Background and Objective:
Pharmacogenetics (PGx) is one of the determinants in personalized medicine. Summaries of Product Characteristics (SmPC) provide structured information to advice health care professionals for safe and effective drug use. Currently, in Swiss SmPCs no section is dedicated to PGx information. We analyzed (by natural language processing, NLP) PGx information in SmPCs of all Swiss drugs and described how PGx-relevant information and instructions are presented.

Setting and Method:
All 4306 Swiss SmPCs were screened for PGx-relevant information by NLP, performed by AmiKo Web (https://amiko.oddb.org/), on February 4th, 2019. An interdisciplinary team defined the word stems used for the search with NLP. For subsequent classification and analysis, the automated search generated a MS Excel® file displaying: search term, substance, brand name, Anatomical Therapeutic Chemical (ATC) code, section of SmPC, sentence containing the search term, and web-link to the published SmPC.

Main outcome measures:
- **PGx-relevance**: Information related to genetic polymorphisms concerning drug metabolism and causing gene expression differences were considered as PGx relevant.
- **PGx-level**: The drug label classification system available on www.pharmgkb.org was applied.

Results:
The NLP generated 5979 hits whereof 2642 were classified as PGx-relevant, originating from 183 substances and 601 brand drugs. PGx information is predominantly reported in the pharmacokinetics section (n=1104), followed by the precautionary measures section (n=858). The ATC group ‘nervous system’ represented the largest group (n=784), followed by ‘cardiovascular system’ (n=456), and ‘blood and blood building systems’ (n=356). Most of the SmPCs (n=110 substances) were assigned to level 3 ‘actionable PGx’, followed by level 4 ‘informative PGx’ (n=26), level 1 ‘test required’ (n=10), and level 2 ‘test recommended’ (n=6). Finally, 31 substances could not be assigned to any of the four PGx-levels proposed by PharmGKB®, e.g. Flucloxacillin, where testing is explicitly disadvised.

In SmPCs for identical active substances, both for different Swiss brand drugs and for drugs approved by the four different authorities listed in PharmGKB®, remarkable heterogeneity was observed.

Conclusion:
Presentation of PGx information in SmPCs is heterogeneous. A distinct PGx section in the SmPC is necessary to enable the efficient identification of PGx information. A standardized presentation of PGx information in SmPC could facilitate its accessibility to automated processing.

Disclosure of Interest: None Declared
Inappropriate dosing of direct oral anticoagulants at hospital entry

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**Background and Objective:** Appropriate dosing of direct oral anticoagulants (DOAKs) is partially complex, as for most of the available substances several parameters such as age, weight, renal function, interacting drugs, or bleeding risk have to be taken into account. The aim of this study was to identify the proportion of inappropriate DOAK dosing at hospital entry and to explore corresponding risk factors.

**Setting and Method:** Retrospective charts review of patients aged ≥18 years, admitted to a large teaching hospital in the north-western area of Switzerland between 1 January and 31 December 2018 and under treatment with a DOAK at hospital entry. Collection of various (potential) parameters for appropriate/inappropriate dosing, such as sex, age, weight, renal function, CHA₂DS₂-VASc- or HAS-BLED-Score, history of bleeding, risk of falling, or pharmacokinetic/-dynamic drug interactions.

**Main outcome measures:** 1. Proportion of patients with an inappropriate DOAK dosing at hospital entry according to the summary of product characteristics (SmPC). 2. Risk factors for an inappropriate dosing with DOAKs using logistic regression analysis. 3. Proportion of patients discharged with an inappropriate DOAK dose.

**Results:** We identified 482 patients (54% male, mean age 75.9 years) who met the inclusion criteria. Of these 86 (17.8%) showed an inappropriate DOAK dosing at hospital entry, whereby underdosing was more frequent than overdosing (13.1% vs. 4.8%). Most dosing errors (compared to its use) occurred with dabigatran (20.8%), followed by rivaroxaban (18.2%), apixaban (17.2%), and edoxaban (15.6%). Women had a higher risk for underdosing than men (adjusted odds ratio [aOR], 95% confidence interval [CI] 1.83, 1.04–3.23), while renal impairment (Creatinin Clearance [CrCl] <50 ml/min) was a risk factor for overdosing (aOR 7.05, 95% CI 1.82–27.28). Of the 86 patients with inappropriate DOAK dosing at hospital entry, 41 (47.7%) were discharged with an inappropriate dose.

**Conclusion:** Almost every fifth patient had an inappropriate DOAK dosing at hospital entry, whereby women and those with renal impairment were at particular risk. This raises the need for further education of referring physicians, but also hospital physicians, as almost half of those patients were discharged with an inappropriate dose.

**Disclosure of Interest:** None Declared
Background and Objective: Switching from one antidepressant to another is frequently indicated due to an inadequate treatment response or unacceptable adverse effects. Based on different guidelines a patient is unlikely to respond if there has been no improvement after four weeks on an adequate dose of antidepressant. The aim of the study was to evaluate the reasons and time appropriateness of antidepressant switch in every day clinical practice.

