with dismounting colostomy and ileocolic bypass using the colostomy opening. In immediate postoperative period, the patient is transferred to surgical intensive care unit, and unfortunately died a few days later.
Conclusion: The regional centre of pharmacovigilance in Lille informs us that the Normacol® monograph mentions a very rare risk of local irritation and very exceptionally rectal necrosis. A few cases are found in scientific literature, from inflammation to rectal gangrene, including one patient with a discharge colostomy. To conclude, Normacol® responsibility in the occurrence of these anal lesions is possible, in light of chronologic and bibliographic data. Drug-related iatrogenia is a daily subject which can't be underestimated, which may lead to serious adverse effects.
Disclosure of interest: None declared.

HP-PC128: Protons pump inhibitors prescriptions: professional practices assessment in a follow up and rehabilitation care service

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Background and objective: Protons pump inhibitors (PPIs) are a large prescribed medications class, because of their efficiency and apparently fine tolerance. However, these drugs are not deprived of toxicity. Due to repeated pharmacovigilance declarations, we decided to collaborate with general practitioners (GP) and hospital doctors to evaluate the relevance of PPIs prescription. Our main objective with this study is to understand and highlight cases of abusive prescriptions and thereafter suggest a care reassessment.
Setting and method: The professional practice assessment has been made by an intern, extern or pharmacist, with inclusion of all patients on one fixed day, based on a prevalence survey, and repeated two times in 4 months. The statistical analysis was based on the following standards while using regular distribution-tests: demographic data, name and quantity of the drug prescribed, treatment duration, potential adverse effects triggered, and results of the interview with the prescriber when needed. The non-compliant prescriptions were reviewed with a pharmacist and a gastroenterologist and recommendations for the re-assessment of treatment were given to the prescribing physician. After this first step, key directions were given to prescribing doctors to guide them through important considerations when prescribing PPIs.
Main outcome measures: The care reassessment of PPI's prescription is mentioned in discharge letter.
Results: The size of the population assessed in both rounds was approximately the same: 74 and 70 files. 23 % then 16 % of patients ($p = 0.209$) had a medical gastric history. 39 % of them were already under a PPI prescription when arriving in the hospital, against 33 % in the second run ($p = 0.45$), and finally 51 versus 41 % of patient ($p = 0.23$) had current PPI prescription at the time of the audit, mostly half dose. Less treatments were established during hospitalization on the second round: 20 % versus 17 % ($p = 0.64$). Prescriptions were justified in 34 and 31 % cases ($p = 0.70$), and dose fitted in 73 and 72 % cases ($p = 0.89$). The adverse effects proportion was roughly the same in both rounds (20 and 17 %, $p = 0.64$). The prescribing duration was of over 6 months for most patients. The care reassessment led to treatment cessation in 11 versus 38 % cases ($p = 0.001$). In the first round, only 9 % of the PPIs patient's discharge letters mention the reason of pursuit or cessation of the PPI, for 19 % in the second ($p = 0.08$).
Conclusion: We note the high number of inappropriate prescriptions, associated with significant adverse effects and too long treatment period, confirming the requirement of regular care reassessment. The hospital pharmacist's intervention permitted to remind PPI's dangers with the medication reconciliation. An increase in PPI's treatment reassessments is noted, along with an increase in mentioning this reassessment in discharge letters. This work leads to the decision, in agreement with the rehabilitation care doctors, to include PPI's consideration for reassessment to the phone interview with GP. This study is now progressing in the entire hospital with the same method.
Disclosure of interest: None declared.

HP-PC129: Retrospective analysis of hospital stays and readmissions on traumatology wards

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Background and objective: Continuity of medication during transitions across health care providers and settings is a challenge. These transfers entail a risk for drug-related problems, adverse events and readmissions, especially in elderly, poly-medicated patients. We are planning an interventional research project to investigate the role of the community pharmacist in continuity of pharmacotherapy after hospital discharge. The objective of the current study is to explore data on admissions and readmissions as to define inclusion criteria and outcome measures for the interventional study.
Setting and method: A retrospective, observational study was conducted using a database of all hospitalizations on the traumatology wards in University Hospitals Leuven between 1 January 2011 and 31 December 2012. The database consisted of demographic data and hospitalization information. The readmission data were calculated for all patients discharged in 2011 and are limited to readmissions on a traumatology ward.

Main outcome measures: Number of patient discharges per month, number of readmissions; time between initial discharge and readmission.
Results: Within a time period of 2 years, 4433 hospitalizations on a traumatology ward took place; the mean number of discharges per month was 183 (DD 20.2). 51 % of hospitalized patients were male. The mean age of patients was 55.8 years (SD 21.0); 23.1 % of patients (n = 1025) were aged 75 years or older. The median length of stay was 4.1 days (range 281.1 days).

13.1 % of patients discharged in 2011 (n = 265) were readmitted to the hospital on a traumatology ward within 1 year after initial discharge. The majority of readmissions (51.3 %; n = 136) occurred within 3 months after initial discharge; 31.7 % (n = 84) even occurred within the first month. Furthermore, 2.0 % of patients (n = 41) had a second readmission on a traumatology ward.
Conclusion: On average, 183 patients are monthly discharged from a traumatology ward in University Hospitals Leuven. The readmission rate for traumatology was 13.1 %. These data confirm the use of the number of readmissions within 3 months as an outcome indicator for the intervention study. Finally, the frequency of discharges is of benefit to determine the study duration.
Disclosure of interest: None declared.

HP-PC130: One-stop dispensing: interdisciplinary drug information and patient involvement optimize drug prescribing in elective gastric-surgery patients

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Background and objective: Insufficient information when the prescribing decisions are made still remain the main cause of drug discrepancies. Imprecise admission summaries can be prevented by combining patient involvement and interdisciplinary drug history sources.

The objective of this sub-study in the development of the medication system one-stop dispensing (OSD) was to investigate whether a comprehensive primary medicine history (PMH) by pharmacy staff are used appropriately by physicians and assess the needs for follow-up after medication reconciliation.
Design: The sub-study was performed in cooperation between The Capital Region Pharmacy- and Gastric-surgery department, Amager-Hvidovre Hospital, Copenhagen.

63 consecutive elective gastric-surgery patients hospitalized from April 1th 2015 to June 26th 2015 were included. Prior to hospitalization, pharmacy staff and patients had a face-to-face conversation. Pharmacy staff recorded and noted the validated PMH directly into the electronic journal system (EJS). PHM's was available for physicians 24 h before medication reconciliation at hospitalization.

Discrepancies between PMH and drug prescriptions in Electronic Personal Medicine-profile resulted in interventions on day one after hospitalization. Suggested interventions were presented to the physician orally or by a written note. Only interventions accepted by physicians led to drug prescribing change.
Main outcome measures:

1. Incidence of discrepancies between PMH and drug prescriptions after medication reconciliation.
2. Acceptance rate of suggested pharmaceutical interventions by follow-up after medication reconciliation.

Results: Pharmacy staff found discrepancies in 21 % (54 of 263) of all drug prescriptions distributed on 60 % (38 of 63) of the patient. 76 % (41 of 54) of the suggested interventions were accepted and resulted in an average of 1.4 drug changes per patient (n = 38). The total 54 discrepancies was distributed as drug omissions 16 (30 %), false prescribing 13 (24 %), false doses 12 (22 %), clinically relevant improper dosing time 7 (13 %), and other discrepancies 6 (11 %).
Conclusion: This study confirms that PMH recorded by pharmacy staff do not prevent all drug discrepancies after medicine reconciliation. From our point of view prescribing follow-up after medicine reconciliation will be required and have to be an integrated part of the OSD-system in the future.
Disclosure of interest: None declared.

HP-PC131: Medication management optimization for surgical patients

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Background and objective: Poor communication of medical information at transition points is responsible for as many as 50 % of all medication errors and up to 20 % of adverse drug events in the hospital1. Our current development strategy integrates clinical pharmacy activities prioritized in surgical services because of a higher frequency of adverse drug events (multiple prescribers, transition in cares, and prescription of high risk medication).

Evaluate the medication management of surgical patients at admission, during hospitalization and at hospital discharge.
Design: During 4 months, medication reconciliation was realized at patient admission in orthopaedic surgery (min. 3 sources of information). During hospitalization, a clinical pharmacist proposed interventions to optimize medical treatment. After hospital discharge, two standardized phone follow-up were conducted at day 3 to the patient pharmacy (drugs dispensed by the community pharmacy) and at day 5 to the patient (readmissions, physician visits and evaluation (scale 0–10) about medication instructions performed by nurses at discharge).
Results: 100 patients were evaluated with an average age of 62 years [18–94] and sex ratio of 1.5. At admission, reconciliation process revealed 177 discrepancies: 56 were unintentional because of drug omission (64 %), dose change (34 %) and drug name confusion (2 %). It required pharmaceutical average time about 27 min/patient [5–240]. Patient interview revealed that 39 % took self-medication with analgesics not known by surgeons and anaesthetists. During hospitalization, 576 pharmaceutical analyses were conducted and required 92 pharmaceutical interventions. The main drug classes impacted were cardiovascular (28 %), anticoagulants (20 %) and central nervous system (13 %). 82 % of pharmaceutical interventions were accepted. At discharge, patients evaluated medication instructions performed by nurses at average of 5.8/10. Pharmacy follow-up showed that 65 % of patients recovered their treatments within 3 days and 10 % of them got self-medication including paracetamol. Patient phone follow-up have shown that two patients were re-hospitalized and 9 had a physician visit because of inappropriate analgesic treatment.
Conclusion: These results demonstrated that implementation of a pharmacist team is necessary to manage patient medication at admission to hospital discharge, and this particularly in surgical service. At hospital discharge, we develop medication information for patients performed to a clinical pharmacist.
References

1. Preventing Medication Errors (Institute of Medicine, 2006).

Disclosure of interest: None declared.

PE005: Prescription patterns of novel oral anticoagulants in Slovenia

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Background and objective: Novel oral anticoagulants (NOACs) are available in Slovenia since 2009 and their prescribing trends have not been identified. The purpose of the study was to explore the prescribing patterns of NOACs.
Setting and method: Health claims data on prescription drugs obtained from the Health Insurance Institute of Slovenia were analysed. The characteristics of patient populations treated with dabigatran etexilate, rivaroxaban and apixaban from January 2009 to June 2014 were investigated. Kaplan–Meier curves were used to analyse the prescription persistence of the patients and their prescribers, including therapy duration and therapy switches from or to vitamin K antagonists (VKA) and between NOACs. SPSS v22.0 was used for data analysis.
Main outcome measures: NOACs prescribing trends; Proportions and characteristics of subpopulations with different prescribing patterns; Therapy duration and persistence determination (median time).
Results: During the study period 19,401 patients received 57,158 NOAC prescriptions. Patients received their first prescription at the mean age of 67 years and the number of treated increased from 552 to 7553 per year between 2009 and 2013.

Only one oral anticoagulant prescription was prescribed to 7698 patients (39.7 %), of which 69.8 % received rivaroxaban, 27.6 % dabigatran etexilate and 2.7 % apixaban. Mean age of this subpopulation was 65 years, 61.3 % were female and 89.2 % of their prescriptions corresponded to primary thromboembolic prevention after orthopaedic surgery according to the dosage and quantity.

Additionally, 7978 patients (41.1 %) received more than one prescription of the same NOAC without any therapy switches. Of these patients, 2893 (36.3 %) were prescribed only two prescriptions, most of them presumably due to orthopaedic indication. In the remainder of 5085 patients with chronic NOAC therapy who received at least three prescriptions without switches, the median therapy persistence time was 760 days.

Moreover, 3724 patients (19.2 %) had 1–6 therapy switches with the first therapy change at the mean age of 69 years; 83.4 % of the patients were switched once, 12.4 % twice and 3.2 % three times, while four or more switches happened in less than 1.0 %. The majority of these patients (67.6 %) were switched from their previous VKA therapy to NOACs. Of these, 1.1, 1.8, 4.1, 17.1 and 52.3 % occurred between 2009 and 2013, respectively. Other 1207 patients (32.4 %) were switched between different NOACs (14.3 %) and from NOACs to VKAs (18.2 %).
Conclusion: Nearly one-fifth of the patients had a therapy switch. The majority of them were switched from VKA to NOAC, but the proportions of switches between NOACs and from NOACs to VKAs were also important. With more clinical experience, more careful and precise therapy changes and adaptations among oral anticoagulants are expected.
Disclosure of interest: None declared.

PE006: Complexity of antihypertensive therapy in geriatric patients

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Background and objective: The pharmacologic treatment of arterial hypertension has as main objective to reduce the risk of serious cardiovascular complications. The patients at high risk of a cardiovascular event because of comorbidities such as diabetes mellitus, chronic renal failure or cardiovascular disease, this control is greater. For elderly patients, the clinical practice guidelines do not include special considerations regarding the choice of antihypertensive treatment although it must be consistent with tolerability of each patient.
Setting and method: Descriptive observational study conducted from November 2012 to August 2014, including in the study all pluripathological patients over 65 years who were hospitalized in the unit of Internal Medicine of a comarcal hospital.
Main outcome measures: Demographic information of the study population and chronic prescription antihypertensive therapy were analysed. For the analysis of drug therapy were revised digital medical records and electronic prescriptions.
Results: The study included 897 patients with a mean age of 78.1 ± 7.1 years, with 50.1 % (407) men. 90.6 % (813) had prescribed at least one drug indicated for the treatment of hypertension, totalling 2282 prescriptions. The average number of drugs by age group was 2.6 in patients ranging from 65 to 69 years, 2.94 between 70 and 74 years, 2.87 between 75 and 79 years, 2.90 between 80 and 84 years and 2.58 in older than 85 years.

The complexity of the therapy had a very heterogeneous distribution in different patients, varying from 1 to 6 drugs per treatment, with higher prevalence of triple therapies (27.8 %, 226), followed by bitherapies (25.3 %, 206) and quadruple therapies (21.8 %, 177). Among the most prevalent drug combinations we observe that 13.3 % (108) was "A or I + B + D", 10.8 % (88) "A or I + D" and 10.0 % (81) "A or I + B + 2D". (A: Receptor Antagonists Angiotensin II; I: Angiotensin-Converting Enzyme Inhibitors; B: Beta-blocker; D: Diuretic).
Conclusion: Based on results obtained we can conclude that in our population no significant differences were observed in relation to the complexity and type of antihypertensive therapy by age group.
The results obtained show that the choice of antihypertensive therapy in the elderly appears to conform to the therapeutic goal of control of blood pressure values, without considering the need for therapeutic simplification in an usually pluripathologycal population, polymedicated and with higher susceptibility to suffer adverse drug reactions.
Disclosure of interest: None declared.

PE007: What is the percentage of people protected against CVDs by aspirin use in the UAE community?

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Background and objective: Cardiovascular diseases are number one cause of death worldwide; most of which can be prevented by addressing the risk factors as well as by using prophylactic drugs most commonly aspirin. In fact, according to the health care guidelines in several countries, low dose aspirin is recommended for individuals aged over 50 for this reason. The aim of this study was to identify how common is the use of low dose aspirin among people above the age of 40 in UAE and their level of awareness regarding its benefit and possible side effects.
Setting and method: A cross-sectional study included 419 UAE residents through convenient sampling to the population. A self-

administered questionnaire containing 33 questions was used to collect data and SPSS 21 for data analysis.

Main outcome measures: Prevalence of low dose aspirin use among adults in UAE.

Awareness of the dose of Aspirin that shall be used.

Awareness of the indications for aspirin use.

Awareness of the side effects of aspirin.

Awareness of the contraindications of aspirin use.

Age at which people start using low dose aspirin as CVD prevention.

Awareness of the importance of life style modification in addition to aspirin use for efficient CVD prevention.

Results: More males (27.7 %) than females (17.5 %) turned out to be using aspirin ($p = 0.012$). Out of the study population, 29.8 % of the sample were using aspirin, (with 23.54 % of the population is using low dose aspirin for CVD prevention). The percentage of people using aspirin increases with age reaching up to 50 % in adults aged 60 and above. The majority (83.2 %) uses aspirin following a prescription, but interestingly, 30.6 % do not know the dose they are taking, 36.4 % of people who use Aspirin had a history of smoking ($p > 0.0005$). A significant relationship was found between using aspirin and having particular long lasting diseases (Hypertension ($p = 0.017$), dyslipidemia ($p = 0.002$). Surprisingly, percentage of people using aspirin was higher among the least educated group (below high school, 41 %) compared to educated groups (above high school 19 %) ($p = 0.0007$). People who are using aspirin believe that it would not cause side effects ($p > 00.0005$), and they also believe that using aspirin would protect them against cardiovascular diseases on long term ($p = 0.001$).

Conclusion: Low dose aspirin use for primary prevention is an important health care issue, especially in older population. Health education and awareness programs are required to increase awareness of safe aspirin use.

Disclosure of interest: None declared.

PE008: Analysis of behaviours and attitudes of antibiotics use in Algarve's population

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Background and objective: In the past years, the antimicrobial resistance has been increasing, partly due to its misuse, and this has been considered as a threat for the public health by WHO.

The aim of this study was to evaluate behaviours and attitudes of antibiotics use among adults in the south region of Portugal, Algarve, particularly self-medication and knowledge about these drugs.

Setting and method: This was a population-based, cross-sectional study conducted in 3 shopping centres of Algarve's Region: Faro, Tavira and Albufeira. Interviews with 298 subjects aged 18 years old or older with a questionnaire of about 17 questions. These answers were collected due to the European Antibiotic Awareness Day Campaign.

The statistical analysis of the results was done by the statistic software SPSS, being the significant level of 0.05 and the confidence interval of 95 %.

Main outcome measures:

1. Percentage of self-medication according to the characteristics of the respondents;
2. Percentage of respondents who do not know which microorganisms are the target of antibiotics.

Results: This study included 298 respondents, 111 (37.2 %) male and 187 (62.8 %) female.

Of the 296 respondents, 42 (14.2 %) assume self-medication while 254 (85.8 %) do not self-medicate. Of individuals who claimed self-medicate with antibiotics, 32 (76.2 %) attended or are attending secondary and higher education. Respondents with more than 50 years old and the retired ones are who present less frequently behaviours of self-medications, 18 (42.9 %) and 8 (19.0 %), respectively.

Relating the self-medicated individuals with the statement "I can reserve the antibiotics' remains at home to take another time", 13 (29.5 %) agree with the statement while 28 (11.3 %) disagree.

It was also established that 136 respondents (59.4 % of a total of 229) consider that antibiotics are used to treat infections by virus and only 93 respondents (40.6 %) disagree.

Conclusion: A higher percentage of self-medication is prevalent among younger and more educated individuals. Self-medicated individuals agree with the possibility to reserve antibiotics at home. Mostly of the individuals who self-medicated did not know what the target of the antibiotics is.

Disclosure of interest: None declared.

PE009: Use of medication among high-risk pregnant women: a drug utilization study

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Background and objective: The high-risk pregnancy is more likely to have adverse outcomes and may require increased use of drugs. Studies related to medication use by high-risk pregnant women are scarce. This study aimed to describe the profile of medication use by high-risk pregnant women and their gestational, socioeconomic and demographic data.

Setting and method: A cross-sectional descriptive study was conducted at a tertiary care hospital in Brazil in 2014. A pharmacist applied a questionnaire to high-risk pregnant women at least in the 12th gestational week attended in the five clinics of high-risk pregnancy (infectious diseases, endocrinology obstetric, foetal medicine, gestational hypertension and risk of prematurity).

Main outcome measures: Data related to socioeconomic, demographic and gestational characteristics, medicines, medication adherence and knowledge about pharmacotherapy were collected. Drugs were classified according to the pregnancy risk category of *Food and Drug Administration* (FDA). Association between the number of medicines used and the other variables was investigated. Women who correctly answered at least 80 % of the questions related to medicines used had satisfactory knowledge about pharmacotherapy. Medication adherence was assessed using the modified Morisky medication adherence scale (CMSA, 2006).

Results: 386 high-risk pregnant women were included. The mean age was 27.7 (SD 6.8); 67.6 % had more than 9 years of study; 57.3 % worked; 73.8 % were married or had a partner; 11.7 % had private health insurance; 63.5 % did not plan the pregnancy; 64.8 % were not primogravida; 72.3 % had no previous abortion; the mean numbers of prenatal visits and ultrasounds were 8.2 (SD 4.4) and 3.4 (SD 3.2) respectively; 93.5 % did not use alcohol and 83.9 % did not use tobacco. 147 active ingredients were used. Each woman used up to 15 active ingredients, average of 5.3 (SD 2.3) and 99.7 % used at least one. There was no difference between the mean number of drugs used in each of the five clinics ($\chi^2 = 4.353$; $p = 0.36$). According to FDA, 2 % of the drugs used were A, 25.8 % B, 35.4 % C, 11.6 % D, 1.4 % X and 23.8 % were not classified. Additionally, 86.8 % of women

used drugs of category A, 63 % of B, 79 % of C, 16.6 % of D and 0.8 % of X. There was no association between the number of medicines used and the other variables after application of the binary logistic regression model. 65.5 % of the women had satisfactory knowledge about pharmacotherapy and 35.5 % had medication adherence. Women who had satisfactory knowledge about the medicines were older ($t = 3.012$, $p = 0.003$), worked (OR 2.16, 95 % CI 1.38–3.36) and had higher medication adherence (OR 1.61, 95 % CI 1.22–2.53).

Conclusion: There was no association between the profile of medication use and demographic, socioeconomic and gestational characteristics. The health conditions of the high-risk pregnancy can determine greater need for drugs and decrease the influence of other characteristics. Age and professional status can influence knowledge about pharmacotherapy and medication adherence.

Disclosure of interest: None declared.

PE010: Antibiotic consumption in Portugal: 2010 and 2011

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Background and objective: The use of antibiotics has contributed to a marked decrease in morbidity caused by communicable and infectious diseases over the past few years.

The aim of our study is to evaluate the use of antibiotics in clinic in 2010 and 2011, considering two different methodologies: the defined daily dose per 1000 inhabitants per day (DHD) and the number of packages per 1000 inhabitants per day (PHD).

Setting and method: Two databases were used: a dispensing antibiotics database with prescription in ambulatory, provided by the National Drug Authority and Health Products (INFARMED), and a sales database of wholesalers, provided by the International Medical Statistics (IMS) Health. The classification and grouping of the molecules are made according to the criteria of the ATC system (Anatomical Therapeutic Chemical), and its consumption is expressed in defined daily dose per 1000 inhabitants per day (DHD) and the number of packages per 1000 inhabitants and per day (PHD).

Main outcome measures:

1. Defined daily dose per 1000 inhabitants per day (DHD).
2. Number of packages per 1000 inhabitants per day (PHD).
3. Percentage of consumed antibiotics.

Results: The analysis of the consumption of antibiotics in clinic in Portugal between 2010 and 2011, shows that while the total sales of antibiotics from wholesalers to pharmacies have decreased, 4.69 % DHD and 3.02 % PHD, the consumption per prescription has increased 2.23 % DHD and 0.65 % PHD.

Regarding the group of antibiotics, the group of penicillines showed the highest consumption both at the level of prescription and at the level of sales from wholesalers to pharmacies, according to the two methods of analysis. The cephalosporins and quinolones were two groups of antibiotics that showed a decrease in consumption in both databases, confirming the trend observed in other studies.

The comparative analysis of antibiotic consumption in different health regions has shown that there are significant differences. The North region presented a greater reduction (10.26 DHD) consumption with prescription while the Alentejo region was the one that presented a greater decrease (8.41 and 5.01 % DHD PHD) of total sales from wholesalers to pharmacies.

Conclusion: The present study has shown differences in the results by different methods and data sources, concluding that it was necessary to use several analysis methods, in order to improve the interpretation of changes in the consumption of antibiotics.

Disclosure of interest: None declared.

PE011: Urinary tract infections: outpatient antibiotic use and antimicrobial resistance in the Algarve Region

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Background and objective: Microbial resistance to antibiotics continues to emerge as a significant global health concern. The misuse of antibiotics is an important factor contributing to the development of antibiotic resistance by bacteria. Urinary tract infection is among the most common bacterial infections, being *Escherichia coli* the main etiological agent.

In this context this study aims to assess, in a specific region,

1. The average consumption of antibiotics.
2. Outpatient antibiotic prescription to treat urinary tract infections.
3. The prevalence of the antimicrobial susceptibility in urinary tract infections.

Setting and method:

1. Descriptive observational study of outpatient antibiotic consumption from 2000 to 2011, using a database provided by the National Authority of Medicines and Health Products.
2. Drug Use Study within a sample of patients from General Practitioners (GPs) consultations (2011).
3. Study of urine cultures from a Clinical Laboratory, from distinct Algarve regions areas and from the year 2012, using the guide M39-A3-Clinical and Laboratory Standards Institute.

Main outcome measures:

1. Defined daily dose per 1000 inhabitants per day.
2. Percentage of prescribed antibiotic.
3. Percentage of antibiotic susceptibility.

Results: In the Algarve region, the antibiotic consumption in 2011 was under to the one in the mainland Portugal, except for cephalosporins and quinolones with higher consumptions in that region.

The most commonly prescribed antibiotic was ciprofloxacin (32.8 %), followed by fosfomycin (11.6 %) and cotrimoxazole (11.1 %). Altogether, 51 % of urinary tract infections were treated with quinolones. Nitrofurantoin represented only 4.2 % of all prescriptions. *Escherichia coli* was the isolate most frequent (73.7 %). Concerning to antibiotic susceptibility, it was found that the antibiotics with the highest % of susceptibility were amikacin (80 %), fosfomycin (85 %) and nitrofurantoin (81 %).

Conclusion: Antibiotic prescribing profile in Family and General Practice consultation in the Algarve region it stands out for the low use of antibiotics considered to be the first options, with a high level of quinolones prescription.

The high susceptibility to fosfomycin and nitrofurantoin indicates that these antibiotics can be used as therapeutical options for empirical treatment of urinary tract infection.

This study provides information that may be useful to develop educational activities to promote the rational use of antibiotics.

Disclosure of interest: None declared.

PE012: Can systematic reviews help with choosing a suitable health-related quality of life measure in interventional studies of psoriasis?