Design: The retrospective study was conducted. All patients hospitalized between 2016 and 2017 in geriatric psychiatric ward in a large teaching hospital in Slovenia were analyzed using paper and electronic patient medical records with a given primary diagnoses: organic depressive disorder, depressive episode, mixed anxiety and depressive disorder or reaction to severe stress and adjustment disorders.

Results: 175 patients were analyzed. During the hospitalization the antidepressant was switched at least ones in 40.6% of patients. Their average age was 73.6±6.65, 71.8% were females, their average hospital stay was 40.2 days±29.7, and 87.3% were on antidepressant already before admission. Most frequently the antidepressants were switched in mixed anxiety and depressive disorder (63.3%), depressive episode (50.0%) and in organic depressive disorder (43.2%). All together there were 94 switches. 76.6% were due to inadequate treatment response, 4.3% due to adverse effects, and 19.3% due to undefined reason. In the inadequate treatment response group as many as 32.8% of patients were switched before four weeks of treatment. Moreover, 15.7% of patients were switched already before two weeks of treatment. Three of four switches were done due to adverse effects in the first month, for one switch we couldn’t predict the exact time frame. The most frequently changed antidepressant was escitalopram (20.2%) and the most frequently prescribed antidepressant at discharge was mirtazapine (35.4%).

Conclusion: Almost one third of antidepressant switches were done earlier than it is recommended in guidelines due to inadequate treatment response. Clinical pharmacists can play an important role in evaluating the sufficient time required for partial or full response with antidepressant treatment, considering also the appropriate dose adjustment or eventually discussing with clinicians about optimal and safe antidepressant switch.

Disclosure of Interest: None Declared
Background and Objective: The use of medication for newborns, infants or children is often based on measures of drug safety and effectiveness assessed in adults. Many drugs are used without marketing authorization. The use of medication in pediatrics should be based on established recommendations from well-conducted clinical trials; however, in the absence of such trials, recommendations are often based on clinical experience. In France, we developed the first inappropriate prescriptions (IP) tool in pediatrics, which we called POPI (Pediatrics: Omission of Prescriptions and Inappropriate prescriptions) composed of 102 items. However, POPI was constructed to satisfy French standards, established by national experts with a strong reliance on French databases and drug availability. We decided to adapt POPI for international use. Our aim in this project is to have POPI assessed by international health professionals to identify which items could be of worldwide use.

Setting and Method: A two-round Delphi questionnaire was executed to arrive at a final list of items validated in different countries by experts. Several hospital pediatricians and pharmacists working on similar topics were contacted. The first round took place on the SurveyMonkey® website whereas the second round was uploaded on a custom-made website that integrated the first round answers.

Main outcome measures: Experts rated the validity of items on a 9-point scale. Justifications and suggestions were required for any score under 7. Only propositions that obtained a median score in the upper tertile with an agreement of more than 75% of participants were retained. A sensibility analysis was also made in order to compare the results of the two rounds if the rate of participation was the same. Finally, the study was approved by the local ethic committee.

Results: Our final panel included 20 experts, both pharmacists (55%) and physicians (45%) with a median of 20 years of experience (5 to 40 years). The panelist came from 12 different countries: England, Belgium, Brazil, Canada, China, Ivory Coast, Ireland, Malaysia, Portugal, Switzerland, Turkey, and Vietnam. At the end of the first round, we retained 80 items and 25 items were deleted. We also reworded 16 items according to panelist input: each panelist was invited to comments why they disagreed with the item (in contradiction with national recommendations, drug unavailable in their countries or other reasons). The final tool will be presented at the ESCP congress.

Conclusion: This study shows how different the practices are in different countries. However, this Delphi methodology allowed an international consensus to be reached upon inappropriate prescribing in pediatrics. In the future, we want to diffuse the POPI tool through a prospective multicentric study in order to promote medication safety in pediatrics.

Disclosure of Interest: None Declared
EU-7 criteria and its applicability in pharmacoepidemiological research in Central and Eastern Europe

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Background and Objective: The EU-7 PIM (potentially inappropriate medication) criteria represents the most comprehensive and up-to-date tool for evaluation of PIM prescribing in Europe. In some EU countries, the lower availability of PIMs from EU-7 PIM list was confirmed which may decrease applicability of EU-7 criteria in clinical pharmacy (CP) research in these countries. The aim of our study was to document approval rates, availability and prescription limits of EU-7 PIMs in several Central and Eastern European countries (CEECs) in order to describe the applicability of EU-7 tool in CP research in CEE region.

Setting and Method: Research teams of WG1b EU COST Action IS1402 (2015-2018) from the Czech Republic(CZ), Estonia(EST), Poland(POL), Slovak Republic(SR) and Croatia(CR) participated in this study. Data on EU-7 PIMs’ approval rates, availability and prescription limits were collected between July 2017-December 2018 using databases of national drug regulatory institutes and up-to-date national drug compendia.

Main outcome measures: percentages of PIMs approved for clinical use and available on pharmaceutical markets (all brand names, strengths and drug forms), PIMs’ availability on prescription or as OTC medications

Results: The highest percentage of available EU-7 PIMs was confirmed in Poland (61.7%), the lowest in Croatia (43.8%) and in the majority of CEECs it ranged around 50% (52.1%>SR, 50.0%>EST, 49.6%>CZ). Particularly solid p.o. drug forms were approved (>85%) and no substantial qualitative differences were confirmed among the lists of available PIMs (active substances) across CEECs (<5%). Prescription limits widely differed from no prescription limits in POL to 40.1% of PIMs prescribed only by specialists in SR. Less than 20% of PIMs were available as OTC medications (12.9% CR-19.9% EST).

Conclusion: For cross-national and national clinical pharmacy research in CEE region, the applicability of EU-7 PIM list is limited. Further adjustments/amendments of these criteria (by including “new” CEE PIMs) is necessary. Because prescribing limits of PIMs substantially differed across CEECs, regulation of PIM use should be better harmonized, particularly for the majority of older PIMs not approved by Central registration procedure of EMA. Grants: EU COST Action IS1402, EUROAGEISM H2020- ITN-MSCF-No764632, INOMED reg.No.CZ.02.1.01/0.0/0.0/18_069/0010046, SVV 260 417, PROGRESS Q42 KSKF

Disclosure of Interest: None Declared
Use of Potentially Inappropriate Medication in Swiss Nursing Homes: Epidemiological Analysis
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Background and Objective: Potentially Inappropriate Medications (PIMs) are widely prescribed to elderly patients, both in the community and in Nursing Homes (NHs). They reduce quality of life and health outcomes, and increase the risks of adverse events, hospitalisation, and death.

Pharmaceutical Assistance Programs (PAPs) exist in two Swiss cantons; they bring together nurses, physicians and pharmacists to produce local consensus on first-choice drugs in the NH, based on scientific evidence and economic factors. They have shown that interprofessional practice can reduce drug costs while maintaining a good quality of care. The monitoring of these programs provided us with data on drug use in participating NHs. We aimed to assess the evolution of PIMs use over time, taking into account the doses used.

Setting and Method: Drug use data collected through the two PAPs were cross-referenced with two validated PIMs lists, Beers and NORGEP-NH, to compute the proportion of defined daily doses (DDDs) considered potentially inappropriate for each NH and each year. Linear mixed-effects models were used to assess the evolution of this proportion over time.

Main outcome measures: The proportion of potentially inappropriate DDDs, relative to the sum of DDDs used in NHs.

Results: Data on drug use in 166 NHs between 2014 and 2017 were obtained. Although the mixed models showed a statistically significant reduction in the use of PIMs over time (-0.9% per year, IC95 [-0.6%; -1.2%]), they remain widely used: 30.4 % of DDDs could be considered PIMs in 2017, according to the combined PIMs lists. The ATC groups N (Nervous system), C (Cardiovascular system) and A (Digestive system) contributed the most to this result.

Conclusion: PIMs remain a significant part of the drugs used in NHs of two Swiss cantons with PAPs. To address this issue, a research program, based on the interprofessional collaboration fostered by the PAPs, and aiming to test the effects and implementation of two consecutive deprescribing interventions, has been launched. Its results will be known in 2020. The results of this analysis will provide field teams with insights on which PIMs to focus their deprescribing efforts, and the analysis method will be used to evaluate the effects of these interventions.

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Background and Objective: A vast number of medicines are recognized to have anticholinergic activity. Anticholinergic burden has been studied on specific populations, eg. elderly patients or patients with specific conditions. The extent of the problem on the population level however is not well known.

The objective of the study was to evaluate the anticholinergic burden in the Slovenian population through the analysis of a national database of health claims data on prescription medicines in 2015.

Setting and Method: Retrospective cross-sectional study using a nationwide database analysis of prescription medicines with anticholinergic burden among outpatients. The study was based on Slovenian health claims data on all prescription medicines dispensed in Slovenia in 2015.

Main outcome measures: Anticholinergic burden was evaluated using the Anticholinergic Cognitive Burden Scale. The scale categorized medicines to have none, mild, moderate or severe anticholinergic burden.

Results: A total of 16,361,172 prescriptions were dispensed in Slovenia in 2015 to 1,480,061 outpatients. Medicines with anticholinergic properties were prescribed to 30.2% of patients. 7.1% of patients were exposed to clinically significant anticholinergic burden (score 3 or higher). Anticholinergic medicines were most often prescribed in the elderly population (45.3% elderly patients), followed by adults (26.2% adult patients) and were least common in the pediatric population (22.0% pediatric patients). Elderly patients were also most frequently exposed to clinically significant anticholinergic burden (11.3% patients). The most frequently prescribed medicines with the highest anticholinergic activity included medicines for urinary diseases, antipsychotics and antidepressants (45%, 35% and 14%, respectively). The three most frequently prescribed medicines were trospium, quetiapine and paroxetine. The majority of medicines with moderate anticholinergic activity belonged to antiepileptics (87.3%). Medicines with low anticholinergic activity belonged to diverse groups including antihistaminics (37%), anxiolytics (20%), diuretics (11%), etc.