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Background and objective: The researchers and sponsors of interventional studies face the ongoing debate of choosing, preferably a single, suitable HRQoL measure. Systematic reviews (SR) are unique in helping to form the basis for developing practice guidelines and identify the most psychometrically sound measure in a given therapeutic area. The aim of this study was to generate evidence of the use of quality of life (QoL) measures to assess treatments for psoriasis.
Setting and method: The methodology for this SR followed PRISMA guidelines. All available articles describing randomized placebo and active-controlled trials (RCTs) of therapies for psoriasis that included QoL measurements published up to November 2014 were identified. Six databases were examined with 388 search terms, and grey literature was identified. Abstracts of articles were reviewed independently by two assessors (FA, AC) and included if they met the inclusion criteria. A third adjudicator (AA) resolved any differences of opinion. Two authors (FA, AC) independently reviewed risk of bias with the *JADAD scale* and extracted data using the *Cochrane Handbook for SR* form.
Main outcome measures: The main outcome measures were identification of randomized controlled studies of dermatological products using health-related quality of life (HRQoL) measures. The most commonly used HRQoL measures will be identified.
Results: Of 3597 screened article abstracts, 329 articles were selected for detailed review, 102 trials met eligibility criteria for inclusion.

The Dermatology Life Quality Index (DLQI) was the most commonly used QoL tool (number of studies = 84, 82.4 %), followed by the Short Form 36 (SF-36) (32, 31.4 %), EuroQol (EQ-5D) (15, 14.7 %), Psoriasis Disability Index (PDI) (14, 13.7 %) and Skindex (5, 5 %); 46 trials used more than one QoL tool for assessment. The most widely investigated interventions that included QoL assessment were: topical calcipotriol (13 trials), systemic methotrexate (6), etanercept (14) and phototherapy (9).

The areas of origin of these studies were: Europe (47 trials) including Germany (9), UK (9); and USA/Canada (40) trials including USA (21), USA/Canada (12) and Canada (7). The number of psoriasis treatment studies that included QoL measurement has gradually increased throughout the years: 1998–2004 = 13; 2005–2009 = 33; and 2010–2014 = 56.
Conclusion: Where QoL is measured in the assessment of interventions in psoriasis, the DLQI is the most commonly used and possible suitable method. There is an increasing recognition of the value of QoL assessment in monitoring the efficacy of interventions in psoriasis, as demonstrated by the increasing reporting of QoL measurement.
Disclosure of interest: None declared.

PEC002: Care and economic impact of the dispensation of the new treatments for hepatitis c in a third-level hospital

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Background and objective: Hepatitis C virus infection is one of the principle causes of chronic liver disease. Successful treatment significantly decreases the risk of hepatic morbidity and mortality. Current standard of care achieves sustained virologic response rates of 80–90 %. The objective of this study is assessing both the healthcare and economic impact involving the dispensation of new drugs for the treatment of hepatitis C in a tertiary hospital pharmacy service.
Setting and method: Retrospective study conducted between October 2014 and May 2015, which included the following drugs: daclatasvir, ledipasvir/sofosbuvir, simeprevir, sofosbuvir, ombitasvir/paritaprevir/ritonavir and dasabuvir. From dispensing data were collected the following parameters: number of patients treated with any of the drugs included in the study, diagnosis of mono-infected or co-infected with HIV, prescribed therapeutic schemes (both with new treatments for hepatitis C as antiviral above), time of treatment, dispensations, prescriber and attributable costs. Economic and dispensing data were obtained through the application of patients outside of Farmatools.
Main outcome measures: As a measure of impact care was quantified the number of new patients with hepatitis C treatment over the same period the previous year.
Results: The total number of patients treated with any of the drugs of the study during the referred period was 129, of which 17 was treated due to ineffectiveness of previous therapies, so 112 were new patients. The distribution by drugs and therapeutic scheme was as follows: 18.6 % daclatasvir + sofosbuvir that co-infected with HIV were 33.3 %, 26.3 % ledipasvir/sofosbuvir that co-infected were 5.9 %, 31 % simeprevir sofosbuvir that co-infected were 5 %, 14 % ombitasvir/paritaprevir/ritonavir dasabuvir of which 5.5 % were co-infected, 6.2 % sofosbuvir (no Co-infected) and 3.9 % simeprevir (no co-infected). All therapeutic schemes could contain ribavirin or peginterferon-alfa. All co-infected, 24 % of the total belonged to the service of infectious diseases and the rest to the digestive service. In all cases dispensations were monthly. The overall cost of the introduction of new treatments for hepatitis C was 4,201,244.77 € with an increase with over the same period the previous year of 3,899,274.33 €.
Conclusion: The incorporation of this type of therapy to the dispensing to outpatients has increased a 87 % of the healthcare burden dedicated to patients with hepatitis C and a 1.391 % respect to the same period of the previous year in pharmaceutical expenses associated with dispensing to outpatients.

The most used scheme in mono-infected was simeprevir sofosbuvir and in co-infected daclatasvir sofosbuvir.

In next years it would have to be confirmed if this increase in pharmaceutical expenditure could represent a saving in the indirect costs of testing diagnostic, visits to the doctor and co-morbidities associated with disease in cured patients.
Disclosure of interest: None declared.

PEC003: An approach to handling additional monitoring of new active substances

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Background and objective: The European Union have established a ruleset for additional monitoring of new active substance, these rules imply that all active substances that are marketed from January 1st 2011, is subject to additional monitoring within the first 2 years after the date of issue of marketing authorization. These rules confer that all adverse reactions must be submitted, no matter the severity. For clinical personnel it is often very difficult to know which medicines

are subject to additional monitoring. Therefore the regional Drug and Therapeutics Committee in the Capital Region (D&TC) have developed a method on how to increase the awareness to drugs that are subject to additional monitoring.
Design: The Capital Region Pharmacy, is maintaining an intern list of drugs that are subject to additional monitoring, due to being a new active substance, for use at hospitals in the Capital Region. The D&TC monitors usage of these drugs/medicines quarterly, in respect to which hospital wards are using drugs with additional monitoring requirements, and the quantities used. This information is disseminated through the local drug and therapeutics committees, at each hospital and through the hospital director level. The total usage of these new active substances are monitored and evaluated by the D&TC, with regard to pharmacoeconomic impact.
Results: Hospital directors and local D&TCs appreciate the quarterly evaluation, and deem it to be a useful tool in achieving additional monitoring of new active substances, rational use of new active substances, and drug-cost management.
Conclusion: Through monitoring of consumption of new active substances, the hospitals in the Capital Region have increased awareness of regulatory requirements. Through a system of local D&TCs, the information is easily disseminated to hospital staff all over the region, with a potential to improve patient safety and insure compliance to regulatory requirements.
Disclosure of interest: None declared.

PEC004: Pirfenidone for treatment of idiopathic pulmonary fibrosis: cost effectiveness evaluation

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Background and objective: Idiopathic Pulmonary Fibrosis (IPF) is a rare disease with significant morbidity and mortality and a 18.07/100,000 prevalence in our region. Patients poor survival and rapid lung function decline underline the importance of early treatment. Three studies (ASCEND, CAPACITY-004 and 006) evaluated efficacy of an antifibrotic drug, pirfenidone, showing a significant improvement of progression-free survival and pulmonary function. Pirfenidone has an AIFA marketing authorization for mild-to-moderate IPF and a new risk-sharing agreement (success-fee). Therefore, the drug is paid only for those patients who benefited from the treatment based on the evaluation of a specific outcome parameter (ΔFVC % < 10) at 6 months treatment from baseline. The aim of this study was to assess the cost-effectiveness profile of pirfenidone in treatment of mild/moderate IPF.
Setting and method: ASCEND trial already provided efficacy and treatment discontinuation data. Cost has been calculated in a cohort of 42 consecutive IPF naive patients by using a hospital perspective with a 52-weeks' time horizon.
Main outcome measures: Efficacy was defined as percentage decrease of predicted FVC (ΔFVC %), after 52 weeks of treatment. Cost of therapy was defined as cost of drug and its side effects (physical examination and laboratory assessment) and the payer perspective (Italian National Health Service) was applied by considering only differential direct costs. The related ICER (Incremental cost effectiveness ratio) was calculated.
Results: Pirfenidone is priced at 451 € for a 14-day, 63-capsule starter pack, 1805 € for a 28-day, 252-capsule blister pack. Even if cost-effectiveness analysis produced an ICER of 59,712 €/ΔFVC % slightly exceeding the 50,000 € threshold, pirfenidone is nowadays the only therapeutic choice for IPF. The related regional budget impact (1-year time horizon) calculated on the basis of IPF prevalence is equal to 11,121,549 €.
Conclusion: More detailed future cost/utility evaluation related to our centre population is required to define the real sustainability of pirfenidone treatment. A complete evaluation of cost saving, related both to reducing of disease worsening and consequent hospitalization, and to success fee agreement, is required in order to define the overall cost/effectiveness. Nevertheless safety and efficacy together with the reduction of mortality rate could be considered as achievement of a previously unmet medical need.
Disclosure of interest: None declared.

PEC005: Economical evaluation of dextriferron in iron deficiency anemia

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Background and objective: The treatment of choice to iron-deficiency anaemia is the administration of oral iron (ferrous salts). Parenteral forms such as iron (III)-hydroxide sucrose complex (Feriv®, Venofer®) are an alternative to oral treatment when oral forms fail. On the other hand, Dextriferron (carboxilmaltosa ferric) is an expensive intravenous iron which is applied in our hospital only to patients with iron deficiency anaemia whose haemoglobin levels are lower than 11 g/L and ferritin levels are lower than 200 ng/mL and when oral iron is ineffective and the patients have difficulties in attending to the hospital to get the necessary dose iv sucrose iron or venous route need to be preserved because of being in a poor condition or presenting a poor venous access. The restricted use of Dextriferron is due to the high price of this drug (1 vial costs 83.7 euro). The objective of this study is to identify patients of our hospital who use Dextriferron and to evaluate the amount of money which is wasted when there is an inappropriate use of such drug.
Setting and method: We evaluated Dextriferron treatments between January and May 2015. Classified patients according to sex, age, pathology and haemoglobin (g/L) and ferritin (ng/mL) levels.
Main outcome measures: A total of 13 patients (9 men and 4 women) received Dextriferron. Age of patients: less than 65 years old (46 % patients) and more than 65 years old (54 % patients). Cause of iron deficiency anaemia of these patients: bleeding caused by duodenal ulcer, 3 patients; rectal bleeding, 4 patients; epistaxis, 1 patient; intestinal obstruction due to peritoneal carcinomatosis in a terminal situation, 1 patient; pseudomembranous colitis, 1 patient; anaemia secondary to diabetic nephropathy, 1 patient; anaemia secondary to pancreatitis, 1 patient; unknown cause, 1 patient. Two vials of Dextriferron were used in the majority of patients (according Ganzoni equation).
Results: Three patients undertook an inappropriate use of Dextriferron (one patient: haemoglobin >11 g/L and ferritin >200 ng/mL; 1 patient: haemoglobin >11 g/L and unknown level of ferritin; 1 patient: oral iron was not tried previously). Therefore, our hospital could have saved 502.2 euro.
Conclusion: The inadequate use of Dextriferron leads to a high waste of money in the hospital. Therefore, pharmaceutics could play an important role in both ensuring an appropriate use of this drug and checking the economic resources of the hospital.
Disclosure of interest: None declared.

PEC006: Introduction of biosimilar growth-hormone, as a means to reduce hospital costs

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Background and objective: To evaluate the effect on hospital drug-costs of the initiatives taken to make clinicians use the cheapest growth hormone (GH) and to introduce biosimilar GH by the regional Drug and Therapeutics Committee of the Capital Region of Denmark (D&TC). The initiatives were powered by clinical pharmacists and clinical pharmacologists from the D&TC in collaboration with the hospital pharmacy of the Capital Region of Denmark.
Design: Analysis of data on drug consumption in conjunction with an overview of continuous initiatives to introduce biosimilar GH, e.g. national tenders and meetings with lead clinicians. The actual GH consumption and expenditure from April 2011 to February 2015 was compared to the expected development as indicated by a forecast for the same 47 months produced by exponential smoothing of data from January 2007 to Marts 2011.
Results: Reductions in cost/consumption is correlated with national tenders and the initiatives taken by the D&TC and clinical pharmacists. Over a period of 4 years, the hospital costs of GH have been reduced by 61 %. Over this period, the GH expenditure was $\sim$120 million DKK ($\sim$16 million €) lower than expected.
Conclusion: Through national tenders and introduction of biosimilar GH, the average cost of GH treatment has been reduced significantly. Due to implementation of these tenders by clinical pharmacists and the D&TC, a significant reduction in expenditure to GH has been achieved. We conclude that the saving potential of biosimilar drugs can be translated into cost reductions through national tenders and a strict implementation based on close collaboration between the D&TC, the hospital pharmacy, and the lead clinicians.
Disclosure of interest: None declared.

PEC007: The cost-effectiveness of genetic testing for CYP2C19 variants to guide antiplatelet therapy with clopidogrel or prasugrel in R. Macedonia

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Background and objective: Pharmacogenetic (PGx) prediction of the therapeutic outcome in each patient individually is a challenge and its usage in clinical practice is still far from reality. The proven safety and efficacy of new highly potent P2Y12 receptor blockers (prasugrel and ticagrelor) and their significantly higher cost relative to clopidogrel, seeks to select a economically valuable therapy associated with better therapeutic effect and a lower risk of adverse events. Our objective was to estimate the cost-effectiveness of *CYP2C19* genotyping in a theoretical cohort of 200 patients with an acute coronary syndrome (ACS), who received a percutaneous coronary intervention (PCI) with or without a coronary stent implantation, treated with clopidogrel or prasugrel in a managed care setting.
Setting and method: A decision tree model based on an adverse event occurrence (myocardial infarction, stroke, bleeding, stent thrombosis or cardiovascular death) in the Trial to Assess Improvement in Therapeutic Outcomes by Optimizing Platelet Inhibition with Prasugrel-Thrombolysis in Myocardial Infarction (TRITON-TIMI) 38, was employed to evaluate the economic efficiency of the selection of an antiplatelet drug based on a patient's *CYP2C19* genotype status (clopidogrel or prasugrel) compared with the selection of an antiplatelet drug based on the standard of care (receiving clopidogrel regardless of the genotype) in a time horizon of 15 months. The model analysis used population data on the prevalence of *CYP2C19*2* allele in the Republic of Macedonia, assuming a 99 % specificity and sensitivity of genetic tests. Only direct costs related to drug treatment, PGx test (*CYP2C19*2* and**17*), treatment of major adverse events and hospitalization were included. Unit costs, expressed as EUR 2015, were obtained utilizing official (Centre for Biomolecular Pharmaceutical Analysis-CBFA, government and hospital pharmacy) publicly available data, with no discount. The benefit of the two treatment strategies, measured as quality-adjusted life years (QALY) were extracted from the published data (8.650 vs. 8.631 for PGx guided and traditional treatment strategy, respectively).
Main outcome measures: Economic viability evaluation of the PGx application in the individualization of the clopidogrel therapy in R. Macedonia.
Results: Total accumulated cost per patient for the PGx guided therapy was € 99.049 versus € 10.762 for the traditional treatment strategy while the mean drug-associated cost was € 21.09 and € 9.68, respectively. The cost associated with and due to side events hospitalization was 1.5-fold less in PGx compared to the traditional treatment.
Conclusion: The CYP2C19 genotype guided treatment was the dominant option (less costly and more effective) compared to the standard care strategy for patients with ACS and PCI in R. Macedonia.
Disclosure of interest: None declared.

PEC008: Possible targets for improving the cost-effectiveness of epoetin alpha for the prevention of blood transfusions in orthopaedic surgery: systematic review and meta-analysis

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Background and objective: Orthopaedic surgery is associated with severe blood loss and risk of blood transfusion. Several blood management strategies are used to prevent blood transfusion, like epoetin alpha for patients with preoperative haemoglobin (Hb) levels of 10–15 g/dL. However, the cost-effectiveness of epoetin alpha is questioned. Therefore, this review aims to study the effectiveness of epoetin alpha on the transfusion rate after large orthopaedic surgery, assess the effectiveness of lower doses epoetin alpha and identify high-risk patients for blood transfusions.
Setting and method: Systematic review based on studies found in PubMed, Medline, the Cochrane Central Register of Controlled Trials and Embase from start of the databases to 31 July 2014. Randomized controlled trials (RCTs) and observational studies including epoetin alpha as intervention compared to an inactive control in patients with elective orthopaedic surgery were selected independently by two reviewers. Quality of evidence was evaluated by two reviewers using the GRADE approach. Meta-analysis and meta-regression were performed.
Main outcome measures: Effect of epoetin alpha on transfusion rate; influence of predefined factors (total dose epoetin alpha, gender, preoperative Hb level, type of surgery) on effectiveness of epoetin alpha.
Results: 19 studies (8 RCT's; n = 1190 and 10 observational studies; n = 1255) were included. Transfusion rate was decreased from 42

(range 21–55 %) to 17 % (range 4–38 %) in the intervention group [RR = 0.36 (95 % CI 0.32–0.42); $p < 0.001$; NTT = 4; quality of evidence 1 out of 3]. However, no dose effect relationship was found in studies comparing high and low dosage schemes (6 studies; n = 701). No studies were available describing only primary total knee arthroplasty, revision surgery, or predominantly male or female participants. No studies described a patient population with preoperative Hb levels within the range 10–15 g/dL, so no stratification could be performed.

Conclusion: Epoetin alpha halves the postoperative transfusion rate after total hip and knee arthroplasty. Because of lack of dose relationship, cost-effectiveness might be increased by lowering the total dose epoetin alpha. Effect of type of surgery, gender and preoperative Hb level on effectiveness of epoetin alpha was inconclusive. For implementation in clinical practice, assessment of absolute risk of transfusion for an individual patient remains to be important.

Disclosure of interest: None declared.

PEC009: Atropine pre-filled syringe: economic relevance of its introduction in anaesthetic

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Background and objective: In Chambery Hospital, anaesthetist or nurse anaesthetist daily prepare an atropine syringe for each operating theatre room. If atropine is used during surgery, a new one is prepared. If it's not, it's kept for the next surgery. In practice, the amount of syringes that have been used seems to be lower than the amount of syringes prepared. Meanwhile, since October 2013, atropine pre-filled syringes are sold but are expensive. The aim of this study is to evaluate cost and use of home-made syringe and to compare them with the cost of using pre-filled syringe.

Design: The effectiveness between home-made Atropine syringe (practice 1) and atropine pre-filled syringes (practice 2) is the same. That is why we proceed to a cost minimisation analysis between these two different practices. Practice 1's cost is equal to the number of prepared atropine syringe multiplied by the price of a prepared syringe. This price is composed by atropine ampoules, syringe, needle, compress, and stickers. Practice 2's cost is equal to the number of administrated atropine syringe multiplied by the price of an atropine pre-filled syringe. These tow costs Have been evaluated during 1 month and have been compared.

Results: During 1 month, 339 syringes have been prepared and only 33 % have been used (17 % administered and 16 % lost view). The first practice costs 142 €/month instead of 296 € using pre-filled syringes. In 1 year, using pre-filled syringes would cost about 1700 € more than the actual practice.

Conclusion: Using pre-filled syringes would remove the risk of mistake during the preparation step of syringes and would secure drug circuit and patient. Furthermore cost of medical error and cost of time preparation are not taken into account in this survey. This additional cost of 1700 € a year is overrated. The cost of a medical error is difficult to evaluate but it's certainly more than 1700 €. That is why Chambery Hospital referenced pre-filled syringes and changed its practice.

Disclosure of interest: None declared.

PEC010: Initiatives to reduce hospital drug expenses on recommended HIV drugs

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Background and objective: In 2009 the Hospital Pharmacy and the regional Drug and Therapeutical Committee (D&TC) launched an initiative to control HIV drug expenditure in collaboration with specialists in infectional diseases in the Capital Region (CR). The intervention began in October 2009 as a regional dialog with the specialists followed in April 2011 by a national process of introduction of national binding guidelines including a tender. This is an evaluation of the efforts on shifting between single-tablet regimes (combination of emtricitabine, tenofovir and efavirenz or combination of emtricitabine and tenofovir) and double/triple-tablet regimes with efavirenz, tenofovir and lamivudine depending on the annual tenders in the period from October 2009 to May 2013.

Design: The aim was to compare data on drug expenditure and drug consumption for the period before and after both the regional and the national initiatives. The actual drug use was compared to the expected development for the same period. Forecasts were produced by exponential smoothing on data from January 2004 to October 2009. The hospital pharmacists and D&TC had annually meetings with the specialists in infectional diseases to evaluate the new national guideline.

Results: The regional initiatives initiated in 2009 did not affect either the drug consumption or the drug expenditure markedly. After the introduction of binding national guidelines there was a reduction in cost/consumption with additional savings at each new annual tender. From October 2009 to May 2013 the HIV drug consumption rose 48 % and the 2013 expenditure was 5.5 million € (27 %) lower than expected.

Conclusion: Significant cost savings can be obtained by extensive management focus by the hospital pharmacists and D&TC in close collaboration with the specialists in infectional diseases and national guidelines/tendering on HIV drugs.

Disclosure of interest: None declared.

PEC011: Management of Crohn's disease by biologics in France: a retrospective pairwise economic study comparing cost per remitter associated with adalimumab and infliximab treatment

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Background and objective: Crohn's disease (CD) is a chronic inflammatory bowel disease (IBD), progressing by flares and remission periods. The effectiveness of conventional treatments with immumodulator drugs such thiopurines or methotrexate to induce clinical remission remains limited and the treatment of CD has undergone a major evolution with the advent of anti-TNF biologic therapies including adalimumab (ADA) and infliximab (IFX). These molecules are very effective but expensive for the French health insurance. The main aim of our study was to compare the costs associated with the use of these two anti-TNF biologic therapies (ADA *versus* IFX) and needed to obtain clinical remission without corticosteroids in patients with moderate to severe luminal CD. Our secondary objective was to evaluate the time to remission in the two therapeutic strategies.

Setting and method: 54 patients being treated either by ADA or by IFX as first-line of anti-TNF between January 2007 and July 2011 in Tours University Hospital, France, were included in the study and matched according to three criteria: disease duration (C1) and patient age (C3) at treatment initiation, treatment duration (C2), resulting in 27 pairs of matched patients. Cost analysis concerned direct medical costs i.e. hospitalization costs, anti-TNF supply costs and costs for examinations and investigations performed out of hospital. Costs data were calculated from the perspective of the French health-care system, on the basis of reimbursement rates of national health insurance.
Main outcome measures: Mean cost per patient and mean time to access remission without corticosteroid.
Results: Mean cost per remitter was € 5962 for patients initiated with ADA treatment and € 12,620 for patients initiated with IFX treatment and the € 6659 difference was statistically significant ($p < 0.001$). For ADA, 84 % of this cost corresponded to anti-TNF drug supply and 14 % to hospitalizations costs. For IFX, these rates were 78 and 21 %, respectively.

Mean time to remission without corticosteroids was also shorter in patient initiated with ADA treatment (4.4 months for ADA vs. 7.7 months for IFX, $p < 0.05$).
Conclusion: Our study demonstrated a significantly lower cost per remitter without corticosteroids for patients treated with ADA as first-line of biotherapy, together with a shorter time to remission when compared with patients initiated with IFX treatment. These results suggested, from a French perspective, a better cost-effectiveness of ADA for the induction of clinical remission. Will the imminent launch of biosimilar products result in new medico-economic outcomes resulting in lower prices for reference products?
Disclosure of interest: None declared.

PEC012: Can health-related quality of life scores be converted to utility values? A paradigm shift

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Background and objective: The conventional method for generating utility values to perform cost-utility analysis is to employ standardized generic utility measures such as EQ-5D from which QALYs are calculated. The aim of this study was to identify a pragmatic mapping approach to allow the accurate prediction of utility values from Dermatology Life Quality Index (DLQI) scores.
Setting and method: A systematic literature search was carried out using PubMed to identify studies that described HRQoL scores to utility value conversion techniques. The inclusion criteria covered all disease areas and all measures.
Main outcome measures: The main outcome measures were:

1. Identification of techniques for conversion of HRQoL scores into utility values.
2. Determination of the most pragmatic mapping method for prediction of utility values from HROoL scores.

Results: 29 articles were identified describing various mapping techniques. The most frequently mentioned method was 'transfer to utility' or 'regression analysis'. Another method, "direct revaluation", involves defining health states in the start measure which are then assigned weights using direct elicitation methods, such as standard gamble (SG), time trade off (TTO) and visual analogue scale (VAS). Two less common methods included response mapping and effect size translation. A number of statistical techniques used for such a conversion were identified, including ordinary least squares (OLS) regression, Tobit regression and censored least absolute deviation (CLAD) estimates. Despite giving the highest accuracy, linear regression, the most commonly used modelling method, is only likely to produce a line of best fit when the relationship between the dependent and independent variables is linear. The starting underpinning caveat is that mapping is more likely to be successful where there is a conceptual overlap between the two measures.
Conclusion: This exploratory investigation indicates that it is highly likely that this shift from the established convention revolutionise the concept of utility values and their Relationship to HRQoL scores. 'Ordinal logistic regression' is a plausible approach as it recognises that the responses of dimensions may be ordered, as in the EQ-5D. A large data set is currently being explored which would allow the internal and external validation of the predicted EQ-5D responses based on the ordinal logistic regression model and utility values derived from the DLQI.
Disclosure of interest: None declared.

PH005: Exposure to bisphenol A related to haemodialysis treatment

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Did you previously present your abstract on an international platform: Yes—the abstract has been previously presented internationally.
Background and objective: Bisphenol A (BPA) is an endocrine disruptor found in food containers and plastic beverages and in some dialyzers. The aim of this study is to investigate for the first time, the overall potential exposure of patients suffering from end stage renal disease (ESRD) to BPA, during haemodialysis (HD) treatment.
Setting and method: This study was conducted at the University Hospital of Poitiers in France (2013–2014). Samples were collected on the water loop, dialysis machine, and dialyzer. In order to avoid contamination by BPA, all samples (250 mL) were collected into glassware calcined at 500 °C for 5 h. The concentrations of BPA were determined using a LC/MS/MS system consisting of an Solid-phase extraction (SPE) system. We studied 5 dialyzers commonly used for HD treatment. These dialyzers are manufactured with different synthetic compounds representative of what is most commonly used in industry. Before HD sessions dialyzers are rinsed using a 2000 mL clear-flex of 0.9 % sodium chloride solution.
Main outcome measures: Our study shows that HD patients are exposed to BPA throughout the water used for HD, the internal circuit of the generator and by the dialyzer itself. Therefore BPA accumulates throughout the HD process, not only by the composition of materials (generator and dialyzer), but also through water that mixes with the dialysate concentrate will further increase patient exposure to BPA.
Results: First, in regards to water loop, BPA was detected everywhere and each step of the water treatment, from water intake to the purified water used to produce dialysate. Next, BPA levels measured at the inlet of dialysis machine confirm the presence of the endocrine disruptor in purified water. Since purified water circulates in the machine internal circuits and in dialysate concentrate cartridge, these devices can potentially salt out BPA and increase the contamination of the dialysate. For the loop and the dialysis machine the concentrations are expressed in ng/L.

Finally, we found in all tested dialyzers (the concentrations are expressed in ng/dialyzers).

Conclusion: Our study shows that HD patients are exposed to BPA through the water used for haemodialysis, the internal circuit of the generator and by the dialyzer itself.

For water processing loop, BPA is not removed by this treatment indeed it is always present at the loop output. It would be pertinent to propose to installation to proceed on this loop BPA elimination as photocatalysis.

The dialysis machine also salt out BPA. This is probably due to the composition of tubes in which water circulates. It adds a significant amount of BPA after the water treatment loop.

All dialyzers salt out. BPA would come from plastic polymers that form the fibers and the case. Rinsing dialyzers done in practice greatly reduces the quantities of BPA, so it is essential that this be done before rinsing each haemodialysis session.

The absence of BPA in dialyzers could become a standard of choice when purchasing these medical devices.

The amounts found in ng/dialyzer are difficult to interpret. It would be more appropriate to directly assay the BPA in the blood.
Disclosure of interest: None declared.

PH006: Correlation between consumption of antibiotics and superbugs isolation

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Background and objective: To analyse the relationship between consumption of antibiotics (AB) and the evolution of resistance in major multiresistant microorganisms (MMR).
Design: Cross-sectional study of measures part repeated during 2012–2013. We analysed every 4 months two variables: (a) percentage of hospital resistances provided by the Department of Microbiology, obtained with an automated system by Wider® panel, using the cut-off points corresponding to the recommendations of the CLSI (Clinical and Laboratory Standards Institute) resistant *Staphylococcus aureus* (SAMR), Enterobacteriaceae producing extended-spectrum beta-lactamase (ESBL), carbapenem resistant Pseudomonas or quinolones (PARC or PARQ) and Acinetobacter baumannii resistant to carbapenems (ABRC) aeruginosa aureus; (b) the consumption of AB calculated by the Pharmacy Service in defined daily dose per 100 stays (DDD/100E) according to WHO methodology (ATC/DDD Nordic Council® update December 2013), which can reduce consumption contribute to the control of previous MMR: quinolones (Q), cephalosporins (CF), extended-spectrum cephalosporins (ESC) and carbapenems (C) reflects in the Spanish antimicrobial stewardship (PROA) consensus document (J. Rodríguez-Baño 2012). Simple linear relationship between resistance and DDD/100E, with a delay of 0, 4 and 8 months, was analysed using non-parametric test and Spearman correlation considered statistically significant correlation bilateral when $p < 0.05$. The positive correlation coefficient >0.5 were selected correlation. For analysis of the results of the statistical package was used IBM SPSS v15.
Results: Results: A total of 24 correlations were analysed. None met the selection criteria set at 0 months. A delay for 4 months: PARC and carbapenems consumption more quinolones ($r = 0.9, p = 0.037$), PARC and carbapenems ($r = 0.8, p = 0.104$), PARC and quinolones ($r = 1, p = 0.001$), PARC and quinolones more CFA ($r = 0.7, p = 0.188$), more MRSA cephalosporins and quinolones consumption ($r = 0.7, p = 0.188$), MRSA and quinolone more ESC ($r = 0.8, p = 0.104$). At 8 months: ABRC and quinolones ($r = 0.8, p = 0.2$) and combinations PARC with carbapenem consumption ($r = 0.8, p = 0.2$), quinolones and cephalosporins ($r = 1, p = 0.001$), quinolones more ESC ($r = 0.8, p = 0.2$), more carbapenems quinolones ($r = 0.8, p = 0.2$), quinolones ($r = 0.6, p = 0.4$) and carbapenems ($r = 0.8, p = 0.2$).
Conclusion: Our analysis shows that the increase in pressure from antibiotics that most influence on the resistance profile of the MMR, does not appear immediately, there is a strong correlation between increased insulation PARC, with a delay of 4 months, increased consumption of quinolones and carbapenems, while the increase comes 8 months delay if jointly increase DDD/100E quinolones and cephalosporins.

It is difficult to interpret the correlation between sensitivity and antibiotic consumption by the high number of factors larger series with more complex analysis being involved.
Disclosure of interest: None declared.

PH007: Are off label prescriptions traced in medical records and are patients systematically informed?

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Background and objective: Since the case of off-label use of Mediator was implicated in cardiovascular diseases, off-label prescriptions become problematic in France especially when expensive drugs are concerned. Because off-label use is still common in hospital, a law was issued to force physicians to justify and trace their off-label prescriptions in the medical record and also to inform patients. This study presents results of an audit conducted in our hospital which aimed to ensure that off label prescriptions were traced in medical records (justification, and patient inform consent).
Design: A working group composed by pharmacists and physicians choose to limit the scope to the ten most off-label prescribed drugs during 2014 in the hospital: Avastin®, Mabthera®, Remicade®, Privigen®, Herceptin®, Clairyg®, Alimta®, Roactemra® and Levact®. A few of medical records (online and paper) were randomly selected and explored to check if physician's motivation of off label prescription was traced and if applicable, made in multidisciplinary meeting, and also if specific information was given to the patient (with a trace of patient inform consent).
Results: Results show that 49 files were audited: 21 patients treated with Avastin®, 8 with Mabthera®, 7 with Remicade®, 6 with Privigen®, 3 with Herceptin®, 1 Clairyg®, 1 Alimta®, 1 Roactemra® and 1 Levact®. Medical prescriptions were founded in 96 % of cases. Most of therapeutic decisions about off-label use were made in a multidisciplinary meeting (76 %). By contrast, motivations in medical records were founded in only 44.9 % of cases, most of them relating to off-label use of Avastin® in Gliomas. Anyway Neuro-oncology seems to be the most exemplary ward in our audit because it is the only ward where we found an information consent form signed by both doctor and patient (71 %).
Conclusion: These findings showed a lack of practice from physicians to trace the rationale for off-label prescriptions in medical records, and to inform patients. This can be problematic in case of control and furthermore does not comply with regulation. To improve these results, many actions have to be developed: doctors' trainings, creation of a special team supervising off label prescriptions; this team could be consulted for each new off-label prescription; and should analyse retrospectively off-label prescriptions and their evidence-based quotation. A new audit will assess these measures next year.
Disclosure of interest: None declared.

PH008: A two-year retrospective study on the activity of Experience Feedback Committee on medication errors and associated adverse drug events

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Background and objective: According to the process-improvement approach, medication use is a complex system with several potential points of failure. To deal with medication errors and adverse drug events (ADEs), an Experience Feedback Committees (EFC) was created in the hospital setting in 2013. The aim of this study was to analyse for a period of 2 years the type of reported events with the related risk rating, the action plan proposed with priorities and relevant preventive strategies to be adopted.
Design: The EFC is a multidisciplinary group concerned with medications errors and ADEs which analysed monthly the reported events on monthly basis. A risk assessment scoring system is used (Risk Matrix: Risk = Consequence × Likelihood). The risk rating helped to identify the level at which the risk will be managed, to assign priorities for action and to include the risk in the organisation risk register at the appropriate level. Each month, one event with the highest score was selected for a root-cause analyse.
Results: Since January 2013, 423 events were reported in the hospital setting. In comparison, in 2014 the number of events was increased by 10.4 % (in 2013 201 vs. 222 in 2014). All the step of the treatment process was involved: 13 % concerned prescription, 33 % affected medication logistical process and 40 % concerned drug administration. 50 % of events were evaluated as "acceptable" and 11 % of cases as "unacceptable". 8.8 % were classified as near-miss. 7 % concerned drugs belonging to the specific list of "never events". 99 % of events were resolved and relevant corrective actions were carried out: review of regular practices (21 %), reviews of morbidity–mortality (9 %), practice audits (2 %), training of staff and elaborations or modifications of medication prescription guidelines. High frequency events were analyses by ad hoc group such the "chemotherapy group", the "portable infusion devices group", and the "logistic group".

The multidisciplinary nature of EFC involves and sensitizes all stakeholders and allows a more effective link-up and interactivity between physicians, pharmacists, risk managers and health care providers and a transverse vision throughout the hospital.
Conclusion: To undertake a risk assessment about medications errors and ADEs is a proactive way of dealing with risk and to adopt the preventive strategies. The analyse of reported events has permitted to define the priorities for action for the hospital.
Disclosure of interest: None declared.

PH009: Long acting benzodiazepine use among the elderly: clinical practice indicators application in hospital setting

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Background and objective: In order to improve long acting benzodiazepine (la.bzd) prescriptions in the elderly, The Haute Autorité de Santé (HAS) has developed clinical practice indicators. The alert indicator evaluates the prevalence of la.bzd prescription among older people. The mastering indicator corresponds to the prevalence of elderly with justified la.bzd prescription among all the elderly with la.bzd prescription. The main objective of this study was to evaluate the feasibility of the use of these indicators in hospital settings.
Setting and method: The study included patients aged 65 years or over, admitted in acute care unit of Lariboisière or Fernand Widal hospitals, between 1st January to 30th June 2014. Local medical databases were used to identify elderly with la.bzd prescription. An algorithm to assess the appropriateness of prescribing la.bzd was developed based on current literature by a work group including pharmacists and geriatricians. A random sample of medical records of all hospitalizations with a la.bzd prescription was used to assess the appropriateness of la.bzd prescription.
Main outcome measures: alert indicator, mastering indicator; proportion of missing information regarding la.bzd prescriptions.
Results: During the study period, 3687 hospitalizations in an acute care unit of Lariboisière or Fernand Widal hospital with computerized prescriptions were included in the study (70 % of hospitalization). Based on medical databases, the la.bzd prescription alert indicator was 10 % (363/3687). The appropriateness of la.bzd prescription was assessed from a random sample of 100 hospitalizations by a pharmacist and a physician. Information regarding la.bzd prescription was lacking for 50 % of hospitalizations, and prescriptions were considered as inappropriate. Among the remaining hospitalizations, la.bzds were prescribed appropriately for 22 hospitalizations. The commonest reason for appropriate prescription was epilepsy fits. Finally, the mastering indicator was 22 %.
Conclusion: La.bzds were prescribed in approximately one of ten hospitalizations among elderly. Further deployment of computerized prescriptions in other care units should improve the quality and facilitated the gathering of the alert indicator. Our study showed that information in medical records regarding la.bzd prescription was insufficient for retrospectively calculating the mastering indicator. One way to improve the quality of the mastering indicator could be to conduct a 1 day study.
Disclosure of interest: None declared.

PH011: Limits of intensive nutritional care for patients treated by radiotherapy in head and neck cancer

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Background and objective: In head and neck cancer, malnutrition is caused by both cancer and treatment. Nutritional care improves quality of life and nutritional status in patients treated by radiotherapy. The aim of our study was to determine if an intensive individualized nutritional care at home further improves quality of life during- and 3 months- after the end of radiotherapy.
Setting and method: Fifty-eight patients were randomized in the intensive individualized nutritional care at home and 59 patients in the control group based on the European and the American guidelines.
Main outcome measures: Patients included in the intensive nutritional care at home received, in addition of current practice, six meetings at home with a dietetic. Quality of life was measured using EORTC QLQ-C30 and EORTC QLQ-H&N 35. A range of quality of life function scores including EQ-5D-3L, EQ VAS and nutritional status were also evaluated.
Results: Only few significant differences were found: the items "sleep" and "speech" improved in the intensive individualized

nutritional group [m = 7 (23.3) and m = 6.4 (16.8)] but worsen in the control group [m = 4.5 (26) and m = 4.3 (18.8)] ($p = .04$ and $p = .02$, respectively). Others quality of life parameters and weight loss exhibit no significant differences between the two groups.
Conclusion: Our study shows the limits of nutritional care in improving the quality of life of patients with head and neck cancer. Intensive individualized nutritional care at home induces a minor benefit compare with European and American guidelines and therefore is not justified.
Disclosure of interest: None declared.

PH012: Development of a therapeutic patient education (TPE) tool model adapted to deaf patients

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Background and objective: In 2012, the INPES (National Institute for Prevention and health Education) wrote a report about the health of the Deaf population. It shows a lack of access to certain health information because they are not suitable to the specific needs of this population. This problem of access to information often leads to inequalities in knowledge, practices and health.

The law passed on February the 11th 2005 for equal rights and opportunities, participation and citizenship of people with disabilities, said that "The public information should be disseminated by appropriate means to different disabilities".

The aim is not to cure deafness but to care for Deaf patients. So, the aim is to develop a therapeutic education tool model with a list of criteria you should respect to deliver effective information about health to the Deaf population.
Design: Literature review have been done on Pubmed, books about deafness and Deaf, and reports of health authorities.
Results: Results allow us to create a list of criteria which should be taken into account when adapting therapeutic education tool for Deaf patients.

This list covers different types of criteria. First, it deals about criteria regarding the form of the document (graphic, easy to read, linguistic…), then criteria on the content of the document (knowledge, beliefs, representations, type of cognition, culture).

This list of criteria summarizes the findings of previous experiments in information or therapeutic education of Deaf patients. This list seems to be useful. Nevertheless, it isn't exhaustive. We shouldn't forget that it is essential to work with Deaf professionals and patients to develop adapted tools. Finally, this list of criteria should be assessed with patients' opinions in order to improve it.
Conclusion: To conclude, this work identified some TPE adaptations needed for Deaf population in order to improve health access.
Moreover, this model corresponds to the principle of universal design for information tools. So it could be useful for other people that Deaf people because the barriers of language and culture are common limit for TPE.
Disclosure of interest: None declared.

PT008: Efficacy and safety of Pazopanib in the treatment of metastatic renal cell carcinoma

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Background and objective: Pazopanib is indicated for the first-line treatment of advanced or metastatic carcinoma of renal cell carcinoma (MRCC) in adults and in patients with advanced disease who have received prior treatment with cytokines. To analyze the efficacy and safety profile of pazopanib in first-line treatment of patients with MRCC.
Design: Retrospective descriptive study, which includes patients diagnosed with MRCC, who started treatment with pazopanib monotherapy as first-line from October 2012 to May 2015. The medical records were reviewed, and the program dispensing outpatient pharmacy service (Dipex®) was consulted. Data collected: sex, age, dose, duration of treatment, number and location of metastasis. As primary endpoint, progression-free survival (PFS) was considered and overall survival (OS) was defined as secondary endpoint. To assess safety, severity of adverse reactions was measured.
Results: We included 10 patients diagnosed with MRCC (stage IV). The mean age was 67.4 ± 11.4 years, men 70 % (7). The average number of metastases was 2 ± 1.7; Location: Pulmonary (6), liver (2), retroperitoneal (2), gastric (1), brain (1) and bone (1). All received regimen according to data sheet (800 mg/day) at baseline, except one case (600 mg/day) due to fragility. Dose reductions occurred for toxicity in 40 % (4) between those included: diarrhea (grade II), hyperoxia and weight loss, fatigue (grade II) and/or hypertension. At the end of the study period, an average of 11.2 ± 9.5 cycles were administered. Of patients considered (10), 7 had died after receiving an average of 4 ± 4.4 cycles, resulting in a median PFS: 1 month (95 % CI 0.8–1.1) and a median OS: 1.16 months (95 % CI 0.0–2.4). The rest (3), continue on treatment after an average of 22.3 ± 11.7 cycles of treatment, currently remain without evidence of disease.
Conclusion: The results obtained show a lower efficacy profile than the data published in the literature (Comparz study), probably associated with poor prognosis or rapid progression at the beginning of the treatment in half of the patients. However it is observed with an acceptable safety profile, certain superiority in patients with moderate or good prognosis. Nevertheless, expand the patients sample and the follow-up period will allow evaluating the long term efficacy and safety.
Disclosure of interest: None declared.

PT012: Observation of dominant occurrence of radiotherapy related acute side effects and management

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Background and objective: Radiotherapy is a treatment choice for almost one half of patients suffering from cancer. Adverse events considered one of main problems during therapy. Two sorts of radiotherapy–induced toxicity. The first are acute adverse effects observed during treatment or just after its com-pletion, and usually end up through four to 6 weeks. The second late adverse effects are observed within months to years after radiotherapy completion. The objective of this study is to observe the common acute side effects and the effective modulating treatment of them in patients with diverse cancer kinds.
Setting and method: A randomized retrospective study was carried out on (79) cancer patients admitted at the radiology unit. Patients' demographic data were collected using patients' data sheets. Acute

side effects and specific therapy for their treatment were documented and assessed.

Main outcome measures: Acute side effects and their specific therapy were documented assessed and reported depending on those based by American Cancer Society. Inclusion criteria include patients over 18 years receiving radiotherapy. Exclusion criteria include patients with chemotherapy and files with insufficient data.

Results: Lung carcinoma was the most common (29.1 %) followed by both breast and colorectal carcinomas (17.7 %). Thorax was the most radiation applied area (40,5 %) then head (27.8 %) and pelvis (18.9 %). Most patients were suffering from diarrhoea (82.3 %) then loss of appetite 74.7 %, mucositis 64.4 %, fatigue 63.3 %, skin reactions 63.3 %, metallic taste 57 %, swallowing difficulty 54.4 %, and headache 39.2 %). The percentage of patients management include loss of appetite using enteral nutrition (18.2 %, $p < 0.001$), diarrhoea using diphenoxylate tablet (14.2 %, $p < 0.001$), mucositis using benzydamine mouth wash (48.5 %, $p < 0.001$), skin reactions using dexpanthenol ointment (62.5 %, $p < 0.05$) and nausea and vomiting using granisetron tablet (34.4 %, $p < 0.05$) and pantoprazole tablet (23.4 %, $p < 0.05$). There was a significant correlation ($p < 0.05$) between gender and skin reactions (males 55.6 %, females 83.3 %), previous chemotherapy and loss of appetite (25 %) and metallic taste (60 %). Radiation applied area, mucositis and stomatitis were significantly correlated ($p < 0.001$) with both of thorax (39.2 %, 33.1 %) and head (31.4 %, 33.1 %) areas, respectively. While proctitis was only significant ($p < 0.01$) with pelvis area (100 %). Stage 4 cancer was significantly ($p < 0.05$). Associated with mucositis (89.8 %). Regarding cigarette smoking, acute side effects include mucositis (39.2 %), dry mouth (46.5 %), swallowing difficulty (46.7 %) and metallic taste (51.3 %).

Conclusion: These results indicate the dominant occurrence and the importance of documentation of radiation-induced acute side effects and the essentiality of applied management for further future follow-up to be more smooth and acceptable in patients with different kinds of cancers.

Disclosure of interest: None declared.

PT013: Does the transfer from an intensive or intermediate care unit to a medicine ward lead to inappropriate prescribing?

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Background and objective: Intra-hospital transfers can lead to medication errors, making medication reconciliation a prerequisite to ensure the continuity of medical treatment. Patients transferred from an intensive or intermediate care unit (ICU/IMC) are at high risk of inappropriate prescribing, especially when discontinuing a necessary treatment or continuing a treatment that is no longer needed. We conducted a study to identify and describe the inappropriate prescriptions (IPs) associated with the transfer from an ICU/IMC to a medicine ward.

Setting and method: Prospective, descriptive study conducted for 10 consecutive weeks in a regional hospital. All adult patients transferred from an ICU/IMC to a medicine ward were included. IPs were defined as an inappropriate length of treatment or a failure to adapt the treatment to the evolution of the patient's condition (lack of adjustment of dosage or route of administration). IPs were identified by reviewing the medical charts at 2 specific times: 1 working day after the transfer from an ICU/IMC to a medicine ward, and at the discharge from the medicine ward.

Main outcome measures: Number of IPs detected per patient (regardless of when they were identified).

Results: At least one IP was detected in 16 of 35 patients included (45.7 %). Among the 22 identified IPs, 16 (72.7 %) were related to inappropriate length of treatment and 4 (18.3 %) to overdose. Four IPs (18.2 %) were classified as potentially serious (2 overdose, 1 underdose, 1 inadequate stop), but none of them resulted in biological or clinical consequences. Proton pump inhibitors were the drug category most frequently identified in IPs. Ten out of 22 IPs (45.5 %) were identified by a physician (8 during the stay in the medical ward, 2 at discharge), and 3 IPs were corrected following the intervention of a pharmacist. No patient was discharged with a potentially serious IP.

Conclusion: Inappropriate prescribing seems to occur frequently in our setting when patients are transferred from an ICU/IMC to a medical ward. A systematic and careful review of the current treatment before transfer could contribute to improve the continuity of care in our hospital.

Disclosure of interest: None declared.

PT014: Prophylaxis of sinusoidal obstruction syndrome after allogeneic stem cell transplantation in high-risk adult patients

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Background and objective: Sinusoidal obstruction syndrome (SOS), also known as veno-occlusive disease (VOD), is a serious liver injury that mainly occurs in patients undergoing allogeneic hematopoietic stem cell transplantation (HCST). SOS/VOD is characterized clinically by rapid weight gain, painful hepatomegaly, jaundice and ascites. It can evolve from a mild, reversible complication to a more severe form associated with multi-organ failure (mortality rate >80 %).

While the incidence of SOS/VOD has been relatively reduced with the use of reduced-intensity conditioning regimens prior to HSCT, the incidence can dramatically increase in high-risk populations. Among such risk factors are a pre-existing hepatic disease, a second allogeneic HCST, conventional myeloablative conditioning regimen, prior exposure to gemtuzumab ozogamicin, and prior abdominal radiation.

From the therapeutic standpoint, defibrotide is the first approved curative treatment for severe SOS/VOD in paediatric and adult patients. It is also recommended for prevention of SOS/VOD in children undergoing HCST with risk factors (BSBMT and EBMT guidelines). Prophylactic data with defibrotide in adults undergoing allogeneic HSCT are still scarce.

Here, we report the course of 44 patients treated in a prophylactic SOS/VOD approach with the combination of defibrotide and ursodeoxycholic acid.

Setting and method: This was a retrospective analysis (May 2012–May 2015) performed on prescriptions and medical records (Haematology and Pharmacy departments).

Main outcome measures: We used the modified Baltimore criteria to characterize SOS/VOD, with an extended time period of 100 days post-HCST. Severe SOS/VOD was defined by death or symptoms persisting beyond 100 days post-HCST. Tolerance was evaluated by haemorrhagic adverse events incidence.

Results: 44 patients [median age, 50 years (16–68)] at high-risk of SOS/VOD received defibrotide prophylaxis (6.25 mg/kg intravenously four times daily). A busulfan-containing regimen was used

in 41 patients, while 34 patients were undergoing a second HCST, and 15 had prior exposure to gemtuzumab ozogamicin. A pre-existing liver disease was also identified in 14 patients, and 13 had a prior abdominal irradiation.

With a median follow-up of 6 months, 40 patients (91 %) did not develop SOS/VOD. 2 mild cases of SOS/VOD and 2 severe late-onset SOS/VOD (day 57 and 58) were diagnosed.

The median duration of treatment was 25 days (range 7–43). Bleeding was observed in eight cases and defibrotide had to be discontinued in four patients, due to haemorrhagic events for 2 of them.

Conclusion: Taking into account late onset SOS/VOD, defibrotide appears to be effective to prevent SOS/VOD in high-risk adult patients undergoing allogeneic HCST, with an acceptable safety profile.

Disclosure of interest: None declared.

PT015: Modification of antiretroviral therapy for concurrent treatment of HIV and hepatitis C virus infection

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Background and objective: When both HIV and HCV treatments are indicated, the antiretroviral therapy (ART) may need to be modified before HCV treatment is initiated to reduce the potential for drug–drug interactions and overlapping toxicities that may develop during the concurrent HIV and HCV treatment. We describe the modifications on ART regimen when HIV/HCV co-infected patients start HCV therapy with new direct acting antiviral (DAA) agents in our HealthCare Area and evaluate its economic impact on ART regimen costs.

Setting and method: Observational retrospective study. Gender, ART regimen and its cost-per-month (previous and after starting HCV therapy) are recorded of every HIV/HCV co-infected patient who start therapy with new DAA agents (simeprevir, sofosbuvir, ledipasvir, daclatasvir, ombitasvir/paritaprevir/rtn, dasabuvir). All data were collected from External Patients and Management Pharmacy's Database and analysed using SPSS statistical package.

Main outcome measures: ART regimen used and its monthly cost. Type of modification according to the antiretroviral group involved (NRTI, NNRTI, IP, INSTI).

Results: 41 patients (17 % female) started HCV therapy during the time of the study. ART regimen was modified in 21 (51.2 %) of them. 22 antiretroviral drugs were changed (in one patient 2 modifications were needed), 10 (45.5 %) were due to the substitution of one non-nucleoside reverse-transcriptase-inhibitor (NNRTI) and the other 12 (54.5 %) corresponded to a change of a protease-inhibitor (PI) of the original regimen. The modifications from a NNRTI led to prescription of another not-contraindicated NNRTI in 6 (60 %) cases, an integrase-strand-transfer-inhibitor (INSTI) in 3 (30 %), and a PI in 1 case (10 %). Modifications from an original PI resulted in the replacement by another PI in 5 patients (41.6 %), to an INSTI in 4 (33.3 %), and to a NNRTI in 3 (25 %).

The average ART cost-per-patient was 639.89 € monthly before starting HCV therapy, and 672.68 € later (variations from −121.36 € to +388.67 €), which means an increase of 5.12 %.

Conclusion: Original ART had to be modified in a high proportion of patients (more than half in our series) when started HCV therapy. All modifications were due to NNRTI and PI interactions with current DAA agents. These changes have led to a slight increase in the ART cost per patient, which can be considered acceptable for public spending.

Disclosure of interest: None declared.