Conclusion: Anticholinergic burden is common on the population level and affects patients of all age groups. The results call for higher awareness of potential adverse anticholinergic effects across a broad range of medicines.

Disclosure of Interest: None Declared
Impact of Antimicrobial Stewardship program on Hospitalized Patients at the Intensive Care Unit: A prospective Audit and feedback Study

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Background and Objective: Inappropriate use of antibiotics is one of the most important factors contributing to the emergence of drug-resistant pathogens. The purpose of this study was to measure the clinical impact of the Antimicrobial Stewardship Program (ASP) interventions on hospitalized patients at the Intensive care unit at Palestinian Medical Complex

Setting and Method: This was a single center prospective; pre and post-intervention study at Palestinian Medical Complex (PMC) in Ramallah. All patients admitted to the Intensive care unit (ICU) and administered any antimicrobial drug were included in the study. A prospective audit with intervention and feedback by ASP team led by a clinical pharmacist within 48-72h of antibiotic administration began in Sep, 2016. Four months of pre-ASP data with 4-months of post-ASP data were compared. ASP team screened cases for appropriateness and made therapeutic recommendations for example dosage optimization, or switch from intravenous to oral antibiotics

Main outcome measures: Drug prescription data for audited antibiotics. Defined daily doses/100 beds for each drug. ICU stay, hospital re-admissions and interventions made by the ASP team

Results: Overall, 176 interventions were made the ASP team with an average acceptance rate of 78.4%. The most accepted interventions were dose optimization (87.0%) followed by de-escalation based on culture results with an acceptance rate of 84.4%. ASP interventions significantly reduces antimicrobial utilization by 24.3% (87.3 DDD/100 bed. vs 66.1 DDD/100 bed p<0.001). The median (IQR) of length of stay was significantly reduced post ASP (11 (3-21) vs. 7 (4-19) days; p <0.01). Also, the median (IQR) of duration of therapy was significantly reduced post-ASP (8 (5-12) days vs. 5 (3-9); p=0.01). There was no significant difference in overall 30-day mortality or readmission between the pre-ASP and post-ASP groups (26.9% vs. 23.9%; p=0.1) and (26.1% vs. 24.6%; p=0.54) respectively

Conclusion: Our prospective audit and feedback program was associated with a positive impact on antimicrobial utilization, duration of therapy and length of stay

Disclosure of Interest: None Declared
ORAL COMMUNICATION II

CP-PC002
Exploring patient’s perspectives after start with inhalation maintenance therapy; a qualitative theory-based study
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Background and Objective: Shortly after start with inhaled corticosteroids (ICS) maintenance therapy, patients with obstructive lung diseases may need additional pharmaceutical care. The Theoretical Domain Framework (TDF) describes different determinants of behaviour that might need change to improve drug use in individuals. This study aimed to obtain insights in the experiences of patients who have just started maintenance therapy for obstructive lung disease, and in the experiences of pharmacists with providing telephonic counselling.

Setting and Method: Semi-structured telephone interviews were conducted by pharmacists with adults 2-3 weeks after start with ICS. Afterwards, the pharmacists were interviewed about their experiences with the patient interviews.

Main outcome measures: Framework analysis was used to code the data into TDF domains.

Results: The 5 pharmacists conducted 23 interviews with ICS starters. Except the domain ‘environmental context and resources’, all other 13 domains in the TDF with possible influence on patients’ medication use behaviour were identified. The majority of patients described clear personal goals, which mainly addressed disease - or symptom control (clinical goals). Some patients reported a lack or incorrect knowledge of clinical indication, or duration of the therapy. The respondents described different perceptions on the need to develop a personalized routine for using the medication or the effect of medication: some patients believed that the medication lacked benefit, while others were convinced of the beneficial effect. Some patients mentioned concerns about medication side effects or the consequences of long term use, or anxiety about the side effects or a possible underlying disease. Patients and pharmacists both felt positive about the consultations.

Conclusion: Patient interviews shortly after start with ICS maintenance therapy revealed various behavioural barriers that might have hampered optimal medication use. Patients shared important information during the counselling session, which not completely would have been emerged during regular counselling moments in current daily practice. The patients appreciated the opportunity to ask their questions and share their perspectives and needs with a healthcare professional, and the pharmacists experienced that they were of added value.

Disclosure of Interest: None Declared
Background and Objective: The Combiconsultation is a consultation with the community pharmacist for patients with diabetes, COPD and/or CVRM, after or before the annual- or quarterly consultation with the practice nurse or general practitioner. The focus of the Combiconsultation are patient’s personal treatment goals, which are evaluated after a few weeks. The aim of this study is to investigate the number and type of drug-related problems (DRPs), interventions and treatment goals resulting from Combiconsultations.

Setting and Method: The number and type of DRPs, interventions and personal treatment goals were analysed based on registrations by participating pharmacists from January - December 2018, in a web-based registration system.