PT016: Safety profile of direct-acting antivirals based therapy in HCV mono and co-infected patients in a real-world setting

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Background and objective: New direct-acting antivirals (DAA) have supposed an improvement in efficacy and safety of HCV treatment regimes, but lack of information is still a concern considering that safety data available to date is derived from clinical trials, and may not reflect the day-to-day practice. We analyse the type and frequency of adverse events (AE) of mono and co-infected patients who start HCV-therapy with DAAs in our HealthCare Area as well as drop-out rates and changes in treatment due to these events.

Setting and method: Retrospective observational study. Medical records and analytical data of all mono and co-infected patients who start therapy with new DAA agents (simeprevir, sofosbuvir, ledipasvir, daclatasvir, ombitasvir/paritaprevir/ritonavir, dasabuvir) with or without ribavirin (RBV) and patient's interviews were recorded on the Outpatients Pharmacy's Database and analysed using SPSS statistical package.

Main outcome measures: Gender, viral genotype, presence/absence of cirrhosis, DAA regimen (RBV yes/no), treatment duration, type and grade of AE ("Common-Terminology-Criteria-for-AE v4.0", from Grade 1: Mild to Grade 5: Death related to AE), change/discontinuation due to AE and supportive care if necessary.

Results: 47 patients (17 % female) were finally reviewed, with a median follow-up of 7 weeks. 89.4 % were HIV/HCV co-infected and 70.2 % cirrhotics. According to genotype, they were mostly G1 (59.6 %), followed by G3 (21.3 %), G4 (17 %) and G2 (2.1 %). 37 patients (78.7 %) had RBV in their HCV regimen.

20 patients (42.6 %) experienced at least one AE, being headache (14.9 %) the most frequent, followed by fatigue (12.77 %), insomnia (6.38 %), skin rash (6.38 %), arthralgia (4.26 %), and cold sores, generalized malaise, dizziness, stomach heaviness and muscle spasms in right arm (2.1 % each). 85.2 % of AE were classified as grades I–II (mild–moderate).

Between patients with or without RBV, AE frequency did not differ (43 vs. 40 %), but types were different: insomnia and fatigue were felt exclusively in RBV patients and Hb fell below 10 g/dL in 7 (18.92 %) RBV patients, but none required neither RBV-dose reduction nor supportive care.

AE motivated one treatment change (skin rash/cold sores grade III) and one voluntary dropout (headache/arthralgia grade IV).

Conclusion: Following our results, AE of DAAs regimens in real-life conditions are similar to those published in clinical trials, with generally well tolerated AE and low discontinuation rates. RBV Regimens varied in AE type but not in frequency of AE.

Disclosure of interest: None declared.

PT017: From evidence to practice. The case of citicoline

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Background and objective: ICTUS and COBRIT Trials showed that citicoline is not more effective than placebo in its approved indications. Despite this, in 2013 citicoline was the drug with the seventh biggest expenditure in our Healthcare Area, with a total cost close to one million euros.

We evaluate the effect of the review and dissemination of citicoline's current evidence on its prescription by doctors and its economic impact on the public budget.

Setting and method: In January 2014, the Medicines and Therapeutic Committee (M&TC) of our Healthcare Area made one review with a technical report with the current evidence about the efficacy and safety of citicoline and, with the approval of the Neurology Department, it was decided to exclude it from the HealthCare Area's Drug List and to disseminate the report among both the doctors of Hospital and Primary care from February to April 2014.

Total amount of defined daily doses (DDD) of citicoline prescribed and its cost 12 months before and after the intervention were measured. Data were collected from the computerized pharmacy records of reimbursed drugs Program.

Main outcome measures: DDDs of citicoline prescribed and total cost (€) of citicoline prescriptions.

Results: Period 1 (January–December 2013): 783.609DDDs citicoline prescribed (Cost 869,807 €). Period 2 (May 14–April 15): 204.284DDDs citicoline prescribed (Cost 160,797 €), what means a 74 % reduction in total prescription and 81 % of total spending on citicoline (DDD Cost: 1.11 € in period 1 and 0.79 € in period 2).

By levels of care, prescription dropped 75 % in Primary Care (766.826DDDs vs. 191.577DDDs), with a reduction of 82 % in total spending, while in Hospital Care the reduction of DDDs was only 25 % (16.783DDDs vs. 12.713DDDs), and 49 % in total spending.

Conclusion: In the case of citicoline, review and dissemination of clinical evidence caused a great impact on medical prescription, leading in turn to a decrease in spending of more than 700,000 € a year, which can be used in therapies with more evident clinical benefits.

The response to the recommendations was significantly different between both levels of care. It would require a detailed analysis to determine the causes of this difference.

Disclosure of interest: None declared.

PT018: Treatment of chronic hepatitis b

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Background and objective: Evaluate the treatment of chronic hepatitis B, as recommended by the latest EASL guidelines (European Association for the Study of the Liver).

Setting and method: Retrospective observational study involving patients in treatment of hepatitis B, from January 2014 to March 2015.

Main outcome measures: The recorded study variables were: sex, age, date of diagnosis, comorbidities virus, hepatitis B serology, current and previous treatments, transaminase values at the beginning and end of treatment, Fibroscan value and cost.

Results: During the study period, 57 patients with hepatitis B were treated: 68 % were male and 32 % female, mean age 50 ± 13 years. No patient had other viral comorbidities. The median value of Fibroscan was 5.2 kPa, equal to fibrosis levels 0 and 1 biopsy.

At the beginning of the study, 5 patients (9 %) were treated with adefovir, 2 (3 %) with adefovir + lamivudine, 1 (2 %) with interferon A, 4 (7 %) with lamivudine, 11 (19 %) with peginterferon α2a, 33 (58 %) with tenofovir and 1 (2 %) with tenofovir + lamivudine.

Currently, 25 patients (44 %) have changed treatment: 19 (76 %) for lack of effectiveness (the patients had resistance to treatment and failed to make negative viral load at week 12), 4 (16 %) developed adverse events, 1 (4 %) change in dose and 1 (4 %) discontinued treatment.

Current treatments are: 1 (2 %) with adefovir, 1 (4 %) with adefovir + lamivudine, 5 (9 %) with entecavir, 1 (2 %) tenofovir + lamivudine, 1 (2 %) with lamivudine and 48 (84 %) with tenofovir. 4 patients (7 %) remain transaminase levels normalize. 2 patients have shown a seroconversion: 1 patient HBsAg to AbHBs and 1 HBeAg to AbHBe.

Tenofovir is the drug used in first-line treatment for newly diagnosed patients as an alternative for patients who have progressed to adefovir, lamivudine or peginterferon. Entecavir reserves as an alternative to tenofovir.

The average cost of treating hepatitis B in the last year was 3583.20 €/patient.

Conclusion: In the study period, the pharmacological treatment of patients follows the guideline recommendations EASL; the current treatment of chronic hepatitis B includes interferon, peginterferon or nucleoside/nucleotide analogs (lamivudine, telbivudine, entecavir, adefovir and tenofovir). 44 % of patients have had to modify their initial treatment in order to get the current therapeutic goal: long-term suppression of viral replication, since none of the analogs gets completely eradicate the virus in most patients (only 1 patient achieved seroconversion to AbHBs).

Disclosure of interest: None declared.

PT019: Evolution of eye diseases treated with autologous serum 20 %

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Background and objective: To evaluate the efficacy of autologous serum 20 % in a variety of eye diseases in a tertiary referral hospital.

Setting and method: We evaluated autologous serum 20 % treatments between January and April 2015. Patients were classified according to sex, age, eye disease, posology of treatment and ophthalmic tests results (such as: Schirmer's test, Tyndall effect).

Main outcome measures: A total of 21 patients (13 women and 8 men) were treated with autologous serum 20 % during 4 months. The average age was 61 years old. Posology: 4 times a day (18 patients), 3 times a week (2 patients), 2 times a week (1 patient).

Results: Eye disease and clinical outcome after treatment with 20 % autologous serum were:

- Bullous keratopathy (3 patients): 2 patients showed improvement of the disease (little corneal micro-oedema and disappearance of corneal epithelial bullae); 1 Patient did not present any improvement of the disease (persistent epithelial bullae).
- Dry eye secondary to different diseases (7 patients):

  Secondary to Sjögren (4 patients): 3 patients experienced improvement in dry eye (Schirmer's test more than 20 mm); 1 patient did not present data (pending of medical review).
  Secondary to rheumatoid arthritis (2 patients): improvement of dry eye (Schirmer's test more than 20 mm).

Secondary to tear film dysfunction (1 patient): clinical follow-up (data about evolution) was performed in another hospital.

- Neurotrophic keratopathy (5 patients):

  Without ocular perforation (3 patients): improvement of the pathology (greater corneal re-epithelialization).
  With ocular perforation (2 patients): no improvement of the pathology.

- Corneal ulcer caused by a fungi (1 patient): improvement (reepithelialisation was noted).
- Herpetic keratitis (1 patient): improvement (little reepithelization).
- Bilateral keratoconus (1 patient): did not present data (pending of medical review).
- Penetrating keratoplasty (1 patient): no improvement (a thinning of the cornea remains).
- Point-sized epithelial defect caused by traumatic ulcer (1 patient): improvement (no corneal epithelial defect).
- Corneal disepithelisation by sulphuric acid burns (1 patient) improvement (negative Tyndall effect, no epithelial defect).

Conclusion: Autologous serum is a very effective treatment in patients with corneal epithelial disorders and with dry eye, which appeared in autoimmune diseases such as Sjögren's syndrome and rheumatoid arthritis.
Disclosure of interest: None declared.

PT020: How to treat delirium in clinical practice? A systematic review and guidelines

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Background and objective: About 30 % of all inpatients experience acute delirium. A number of risk factors that are highly prevalent in the seriously ill have been identified (i.e. polypharmacy, infection, dehydration, immobility and malnutrition). In general pharmacotherapy is needed to treat this dangerous condition. Clinical guidelines based on systematic reviews that take into account side effects as well as substance properties are lacking.
Setting and method: We performed a systematic literature search of RCT studies with focus on therapy and prophylaxis of acute delirium using Medline. Evaluation of included studies and an analysis of extracted raw data were performed with Cochrane Collaboration tools (RevMan). To pool data the random effects model was used. Dichotomous data were compared with the Mantel–Haenszel test, continuous data with the inverse variance method. Properties of analysed drugs were collected from official product information and drug data bases.
Main outcome measures: Delirium incidence, duration, severity.
Results: Of 99 studies only 23 (10 treatment and 13 prophylaxis) met our inclusion criteria. Most of the excluded publications were on non-pharmacological therapies. 11 included studies had overall a low risk of bias according to the criteria of the Cochrane collaboration.
Antipsychotics were the most investigated drugs.

For the treatment of delirium, haloperidol was compared to atypical antipsychotics demonstrating no significant difference in outcome using standardized delirium scores. Studies comparing antipsychotics to placebo showed significant effects but could not be pooled because of different outcomes. Anti-dementia had no effect on delirium duration compared to placebo [SMD = 0.18, 95 % CI (−0.23, 0.59)]. In addition one study [van Eijk 2010] was stopped prematurely due to an increase of participants' mortality.

Antipsychotics in prophylactic use resulted in a significant reduction of delirium incidence [RR = 0.54, 95 % CI (0.34, 0.87)], severity [SMD = −1.01, 95 % CI (−1.52, −0.51)] and duration in one of two studies [SMD = −0.99, 95 % CI (−1.49, −0.48)] as compared to placebo.

Melatonin agonist drugs reduced the incidence of delirium [RR = 0.25, 95 % CI (0.07, 0.88)] if used as prophylaxis in elderly patients. Anti-dementia, which are used due to their cholinergic effect, showed no significant efficacy [RR = 0.99, 95 % CI (0.65, 1.50)]. Sample size of included studies was too small to assess side effects such as extrapyramidal symptoms.
Conclusion: All studied antipsychotics were found to be effective in both treatment and prophylaxis of delirium without any clear superiority of a specific substance. Therapy should be chosen individually according to drug properties and potential side effects and comorbidities. Anti-dementia should not be used because of the possible risk of increased mortality. Melatonin agonists seem to be very promising to prevent delirium due to their favourable side effect profile.
Disclosure of interest: None declared.

PT021: Therapeutic strategies in paediatric epileptic syndromes: which correlation between theory and practice in France?

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Background and objective: The choice of an antiepileptic therapy in children depends on the epileptic syndrome, its aetiology, the type and frequency of seizures, the age, the status of the drug and the expected benefits or risks. The aim of the study was to compare French neuropediatric centres' practices in paediatric epilepsy with theoretical strategies.
Design: A survey was submitted in 15 French neuropediatric centres and completed by a neuropaediatrician. Six main paediatric epileptic syndromes were selected for the study: Doose, Dravet, Landau–Kleffner (LKF), Lennox–Gastaut (LGS), West syndromes and continuous spike-waves during slow sleep (CSWSS). Treatment strategies were stratified from first to third-line and observational results were compared to theory (*Nice Guidelines®, February 2014*). The proportions of concordance or discordance between practice and theory were then established.
Results: Nine neuropaediatricians from different centres answered to the survey. On first-line treatment, 100 % concordance was found in Doose (sodium valproate) and West syndrome (vigabatrine), 72 % concordance in LGS (sodium valproate) and 56 % concordance in CSWSS (corticosteroids). Secondly, West syndrome was completely concordant treating by hydrocortisone whereas different practical strategies were underlined in Doose syndrome, LGS, LKF and CSWSS. 100 % of the strategies were concordant on the third-line for LGS (rufinamide, topiramate, felbamate) and discordant for the other ones: CSWSS (55 %) and LKF (100 %). Dravet syndrome was practically different in all three intentions from theory, basing on monotherapy or association of sodium valproate, stiripentol or clobazam.
Conclusion: Among the six epileptic syndromes studied, Doose, Lennox–Gastaut, and West syndrome were the most concordant between theory and practices whereas CSWSS, Dravet and LKF syndrome were not. It reflects the importance of practical aspect while treating epilepsy in children. The commercialization of new antiepileptic molecules during the few past years has contributed to generate new therapeutic strategies. The lack of paediatric studies for

the first and second generation antiepileptic drugs and the absence of international guidelines could be reasons for such discordance between practice and theory.
Disclosure of interest: None declared.

PT022: Treating paediatric epilepsy: are the practices harmonized in French neuropaediatric centres?

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Background and objective: Antiepileptic drugs available on the market are numerous and recommendations in paediatric epilepsy are rare in literature. It is therefore currently difficult to identify the therapeutic strategies. The aim of the study was to compare French hospital practices between different neuropediatric centres in paediatric epilepsy.
Design: Six main epileptic syndromes were selected for the study: Doose, Dravet, Landau–Kleffner (LKF), Lennox–Gastaut (LGS), West syndrome and Continuous Spike-Waves during Slow Sleep (CSWSS). A survey was submitted in 15 French neuropediatric centres and completed by neuropaediatricians. Treatment strategies were stratified from first to third-line and compared between the surveyed hospitals concerning the drugs used and their level of intention.
Results: 60 % of the requested hospitals answered to the survey. On first-line treatment, 100 % of the neuropediatric centres were concordant on Dravet and Doose syndrome and 75 % on LGS, using sodium valproate. West syndrome's treatment was firstly based on 100 % vigabatrine and on the second line, hydrocortisone was prescribed in 100 % of the cases. Clobazam was used in 42 and 14 %, respectively in second and third intention for treating Dravet syndrome. Association can also be made with stiripentol and clobazam in 29 % of the cases. In Doose syndrome, 42 % of the children were secondly treated by lamotrigine. Other treatments included ethosuximide (14 %) and clobazam (14 %) in second and third intention. In LGS, association between lamotrigine and sodium valproate was made in 56 %. Rufinamide was the third line of LGS treatment in 44 % of the hospitals. Clobazam was used in first intention in 62 % for LKF and 56 % for CSWSS then ethosuximide in 38 % for LKF and 33 % for CSWSS. Corticotherapy (hydrocortisone or prednisolone) was the second-line for 62 % of the hospitals in LKF and 44 % in CSWSS. Off-labelled antiepileptics as sulthiame were prescribed in 76 % children in CSWSS.
Conclusion: Antiepileptics of first and second generation are still part of the therapeutic strategy in Dravet and Doose syndromes with respectively sodium valproate and clobazam. Third generation antiepileptic drugs such as rufinamide are frequently used in LGS when the first lines have failed. West syndrome is the most harmonized paediatric epileptic disease between others. In last intentions, antiepileptics with temporary agreement (sulthiame) can be used in some particular paediatric clinical cases. The study showed that practices between nine French neuropediatric centres present many similarities but is difficult to move towards a harmonization of practical therapeutic strategies.
Disclosure of interest: None declared.

PT023: Non-pharmacological treatments in children epilepsy: how neuropaediatric centres use them in practice?

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Background and objective: Ketogenic diet, Atkins diet, Vagus Nerve Stimulation (VNS) and curative or palliative surgery are non-pharmacologic treatments recommended in children epilepsy. They are increasingly used in therapeutic strategies, particularly in drug-resistant syndromes. The aim of the study was to determine which non-pharmacological treatment was being used in practice in neuropediatric centres and to compare them to theory.
Design: A survey was submitted in 15 French neuropediatric centres to ask about the practical use of ketogenic diet, VNS and palliative surgery on children. The neuropaediatrician should indicate if he used the designated non-pharmacological treatment and which indication was targeted. The observational results were compared to theory (*Nice Guidelines®, February 2014)*. Their indication and the reason why the neuropaediatrician used a non-pharmacological treatment were requested in the survey.
Results: Nine neuropaediatricians from different centres answered to the survey.

All the requested hospitals use them in drug-resistant epilepsy, particularly in Dravet, Doose or West syndromes. They are even used for two centres in recent worsening of epilepsy.

VNS is theoretically recommended in refractory epilepsies with surgical contraindication, in all types of crises. Eight centres used VNS, all in drug-resistant epilepsy including 40 % of the centres in Lennox–Gastaut syndrome. VNS is a non-pharmacological alternative in 88 % of the centres.

Palliative surgery is indicated in tonic and atonic generalized seizures with falls. All the centres use it in drug-resistant epilepsy with 40 % of the hospitals on seizures with falls, particularly in Lennox–Gastaut syndrome. One hospital did never use callosotomy for epilepsy in children.
Conclusion: In literature, efficacy of ketogenic diet is described particularly in Doose, Dravet, Lennox Gastaut and West syndromes. This diet is helpful in severe period of crisis exacerbation. All the practical results are corresponding to theory. Some neurological centres use them in a specific syndrome than another, according to their clinical habits but drug-resistant epilepsy is the indication of all these non-pharmacological treatments. New antiepileptic drugs have brought great improvements in childhood epilepsies but 30 % of drug-resistant epilepsies still remain. Non-pharmacological treatments represent interesting perspectives, increasingly used in practice in paediatric neurological centres.
Disclosure of interest: None declared.

PT024: Evaluation of effectiveness of fampridine and comparison with the clinical trail

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Background and objective: Fampridine has been approved for the improvement of walking capacity (WC) in multiple sclerosis adult patients with Expanded Disability Status Scale (EDSS) 4–7.
Purpose: To evaluate the effectiveness of fampridine in WC of MS patients.
Setting and method: Data were obtained from reviewing patient's clinical records from Neurology department. Patients with MS and disability score (EDSS) between 4 and 7and treated with fampridine 10 mg/12 h from October 2014 to May 2015 were evaluated in a retrospective study. Parameters measured: timed 25-foot walk test (T25FW), 12-item MS walking scale (MSWS-12) questionnaire at

baseline and 15 days after the first dose. Responder patients were those with T25FW decrease ≥20 % from baseline.
Main outcome measures: 45 patients were included in the study with the following characteristics: age 49.93 (±9.98) years, 68.9 % women, 64.4 % relapsing remitting MS, 13.3 % primary progressive MS, 22.2 % secondary progressive MS. EDSS, TW25F and MSWS average at baseline were 5.55 (±0.92), 20.56 (±11.49) and 53.23 (±4.5), respectively. At 15th day, TW25F was 13.29 (average reduction 34 %, 71.1 % ≥ 20 %) and MSWS-12 was 34.94 (average 15.73 points). Although 13 patients (28.9 %) didn't improve TW25F only 10 patients discontinued the treatment, 2 because intolerance.
Results: In the pivotal clinical trial there was a global average T25FW reduction of 35 %. We evaluated the association between response (T25FW) and EDSS (> or <6.5 at baseline) and there were no differences statistically significant.
Conclusion: Fampridine produces a clinical hold-in-time improvement in walking capacity in our population similarly those showed on the clinical trial.
Disclosure of interest: None declared.

PT025: Evaluation of tocilizumab response in rheumatoid arthritis. Comparison of the results with the clinical trial

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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. The goal of this study is to compare the efficacy of TCZ obtained in our study with that obtained in the clinical trial.
Setting and method: Descriptive observational study of all patients diagnosed with RA and treated with TCZ from March 2009 until January 2015. Demographic data were collected by reviewing medical records of patients: age, sex, race, weight, height, rheumatoid factor (RF) and erosions, prior and concomitant therapy.
DAS28 at baseline and 24 weeks for each patient were calculated and EULAR response was assessed: remission DAS28 < 2.6, good response DAS28 < 3.2 and change in DAS28 > 1.2, moderate response DAS28 > 3.2 and change in DAS28 between 0.6 and 1.2.
Main outcome measures: 73 patients with the following characteristics were included: 82.19 % female, mean age of 52.92 (±10.74) years, weight 72.6 kg (±14.5) and average height 162 cm (±7.27). 47 patients were FR positive and 54 had erosions. 93.2 % of patients were taking DMARD previously, and 23.3 % had no prior biological treatment. Concomitant therapy: 53.4 % of patients were treated with Methotrexate, 5.5 % with Leflunomide, 2.7 % with sulfasalazine and the rest had no concomitant DMARD. The mean DAS28 at baseline was 5.5412 (±1.08) and DAS28 at 24 weeks 2.7921 (±1.17). The mean difference between DAS28 at baseline and at 24 weeks was 2.74. According to EULAR criteria, the good response was achieved in 63 % patients, moderate response was achieved in 30.13 % of patients, and remission in 49.3 %.
Results: In the clinical trial, the results were: 38 % good response, moderate response 41 and 27 % remission.
Conclusion: In our study, TCZ has shown a comparable response to that showed in the clinical trial, the efficacy were higher in good response and remission.
Disclosure of interest: None declared.

PT026: Intensification and desintesification on biological therapy in inflammatory digestive pathology

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Background and objective: Biological therapy is a great help in the treatment of gastrointestinal inflammatory diseases. The effectiveness of these drugs may be altered by many factors doing necessary to intensify the posology. Conversely if the disease is controlled desintensification can proceed. With this work we seek to know the percentage of intensifications in our centre.
Setting and method: Retrospective descriptive study that included patients who were dispensed adalimumab in our hospital between February and May 2015 from dispensations contained in the computer program Abucasis. Visits to day hospital patients with infliximab through Oncofarm program between February and May 2015.
The patients under charge regimen were excluded.
Main outcome measures: The variables were: age, sex, administered/dispensed drug and dosage regimen.
Results: In the study period 85 patients were included, 47 (55.3 %) received infliximab and 38 (44.7 %) adalimumab. In the infliximab group 25 patients (53.2 %) were men and the mean age was 37.5 years. In the group of patients treated with adalimumab 25 patients (50 %) were male and the average age stood at 41.9 years.
10 infliximab patients (21.3 %) being treated with intensify posology distributed as follows: 3 (6.4 %) 5 mg/hg 4 weeks, 6 (12.8 %) 5 mg/kg 6 weeks and 1 (2.1 %) 10 mg/kg 8 weeks. 35 patients (74.5 %) receiving the standard treatment regimen 5 mg/kg 8 weeks and only 2 patients (4.2 %) are treated with reduced posology of 5 mg/kg 9 and 10 weeks.

Respect the patients treated with adalimumab, 8 (21 %) show enhancement: 1 (2.6 %) 40 mg/5 days, 5 (13.2 %) 40 mg/7 days, 1 (2.6 %) 40 mg/10 days and 1 (2.6 %) 80 mg/15 days. 29 patients (76.3 %) are treated with the standard guideline 40 mg/14 days and 1 patient (2.1 %) is in desintensification with 40 mg/28 days.
Conclusion: We can consider that in clinical practice 1 in 5 patients are being treated with intensified guidelines. In these cases it would be interesting to know the plasma concentration of these drugs and neutralizing antibodies.
Disclosure of interest: None declared.

PT027: Novel oral anticoagulants in a Belgian teaching hospital: a retrospective drug use evaluation

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Background and objective: In 2009 the novel oral anticoagulants (NOAC) were introduced in Belgium as an alternative to warfarin for the prevention of thrombotic events. At the University Hospital Ghent (Belgium) internal guidelines for optimal and safe use of rivaroxaban, dabigatran and apixaban in the prevention of stroke and systemic emboli in patients with non-valvular atrium fibrillation were published.

The aim of this study is to assess the prescribing compliance to the guideline.

Setting and method: At the 1000-bed Ghent University Hospital, Belgium, a retrospective chart review was performed (October 2014–January 2015).
Main outcome measures: Compliance with guidelines was evaluated regarding indication, dose correctness and correct bridging therapy during surgery. Moreover, the pharmaceutical recommendations of the hospital pharmacist in the electronic patient file were analysed.
Results: In analysis, 191 patients (49 % male gender) were included with a mean age of 74 years [standard deviation (SD) 13]. The mean length of hospital stay was 17 days (SD 23). Sixty-three percent of the patients were admitted via the emergency room (121/191). Sixty-seven percent of the patients were already on a NOAC (128/191) with a distribution between the NOACs of rivaroxaban/dabigatran/apixaban of 7:2:1. The 33 % (63/191) NOAC therapy started in our hospital showed a distribution of rivaroxaban/dabigatran/apixaban of 4:4:2.

NOACs were most frequently prescribed by cardiologists (20/63) and geriatricians (12/63) for the indication of the prevention of a stroke in patients with non-valvular atrial fibrillation (96 %, 183/191). Eighty-eight percent of the patients with non-valvular atrial fibrillation had a CHA_2DS_2-VASc >2.