Main outcome measures: Primary outcome measures were number, type and implementation rate of identified DRPs and mean number of personal treatment goals per patient. The implementation rate was defined as the percentage of recommendations that was fully or partly implemented according to the community pharmacist.

Results: In 2018, pharmacist of 21 pharmacies included 668 patients (50% male, mean age 70 years). 708 DRPs were found during the consultations, mainly side effects (29%), under-treatment (19%) and over-treatment (16%). The pharmacists made 693 recommendations to the practice nurse /general practitioner, 70% of these recommendations were implemented. 328 treatment goals were set, of which 50% were achieved and 21% were partially achieved.

Conclusion: The mean number of DRP determined in a Combiconsultation was 1.1 and the mean number of recommendations to the practice nurse /general practitioner was 1.0. For about half of the patients a treatment goal was set. The degree of implementation of the recommendations was high.

Disclosure of Interest: None Declared
EVALUATION OF AN EDUCATIONAL PROGRAM CONCERNING ANTICOAGULANTS (ETAP) AFTER FIVE YEARS IN A CARDIOLOGY DEPARTMENT


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Background and Objective: Oral anticoagulants drugs are associated to significant risks of iatrogenic complications. A multidisciplinary educational program called “ETAP” dedicated to patients treated with Vitamin-K Antagonists (VKA) or Direct Oral Anticoagulants (DOA) was set up in our cardiology department. The purpose was to assess its effectiveness regarding patient skills and adherence to treatment.

Design: From January 2013 to December 2018, patients who gave their oral consent were enrolled and received a therapeutic patient education (TPE) session. If possible, a first evaluation during the hospitalization through a questionnaire designed by our team assessed skills and knowledge of patients. An initial skill score was established (E1 score:0-1). At least one month after hospital discharge patients received a phone call from a trained pharmacy student with the same questionnaire leading to a second score (E2 score:0-1). Specific questions about INR were asked to patients with VKA. At this time, medication adherence level was estimated thanks to a questionnaire designed by our team. The occurrence of hemorrhagic or thrombotic events was also evaluated. The level of significance was set at p<0,05.

Results: Overall, 875 patients were enrolled including 664 (76%) treated by VKA and 211 (24%) by DOA. Among them 172 (19,7%) were assessed during hospitalization (E1) and 307 (35%) at least one month later. For the second evaluation 76,5% (235/307) patients were under VKA and 23,5% (72/307) under DOA. Mean skill scores differed significantly between evaluation during hospitalization and after discharge: respectively 0,83 ± 0,23 and 0,75 ± 0,17 for E1 and E2 (p<0,001). There was no significant difference between E2 scores of patients under VKA or DOA with 0,75 ± 0,17 and 0,76 ± 0,17 respectively (p=0,71). Among 235 patients treated by VKA, 107 (45,5%) knew INR target and 83 of them (77,6%) had INR in targeted range. Overall 59,6% of patients had a high level of drug adherence. Results were similar between patients treated by either VKA or DOA, respectively 58,7% (138/235) and 62,5% (45/72). Thrombotic or hemorrhagic events occurred for 12% (37/307) of interviewed patients with a significant difference between patients treated by VKA and those treated by DOA, respectively 9,8% (23/235) and 19,4% (14/72)(p<0,05).

Conclusion: Skills scores of patients receiving TPE were very high, unfortunately skills scores decreased over the medium term. As skills scores were not significantly different between patients treated by VKA or by DOA, our TPE program fitted with both pharmacological classes. Moreover less than half of patients treated by VKA declared to know INR target, and higher rate of iatrogenic events occurred in patients treated by DOA. These results highlight TPE should reinforce potential adverse events and INR targets knowledge.

Disclosure of Interest: None Declared
Reducing readmissions in heart failure patients through pharmacist-facilitated transition-of-care interventions.
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Background and Objective: Consistent preventative pharmaceutical care interventions during care transitions with the aim of improving patient outcomes and quality care are imperative for a shift towards value-based care. The impact of pharmacist interventions on readmission rate of heart failure (HF) patients is a target outcome measure. Finding the most appropriate and practical intervention combination to be applied during transition from hospital to community is challenging. The objective was to determine and apply pharmacist interventions during transition-of-care (TOC) to HF patients and study impact on readmission rate.

Setting and Method: The study was conducted from June 20, 2018 to January 31, 2019, in a teaching hospital in Malta. A multi-perspective focus group supported with surveys and literature was used to determine pharmacist interventions for a TOC pathway. Patients suffering from HF who followed the pathway were compared to a control group that followed the usual TOC. Recruitment involved prospective convenience sampling using eligible criteria. The study involved two phases starting with the control group (n=52). The proposed pathway was then validated in the intervention group (n=27). The primary outcome was 30-day all-cause readmission. The secondary outcomes were all-cause readmission during the observation period from day 31-60 post-discharge and the number and type of interventions.

Main outcome measures: Pathway of pharmacist intervention with HF patients discharged from hospital, assessment of readmission rate.