The dosage was congruent with the guidelines in 143 of 191 patients (75 %). Discrepancies were labelled as underdosing (16 %, 30/191), overdosing (6 %, 12/191) and the need for treatment change due to significant interaction (avoid combinations) (1 %, 2/191). Four cases could not be assessed due to missing information.

Bridging therapy pre and post-surgery was correctly performed in 93 % of the cases (41/44).

Seven patients received a successfully implemented pharmacist recommendation.
Conclusion: A quarter of the NOAC prescriptions is not in accordance with our therapeutic guidelines. There is an opportunity for the clinical pharmacist to validate the prescribing of these high risk molecules before delivery. As a restrictive measurement centralized stockholding of NOACs should be encouraged.
Disclosure of interest: None declared.

PT028: Fractionated rituximab in haematological malignancies: an effective alternative regimen for patients at risk of tumor lysis syndrome

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Background and objective: Tumor lysis syndrome (TLS) is a life-threatening situation caused by massive tumor cell lysis. TLS usually occurs after initiation of chemotherapy in patients with high-grade lymphomas and leukaemias. TLS can also occur either spontaneously or in other tumor types with high proliferative rate, large tumor burden or high sensitivity to cytotoxic therapy. Rituximab (RTX), a monoclonal anti-CD20 antibody, is an essential drug for treatment of non-Hodgkin's lymphoma (NHL) and chronic lymphocytic leukaemia (CLL). The recommended dosage of RTX in haematological malignancies (HM) is 375 mg/m^2 (IV infusion on day 1). Several studies have reported TLS after RTX administration with this regimen. No publication was found about the use of RTX in patients with risk factors for TLS. In our hospital, to reduce the potential toxicity of RTX, fractionated RTX is used on days 1 and 2 for these patients. We report 25 patients treated with fractionated RTX.
Setting and method: Patient information was collected from Haematology and Pharmacy departments. Evaluation of risk factors for TLS, safety and efficacy results of fractionated RTX are presented.
Main outcome measures: TLS risk classification (low, intermediate and high risk) based on risk factors (type of HM, proliferation and bulk of the tumor, LDH level, white blood cell level, renal function). Safety evaluation: occurrence of SLT. Efficacy evaluation: evaluation of disease (recurrence, response).
Results: 25 patients (15 men, 10 women, mean age 73 years) were treated between January 2008 and June 2015 with fractionated RTX for their HM. 18 patients were classified as high risk of TLS and 7 as intermediate risk. The fractionated RTX regimen commonly used is 175 mg/m^2 on day 1 and 200 mg/m^2 on day 2. 24 patients received 1 cycle of fractionated RTX and 1 patient 2 cycles. After fractionated RTX cycle(s), patients received several cycles of full single dose RTX (375 mg/m^2). Fractionated RTX was used in combination with chemotherapy (n = 23, curative intent) and in monotherapy (n = 2, palliative intent).

No TLS was observed in our patients after RTX administration. For NHL (n = 18), complete remission (CR) was achieved in 4 patients, partial remission (PR) in 6 patients, progression in 4 patients, death in 2 patients, outcomes for 2 patients was unknown. For CLL (n = 7), CR was achieved in 4 patients and PR in 3 patients.
Conclusion: Fractionated RTX seems to be efficient and well tolerated and could be an alternative regimen for patients with HM and at high or intermediate risk of TLS. Fractionated RTX also allows introduction of full single dose of RTX without TLS occurrence in these patients. The identification of patients at high or intermediate risk for TLS is not codified in our Haematology department and can be optimized by the implementation of a TLS risk score.
Disclosure of interest: None declared.

PT029: Clinical use of second-generation HIV integrase inhibitors in naïve patients

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Background and objective: To describe the profile of use, in clinical practice, of the second-generation integrase inhibitor (INI) dolutegravir (DTG) and elvitegravir (EVG) taken in combination with other types of HIV drugs in naïve patients.
Design: Observational, transversal and descriptive study in naïve adult patients who had started treatment between November 2014 and April 2015. Variables: demographic (age, gender), CD4, HCV coinfection, viral load (VL) 6 months before initiation of antiretroviral therapy (ART). Variables associated with the indication of use were defined: (a) Variables related to efficacy: severe immune suppression (CD4 below 200 cells/μL) and/or patients with multidrug resistance and/or VL > 100,000 copies, (b) Variables related to safety: comorbidity ART contraindicating different from INI and/or drugs interactions and (c) Combined efficacy and safety variable. The data were obtained from the clinical history, laboratory testing and registration program dispensing pharmacy unit.
Results: 12 naïves patients (1.9 %) were included from a total of 644 HIV+ patients taking care of in our unit. 83.3 % male, median: 33.5 years, 431 CD4 cells/μL and VL in the previous 6 months 43,078 copies and HCV co-infected in 16.7 % of cases. 66.7 % of naïve patients started with INI, seven with combining elvitegravir (EVG)/cobicistat/tenofovir (TDF)/emtricitabine (3TC) and one of them start with DGT more TDF/3TC. 28.6 % of patients treated with INI were for reasons of efficiency (one case per 141 CD4 cells/μL and another patient with VL of 749,716 copies), 42.8 % for safety reasons (two suffered from insomnia, a case of interaction with high doses of methadone) and the combined endpoint of efficiency and safety in 14.3 % (a case of insomnia and interaction with proton-pump inhibitor). In one patient the subject (14.3 %) was unknown.

Conclusion: The use of INI in routine clinical practice, for naïve patients, is mainly for safety reasons in difficult clinical situations to manage.
Disclosure of interest: None declared.

PT030: Empirical treatment of spontaneous bacterial peritonitis with parenteral third-generation cephalosporins

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Background and objective: Facing the commonly accepted recommendation, recent epidemiological changes have questioned the usefulness of ceftriaxone or cefotaxime in the empirical antibiotic treatment of spontaneous bacterial peritonitis (SBP). Our goal is to know if these antibiotics are still useful as empiric treatment of SBP in our area.
Design: Retrospective analysis of cases of SBP identified through the MBDS (minimum basic data set) hospitalization with ICD-9-CM code 567.23 for the years 2006–2013, inclusive. The diagnosis of SBP is set to a count above 250 cells/ml in ascites of cirrhotic patients with portal hypertension polymorphonuclear, excluding peritonitis caused by perforation, peritoneal dialysis. Field of study: tertiary hospital that does not perform liver transplantation and serves a population of 255,000 inhabitants.
Results: We detected 39 cases of SBP, of which 20 episodes germ was isolated and the rest were diagnosed by biochemical criteria. Seeds isolated on the 20 cases were: 2 anaerobes, 2 Campylobacter spp, 6 gram-positive cocci 10 enterobacteria (7 *Escherichia coli*). 70 % were male and the median age 56 years (41–81), with a Child–Pugh stage C in 60 % and B in the rest.

Six patients had SBP during hospitalization and were considered nosocomial; seeds isolated fragilis group were one Bacteorides a Enterococcus faecium jejuni and Campylobacter jejuni, the three resistant to ceftriaxone; two *E. coli* and *Clostridium perfringens* susceptible to ceftriaxone. Five of them had received prior antibiotics (other than norfloxacin). Four of these patients died (three of them directly related mortality).

In 14 patients (70 %) went community SBP or related to healthcare. The following germs were isolated: Five *E. coli*, Streptococcus group four "viridans" a *Streptococcus pneumoniae*, *Klebsiella* spp. two a *Pantoea agglomerans* and *Campylobacter coli*, sensitive to ceftriaxone 93 % (all but *C. coli*). Only two patients had undergone prior prophylaxis with norfloxacin, without causing resistance to ceftriaxone in the isolated bacteria (*E. coli* and *S. salivarius*). In this group died 5 patients (35 %), four of which directly attributable mortality.
Conclusion: In our area, germs isolated in peritoneal fluid of patients with community SBP or related healthcare remain sensitive to ceftriaxone/cefotaxime and empirical antibiotic on a percentage higher than 90 %, not to be so in the case of nosocomial SBP.
Disclosure of interest: None declared.

PT031: Drug therapy among patients subject to outpatient compulsory mental health care

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Abstract submitted before to: The Norwegian Pharmacy days (Farmasidagene) 2014, Oslo, Norway.
Background and objective: Use of coercion in mental health services is controversial, and requires particular attention. Little is known about drug therapy in patients subject to ambulant compulsory mental health care.

The purpose of this study was to describe the drug therapy and follow-up in patients subject to ambulant compulsory mental health care at Sorlandet Hospital, and, if possible, to improve drug therapy through specific advice from a consultant pharmacist.
Setting and method: Relevant information was obtained from patients' medical records. Drug reviews were processed. Identified drug related problems (DRPs) were evaluated by the psychiatrist, and initiatives were documented.
Main outcome measures: Number of drugs, DRPs, agreement on the DRPs with the psychiatrist.
Results: Of the 101 patients subject to ambulant compulsory mental health care 77 patients met the inclusion criteria. On average each included patient used 3.6 drugs overall. All patients were using at least one antipsychotic agent, 83 % used depot injections. We identified 68 DRPs in 51 patients. Of these, the psychiatrist treating the patient agreed with 54 DRPs. The most common type of agreed DRP was "lack of monitoring". The most common initiative was "discussion in the multidisciplinary team or with the patient".
Conclusion: The patients in this study used fewer numbers of drugs than expected in spite of their severe disorder. Even though there was consensus on indication, drugs were not always prescribed, or prescribed in too low doses, on the patients' request. Among the presented DRPs the psychiatrist agreed with a high proportion, but few alterations were made immediately.
Disclosure of interest: None declared.

PT032: Effectiveness and safety of oral melatonin premedication in sleep EEG in paediatrics

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Background and objective: Sleep is known to improve the yield of electroencephalogram (EEG) recording in children with specific epileptic syndromes. Difficult to obtain despite sleep deprivation the night before the exam, sleep EEG requires sedative drugs which can affect the analysis of recording. In this context, the use of oral melatonin has been developed as a physiological sleep-inducer. The aim of this study was to assess the effectiveness and safety of oral melatonin in children requiring a sleep EEG.
Setting and method: An open-label prospective study was performed in children admitted to the Neurology ward for a sleep EEG. Five milligrams of oral melatonin were administrated before the exam.
Main outcome measures: Melatonin effectiveness was assessed by clinical criteria and EEG quality. Safety was evaluated just after EEG implementation and 48 h after examination.
Results: From October 2014 to June 2015, 63 patients (44 % girls) received 5 mg of melatonin before a sleep EEG. Mean age was 6.6 ± 3.8 years old. Around 65 % of these children did not suffer from sleep deprivation the night before. Sleeping rate was 88 % with an average time to fall asleep of 27 ± 17 min. Sleep duration was 31 ± 12 min on average, with a spontaneous awakening reported in 57 % of cases. A high-quality of EEG was reported by physicians in more than 75 % of cases. Concerning melatonin safety, 22 children had side effects just after the EEG (12 were sleepy, 10 were restless or

anxious) and 29 children within 48 h following the exam (26 had sleep disturbances, 5 were more agitated than usual and one child had headache).
Conclusion: This study highlights the effectiveness of oral melatonin in sleep induction in children with a period and duration compatible with the sleep EEG. No serious adverse effect was reported but sleep disturbances within 48 h following the exam were observed, requiring parents warning.
Disclosure of interest: None declared.

PT033: Establishment of a European best-practice model for improvement of health care for oral chemotherapy patients

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Background and objective: Oncology is currently the fastest developing area of healthcare. Many of new drugs are formulations for oral administration. This means that the complex treatment of often co-morbid oncology patients is moving from a supervised hospital setting to the patient's home and dispensing of potent oral anticancer drugs to general community pharmacies.
Design: Our purpose is to empower pharmacists to improve therapy-related outcomes and patient safety by lending support for the pharmaceutical counselling related to the dispensing of oral anticancer drugs. By doing so in selected member countries, we will create a best-practice model for the EU.
Results: We will present the results of the project design and future plans. First we plan to survey the current situation and problems at dispensing of oral anticancer drugs in the EU. Based on the results we will design an education program for pharmacists about oncology topics and develop IT-tools that assist the pharmaceutical counselling process. This will allow the pharmacist quick access to essential information on oral oncology drugs including important advice for patients as well as useful service options like the preparation of treatment plans for the patient.
Conclusion: This system will be put to effect in the participating partner countries and later made available for implementation in other EU-countries. These measures will improve patients' self-efficacy regarding his or her disease and therapy and, consequently, will enhance adherence.
Disclosure of interest: A. Eberl grant/research support from European commission.

PT034: Utilization of evidence-based secondary prevention medications at the time of discharge in patients with acute coronary syndrome (ACS) in Qatar

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Background and objective: In Qatar, ACS (acute coronary syndrome) has become the leading cause of morbidity and mortality. Guidelines recommend that ACS patients should receive indefinite treatment with antiplatelets, beta blockers (β-blockers), angiotensin converting enzyme inhibitors (ACEIs) or angiotensin II receptor blockers (ARBs) and statins. The study objectives were to examine the use of evidence-based secondary prevention medications at discharge among ACS patients in Qatar and to determine the clinical and demographic characteristics associated with the use of these medications.
Setting and method: A retrospective medical record review was conducted at Heart Hospital in Qatar. A random sample of 1068 ACS patients was selected. Patient characteristics were summarized using means and standard deviations for numerical variables and frequency distributions for categorical variables. Prevalence of medications at discharge were computed for each medication as well as for the medication combination. Multiple logistic regression was used to detect patient variables that were associated with the outcomes. A p value of .05 or less was considered significant.
Main outcome measures:

- Percentage of ACS patients discharged on each of the following medications: antiplatelets (Aspirin, Clopidogrel), β-blockers, ACEI or ARBs and statins and on the combination of these medications.
- Association between the use of these medications and patient characteristics.

Results: In total, 1064 records were reviewed. The majority were males (85.3 %) and about 1 in 5 were Qatari (18.7 %). At discharge, patients were prescribed the following: Aspirin (96.0 %), Clopidogrel (92.0 %), β-blockers (90.6 %) and Statins (97.7 %). ACEI and ARBs were prescribed to 63.5 and 11.3 %, respectively. The concurrent 4 medications were prescribed to 665 patients (66.9 % with 95 % confidence interval of 64–70 %). Being overweight or obese, and having STEMI or hypertension were associated with higher prescription of the concurrent medications. And, those with diabetes had about a 55 % increase in the odds of prescribing the 4 medications. However, those with kidney disease had about an 83 % reduction in the odds of prescribing.
Conclusion: Despite that most ACS patients were prescribed antiplatelets, β-blockers, and statins, use of ACEIs was suboptimal. Strategies are needed to enhance ACEIs' prescribing especially in high risk patients who would have the greatest therapeutic benefit of these medications.
Disclosure of interest: None declared.

PT035: Effectivity and safety of miltefosine used for the treatment of visceral leishmaniasis

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Background and objective: The present study aims to analyse the effectivity and safety of miltefosine, an antiparasitic agent used for the treatment of cutaneous, mucosal or visceral Leishmaniasis.
Design: A retrospective, observational study including all patients treated with miltefosine at the hospital was carried out.
Demographic (age and sex), diagnostic (type of Leishmaniosis) and therapeutic (line of treatment with miltefosine, dosage, recurrence rate and adverse reactions) variables were gathered. Statistical analysis of data was carried out using Microsoft Excel®.
Results: A total of 9 patients (8 men and 1 woman, aged 57 [38–81] years old) were included from October 2010 to June 2015. In all cases the parasite was detected in blood, bone marrow and/or urine samples.

All patients had visceral Leishmaniasis, among them, 22 % showed cutaneous or mucocutaneous involvement. All patients had had at least one previous episode before they were treated with miltefosine.

Liposomal amphotericin B was used as first-line treatment in 8 patients (89 %) and 1 (11 %) was treated with meglumine

antimoniate im. Miltefosine was administered as second-line treatment in 67 % of patients, and as third-line in 33 %. 33 % of patients were treated with miltefosine 50 mg/8 h for 28 days. One patient discontinued the treatment. In the other 67 % of patients the dose used was 50 mg/12 h for 28 days.

Eradication was confirmed in 56 % of patients after treatment with miltefosine; of them, 2 patients kept prophylaxis with miltefosine because they were immunocompromised (HIV) and another one with amphotericin. 33 % had recurrences after treatment with miltefosine (2–3 months after finishing the therapy) so they were treated with amphotericin.

One patient (11 %) discontinued treatment with the antiparasitic agent because of the appearance of neurotoxicity symptoms resolved after miltefosine withdrawal and subsequent treatment with amphotericin which led to the parasite eradication.

22 % of patients suffered a decline in renal function and another 22 % showed abdominal pains which were resolved in 50 % of cases after drug administration with food and 50 % after dose reduction.

Conclusion: 56 % of patients were successfully treated with miltefosine.

56 % of patients treated with miltefosine showed adverse reactions, however, the interruption of the treatment was only produced in 11 % of patients.

Gastrointestinal toxicity could have been prevented with an appropriate Pharmaceutical Care by informing the patient about the need of taking the drug with food.

Disclosure of interest: None declared.

PT036: Use of proton-pump inhibitor in hospitalized patients

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Background and objective: In the last times we have witnessed of increased use of proton-pump inhibitor (PPI). They are used as gastroprotective drugs, in which both healthcare professionals and patients have full confidence deposited by their apparent good efficacy and safety profile. However, there are few published studies reporting adverse effects and drug interactions resulting from chronic use of these drugs, as bone fractures due to calcium malabsorption, anaemia by vitamin B12 and iron deficiency, enteric and respiratory infections, acute interstitial nephritis and even cancer according to scientific evidence published. Therefore, an analysis of the appropriateness of prescribing PPIs in patients is necessary, giving more attention on those who have it included in its outpatient chronic therapy.

This study aimed to measure and analyse the prescription profile of PPI in a hospital setting of pluripathological patients.

Setting and method: A transverse study was performed by analysing the appropriateness of the prescription of PPIs in patient admitted to hospitalization units of Internal Medicine of a commercial hospital.

Main outcome measures: Profile of hospitalized patients were analysed and the number of PPI prescribed, dose, duration of treatment, concomitant medication, medical history and reason for hospitalization was determined.

Results: On May 29, 2015, the treatment of 47 patients admitted to the hospitalization units of Internal Medicine was analysed. 57.4 % (27) of these patients were male and the average age was 67.8 ± 15.8 years. Of the total admitted patients, 81 % (38) was treated with a PPI and 15 % (7) with an H2-receptor antagonist. Only 2 patients were free of drug treatment against alterations in gastric acidity. 55.3 % (26) of the patients already had a PPI as chronic treatment before admission. Of all patients analysed, 87.2 % (41) had a reason for hospitalization or medical history that would justify the use of these drugs. 63.8 % (30) were treated with gastrolesive drugs (29.8 % (14) non-steroidal anti-inflammatory agents, 29.8 % (14) antiplatelet agents, 8.5 % (4) oral anticoagulants and 10.6 % (5) corticosteroids) and 36.2 % (17) were being studied for suspected bleeding or discomfort digestive.

Conclusion: The results presented show that there is still an inappropriate use of drugs against gastric acidity disorders, mainly of PPIs. It would therefore be necessary to intensify health education of clinical prescribers and patients, ensuring the rational use of these drugs, and by making them aware of their responsibility in the prevention of adverse reactions due to the inappropriate use of PPIs.

Disclosure of interest: None declared.

PT037: Prescription profile of low-molecular-weight heparins in a hospitalization unit of internal medicine

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Background and objective: The low-molecular-weight heparins are a group of drugs widely used for its indication in venous thromboembolism (VTE) at doses that depend on their prescription for treatment or prophylaxis. Thus, the use of these drugs for prophylactic purposes involves the study of the degree of risk based on the assessment of the patient's clinical situation (previous episodes of VTE, causes long-term immobilization by surgery or functional dependence and other clinical causes that increase the risk of venous thrombosis).

The objective was to analyse the appropriateness of prescribing low-molecular-weight heparins at prophylactic doses in a hospital setting of pluripathological patients.

Setting and method: A transversal study was performed to analyse the prescription profile of low-molecular-weight heparins in the hospitalization unit of Internal Medicine of a commercial hospital.

Main outcome measures: The demographic data of the population admitted (age, sex, degree of dependency as Barthel scale and/or physical mobility); medical history and prescribed dosage of low molecular weight heparin were analysed.

Results: 47 patients admitted to the hospitalization unit of Internal Medicine were studied, with a mean age of 67.8 ± 15.8 years and 57.4 % (27) males. 27.7 % (13) of hospitalized patients had prescribed therapeutic dose of enoxaparin (weight adjusted: 1 mg/Kg twice daily or 1.5 mg/kg once daily) and 31.9 % (15) prophylactic dose of dalteparin (2500–5000 IU once daily). In the cases with prophylactic doses of dalteparin, 53.3 % (8) had a clinical situation that justified it, like prolonged immobilization in 33.3 % (5) and previous episode of VTE in 20 % (3). In 46.7 % (7) cases, the prescription of prophylactic dose dalteparin was not justified.

Conclusion: We can conclude with the obtained data that the use of low-molecular-weight heparins is not adequate to recommendations of clinical practice guidelines and published scientific evidence. Therefore, strategies would be needed to improve the prescription of these drugs in the treatment and prevention of venous thromboembolism.

Disclosure of interest: None declared.

PT038: A case of medication error in patient polymedicated

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Background and objective: During transitions of care (hospital care, primary care, specialist consultations, …) patients are served by different health professionals who participate in its pharmacotherapy and many errors occur as a result of miscommunication of the changes.

The objective of this study was to analyse discrepancies in the home treatment of a patient after an episode of hospitalization.
Setting and method: One patient, male, 71 year old, was admitted to an Internal Medicine unit with diagnosis of unstable angina.
Main outcome measures: A drug therapy evaluation was performed to analyse the existence of differences in patient therapy after hospitalization. It was analysed in the prescription in the hospital discharge report and registration of prescribed drugs in the electronic patient record (Diraya®).
Results: One month after discharge in a visit to the patient's home, the following discrepancies were detected in his treatment:

- Clopidogrel 75 mg and acetylsalicylic acid (ASA) 100 mg (hospital discharge report) and the combined drug clopidogrel 75 mg/ASA 100 mg (Diraya®): It was explained to the patient that it was the same treatment, keeping combined treatment before admission to confirmation in Primary Care (PC).
- Amlodipine 5 mg (discharge) and Manidipine 10 mg (Diraya®): The patient didn't recognize as drugs in the same therapeutic group and same indication. The patient kept only the treatment prescribed at hospital discharge (Amlodipine) to confirmation in PC.
- Carvedilol 25 mg (discharge) and Carvedilol 6.25 mg (Diraya®): The patient kept only the dose prescribed at hospital discharge (25 mg) to confirmation in PC.
- Hydrochlorothiazide 25 mg (discharge) and Torasemide 5 mg (Diraya®): In the discharge report was prescribed hydrochlorothiazide 25 mg every 24 h for a week, without reference to previous treatment with torasemide 5 mg. The patient kept only the treatment prescribed at hospital discharge (Hydrochlorothiazide) to confirmation in PC.
- Clorazepate dipotassium 10 mg (discharge) and Bromazepam 1.5 mg and zolpidem 10 mg (Diraya®): The patient asked the prescription of clorazepate dipotassium for better therapeutic control at hospital discharge.
- Ranitidine 300 mg (discharge) and lansoprazole (Diraya®): The patient reported previous inefficiency with ranitidine, keeping treatment with proton pump inhibitor.

Conclusion: The absence of a process of evaluation and information pharmacotherapeutic at the time of discharge, increases the risk of medication errors. Thus, in patients with high therapeutic complexity, as polypharmacy over 65 years, their safety can be severely compromised by misuse of medicines.
Disclosure of interest: None declared.

PT039: Controversies about insomnia therapy in elderly

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Background and objective: Insomnia is characterized by difficulty falling asleep, limited duration or for a restless sleep that leads to daytime dysfunction resulting.

The objective of this study is to describe the controversies of the use of drugs for the treatment of insomnia and the criteria for inappropriate prescribing in the elderly.
Setting and method: A systematic review of the scientific evidence was performed. It was used for the literature search the following reference databases: Medline, Embase, IME and Pubmed.
Main outcome measures: We conducted a review of the clinical practice guidelines published on pharmacological therapies for insomnia and criteria for potentially inappropriate medication use in older people (Beers and STOPP–START).
Results: Claims converge in the literature reviewed the first-line therapy for chronic insomnia should be based on non-pharmacological measures aimed at an etiological approach. In this way, the pharmacologic action would be limited to acute or severe and persistent cases. The initiation of treatment should be to minimal doses with periodic interruptions and gradual withdrawals in order to avoid chronic use.

In the case of elderly, drug therapy requires a much more thorough monitoring by the susceptibility and risk of the occurrence of adverse effects.

Drugs for insomnia and recommendations for use detailed below:

- *Benzodiazepine hypnotics*. The use of short-acting benzodiazepines (midazolam) are recommended as opposed to intermediate-acting benzodiazepines (lorazepam) o long-acting (diazepam) because of the risk of falls and cognitive impairment.
- *Z-hypnotics (zolpidem)*. Only it recommended in elderly in short-term treatments.
- *Tricyclic antidepressants*. in general, these antidepressants are sedatives and have anticholinergic effects and risk of cardiac arrhythmias which makes them little recommended. However, Doxepin is recommended at low doses in the elderly (1–3 mg) by the low risk of anticholinergic effects.
- *Other antidepressants (trazodone*): Only recommended in cases of insomnia associated with depression.
- *Antihistamines (hydroxyzine)*. They are not recommended by an unproven efficacy and anticholinergic adverse effects in older patients.
- *Other drugs (melatonin)*. This drug is not recommended because it has only demonstrated a reduction in sleep latency 4–7 min.

Conclusion: The management of insomnia should be based on non-pharmacological measures, being limited the use of drugs to acute or severe and persistent cases.

Thus, despite the recommendations, currently there is concern by the widespread chronic use of these drugs and the high degree of dependence that could compromise the safety of the patient.

This situation implies the need for educational interventions and pharmaceutical care by health staff to improve the level of knowledge and lifestyle regarding the quality of sleep.
Disclosure of interest: None declared.

PT040: Use of leflunomide in a cytomegalovirus infection resistant: a report of a case

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Background and objective: Cytomegalovirus (CMV) infection is one of the most common complications in transplant patients, which

can lead to multiple organ failure. The 80–90 % of patients are cured with intravenous treatment standard (ganciclovir), or its oral prodrug (valganciclovir). In case there is no answer, we have alternatively another antiviral, foscarnet. A small number of patients do not respond to this, having a bad prognosis.