Results: The proposed pathway followed a ward-based pharmacist model with a case management approach that included medication reconciliation, individualised pre-discharge education and telephone care management post-discharge. The 30-day all-cause readmission rate of the control group was 30.8% and that of the intervention group was 18.5% (p=0.242). The readmission rate between days 31-60 was 13.5% for the control group and 22.2% (p=0.211) for the intervention group. A total of 284 interventions with a mean of 10.5 were performed as part of the pharmaceutical TOC pathway.

Conclusion: The piloted TOC pathway is a quality improvement composite indicative that pharmacist interventions delivered at the right place and the right time may reduce readmission rate of HF patients during the immediate period after discharge. The impact beyond 30 days without reinforcement is not confirmed.

Disclosure of Interest: None Declared
Pharmaceutical care for adult asthma patients: A controlled intervention one year follow up study
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Background and Objective: Achievement of good asthma control is a major concern in asthma management. However, asthma control in many patients is suboptimal, due to improper use of asthma medications and non-adherence. The aim of this study was to implement and assess hospital-based pharmaceutical care services for patients with asthma.

Setting and Method: A 12-month single-center randomized controlled study was undertaken with the allocation of patients to the intervention or control group. Adult asthma patients in the intervention group received a protocol-based intervention addressing individual needs related to asthma control, knowledge, inhaler technique, and medication adherence. Patients in the control group received usual care. Main variables were measured at baseline, 6 and 12 months.

Main outcome measures: primary outcomes were Asthma control measured by Asthma Control Test (ACT) and Adherence to maintenance therapy, secondary outcomes were inhalation technique, Forced expiratory volume in 1 second and health care utilization.

Results: 192 patients completed the study, 102 in the intervention group and 90 in the control group. Over the 12 month follow up period there was a significant difference between the intervention and control groups regarding asthma control (38.2% vs. 10.0%; \( P<.001 \)), Asthma knowledge scores (88.4%, CI:84.1-91.1 vs. 60.1%, CI:56.3-63.8; \( P=.02 \)), mean correct inhalation technique (8.1 CI: 7.8-8.5 vs. 6.1 CI: 5.6-6.6; \( P=0.01 \)) and good adherence to medication (60.7% vs.50.0%, \( P=0.02 \)). There was a 34% reduction in the emergency department visit and 25% reduction in hospital admission in the intervention group compared with the control group respectively. No significant changes for any of these variables were observed in the control group.

Conclusion: The findings of the present study suggest that pharmacist’s intervention can have a positive impact on asthma-related outcomes in patients with asthma.

Disclosure of Interest: None Declared
Small Patients/Big Solutions - Pharmaceutical Intervention in Paediatric Electronic Prescriptions Monitoring

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Background and Objective: Pharmaceutical intervention (PI) is defined as a recommendation started by the Pharmacist in response to a drug-related problem in a patient, at any stage of the drug circuit. This intervention is performed by the multidisciplinary team and focuses on patient care, aiming to improve the clinical results of the drug and consequently the health outcomes. The PI is even more relevant in Paediatrics, where the exposure to the error of dose calculation is greater and the errors associated with the medication assume a greater severity. In daily pharmaceutical practice, it becomes essential to document these interventions for later characterization and identification of improvement opportunities.

To characterize and quantify the type of Pharmaceutical Interventions carried out in the last year in Paediatrics, Neonatology, Paediatric Urgent Care and Intermediate Care Units.

Design: Retrospective study, that consisted of the analysis of the database records of Pharmaceutical Interventions from Clinical Pharmacy and Sterile Production Areas between March 2018 and March 2019.

Results: From a total of 642 PIs performed in 220 patients, of which 637 (99,2%) accepted by the Physician, 481 (74,9%) were related to the request for monitoring laboratory parameters (renal function, inflammatory parameters) and pharmacokinetic monitoring to evaluate the suitability of the prescribed dose (effectiveness, safety or maintenance); 19 (2,9%) dose change (toxicity, inefficacy); 13 (2,0%) duplication, 38 (5,9%) other reasons (dose suggestion, switch). Specifically related to the Parenteral Nutrition (PN), 52 (8,0%) were related to dose/input changes due to toxicity, ineffectiveness or physicochemical incompatibilities, 24 (3,7%) referring to the indication for initiation or interruption of additivation and 15 (2,3%) were related to prescription requests of PN.

Conclusion: The results obtained reinforce the impact of Pharmaceutical interventions and corroborate those of other national and international studies that report pharmacokinetic monitoring and dose modification recommendations as major sources of PI. This study also identifies potential opportunities for improvements in electronic prescribing. Currently, we are studying the incorporation of tailored solutions in the prescribing system in order to prevent errors and improve the quality and safety of electronic prescribing in paediatrics.

Disclosure of Interest: None Declared
Pharmacist Drug Information Access at Patient Bedside: Using Ask Watson

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Background and Objective: The artificial intelligence (AI) Ask Watson is a new feature within Micromedex intended to improve Drug Information (DI) access. Micromedex combines the AI of IBM Watson with the evidence-based clinical decision support of Micromedex. Ask Watson answers drug questions from specific content within Micromedex. The aim of the study was to evaluate the use of Ask Watson platform when used at the patient bedside.

Design: An 8-week observational study was carried out at the Intensive Care Unit at Mater Dei Hospital (MDH), Malta. During this period, DI requests forwarded by the healthcare team and answers provided by the pharmacist at patient bedside were reviewed. These queries were first answered using online drug information sources including Micromedex and Up to Date, while noting the time taken to access these resources and provide an answer. The same queries were then re-answered using Ask Watson. The time taken to access and answer using this DI platform was noted and compared to the time taken to access and answer using conventional DI resources.

Results: A total of 140 DI queries were presented at patient bedside. Fifty-nine percent (59%, n=83) of the queries were answered in less than 5 minutes using the conventional DI resources. Fourteen percent (14%, n=20) of the bedside queries had to be referred to different sections according to the query specialisation, 7% of which were referred to the DI centre (DIC) at MDH since they were queries about dosing calculations or Total Parenteral Nutrition (TPN) doses. When the Ask Watson platform was adopted to respond to the 140 queries, 78% (n=110) could be answered at the bedside. Using Ask Watson, 87% (n=95) were answered in less than 5 minutes and 9% (n=10) had to be forwarded to the respective entities.

Conclusion: Ask Watson improved the time taken for a DI response to be given since it accelerates access to information by bypassing the keyword-based research process. Ask Watson platform is a resource that improves DI response at patient bedside by pharmacists.

Disclosure of Interest: None Declared
Patient access to novel antidiabetic agents in European countries
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Background and Objective: Several incretin-based therapies (glucagon-like peptide-1 (GLP-1) receptor agonists and dipeptidyl peptidase-4 (DPP-4) inhibitors) and sodium-glucose cotransporter (SGLT-2) inhibitors were approved by the European Medicines Agency since 2006. These so called novel antidiabetic agents came at significantly higher prices. The aim of the study was to evaluate patient access to new antidiabetic agents in 11 European countries over a 10 year period.

Setting and Method: The study used IQVIA Quarterly Value Sales Data in EUR and Quarterly Volume Sales Data expressed in days of treatment (DOTs) for the products from ATC A10 group, January 2006 – December 2016. A set of eleven different European countries was selected; these are Austria, Croatia, France, Hungary, Italy, Germany, Poland, Slovenia, Spain, Sweden, and United Kingdom (UK).

Main outcome measures: Patient access to novel antidiabetic agents was estimated based on the following outcomes: number of available new active substances, median time to first continuous use, volume market share of novel antidiabetic agents and annual therapy cost.

Results: At least one new active substance from the groups of DPP-4 inhibitors, GLP-1 receptor agonists and SGLT-2 inhibitors was in continuous use in all selected countries, with the exception of France where SGLT-2 inhibitors were not available between 2006 and 2016. On the contrary, the study found a 10-fold difference in median time to first continuous use (range: 3-30 months). The fastest were Germany and UK, while Slovenia and Croatia were shown to be the slowest. Also, significant differences in novel antidiabetic agents volume market share and annual therapy cost were found. The highest volume market shares of novel antidiabetic agents were detected in Spain and Austria (26%), followed by Germany (23%). The lowest volume market share of new antidiabetic agents was observed in Poland (1.5%). Among novel antidiabetic agents the market share of DPP-4 inhibitors was the highest in all the countries. Average annual therapy cost of new antidiabetic agents ranged from 363 EUR (Poland) to 769 EUR (Sweden) in 2016.

Conclusion: The study found important differences in patients access to novel antidiabetic agents among selected European countries.

Disclosure of Interest: None Declared
Development of a web application for detecting Y-site drugs compatibilities: an in silico decision-making tool for managing multi-drugs infusion

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Background and Objective: In patients receiving multi-drugs infusion, knowledge, management and anticipation of physical and chemical incompatibilities are essential. These interactions are found responsible for the majority of errors and/or accidents related to parenteral drug delivery when several drugs are to be administered simultaneously. Our goal was to develop a simple and free web application to help prescribers, nurses and pharmacists in detecting these incompatibilities.

Design: First, we conducted a literature review in order to develop an in silico tool to detect these incompatibilities. A total of 112 drugs, 41 cytotoxics, 7 therapeutic monoclonal antibodies, 3 solvents and 1 parenteral nutrition mix were screened. Combinations of drugs were next classified into 4 categories: “compatible”, “incompatible”, “variable compatibility” (i.e. when conflicting data were reported in literature) and “no data available”. The web application was finally written in Python and deployed on the web hosting service PythonAnywhere.

Results: From all the selected drugs, we listed the main interactions for each pair of drugs. A total of 13 366 pairs of interactions were analyzed: 2 362 were compatible (17.7%), 679 were incompatible (5.1%), 95 presented a variable compatibility (0.7%) and 10 230 for which compatibility was not described yet (76.5%). For each incompatible couple, the underlying mechanism (e.g. turbidity, precipitate form, color change, drug loss…) was described and integrated in the web application.