The aim is to describe the case of a double lung transplant for cystic fibrosis, and recurrent CMV infection in which the use of leflunomide gets lower and even reach undetectable viral load.

Design: Woman, 22 year old, double lung transplant for cystic fibrosis in March 2014. The CMV serology performed was positive in the donor and negative in the recipient. Controls viral load during prophylaxis with valganciclovir were negative in the receiver until the sixth month after transplantation, at which viral load was detected in controls (2090 IU/ml). The patient was admitted to our hospital to receive intravenous treatment with ganciclovir, after 1 month with intravenous therapy viral load persisted positive (42,400 IU/ml). One study of resistance showed that was resistant to ganciclovir, so began treatment with intravenous foscarnet. This drug achieved negativizar viral load, so the treatment was discontinued, continuing with fortnightly controls viral load. After 2 months without treatment, viral load increased to 13,665 IU/ml, why was requested to Pharmacy Service the off-label use of leflunomide, with the intention that use oral therapy, instead of intravenous therapy. The patient was treated with valganciclovir until have the authorization of use of leflunomide, although unanswered, since in March 2015, at the start of leflunomide treatment the patient had a viral load of 17,344 IU/ml.

Results: The initial regimen was 100 mg of leflunomide daily for the first 5 days, followed by 20 mg every 12 h. After 15 days of treatment viral load had fallen to 531 IU/ml, becoming undetectable in 1 month. After 4 months of treatment the patient remains with undetectable viral load without having any adverse effect associated with it.

Conclusion: Our case is an example where the use of leflunomide in CMV infection resistant to other therapies is an effective and convenient alternative for patients because it keeps undetectable viral load with an oral therapy without having to enter the hospital for intravenous treatment.

Disclosure of interest: None declared.

PT041: Indirect comparison of ramucirumab and alternatives in advanced or metastatic gastric adenocarcinoma

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Background and objective: The first line of treatment of unresectable or metastatic gastric and gastroesophageal junction (GEJ) adenocarcinoma is based on the platinum–fluoropyrimidine combination therapies. According to current evidence, in patients with a good performance status the treatment with second line chemotherapy agents may improve symptoms and quality of life, and can extend survival in selected patients.

We evaluate the effectiveness of ramucirumab alone or in combination with pactlitaxel in treatment of adult patients with advanced gastric cancer (CG) or GEJ adenocarcinoma with disease progression after prior treatment with fluoropyrimidine and platinum containing chemotherapy, compared with other therapeutic alternatives available.

Setting and method: Up to 12/01/15 a literature search of clinical trials and meta-analysis to evaluate second-line treatment of CG and GEJ tumour was performed, yielding 10 clinical trials with a homogenous design that allowed us to compare the overall survival (OS) results of 8 lines of treatment (irinotecan, docetaxel, everolimus, ramucirumab, apatinib, docetaxel + sunitinib, lapatinib + paclitaxel and ramucirumab + paclitaxel). The indirect comparison was performed using the Bucher method, with irinotecan as common comparator, because it presented the lowest HR value versus placebo: 0.55 (0.4–0.77).

Main outcome measures: Overall survival (HR, 95 % CI).

Results: The following levels of HR (95 % CI) were obtained for OS with the different chemotherapy schemes versus irinotecan: docetaxel 1.218 (0.773–1.919), everolimus 1.636 (1.125–2.38), ramucirumab 1.411 (0.933–2.133), docetaxel + sunitinib 1.382 (0.852–2.24), apatinib 0.673 (0.364–1.242), docetaxel + sunitinib 1.298 (0.669–2.521), lapatinib + paclitaxel 0.743 (0.504–1.097) and ramucirumab + paclitaxel 0.714 (0.516–0.989). There was only significant statistical difference ($p < 0.05$) regarding the levels of OS obtained with everolimus versus irinotecan (with everolimus as the worst result) and ramucirumab + paclitaxel versus irinotecan (with the ramucirumab combination as the best result).

Conclusion: Ramucirumab alone does not provide an advantage over other therapeutic alternatives. Ramucirumab provides statistically significant advantages if used in combination with paclitaxel. However, it would be necessary to analyse the increase of toxicity associated with the use of this chemotherapeutic scheme and its impact on quality of life of patients.

Disclosure of interest: None declared.

PT042: Is the choice between warfarin and fluindion important for patients?

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Background and objective: Of the two antivitamins K (AVK) available in France, fluindion and warfarin, only the latter is internationally recommended. Warfarin is known to stabilize International Normalized Ratio (INR) faster than fluindion. In psychiatric population, comorbidities (medication adherence, polymedication, metabolic syndrome…) make stabilization of the INR more difficult to attain than in global population. Those risks make faster INR stabilization a major concern in coagulation treatment.

Is there any real difference between patients receiving warfarin or fluindion in our psychiatric hospital?

Design: All inpatients having received AVK between January 2015 the 1st and may 2015 the 31th were included in the study. INR were extracted from the hospital laboratory database. All INR were recorded, and matched with prescription data of the day before INR (active product prescribed, half or quarter pills prescribed). Fluindion, warfarin, fractions of pills were the dependant variables. A statistically significant ($p < 0.05$) Chi squared test of the interaction between INR and active product prescribed, and between INR and fraction of pills prescribed was done. INR were classified in four groups: <2; 2–4, 4–6 and >6.

Results: A total of 1259 INR were recorded. The study included 95 patients (mean age ± SD = 68.8 ± 16.1 years, sex ratio 1.8). 738 INR were recorded for patients under warfarin and 521 for patients under fluindion. Most of the prescriptions included fractions of pills (704/1259).

Significant interactions were observed between INR and fluindion or INR and warfarin arms (χ^2, $p = 0.0352$) and between fractions of

pills or whole pills arms (χ^2, $p = 9.5 \times 10^{-4}$). Prescribing fractions of pills remains a statistically significant factor in fluindion and warfarin subgroups (χ^2 $\alpha = 0.0315$ and $\alpha = 0.025$, respectively).
Conclusion: These results suggest that the active product prescribed has an influence on the INR results for the population under study. The choice of active product prescribed should take into account that influence and also avoid fractioning pills. Within its limits, this study seems to justify clinicians' preference for warfarin (better INR, several dosages). However, a wider study using statistically unilateral tests would be needed to confirm its superiority in INR results.
Disclosure of interest: None declared.

PT043: Development and validation of novel self-report questionnaire about knowledge of medicines and perception of risk among adolescents

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Background and objective: Nowadays, adolescents play an active role in the use of medicines. Poor knowledge could lead to the improper use of commonly used medicines and adverse drug reactions. There is no information about adolescents' knowledge, attitude and practise of medicines in the Slovak Republic, which led us to develop and validate an assessment questionnaire (KPQ).
Setting and method: The KPQ was designed for use in the adolescents' community prepared by pharmacists from Faculty of Pharmacy, Comenius University in Bratislava in collaboration with panel of three experts with expertise in pharmacy, psychology, statistics and questionnaire design. The questionnaire contained 23 multidimensional items, with closed-ended and open-ended questions. There was one specific item with seven questions about adolescents' perception of medicines and other specific item with eight questions to assess adolescents' knowledge about the administration of medicines with responses recorded on the "Likert type scale". The validity and reliability of the final KPQ was carried out using a cross-sectional and analytical study with PSPP 0.7.9 statistics programme. The KPQ was distributed by pharmacists to adolescents ($n = 750$) into 12 community high schools that covered all parts of the Slovak Republic, following selection criteria.
Main outcome measures: Validation of questionnaire by establishing the distribution of KPQ's items and dimensions of KPQ, through factor analysis, evaluation of reliability with Cronbach alpha coefficient (α).
Results: The face and content validity of novel self-reported questionnaire were assessed collaborating with seven experts pharmacists from Faculty of Pharmacy, Comenius University in Bratislava and State Institute for Drug Control. The factor analysis with varimax rotation confirmed final KPQ two specific items in "Likert type scale" over three dimensions: knowledge of the use of medicines, perception of medicines risk, and attitude to the use of drugs which extracted together 73.77 % of the variance. The internal consistency by Cronbach alpha coefficient (α) was 0.85 for the KPQ and 0.83 and 0.75 and 0.82 for dimensions, respectively.
Conclusion: We present the self-report questionnaire which is an effective instrument to assess the knowledge of medicines among adolescent. This tool appears to be a starting point in the development of future trials to understand more about the improvement in the use of medication in adolescents in the Slovak Republic.
Disclosure of interest: None declared.

PT044: Off label use of bevacizumab in recurrent glioblastoma: efficacy and safety

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Background and objective: The present study aims to analyse the efficacy and safety of bevacizumab therapy, which is used off label in Spain, for recurrent glioblastoma.
Design: A retrospective, observational study including all patients with recurrent glioblastoma, who started treatment with 10 mg/kg bevacizumab intravenous infusion every 2 weeks between July 2011 and May 2015, was carried out.

To identify patients and collect data the electronic prescription tool Oncofarm® and the electronic clinical history system HCIS® were used.

Demographic (diagnosis age and sex), diagnostic (tumour resection) and therapeutic (Eastern Cooperative Oncology Group scale (EGOG), line of treatment and number of cycles with Bevacizumab) variables were gathered.

Median progression free survival (PFS), rate of PFS at 6 months, complete or partial response and stable disease events were recorded to evaluate efficacy. Adverse effects related to Bevacizumab were documented and classified according to the Common Toxicity Criteria v4.0 to measure safety.

Statistical analysis of the data was carried out using Microsoft Excel 2010® and SPSS® 18.
Results: Throughout the period of study a total of 42 patients (24 male and 18 female) with a median age at diagnosis of 56 years (range 30–74) started treatment with Bevacizumab. First-line treatment with temozolomide and radiotherapy was received by all the patients included in the study.

Most of the patients (88 %), had previously undergone surgery. Five patients had inoperable tumours.

The median ECOG value prior to bevacizumab therapy was 1 (range 0–3). An ECOG improvement during treatment was documented for 7 patients, however the median ECOG value at the end of the treatment was 2 (range 0–3).

Bevacizumab was mainly used as a second or third-line treatment (83 %), the median number of cycles with bevacizumab was 6 (range 1–51).

Partial response and stable disease were reported in 8 and 5 patients respectively. No complete response was observed. The median PFS was 3 months (95 % CI 2.2–3.8), with 6-month PFS rate of 17.2 %.

Adverse effects related to bevacizumab were: asthenia (26 %), hypertension (19 %), epistaxis (12 %), diarrhoea (5 %), myalgia (7 %), proteinuria (14 %) and thromboembolic events (5 %). All of them were G1–2, excepting thromboembolic events which were G3.
Conclusion: The median PFS and 6-month PFS rate obtained in the study were lower to the data published in clinical trials. However, and according to our experience, bevacizumab can be considered an active treatment with an acceptable safety profile that can be used as an alternative to the standard chemotherapy to treat recurrent glioblastoma.
Disclosure of interest: None declared.

PT045: Analysis of pharmacotherapeutic profile in patients with type 2 diabetes mellitus

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Background and objective: To trace type 2 diabetics' pharmacotherapeutic profile, describing the use of drugs in prevention and treatment of cardiovascular/macrovascular disease, such as antidiabetic, antihypertensive, antilipidemic and antiplatelet drugs.
Setting and method: Questionnaires were made to access sociodemographic and clinical data, relevant metabolic/cardiovascular parameters and drugs information. They were filled by health professionals in a private practice and in a pharmacy. It were obtained 70 questionnaires during 5 months, which were statistically analysed by the software Statistical Package for Social Sciences (SPSS).
Main outcome measures: Classification of the different types of drugs; categorize the number of drugs used by each patient.
Results: The sample presented a mean age of 73.3 ± 11.1 years and 52.9 % were men. The average diabetes' duration was 18.4 ± 11.2 years. Everyone consumed at least one antidiabetic drug, where 78.6 % used metformin, making it the most used one. About 42.9 % used only one antidiabetic, while the same percentage took 2 different drugs. The antihypertensive drugs were administered by 80.0 % of the sample and 52.9 % used lipid remedies. In each group, aldosterone receptors antagonists and statins were the most used ones, respectively. About 92 % used only one hyperlipidaemia agents and 53.6 % took one single antihypertensive drug. Antiplatelet drugs were consumed by 42.9 %. The acetylsalicylic acid was the most mentioned. The mean number of total drugs used per person was 6 ± 2. More than 38 % used 4–6 drugs and 30 % used 7–9 different medicines. Among all the other drugs, digestive system's agents prevailed.
Conclusion: The use of drugs related with prevention/treatment of cardiovascular disease was substantially high. Among the four main types of medicines taken into account, metformin, aldosterone receptors antagonists, statins and acetylsalicylic acid were the most used. The major part of this sample used 4–9 different active ingredients. Therefore, it's important to rationalize therapeutic in this type of patients and promote their monitoring, in order to reduce potential drugs interactions and other possible medication errors, as well as improving treatment's effectiveness and life's quality.
Disclosure of interest: None declared.

PT046: Gemtuzumab-ozogamicin in the treatment of acute myeloid leukaemia in a haematology department

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Background and objective: Gemtuzumab-ozogamicin (GO) is an anti-CD33 antibody coupled to a cytotoxic antibiotic, used for acute myeloid leukaemia (AML) alone or in combination with others chemotherapy drugs. Several publications have reported evidence of efficiency in this indication and few serious complications of GO are described with a single dose at 9 mg/m^2 particularly liver toxicities. In France, this drug is under cohort temporary authorization for non pre-treated AML. The haematology department of Saint-Antoine hospital is an important unit for AML medical care's (70 per year). In order to reduce the GO toxicities, we use a fractionated dose regimen. The aim of the study is to establish a current state of GO's use.
Setting and method: A retrospective study was performed from 2012 to 2014 in haematology and pharmacy departments. Patients data were extracted from Chimio® software and medical records. The cohort is split in two groups: patients who received a stem cell transplant after GO-treatment (SCT group) and patients who provided only GO-treatment (without SCT group).
Main outcome measures: Indications, dosages of GO-prescriptions, efficiency [remission rate (RR): myelogram without leukemic blast after GO-treatment), progression-free survivals (PFS), complete response (CR)] and toxicities.
Results: 41 patients were treated with GO. Median age at time of treatment was 51.8 years old (range 19–77).
Indications: One patient was in first line treatment, nine patients were refractory to a first-line of chemotherapy and 31 patients were in relapse AML.
Dosage: GO was fractionated (3 mg/m^2 on day 1, 4 and 7) in combination with anthracyclines and cytarabine. At time of remission, 3 patients received 1 consolidation GO-containing regimen (3 mg/m^2 on day 1) and 11 patients 2 consolidations.
Efficiency: Overall RR was 29/41 (71 %), including 6 CR and 23 CRp (without platelet recovery). 15/29 (52 %) CR (or CRp) underwent a SCT. For the SCT group (15 patients), 4 patients were already allograft in first line treatment and 11 were allograft only after GO: PFS were respectively 23.3 and 10 months. For the group without SCT (14 patients), PFS were 11 months for patients allografted in first line treatment and 14.1 months for the 10 others patients. The comparison of aplasia lengths (neutrophils < 500/mm^3) between GO-treatment and standard chemotherapy received in first line are significantly different: 30.4 versus 23.5 days, respectively ($p < 0.05$).
Toxicities: Two minor cases of sinusoidal obstruction syndromes (5 %), 6 liver-toxicities with ALAT/ASAT > 10 N (14.6 %), 11 refractory thrombopenia (without platelet recovery in day 45) (27 %) are described.
Conclusion: Most patients received GO in a "off label use" but GO seems to be efficient for refractory and relapsed AML in 2 groups (with and without SCT). The fractionated dose regimen allows an acceptable safety profile, even if liver toxicity and aplasia length should be barriers to its use.
Disclosure of interest: None declared.

PT047: Use of metformin and mecasermin in the treatment of Donohue syndrome: about a clinical case

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Background and objective: Donohue syndrome is a rare disease with severe loss-of-function mutations in the insulin receptor pulling to very high insulin level. Majority of patients died before 2 years of age mainly from cardiac complications. Metformin has been proposed in this disorder to try to normalize glycaemia and decrease plasmatic insulin levels but there are few data demonstrated its efficiency this day. Recombinant human insulin-like growth factor 1 (IGF1) therapy has been shown to have modest efficiency in some cases. At present, it is nevertheless the only therapy with documented efficacy. This work presents a case of Donohue syndrome handled by metformin combined with IGF1.
Design: Donohue syndrome has been diagnosed in a new-born female, presented with hypertrophic heart disorder, hyperandrogenism and growth retardation. Diagnosis has been made clinically on typical dysmorphic features, severe lipoatrophy, hirsutism and on

biological elements with severe hyperinsulinemia (8000–14,000 UI/L). Diagnosis was confirmed by molecular biology (2 heterozygote mutations composite).

Results: The child received parenteral and continuous enteral nutrition because of recurrent hypoglycaemia. Treatment with metformin was initiated aged at 2 months old at 10 mg three times a day then increased gradually until 100 mg three times a day (60–100 mg/kg/day). Because of hyperlactacidemia, dose was decreased to 70 mg three times a day. Capsules compounded by pharmacy were administered by gastrostomy. Metformin stabilized glycaemias but did not have any effects on hyperinsulinemia (10,000 UI/L). The recombinant IGF1 (mecasermin) was so introduced when aged 4 months old (300–400 μg/kg/jour) for its "insulin like" properties, administered subcutaneously by pump and continued until this day. It allowed a decrease of insulin to 1900 UI/L. Mecasermin had cardiac and ENT side effects with worsening of child heart disease and hypertrophy lymphoid tissues requiring a reduction of mecasermin doses. Association with metformin allowed decrease mecasermin's doses and thereby decreasing side effects toxicity.

Conclusion: Treatment with metformin combined with mecasermin permitted decrease of hyperinsulinemia and to control and stabilize glycaemia's. Assessment and efficiency of this combined therapy will be made at the age of 2 years age rarely achieves by the patients affected by this serious and rare pathology.

Disclosure of interest: None declared.

PT048: Use of vandetanib in medullary thyroid cancer

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Background and objective: Vandetanib is indicated for the treatment of medullary thyroid cancer (MTC) unresectable locally advanced or metastatic, which represents 5 % of thyroid cancer cases. The aim of our study is to evaluate the safety and efficacy of vandetanib in patients with MTC.

Design: Retrospective observational study of patients who began treatment with vandetanib from January 2014 to March 2015. The data were obtained from the outpatient dispensing software application (Dipex®) and by review of medical records and clinical analysis.

Results: Three patients were included, all men, with a mean age of 61.7 ± 10.6 years. The patients, diagnosed with stage IV sporadic MTC progression, were initially treated with thyroidectomy, cervical lymph node removal and external radiotherapy. The oncogene RET mutation status was negative in one patient and unknown in the remaining 2. Basal calcitonin levels at baseline were >500 pg/ml in all cases and the mean baseline carcinoembryonic antigen was 109.4 ± 141.19 ng/ml. The average duration of treatment with vandetanib was 5.9 ± 3.6 months. The initial dose of 300 mg/day had to be reduced in two patients due to drug toxicity. In one of them this was the cause of itching in photo exposed areas, and grade III acneiform rash that would not yield to conventional treatment. On the other patient, it caused unintentional tremor with gait instability, headache and confusional state with language impairment, compatible with reversible posterior leukoencephalopathy syndrome after brain MRI assessment, which finally led to treatment discontinuation. The two patients who continued treatment with vandetanib currently present partial response to it.

Conclusion: In our study, despite the good response to treatment with vandetanib until now, we cannot verify the improvement in progression-free survival versus placebo established in published trials (30.5 vs. 19.3 months, respectively) due to the limitation of treatment time in the patients. Regarding the safety profile of the drug, we find it unfavourable due its poor tolerability, with events that even required its suspension.

Disclosure of interest: None declared.

PT049: Cidofovir for treatment of adenovirus and BK polyomavirus infections after hematopoietic stem cell transplantation in paediatric patients

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Background and objective: Haemorrhagic cystitis (HC) caused by adenovirus and BK polyomavirus is a common complication after hematopoietic stem cell transplantation (HSCT). Its manifestations vary from painless microscopic haematuria to severe bladder haemorrhage. Treatment is mainly symptomatic, based on hyperhydration and continuous bladder irrigation. Cidofovir, a drug indicated for treatment of cytomegalovirus retinitis, could also be active against adenovirus and BK polyomavirus. The aim of this study is to describe our clinical experience with cidofovir in paediatric patients with HC after HSCT.

Design: Data from 12 paediatric patients with HC treated with cidofovir between April 2010 and March 2015 in a paediatric bone marrow transplantation unit was collected. Demographic and clinical data were obtained from the electronic medical records. Treatment regimens and efficacy were assessed.

Results: Twelve patients with ages ranging from 1 to 17 years were included. In nine cases the dose was 5 mg/kg/7 days for two consecutive weeks followed by 5 mg/kg/14 days. Two patients received an alternative regimen of 1 mg/kg/dose three times per week while another was treated with a 1 mg/kg/week regimen. All patients received hyperhydration and all but one received probenecid to prevent nephrotoxicity. In six cases the patients were treated with bladder irrigations. Ten patients (83 %) showed clinical improvement in HC. Two of them suffered a second HC episode and were treated twice. Two patients didn't respond and underwent hypogastric artery embolization. Median duration of treatment until clinical response was 5 weeks.

Conclusion: The most used regimen was cidofovir 5 mg/kg/week for 2 weeks followed by 5 mg/kg/14 days. Clinical improvement was observed in 83 % of patients, so it could be considered effective in our clinical setting.

Disclosure of interest: None declared.

PT050: Use of dimethylfumarate for the treatment of multiple sclerosis

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Background and objective: Dimethylfumarate is an oral treatment recently approved in Spain for the treatment of relapsing forms of multiple sclerosis at the recommended dose of 120 mg twice daily for 1 week and then 240 mg twice daily.

To analyse the use and safety of dimethylfumarate for the treatment of relapsing-remitting multiple sclerosis (RRMS).

Design: For 6 months (January–June 2015), each new patient with a prescription for dimethylfumarate was included in the study. For these

patients, we collected data about the disease and previous treatment (from medical software); the starting dose and questioned them about possible adverse event.
Results: 14 patients were included (5 men and 9 women) with mean age of 42. Dimethylfumarate was prescribed as a first line (2/14) or a second-line (9/14) and third-line (3/14) treatment. The main reasons for prescribers to choose this treatments were: contraindication of injectable drugs (50 %), infectivity (29 %) and adverse reactions to previous drugs (7.14 %). All patients received a gradual dosing regimen that consisted in 120 mg twice daily during the first week, then 240–120 mg the next week and continued with 240 mg/12 h, despite the recommended dosage in the label information was different. Regarding tolerability, adverse events reported more frequently by patients were flushing (14 %), diarrhoea and abdominal pain (14 %) and the remaining patients (71 %) tolerated the medication without adverse effects. During the study, 1 patient discontinued dimethylfumarate due to relapse of multiple sclerosis.
Conclusion: Our study shows that although prescribers did not follow the recommended dosage, the gradual dosing regimen for the starting dose did not seem to reduce the occurrence of side effects. With the approval of this new oral drug for RRMS, the therapeutic strategy has evolved to include options that appears to have administration advantages over established parenteral treatments.
Disclosure of interest: None declared.

PT051: Evaluation of the use of pazopanib in a specialty hospital

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Background and objective: Pazopanib is a protein kinase inhibitor. It is indicated in adults for the treatment of advanced Renal Cell Carcinoma (RCC). These enzymes can be found in some receptors on the surface of cells that are involved in the growth and spread of cancer cells, such as 'VEGFR', 'PDGFR' and 'KIT'. By blocking these enzymes, Votrient can reduce the growth and spread of the cancer. To evaluate the effectiveness and safety of the use of Pazopanib in a specialty hospital.
Design: Descriptive observational study of the use of Pazopanib from April 2013 to November 2014. The following variables were collected from medical history through Archinet computer application (medical history software): sex, age at which the treatment was initiated, pathology, line of treatment, prescribing service and adverse reactions.
Results: Seven patients were analysed (43 % male), with an average age of onset of treatment of 60 years (35–76 years). All patients received Pazopanib for metastatic RCC in first line treatments.

The prescribing services were oncology (5 patients) and urology (2 patients).

Only 4 patients continue on treatment. The average duration of treatment was 221 days (22–555 days) and the reasons for dropout were: exitus (2 patients) and intolerance to treatment (1 patient).

Four patients presented adverse reactions. Most were: change hair colour (3 patients), vomiting (1 patient), asthenia (1 patient), nausea (1 patient), esophagitis (1 patient), hand-foot syndrome (1 patient), hypertension (1 patient), discomfort at mucosal (1 patient), headache (1 patient).
Conclusion: The average duration of the treatment was 221 days and the fact that four patients continue treatment reveals that Pazopanib is effective in controlling disease progression. Oral administration and the fact that most adverse effects recorded are mild provides advantage over other therapeutic alternative.
Disclosure of interest: None declared.

PT052: Development of a 0.2 % ganciclovir collyrium in Posner-Schlossman syndrome. A case report

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Background and objective: The Posner–Schlossman syndrome is defined as a unilateral hypertensive uveitis that causes limited and short-lived episodes. This syndrome is associated with cases of cytomegalovirus infection.

To describe the preparation of an ophthalmic formulation of 0.2 % Ganciclovir for the treatment of a patient with Posmer–Schlossman syndrome with a cytomegalovirus infection.
Design: From the Ophthalmology Service it was requested to the Pharmacy Service develop a 0.2 % Ganciclovir collyrium. The Pharmacy Service carried out a bibliographic search for its preparation. Composition: Ganciclovir sodium 500 mg/vial (Cymevene), water for injection, 0.9 % sodium chloride.

Case description: Male patient with the syndrome Posmer–Schlossman and a repetitive glaucomatocyclitic crises in his right eye. Due to the continuing crises, an aqueous humour sample by PCR for cytomegalovirus was analysed, and the result was positive.

Preparation technique: To reconstitute Ganciclovir vial with 10 ml of water for injections. Take 0.3 ml of reconstituted vial and fill with 9.7 ml of saline. Shake until homogenization. Packaged in eye drop bottle. Label. Expiration: 30 days, 7 days after opening. Storage: Protected from light. Room temperature. The formulation is elaborated in line with the handling cytostatic drugs rules. It is performed under sterile conditions with the maximum hygiene (PN/L/PG/003/00) and following the ophthalmic preparations protocol.
Results: Favourable evolution. The patient presents a symptomatic improvement after 2 months of treatment following a dosing regimen of one drop every 4 h. Currently the patient comes to periodic reviews with a progressive improvement.
Conclusion: This formulation could be an alternative for patients with recurrent uveitis in a cytomegaloviris infection. Compared to oral valganciclovir has the advantage of having less adverse reactions.
Disclosure of interest: None declared.

PT053: Usage and safety of fingolimod in multiple sclerosis

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Background and objective: The objective of this study was to assess the use and safety profile of fingolimod treatment in patients with multiple sclerosis (MS) in a clinical setting.
Design: Retrospective, observational study that included all patients treated with fingolimod from March 2011 to June 2015. Patients were identified and followed through electronic medical record. The sociodemographic variables (sex, age, and years of onset of the MS since the disease was diagnosed), type of multiple sclerosis, previous treatment lines, monitoring of the first fingolimod dose and after reintroduction according to the guidelines, reason for interruption or discontinuation, mean treatment duration of treatment and adverse side effects were retrospectively recorded.

Results: A total of 32 patients were included in the study, with a median age of 41.84 years (±9.61), of which 71.84 % were female. 100 % of patients were diagnosed with RRMS (relapsing-remitting multiple sclerosis) at treatment starting, with a median duration of the disease of 8.5 years.

Fingolimod was most frequently prescribed as a third-line agent in sixteen cases (range 2–5).

Vital signs were monitored in 96.87 % of patients the treatment initiation. Treatment was temporarily interrupted in 9.37 % (two of them due to hepatotoxicity and one patient due to possible presence of JC virus). Reintroduction of treatment was monitored following Spanish Medicines Agency (SMA) safety recommendations in 66.6 %.

Fingolimod was discontinued in 43.75 % of patients with a mean duration of treatment 37, 82 months. Adverse effects leading to discontinuation included: unsatisfactory therapeutic response (35.71 %), adverse events (42.86 %) (nausea, diarrhoea, leukopenia, hepatotoxicity and dizziness), pregnancy (14.28 %) and other causes (7.14 %). Regarding the safety profile of the drug, 96.87 % had experienced an adverse side effect due to fingolimod at some time. All cases had lymphopenia [mild (29.03 %), moderate (64.52 %) and serious (6.45 %)], 70.97 % abnormal liver profile [transaminases levels >3 (ULN) upper limit of normal 29.35 % and elevated bilirubin in 16.13 %], general symptoms (nausea, diarrhoea, asthenia, dizziness) in 64.52 %, leucopenia in 41.93 %, visual symptoms in 35.48 % and clinical infection manifestations in 29.03 %.

Conclusion: Fingolimod was used as third line treatment in about 50 % of patients.

Almost half of the patients discontinued fingolimod treatment due to adverse effect.

Treatment monitoring is frequently when starting but not always when drug is reintroduced after a previous interruption. This was observed in approximately in a half of the patients.

Disclosure of interest: None declared.

PT054: Patterns of antiepileptic drug use in an ageing population with epilepsy and intellectual disability

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Background and objective: Epilepsy is over-represented in people with intellectual disability (ID). Although life expectancy for people with ID is increasing, those with ID co-existing with epilepsy have a higher mortality rate, particularly those who experienced recent seizures. There are few observational studies of prevalence and patterns of antiepileptic use among people with ID and epilepsy. The objectives were to investigate prevalence and patterns of antiepileptic use in the treatment of epilepsy in a representative population of older people with ID and epilepsy.

Setting and method: Cross-sectional medication data was drawn from Wave 1 of the Intellectual Disability Supplement to the Irish Longitudinal Study on Ageing (IDS-TILDA), a study on the ageing of 753 nationally representative people with an ID aged >40 years randomly selected from the National Intellectual Disability Database in Ireland. Participants and/or carers recorded medicines used on a regular basis and reported doctor's diagnosis of epilepsy. Participants/carers reported seizure frequency, when epilepsy was last reviewed, and which practitioner reviewed epilepsy.

Main outcome measures: Reported us of antiepileptic medicines to primarily treat epilepsy (i.e. regular use of antiepileptic medicines (AED'S) in those reporting a physician diagnosis of epilepsy) was the primary outcome. In addition medications that may lower the seizure threshold were adopted from the Maudsely prescribing guidelines in psychiatry and examined.

Results: Of the 736 participants with reported medicines use, 287 (38.9 %) reported use of AEDs. Of these 736, 225 (30.6 %) participants had a doctor's diagnosis of epilepsy, and 205 (90.7 %) reported concurrent regular use of antiepileptics and epilepsy. Of these 205, 49.7 % (n = 102) had monotherapy, and 50.3 % (n = 103) polytherapy. The most frequently reported antiepileptics were: valproic acid (N = 100, 48.7 %), carbamazepine (N = 89, 46.3 %), lamotrigine (N = 57, 27.8 %). Phenytoin and phenobarbital were reported 10.3 % (n = 21) and 9.4 % (n = 19). Other than AEDs and medicines used to treat acute seizures, participants reported a mean (SD) of 5.9 (3.9) other medicines. 13.7 % had a concurrent psychotropic recommended to be avoided in epilepsy, 31.7 % had a psychotropic where caution is required is required.

Conclusion: Prevalence of epilepsy was high among older people with ID, and 5 in 10 took two or more agents. Despite use of multiple medicines over half of people had a seizure in the previous 2 years. The treatment of epilepsy is complex, and places a considerable burden on patients, carers and specialist services. It is important for pharmacists to carry out regular reviews and monitoring of antiepileptic medicines, in collaboration with other healthcare professionals and to consider the effect of other medicines that interact with AEDs or lower the seizure threshold.

Disclosure of interest: None declared.

PT056: Successful implementation of a new cefuroxime dosing regimen in hospitals

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Background and objective: The increasing use of antibiotics is of great concern in relation to antibiotic resistance. A national initiative has targeted cephalosporins in particular for intervention. A specialist group of doctors and hospital pharmacists therefore reevaluated the dosing regimen for cefuroxime. The aim was to reduce the overall utilization of cefuroxime in hospitals in North Denmark Region.

Design: The dosing regimen was changed from cefuroxime 1500 mg three times per day to 750 mg four times per day which provides approximately similar 'time over MIC' but decreases the daily dose by 33 %. The regimen was aimed at adult hospitalized patients in North Denmark Region.

Starting in 2012, the implementation strategies coordinated by the phamacist were: Standard dosing regimen in the electronic prescribing system was changed; Hospital Pharmacy staff were informed of the new regimen at a meeting; an antibiotic-theme newsletter from The Hospital Pharmacy was distributed to all wards at the hospitals; mails and letters were distributed to leading doctors. The Hospital Pharmacy staff on the wards followed up on the change in the dosing regimen and explained the change at ward staff meetings for both nurses and doctors.

Utilization of cefuroxime in DDD was evaluated periodically and reported annually.

Results: Cefuroxime 1500 mg decreased 69.7 % (from 16.945 to 5.140 DDD). Cefuroxime 750 mg increased 41.6 % (from 25.289 to

35.820 DDD). From 2011 to 2014 an overall decrease in utilization of cefuroxim by 8.3 % was observed (from 55.332 to 50.757 DDD).
Conclusion: The new regimen was successfully implemented and led to a reduced utilization of cefuroxime in hospitals in North Denmark Region.
Disclosure of interest: None declared.

PT057: Effectiveness analysis of second line squamous non-small-cell lung cancer in real-life clinical practice

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Background and objective: To describe the clinical experience in our hospital with second-line chemotherapy in patients with advanced or metastatic squamous non-small-cell lung cancer (NSCLC) and compare with efficacy results obtained in the Checkmate-017 Study what compared nivolumab 3 mg/kg every 2 weeks versus docetaxel 75 mg/m^2 every 3 weeks.
Setting and method: A retrospective observational study involving patients diagnosed with NSCLC who were treated with second-line chemotherapy after first-line progression based on a platinum-based chemotherapy during 2012 and 2013. Demographic, clinical and treatment data were collected through Computerized Physician Order Entry Oncowin® and History Health Digital Single Diraya® program. As effectiveness variables Progression free survival (PFS) and Overall survival (OS) were measured and compared with the efficacy data of nivolumab.
Main outcome measures: 25 cases were diagnosed of NSCLC: 15 patients (14 men) received a second-line treatment: 53.4 % (n = 8) docetaxel 75 mg/m^2 every 21 days, 20 % (n = 3) erlotinib daily in EGFR mutation-negative patients, 13.3 % (n = 2) gemcitabine 1000 mg/m^2 + vinorelbine 25 mg/m^2 on days 1 and 8 every 21 days, and 13.3 % (n = 2) received a platinum-based therapy that had not received as the first line. Four patients received subsequent chemotherapy lines. The median patient age was 64 years and 93.3 % had received a first line platinum-based chemotherapy.
Results: In our clinical practice, the median OS was 3 months and the median PFS was 1.47 months with the second-line chemotherapy. In the subgroup of docetaxel median OS was 3.6 months and median PFS was 2.37 months. Results of the Checkmate-017: median OS was 9.2 months with nivolumab versus 6.0 months with docetaxel (HR = 0.59, 95 % CI 0.44–0.79, $p = 0.00025$) and median PFS was 3.5 months with nivolumab versus 2.8 months with docetaxel (HR 0.62, 95 % CI 0.47–0.81, $p = 0.0004$).
Conclusion: This study shows that in real life, patients treated with second line chemotherapy had worse effectiveness comparable to prior randomized trials; probably our patients had a worse performance status that patients in clinical trials. If promising results obtained with nivolumab are confirmed, this treatment will change clinical practice in second line NSCLC patients.
Disclosure of interest: None declared.

PT058: Acute hepatitis C: treatment effectiveness in clinical practice

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Background and objective: Acute hepatitis C virus infection (AHC) occurs during the first 6 months after transmission. As it is often asymptomatic, AHC is usually undiagnosed except for high-risk population. Progression to chronic liver disease is reported in up to 80 % of patients whereas only 20 % clear the virus spontaneously. Current guidelines recommend a treatment based on peginterferon with or without ribavirin. The aim of this study is to evaluate treatment effectiveness in our clinical practice.
Design: An observational study was performed in a tertiary university hospital in Barcelona. Data from all consecutive AHC patients treated between 2011 and 2014 were collected. Demographic and clinical data were obtained from medical records.

All patients (except one) were HIV-coinfected. Patients were treated with peginterferon alpha-2a (180 mcg/week) combined with weight-based ribavirin (≤75 kg 1000 mg, >75 kg 1200 mg, divided in two daily doses) during 24 weeks. The main endpoint was the achievement of sustained virologic response (SVR) 24 weeks after the end of the treatment.
Results: During the study period, 21 patients received 24 treatments (three patients were re-infected). All patients were male and the median age at diagnosis was 35 years (range 27–47). Eleven infections (45.8 %) were caused by genotype 1 virus and ten (41.7 %) by genotype 4. In the remaining three cases the genotype could not be determined. The baseline viral load ranged between 4000 and 400,000,000 UI/ml. Nineteen treatments were completed (79.2 %), while five (20.8 %) were discontinued. The reasons for early interruption were adverse effects in three cases (12.5 %) and non-response due to a low treatment adherence in two cases (8.3 %).

According to the intention-to-treat analysis, the rate of SVR was 62.5 %. Two patients progressed to chronicity and two were lost to follow-up. This rate rises to 68.2 % if lost to follow-up patients are excluded.
Conclusion: Current standard treatment in AHC patients can be considered acceptable according to our data. Based on these results, it is necessary to improve health education to prevent reinfection in high-risk population.
Disclosure of interest: None declared.

RD002: A Delphi study to determine consensus around aspects of medicines management for elderly, hospitalised patients

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Background and objective: Elderly patients are at risk of medicine-related issues due to several factors including changes in pharmacokinetics and pharmacodynamics, and polypharmacy. While there is no standardized, universally accepted definition of 'medicines management', it basically refers to 'getting the best from medicines'. The objective of this study was to determine consensus in relation to strategic and operational approaches around medicines management for elderly, hospitalised patients in the UAE, as a first step in the development of medicines management guidelines.
Setting and method: The research was conducted in Abu Dhabi city, UAE utilizing a Delphi technique involving an expert panel of 30 key stakeholders (senior geriatricians, senior family physicians, directors of pharmacy and nursing departments, senior academics and key Health Authority of Abu Dhabi (HAAD) professionals), identified by means of snowball sampling. The expert panel members represented all public hospitals, HAAD and Al Ain Medical University. The Delphi statements were developed from three sources: narrative and systematic literature reviews, and analysis of data generated from the in-depth interviews of a purposive sample of health professionals. Statements were organized into: medicines management guidelines;

medicines reconciliation; medicines prescribing and review; medicines adherence and counselling; health professional training, and evaluation research. Each expert was sent an email with a link to the online survey tool. Descriptive statistics were used to analyse responses.
Main outcome measures: Consensus level of agreement was defined as 70 % or more experts 'agreeing'/'strongly agreeing' with each statement.
Results: Out of the original 30 experts invited, 26 participated. Consensus was achieved for most statements except those which named specific professions (e.g. nurses, pharmacists) who should undertake specific tasks (e.g. medicines reconciliation). However, consensus was achieved such that these tasks should be undertaken by a 'trained health professional'.
Conclusion: The results of the Delphi study have identified very high levels of agreement around structures and processes of medicines management for elderly, hospitalised patients and will form the basis for further work.
Disclosure of interest: None declared.

RD003: Stakeholders' views on and their minimal requirements for redispensing unused medicines: a qualitative study

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Background and objective: Medication wastage has undesirable consequences both economic and environmental. Wastage is partly unavoidable, but could be reduced by redispensing unused medicines that are returned to the pharmacy. However, scientific and practical information on the minimal requirements for redispensing medicines is lacking. Stakeholders can provide insights into the feasibility of a redispensing system. The objective of this study is therefore to identify stakeholders' views on and their minimal requirements for redispensing unused medicines.
Setting and method: Semi-structured interviews were conducted with 19 Dutch key stakeholders (healthcare professionals, health insurance companies, patient and consumer organisations, health authorities and manufacturers' representative organisations). The interview guide included two core themes: medication wastage and redispensing unused medicines. The latter contained in depth the subthemes quality, legal and business aspects and patient communication. Interview transcripts were subjected to thematic content analysis by open, axial and selective coding.
Main outcome measures: Stakeholders' reported minimal requirements for redispensing unused medicines.
Results: All stakeholders recognized medication wastage as undesirable and wasteful. Stakeholders' views on redispensing unused medicines were positive. All stakeholders stated that several requirements should be met for the safe redispensing of unused medicines. Most frequently mentioned was that the quality of redispensed medicines should be guaranteed, for instance, by monitoring patients' home storage conditions. In addition, responsibilities for the redispensing system should be integrated into guidelines. Stakeholders addressed that the redispensing system's benefits have to outweigh the costs, and a cut-off price value of medicines suitable for redispensing should be determined. Stakeholders stated that transparent communication towards patients is essential, as patients have to trust the redispensing system and be willing to participate. Moreover, stakeholder involvement can contribute to the success of the system, and their roles should be established.
Conclusion: According to stakeholders, unused medicines can be redispensed if several requirements are fulfilled. This strengthens the idea of decreasing medication wastage by redispensing unused medicines.
Disclosure of interest: None declared.

RD004: Worldwide initiatives to decrease medication wastage: a cross-national survey

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Background and objective: Medication wastage is an increasing problem worldwide, and can occur in all components of the pharmaceutical supply chain. Information about international anti-waste initiatives may facilitate knowledge transfer and can promote the timely implementation of successful interventions. However, no overview of worldwide initiatives is yet available. The objective of this study is therefore to gain insights into pharmacy-related interventions implemented worldwide to decrease medication wastage.
Setting and method: A cross-national online survey was performed among pharmacists working in the community, hospital or university setting in western countries. Questions focussed on initiatives that are currently implemented in the community and hospital pharmacy. The pharmacy process was divided into three phases: the prescribing, (pre)dispensing and leftover phase (when the patient returns medicines in the pharmacy). Answers were qualitative analysed by open, axial and selective coding.
Main outcome measures: Pharmacists' reported initiatives to decrease medication wastage in the prescribing, (pre)dispensing and leftover phase.
Results: In total, 55 respondents representing 20 countries finished the survey; 35 community pharmacy based, 16 hospital pharmacy based and 4 university based pharmacists. At least two participants filled-in the questionnaire in each country. The majority of the respondents reported that the prescribing and (pre)dispensing of medicines are tailored to the individual patient's circumstances (e.g. health condition or expected duration of treatment) or depending on the characteristics of the prescribed drug (physiochemical or financial). Furthermore, most pharmacists manage the pharmacy inventory regularly, including the return of medicines from the hospital wards in stock. Specific for hospital pharmacies, drug compounding is centralized. In the leftover phase, each participating country destroys all medicines that are returned to pharmacies.
Conclusion: Worldwide different initiatives are implemented to decrease medication wastage, mainly limiting the amount of prescribed and (pre)dispensed medicines. For returned medicines in the pharmacy, no initiatives are implemented. This can be an interesting target to design new strategies, for instance, the redispensing of unused medicines.
Disclosure of interest: None declared.

RD006: Pharmaceutical additional costs evaluation in institutional clinical trials

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Background and objective: At the establishment of a clinical trial (CT), a financial agreement is established between the health institution and the sponsor. This defines the additional costs (AC) borne by the investigation centre for the realization of the study. It includes among others the cost of pharmaceutical acts (PA). For CT sponsored by an institution, hospital pharmacies start to apply, since 2013, AC' grid validated by DGOS.

The objective of this study is to assess the effective costs of achieving the PA in the conduct of an institutional CT. They could then be faced with one hand DGOS grid and secondly compared the rate allocated by the sponsor of each study to support these AC.
Design: This prospective study was conducted over a period of 4 months (March to June 2015) and involves 25 institutional studies. The time spent to achieve the different PA (dispensation, reconstitution, labelling, ordering, reception, and sending treatment) was evaluated. An average time allowed for each PA was calculated. Based on an average hourly rate of 22.9 euros (€) on the CT unit, an estimate of the actual pharmaceutical AC of these studies was done. The data collected relate 82 dispensations (20 studies), 18 reconstitutions (4 studies), 13 labels (7 studies), 13 orders (9 studies), 27 receptions (17 studies), and 18 sending treatments (2 studies).
Results: Reported the average hourly rates, different PA cost on average 15 € at the University Hospital for a dispensation (including the counting of returns), 60 € for a reconstitution, 22 € for a labelling under 10 units, 45 € for a labelling of 10–50 units, 4.5 € for an order, 8.5 € for a reception, and 11 € for a sending. Of the 25 studies, only 28 % of them apply DGOS grid.
Furthermore, AC provided by the sponsor are insufficient to 12 studies of 20 or 60 % for dispensing, to 3 of 4 studies or 75 % for reconstitution and to five studies of 7 or 71.5 % for labelling.
Conclusion: The rates proposed by the grid provide 10 € for a dispensation, 10 € for a reconstitution, 15 € for a label of less than 10 units, 25 € for a label of 10–50 units. The AC provide by the grid are on average undervalued by 20 €. The act the least well estimated by the grid is reconstitution with a gap of 50 €. Moreover, this outcome does not include the cost associated with the use of the equipment or the depreciation of equipment. Order, reception and sending of treatment are not taken into account by the grid.

This study reveals a mismatch between the real AC borne by the CT unit and those proposed by the DGOS grid. However, a few sponsors apply for AC adapted to the reality of the costs.
Disclosure of interest: None declared.

RD007: Quality of medical calculator mobile apps

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Background and objective: The use of mobile apps for health and well-being promotion has grown exponentially in recent years. However, recent studies have addressed the lack of evidence and quality of health apps.

The objective is to describe the content of the available medical calculator mobile apps, as well as assess their quality using the Mobile App Rating Scale (MARS).
Setting and method: A descriptive observational study was carried out in May 2015. We searched medical calculator smartphone apps for using a keyword search with the term "medical calculator" in the Google Play Store (Android).

To be included in our analysis, apps had to be described in English or Spanish, free and included in the "medical" category. Apps were excluded if they were designed specifically for one formula type or a single disease. Lastly, those funding by pharmaceutical companies or could not be used because of technical problems also were excluded.
Main outcome measures: Data recorded included: language, updating date by the developer, user star rating, downloads, authorship. Each eligible app was downloaded to analyse their content.
App quality was assessed using the MARS. It had four objective dimensions (engagement, functionality, aesthetics and information quality) and one subjective quality scale. All items (23) are rated on a 5-point scale from "1-Inadequate" to "5-Excellent".
Results: A total of ten apps were included (from 450 that were identified). Only four apps were available in Spanish. Six had been updated in the last year. All apps had ratings >4 stars (out of 5). There was a mean store rating of 4.3 ± 0.2, with the highest rated app being "MedicApp" (4.7). The median of customer satisfaction ratings was 35.5 (IQR 18.3–269.3). All apps had exceeded 500 downloads. The most popular app based on reported number of downloads was "Medicalc". Half of the apps had named the authorship.

80.0 % had the formula for calculating the body mass index and Cockcroft–Gault *equation. Half of the apps included the body surface area formula and anion gap.* 40.0 % had the $CHADS_2$ score for stroke risk, HAS–BLED score for major bleeding risk, pneumonia severity index, Glasgow scale and Child–Pugh.

The MARS mean score was 3.9 ± 0.5. In relation to the sections: functionality (4.9 ± 0.2), aesthetics (4.5 ± 0.7), information (3.4 ± 1.0), subjective quality (3.3 ± 1.2), engagement (3.0 ± 0.4). The highest rated apps were "AF Global Calculator" and "Medicalc".
Conclusion: The MARS is an objective tool for assessing the quality of mobile health apps. Most of the medical calculator apps had a low quality.
Disclosure of interest: None declared.

RD008: Anticholinergic drugs and false diagnosis of demential syndrome in the elderly

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Background and objective: Drugs with anticholinergic effect are commonly used in clinical practice, since they have a large number of indications: urinary incontinence, Parkinson's disease, depression, peptic ulcers and insomnia among many others. However, the severity and frequency of their cognitive adverse effects is that currently is in question the suitability of your prescription at least in the population more susceptible to these effects.
The aim of this paper is to analyse the relationship of the use of anticholinergic drugs and false dementia syndrome in the elderly population.
Setting and method: A systematic review of research published until April 2015 was performed using a restricted search strategy combining the following descriptors: "drug", "anticholinergic", "elderly", "dementia", "cognitive". The search was conducted in the

reference databases Medline, Embase, IME, Lilacs and Pubmed through the Virtual Library of Andalusian Public Health System and those studies published by scientific evidence and clinical relevance were selected.

Main outcome measures: We analysed the scientific papers selected for the search of arguments that support the relationship between the use of drugs with anticholinergic action and cognitive dysfunction in elderly patients.

Results: The literature review showed that there is extensive scientific evidence of the association between the consumption of anticholinergic drugs and cognition in the elderly patient. Thus, the study of Bhattacharya et al. (2011) conducted in outpatients with dementia was estimated that 43 % of patients had been treated with an anticholinergic drug.

Regarding the use of anticholinergics in over 75 years, the study Jessen et al. (2010) showed a significant association with an increased risk of dementia (RR = 2.08) at 54 months was higher (RR = 3.36) drugs with more potent effects.

Anticholinergics should be avoided in patients with Alzheimer's disease, dementia with Lewy bodies or dementia and Parkinson's disease treated with targeted therapies such as acetylcholinesterase inhibitors (AChEI). The work of Boudreau et al. (2011) on the antagonistic effect of anticholinergic drugs and AChEIs, determined that 37 % of the patients treated with AChEI had previously taken drugs with anticholinergic effects, with an average of 4 months of treatment and 25 % of cases, for over a year.

Conclusion: Clinicians should consider anticholinergic adverse effects of patients, particularly in elderly patients where polypharmacy and reduced cognitive performance is more frequent. The effects of anticholinergic drugs on cognitive status of patients, may be associated with the cumulative effect of several drugs with modest antimuscarinic activity. Thus, according to criteria of adequacy of prescription geriatrics as the Beers criteria or STOPP/START recommend reducing the use of drugs with anticholinergic effects that have no indication based on clear evidence or involve a significant risk of adverse effects the patient.

Disclosure of interest: None declared.

RD009: Insulin resistance and cognitive impairment

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Background and objective: Diabetes and Alzheimer's disease has traditionally been regarded as separate diseases. However, recent studies support the theory of Alzheimer disease as a result of a metabolic disorder and insulin resistance.

The objective of this study is to describe published scientific theories that support the relationship between diabetes and Alzheimer's disease as a potential causal factor.

Setting and method: A systematic review of the published scientific evidence between 2012 and 2015 was performed. It was used for the literature search the following reference databases: Medline, Embase, IME, Lilacs and Pubmed the Virtual Library of Andalusian Public Health System. It was used as descriptive terms "insulin resistance", "diabetes" and "Alzheimer".

Main outcome measures: We analysed the scientific articles selected for finding possible mechanisms that justify the relationship between Alzheimer's disease and diabetes.

Results: In the process of literature review we obtained 942 scientific articles published in English and with access to the complete article. Of these items, we selected the most clinically relevant articles.

After the literature review we can say that so far there is no confirmation in clinical trials of the pathogenic mechanisms linking diabetes and Alzheimer's disease. However, according to available evidence, it works on several lines of research analysing common cellular and molecular mechanisms.

Thus, Rory et al. (2012) in their study published states that chronic hyperglycaemia and microvascular disease involved, contribute deceleration and neuronal cortical atrophy and therefore cognitive dysfunction in patients.

Similarly, De Felice et al. (2014) proposes the pro-inflammatory signalling as shared between cognitive and metabolic disorders (diabetes and obesity) pathogenic mechanism. Thus, it states that chronic low-grade inflammation in the brain and peripheral levels lead to insulin resistance, synapse deterioration and memory loss.

Conclusion: At present there are numerous research studying the pathogenic mechanisms linking diabetes mellitus with Alzheimer's disease. Insulin resistance and pro-inflammatory signalling cerebral and peripheral levels seem to relate both pathologies. However, currently we only have hypotheses to be confirmed in clinical trials. Thus, evidence of relationship between the two conditions implies the need for further studies on the benefits of the antidiabetic therapy in the control and prevention of cognitive dysfunction as a new therapeutic target.

Disclosure of interest: None declared.

RD010: HEPMA implementation: hospital staff opinion of impact on discharge communication

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Background and objective: Hospital Electronic Prescribing and Medicine Administration (HEPMA) implementation has anticipated benefits including improvements to patient safety and discharge information communication. The aim of this study was to describe and understand perspectives of key staff groups (consultant doctors, junior doctors, pharmacists and advanced nurse practitioners (ANP)) relating to patient discharge communication using a recently implemented HEPMA system.

Setting and method: A Scottish district general hospital using a qualitative, phenomenological approach. Semi-structured face-to-face interviews were undertaken with a purposive sample of key staff involved in inpatient prescribing and discharge communication. Interviews were audio recorded and transcribed verbatim using a denaturalised style. Analysis utilised framework approach with behavioural components from the Theoretical Domains Framework (TDF). Coding and themes were independently verified.

Main outcome measures: General experience themes and behavioural components from TDF.

Results: Nineteen staff were interviewed: six consultant doctors; four junior doctors; six pharmacists; and 3 ANPs. Eight TDF domains were applicable to interview topics. Interviewees were knowledgeable and skilful system users, "Yeah, for prescribing things no problem…Yeah I'm pretty confident now". Several described changes in prescribing behaviour (self-checking) to prevent errors, "if I prescribe, I go back and double check it straight after" as a new system error type was identified "it's quite easy to type an incorrect drug, to type the drug name and get an incorrect concentration, or incorrect tablet". Quality improvements to discharge information *were noted,*

"it's just the quality of the letters that are coming out now, is far better than what we had before with the handwritten prescription". Patient safety and efficiency were claimed to be improved, "I think it's definitely made a huge difference, a huge improvement in patient safety"; "I think there are lots of advantages in term of efficiency, in terms of access, in terms of safer prescribing". Improvement suggestions included greater computer availability, "There's certain wards there's a lack of computers" and minor alterations, "there are things that we would like to tweak".

Conclusion: Hospital staff viewed HEPMA implementation favourably and described patient safety improvements. They articulated enhanced discharge information communication especially quality and information completeness with process change resulting in efficiency improvement. Minor changes for system development were proposed.

Disclosure of interest: None declared.

TDMP005: Comparison of evolutions in patients with acute coronary syndrome undergoing percutaneous coronary intervention with stent between treatment guided by genetic test and without depending on genotyping

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Background and objective: Clopidogrel is used for the prevention of cardiovascular events in patients with acute coronary syndrome (ACS) and metabolized by the CYP2C19 iso-enzyme to active metabolite responsible for the inhibition of platelet aggregation. It is also necessary for drug absorption P-glycoprotein which is encoded by the ABCB1 gene. According to CYP2C19 and ABCB1 genotypes, the effectiveness of clopidogrel antiplatelet may differs establishing normal, intermediate and poor metabolizers; and good or poor transporters.

Objectives: To compare the evolution of patients undergoing PCI after ACS obtained before and after the recommendation of antiplatelet therapy based on their CYP2C19 and ABCB1 status. To assess the genetic differences in our group of patients compared to the reference population.

Setting and method: Patients diagnosed with ACS between April 2010 and April 2012 in our hospital treated with clopidogrel at discharge and returned for suffering a second ACS from April 2012. In this second time, antiplatelet therapy were prescribed according to CYP2C19*2 (rs4244285) and ABCB1 (rs1045642) status. Carriers of *CYP2C19*2* allele and/or ABCB1 TT were prescribed prasugrel and those who were not carrying these genotypes were administered clopidogrel. Polymorphisms were genotyped using TaqMan® genotyping assays technology. The combined cardiovascular endpoint (cardiovascular death, ACS, stroke and stent thrombosis) were studied at 1 year, before and after genetic counselling.

Main outcome measures: Eleven patients were enrolled: three patients (28 %) were poor metabolizers (CYP2C19*1/*2 or *2/*2), five patients (46 %) were bad transporters (ABCB1 TT) and seven patients (63.7 %) carriers CYP2C19*2 and ABCB1 TT, only four patients were good metabolizers and transporters. The prevalence of poor metabolizers and transporters in the control population were 27.5 and 20.8 %, respectively.

Results: Seven patients had a cardiac event within 12 months after discharge from the first ACS; after discharge from the second ACS (guided by genetic testing) only 4 of these 11 patients had a cardiac event within 12 months.

Conclusion:

- There is a higher proportion of poor metabolizers and/or bad transporters of clopidogrel in patients with ACS compared with a the reference population.
- Treatment based on CYP2C19 and ABCB1 genotyping has reduced number of new cardiovascular events in the study population.

Disclosure of interest: None declared.

TDMP006: Design of a pharmacogenetic algorithm to predict the therapeutic dose of acenocoumarol

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Background and objective: Acenocoumarol (AC) is used in thromboembolic disease (TED), atrial fibrillation (AF) and cardiac valvular prosthesis (VR). It has a narrow therapeutic margin and shows a large inter-individual variability. There is a close relationship between genetic polymorphisms and dosage requirements of oral anticoagulants. Genotyping of polymorphisms involved in the pharmacokinetics and pharmacodynamics of AC before starting anticoagulant therapy will result in a better quality of life for patients as well as more efficient use of health care resources.

The objective of this report is to develop a new algorithm, including clinical and genetic variables, to predict the stable AC dose in a wide range of patients on AC treatment.

Setting and method: We recruited 685 patients attended in two different Spanish hospitals. Two cohorts were formed at random, one for model generation and one for validation. The variables included in the algorithm are age (years), weight (kg), amiodarone use, enzyme inducers status, INR target range, stable AC dose, CYP2C9*2 (rs1799853), CYP2C9*3 (rs1057910), VKORC1 (−1639 G→A = rs9923231), CYP4F2 (rs2108622). A multiple linear regression was used to generate the algorithm using AC stable dose as dependent variable and clinical and genotypic variables as independent ones.

Main outcome measures: The variability (R^2) explained by the algorithm in the generation cohort was 52.8 % and in the validation cohort increased to 64 %. R^2 was evaluated by pathology: R^2 for AF = 57.4 %, R^2 VR = 56.3 % and R^2 for TED = 51.5 %. To test the clinical utility of the algorithm we calculated the percentage of patients correctly classified within 20 % of the real dose: 46 % of patients are correctly classified with the pharmacogenetic algorithm in comparison with a 34 % correctly classified using only clinical variables.

Results: If we classify the patients into three dose groups (<11 mg/week, 11–21 mg/week, >21 mg/week) we can see that the percentage of correctly classified patients is higher in the intermediate group for both algorithms, while differences between both algorithms increase in the extreme dose groups.

Conclusion: Our algorithm could improve dose selection of AC in patients who will begin treatment with this drug; the predictability of pharmacogenetic algorithm varies slightly with the different diseases.
Disclosure of interest: None declared.

TDMP007: Monitoring vancomycin

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Background and objective: In 2012, the pharmacokinetic monitoring of vancomycin was created in our clinical pharmacy department. We developed a monitoring protocol for staff vancomycin practitioner and nursing.
Objective: To analyse the activity of vancomycin pharmacokinetic monitoring and assessing the adequacy of the protocol developed applications.
Setting and method: Materials and methods: A retrospective of all monitoring applications vancomycin levels from October to December 2014. We considered the following therapeutic range: C_{min} = 10–20 mg/L and C_{max} = 25–40 mg/L depending on the type of infection except bacterial endocarditis and osteomyelitis in which we take as target concentration C_{min} = 20–25 mg/L and C_{max} = 30–40 mg/L. Pharmacokinetic analysis was performed in most cases using a Bayesian setting with compartment model, PKS program. To complete patient data was used Archinet program history.
Main outcome measures: The total number of patients screened was 200 and there were 228 recommendations through pharmacotherapeutic reports. The applications were processed by the following services: internal medicine (50 %), nephrology (25 %), surgery (10 %), other (15 %). Of all the monitoring carried out, 52.7 % of patients had initial C_{min} < 10 mg/L and 5 % of the initial Cmin were above 25 mg/L.
Results: Regarding the characteristics of the population 56 % of patients had a serum creatinine >1.2 and 60 % of patients were older than 65 years. The majority were indications bacteraemia, and varying degrees of abdominal infection. The acceptance of the recommendations was 90 %.
Conclusion:

- The number of applications received is considered adequate.
- We consider a need for greater promotion and information in the area of pharmacokinetics, feeling satisfied with the initial result.
- The pharmacokinetics can be a useful tool for monitoring the patient and involves a high savings.

Disclosure of interest: None declared.

TDMP008: Direct and indirect mechanisms in warfarin drug–drug interactions: fact or fiction?

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Background and objective: Warfarin is an oral anticoagulant with narrow therapeutic index widely used for various indications. Drug–drug interactions have to be considered particularly in polymedicated patients, such as in lung transplantation.
Design: Case report.
Results: A 48-year-old lung transplanted woman with alpha-1 antitrypsin deficiency and emphysema (BMI: 18.7 kg/m^2) in 2013 was admitted in Chest ward for post-transplantation monitoring. Her immunosuppressive therapy included tacrolimus (4 mg daily, residual level = 9 μg/L and creatinine clearance = 82 mL/min), mycophenolate mofetil (750 mg daily), and prednisolone (15 mg daily). A long-term treatment by warfarin (2 mg once daily, INR target 2–3) was introduced in 2013 for a recurrence of deep venous thrombosis on implanted catheter. In May 2015, a pulmonary aspergillosis was highlighted, leading to introduce a curative therapy by posaconazole (400 mg twice daily) and decrease tacrolimus dosage to 2 mg/day because of posaconazole enzymatic inhibitor effect on cytochrome P450 3A4. Six days after, the tacrolimus dosage was decreased to 1.5 mg/day due to a residual level at 11.1 μg/L with creatinine clearance at 61 mL/min. The patient was admitted 3 days later to emergency department for digestive and gynecologic bleedings. At admission, INR was 3.7, and creatinine clearance at 46 mL/min. No organic cause was founded, except a mild dehydration.

A complex drug–drug interaction could explain this event with an indirect and direct mechanism: (1) a tacrolimus overdosage due to the strong enzymatic inhibition of posaconazole on cytochrome P450 3A4 led to the onset of acute kidney injury, and thus an increased risk of bleeding because of an increase of warfarin elimination half-life; (2) even the main metabolism pathway is via CYP2C9 for the most active isomer of warfarin, a direct mechanism could also be raised by the enzymatic CYP3A4 inhibition of posaconazole and tacrolimus leading to a warfarin overdosage.
Conclusion: This case report suggests the potential complexity of drug–drug interactions particularly in polymedicated patients. Direct and indirect mechanisms should be considered in iatrogenic events, particularly because of genetic polymorphisms, in order to optimize therapeutic management.
Disclosure of interest: None declared.

TDMP009: Amikacin plasma monitoring in treating Portuguese patients infected with Acinetobacter baumannii

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Background and objective: *Acinetobacter baumannii* has been identified as the most prevalent microorganism responsible for nosocomial infections detected in Hospital and University Centre of Coimbra, EPE (CHUC), Portugal. Amikacin (AMIK) is regarded as the first choice for the treatment of severe nosocomial infections by gram-negative bacilli in CHUC and the once-daily dosing (ODD) started to be implemented. Optimizing the prescription of AMIK applying therapeutic drug monitoring (TDM) based on individual pharmacokinetic values can improve clinical outcome.

The present work aimed at analysing the pharmacokinetics of AMIK during its therapeutic monitoring performed in patients hospitalized in CHUC and infected with *A. baumannii*, comparing ODD versus multiple-daily dosing (MDD), as well as verifying if the plasma concentrations were within the targeted therapeutic range defined in CHUC protocols and the impact of TDM in further posological interventions.
Setting and method: A retrospective study was carried out in CHUC from January 2010 to December 2012, included 114 patients administered with AMIK for the treatment of nosocomial infections by *A. baumannii* and with at least 1 pharmacokinetic monitorisation.

Demographical data of the patients were recorded, as well as the dose and frequency of administration, serum creatinine levels (Cr_s), trough (C_{min}) and peak (C_{max}) concentrations of AMIK.
Main outcome measures: C_{max}, C_{min}, half-life time ($t_{1/2}$), clearance of amikacin (CL_{AMIK}), clearance of creatinine (CL_{cr}).
Results: Amongst the 261 monitorisations performed (1–6 monitorisations/patient), ODD was preferred (68.2 %) with a mean prescribed loading dose (LD) of 1019.0 (250–2000) mg, resulting in a mean C_{max} of 41.9 (16.2–102.6) μg/mL and C_{min} of 6.13 (0.2–24.8) μg/mL. In MDD, the mean prescribed LD was 493.9 (300–500) mg, revealing a mean C_{max} of 26.4 (10.9–59.4) μg/mL and C_{min} of 7.2 (0.1–19.3) μg/mL. These results justify why only in 29.9 % of the following monitorisations, the administration dose and frequency remained unchanged, while in more than a half of the cases (52.38 %), adjustments were made to increase doses, suggesting that the LD was low. Indeed, considering the ODD regimen, C_{max} values were below the targeted range in 66.89 % of the population and C_{min} was within in 93.24 %; regarding the MDD regimen, 58.57 % of the population exhibited desirable values of C_{max} and 41.43 % the targeted C_{min}.

Finally, CL_{AMIK} decreased and, consequently, drug's $t_{1/2}$ increased as the patient age enhanced while CL_{cr} and Cr_s remained unchanged.
Conclusion: The results evidence that TDM of AMIK is required to individualize the posology since the majority of the subsequent administrations required adjustment of AMIK therapy in the study population. ODD of AMIK revealed to be preferable, because it achieved higher C_{max} than MDD and it was associated with a lower risk of kidney injury. CLcr and Cr_s should not be used for predicting renal excretion capacity of elderly patients.
Disclosure of interest: None declared.

TDMP010: The impact of therapeutic drug monitoring (TDM) in optimizing dosage regimens of gentamicin in patients with augmented renal clearance

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Background and objective: Augmented renal clearance (ARC) refers to enhanced renal elimination of circulating solute and is being described with increasing regularity in the critically ill. An augmented renal clearance has been described in critically ill patients, and it might induce sub-optimal concentrations of drugs eliminated by glomerular filtration, mainly antibiotics. Patients with augmented renal clearance (CrCl $\geq$ 130 ml/min/1.73 m^2) are often underdosed in clinical practice.
Setting and method: Our retrospective study includes 204 patients (160 men, 44 women) who were treated by gentamicin during 4 years (August 2010–August 2014). They were hospitalised at departments in Teaching hospital Nitra, Slovakia. Therapeutic drug monitoring was applied by pharmacists for all the patients.
Main outcome measures: Number of patients with augmented renal clearance. Proportion of patients with augmented renal clearance achieving optimal levels of gentamicin at the beginning and after the adjustment of the gentamicin dosing by the clinical pharmacists according to Therapeutic drug monitoring (TDM) results.
Results: 28 patients had ARC in our group (13.7 %). Patients with augmented renal clearance than the rest of the patients in the same group were significant younger $p < 0.001$ (the average age is 42 ± 14 years) and had the enhanced elimination reflected by the pharmacokinetic parameters. The average values ClCr 165.7 ± 28.2 ml/min/1.73 m^2 were significant higher $p < 0.001$ than the rest of the patients. Up to 93 % (26 patients) of patients with ARC were underdosed (low peak levels). Doctors have chosen for patients with ARC the same dosage regime as for patients with normal renal clearance. The average values of peak levels of gentamicin were low (3.38 ± 1.43 mg/l). The number of patients with optimal peak levels was higher after the adjustment of the gentamicin dosing (7 vs. 72 %, $p < 0.001$). The average values of peak levels (6.08 ± 2.26 mg/l) were significant higher ($p < 0.001$) after adjustment of the gentamicin dosing by the clinical pharmacists according to TDM results.
Conclusion: Optimal dosage regimens of gentamicin for patients with ARC are yet not fully known. Determination of the optimal dose for these patients would not be possible without therapeutic drug monitoring and adjustment of dosage regimens by clinical pharmacist.
Disclosure of interest: None declared.

TDMP011: Complex iatrogenic effects in lung transplantation: everything must be under supervision

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Background and objective: Polymedication in lung transplantation should raise awareness among health professionals on the complexity of some medication iatrogenic mechanisms.
Design: Case report.
Results: A 66-year-old woman, right mono pulmonary transplanted in 2013 for chronic obstructive pulmonary disease, was admitted in Chest ward for post-transplantation monitoring. Her immunosuppressive therapy included tacrolimus 6 mg/day, mycophenolate mofetil 1000 mg/day, and prednisolone 7.5 mg/day. Renal clearance was stable around 45 mL/min with a residual rate of tacrolimus in target (5–10 μg/L) during the last 3 months. Because of the presence of *Penicillinium* in bronchoalveolar lavage, a curative anti-fungal therapy by voriconazole was introduced, leading to a decreased dosage of tacrolimus to 3 mg/day, enabling a tacrolimus level in the target. A transient and reversible photophobia imputable to the anti-fungal drug led to switch voriconazole by posaconazole (800 mg/day) with no tacrolimus dosage change. Drug therapy monitoring highlighted a tacrolimus overdosage (21 μg/L), associated with a posaconazole residual rate at 3.5 mg/L and an acute renal failure (renal clearance: 27 mL/min). Besides, a self-medication by local nonsteroidal anti-inflammatory drug (NSAID) was carried out during this period. Despite a tacrolimus dosage decreased to 1 mg/day, the residual rate of tacrolimus was 16.8 μg/L 5 days after with a renal clearance at 31 mL/min. A 0.5 mg/day tacrolimus dosage led to a targeted residual rate (7.6 μg/L).

The onset of acute renal failure in this patient was probably due to multifactorial iatrogenic effects. It was induced by tacrolimus overdosage and posaconazole nephrotoxicity. The tacrolimus overdosage occurring after the anti-fungal switch could be explained by the probable stronger CYP450 3A4 enzymatic inhibition of posaconazole than voriconazole (e.g., higher dose reduction of tacrolimus is required for a clinically equivalent dose), enhanced by posaconazole overdosage. Moreover, topical NSAID might worsen it by a systemic absorption estimated between 5 and 13 %, leading to small artery

afferent vasoconstriction and tacrolimus overdosage by plasma protein binding displacement.
Conclusion: This case report suggests a stronger enzymatic inhibition power of posaconazole than voriconazole which is in concordance with pharmacokinetic parameters, and highlights the complexity of drug–drug interactions in polymedicated patients. Finally, the monitoring and understanding of behavioural, pharmacological and biological processes are crucial to ensure an optimal patient care.
Disclosure of interest: None declared.

TDMP012: Intravenous versus subcutaneous trastuzumab in the treatment of breast cancer

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Background and objective: Breast cancer (BC) is the most common cancer in women worldwide with an unquestionable negative impact on the public health of the modern societies. Trastuzumab (TZ), a recombinant antibody targeting the human epidermal growth factor receptor (HER) 2, was the first biological drug approved for the treatment of HER2-positive BC and remains the gold-standard for this indication. Nowadays, TZ is available in intravenous (IV) and subcutaneous (SC) formulations and, therefore, the clinicians are routinely confronted with the difficult to select the best way for TZ administration. Thus, this work aims to clarify which of the TZ administration route is preferable in the treatment of BC.
Setting and method: Setting: Not applicable. Method: Literature review. PubMed database was searched in last 5 years using combinations and iterations of the keywords: "breast cancer", "intravenous trastuzumab" and "subcutaneous trastuzumab".
Main outcome measures: Pharmacokinetics, efficacy and tolerability profiles of SC and IV TZ and patients' preference of administration route.
Results: IV doses of TZ should be adjusted to the body weight whilst the SC formulation has an approved dosing schedule of 600 mg every 3 weeks, irrespective of patients' body weight. Several studies have suggested that the body weight does not significantly influence the pharmacokinetics of TZ. Moreover, the SC administration does not require a loading dose, given that the first dose results in therapeutic concentrations. Thus, TZ subcutaneously is more cost-effective. Despite these differences, it has been demonstrated that IV and SC administration of TZ is similar in terms of the pharmacokinetics, efficacy and safety profile. Studies on patients' preferences indicate that the SC administration is favoured, mainly due to the time-saving (2–3 min of SC injection versus 30 min of IV infusion) and less pain and discomfort associated.
Conclusion: This work suggests that the SC route is currently the best option for the administration of TZ in the treatment of HER2-positive BC and its adoption as the standard route of administration is probably a matter of time.
Disclosure of interest: None declared.

TDMP013: Therapeutic drug monitoring of digoxin in hospitalized patients

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Background and objective: Given the inter and intra-individual differences and the degree of physiological and pathological aging of each one, the medical and pharmaceutical community argues that treatments must be individualized by adapting the drug, the dose and the dosing regimen to each patient according to their particular characteristics.

The objectives of this work included the characterization of the hospitalized population treated with digoxin, the methods employed to individualize the dosage and evaluate the predictive capacity demonstrated by different sets of population pharmacokinetic parameters described in literature to know which one has the greater clinical acceptability.
Setting and method: Demographic, clinical, analytical and therapeutic data relative to 1329 patients with a mean age of 76 years old treated with digoxin during 3 years (2011–2013) in the Hospital and University Centre of Coimbra, EPE (CHUC) in Portugal, were collected retrospectively by consulting the patient's clinical process. Pharmacokinetics parameters were estimated using *Abbottbase Pharmacokinetics Systems* (PKS) and the statistical analysis was performed using *Statistical Package for the Social Science* (SPSS) 20 software.
Main outcome measures: Drug serum concentrations were distributed according to the reference range established for each clinical indication, and distinguished in sub-therapeutic, therapeutic and supra-therapeutic. The values of creatinine clearance (CrCL), distribution volume (V_d) and digoxin clearance ($CL_{digoxin}$) were calculated.
Results: During the study period we found that there are two main objectives in the measurements of digoxin concentrations: (1) Dosage individualization; and (2) suspicion of infradosification or toxicity, this one has a lack of accuracy in relation to the sampling protocol. In the total of 2439 digoxin serum concentrations analysed, 52.2 % were found outside of the reference range. A high percentage of 34.4 % was found as sub-therapeutic level (<0.8 ng/mL).

The values of V_d ($n = 78$) calculated by the methods of Jusko, Tozer using PKS were respectively: 290.69 ± 76.03, 316.59 ± 78.09, 210.40 ± 184.21 L. The $CL_{digoxin}$ ($n = 78$) calculated by the methods of Sheiner, Koup, Konishi were respectively: 52.60 ± 25.75, 63.12 ± 33.84, 95.05 ± 52.61 and 12.84 ± 10.47 mL/min. The obtained results showed that ideal body weight, height and CrCL may explain some of the variability in the kinetic behaviour of digoxin in this patient population. The method of Jelliffe proved to be less accurate and less precise, being method of Konishi the most accurate and precise, also showing the best profile of clinical acceptability.
Conclusion: Therapeutic drug monitoring data showed high percentages of serum concentrations outside the therapeutic range, which may result in ineffectiveness or toxicity. There still exists a need to improve dosing guidelines in the management of such patients.
Disclosure of interest: None declared.

TDMP014: Pharmacokinetics of digoxin during pregnancy

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Background and objective: Foetal supraventricular tachycardia (SVT) is the most common form of foetal tachycardia. Transplacental therapy with digoxin is still considered as one the first choice of

treatment for foetal SVT. Since this pathology is uncommon, pharmacokinetics (PK) data are lacking. The objective of this study was to characterize the PK of digoxin in pregnant women and its potential implications for drug dosage.

Setting and method: A retrospective pharmacokinetic analysis of serum digoxin concentrations (SDCs) obtained in routine digoxin monitoring (2004–2014) in pregnant women treated for foetal SVT was performed. Clinical information was collected from the patients' medical records. Details of digoxin therapy, dosage and blood sampling times were obtained from pharmacokinetic reports. Digoxin clearance (Cl) and distribution volume (V) were estimated assuming a one-compartment pharmacokinetic model with first order input and elimination. Absorption rate (K_a) and bioavailability (F) of digoxin were set at values usually considered in our hospital ($K_a = 0.82\ h^{-1}$, $F = 0.68$). PK analysis of individual data was performed using nonlinear regression by PKS program (Abbott). Population PK analysis was made using a nonlinear-mixed effects modelling approach implemented in NONMEM 7.2 software.

Main outcome measures: *Clinical outcomes:* foetal heart rate and new-borns alive.

Pharmacokinetic parameters: Cl and V.

Results: Foetal heart rate was normalized in all patients and only a new-born was death. Data were obtained from eight pregnant women aged between 22 and 39 years, with foetal SVT noted between 27 and 33 weeks of gestation. A total of 42 SDCs were recorded with a mean value of 1.37 ng/mL (range 0.71–2.67 ng/mL), and the average value of total daily dose was 0.91 mg/day (range 0.76–1.5 mg/day). The PK parameters obtained by both individual ($V = 788$ L, $CV = 38.86$ %; $Cl = 17.08$ L/h, $CV = 16.51$ %) and population approaches ($V = 731$ L, $CV = 30.50$ %; $Cl = 18.70$ L/h, $CV = 17.80$ %) are very similar and show a clear trend of increasing drug disposition in the third trimester of pregnancy. After monitoring SDCs, the pharmacokinetic adjusted doses aimed to reach in the mother a trough SDC of 1.5 ng/ml were: oral loading dose = 0.5 mg 8 hourly for 1 day, and oral maintenance dose = 0.375 mg 12 hourly. Considering the value of F we can calculate the equivalent intravenous dosing. The equivalent intravenous doses were: 0.375 mg 8 hourly for 1 day and intravenous maintenance dose = 0.25 mg 12 hourly.

Conclusion: There are no previous references of PK parameters of digoxin in pregnant women. Despite the small sample size, this preliminary study is the starting point to characterize population PK of digoxin in pregnant women for treating fetal SVT. These parameters could be used as a guide to calculate the dosage requirements in the third trimester of pregnancy. However, maternal SDCs should be monitored to avoid toxicity.

Disclosure of interest: None declared.