Two modules were created: one for drug-drug Y-site compatibility and another one specific to drug-chemotherapy Y-site compatibility.

Conclusion: In this study we have built a free, simple and intuitive tool for detecting physicochemical interactions, which is a key element of pharmaceutical analysis. Of note, this type of analysis is currently not included in prescription assistance softwares. In addition to the analysis of patient’s biological data or PK/PD-based drug-drug interactions, the development and use of this tool allows to detect physical interactions related to the co-administration of intravenous drugs during routine pharmaceutical analysis. This web application is accessible on any computer or smartphone and is an asset for physicians and clinical pharmacists that could be used as a decision-making tool when managing multi-drugs infusions.

Disclosure of Interest: None Declared
Background and Objective: Medication errors (MEs) and other drug related problems (DRPs) are common issues on hospital admission. These MEs and DRPs can cause preventable adverse drug events (pADEs) resulting in patient harm with a significant additional cost. A clinical pharmacist (CP) dedicated to the Emergency Department (ED) can improve medication safety by performing medication reconciliation and review, and hence avoid additional costs. The aim of this study was to determine the economic value and the cost-benefit of a CP in the ED by applying a theoretical model (University of Sheffield School of Health and Related Research – SCHARR).

Setting and Method: This retrospective, single-centre, observational study was carried out in the ED of a tertiary care university hospital. Patient-specific recommendations recorded by the CP during a 1 month period were observed. On admission to the ED, the CP had carried out a standardized medication reconciliation and medication review in order to determine pADEs. The most important pADE for each patient was selected and classified for its potential to cause harm using severity rating methods. An expert panel of senior ED physicians evaluated the pADEs for clinical significance. The net cost avoidance was calculated according to the SCHARR model\. We took into account the lower cost limit of the SCHARR model and current inflation. Statistical analysis was done using Graphpad Prism® and Microsoft Excel®.

Main outcome measures: cost-benefit ratio CP

Results: During 1 month (18 weekdays), the CP recorded recommendations for 136 patients (>18 years) admitted to the ED. On ED admission, medication reconciliation was performed for 98 patients with a median of 4 (IQR 2-7) discrepancies/patient. A medication review for both chronic medication and medication prescribed at hospital admission was performed (n=109 and n=98 respectively). Only the CP' interventions leading to the most important pADE for each patient were taken into account for the calculation of the cost avoidance. We classified 18 (14.8%) DRPs, 66 (54.1%) DRPs, 37 (30.3%) DRPs and 1 (0.8%) DRP as a pADE with minor or no harm, significant pADE, serious pADE and at least as a severe, life-threatening or fatal pADE, respectively. According to the SCHARR model, this contributed to a net cost avoidance of €40 940. We documented 5 (4.1%) discrepancies without DRP, 53 (43.4%) discrepancies linked to a DRP and 64 (52.5%) DRPs without discrepancy with a cost avoidance of respectively €303, €17 734 and €31 003. The benefit:cost ratio was 5.05:1. Furthermore, the pharmacist carried out a total of 722 interventions.

Conclusion: A CP integrated in a multidisciplinary ED team has an important economic value. Furthermore, the CP enhances medication safety by preventing discrepancies in the chronic medication and by the identification of DRPs on admission at the ED.

Disclosure of Interest: None Declared
How do pharmacy staff distribute the time in a Hospital outpatient Pharmacy? – The first WOMBAT time and motion study in a Norwegian Hospital Pharmacy

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Background and Objective: Pharmacy staff are highly trained healthcare professionals with regular patient interactions. It is important to know who does what task, when and how, to identify possibilities to increase time spent on tasks that improve patient outcomes.

Our objective was to quantify pharmacy staff’s distribution of time during normal working hours.

Design: Pharmacy staff working at Hospital Pharmacy of North Norway Trust were shadowed for a maximum of 2 hours at a time by a trained observer using WOMBAT (Work Observation Method By Activity Timing), an electronic data collection tool designed for direct observations. De-identified information about WHAT the observed staff was doing (filling prescriptions, patient counselling, etc), WITH whom (alone, with customer, etc), HOW they were performing the task (face-to-face, on a computer, etc), and WHERE they were doing it (shop front, behind a desk, etc) was collected. Collected data was downloaded from the tablet and the frequency, average duration and proportion of observed time in each task was calculated. The rates of interruptions and multi-tasking was also calculated.

Results: Pharmacy staff were observed for 7218 minutes in total while performing 2801 individual tasks during weekday shifts (Monday-Friday 8.00am-16.00pm). Preliminary analysis show that the most frequently performed task were dispensing (n=917, 32.8%) followed by logistic tasks such as managing inventory (n=405, 14.5%) and patient counselling regarding prescription medicines (n=396, 14.1%). Most of the tasks were completed between 12-2pm and 2-4 pm, 27.2% and 26.6% respectively. Staff spend 45.3% of their time behind the counter and interact with customers 41.5% of the time. Interruptions occurred less than once every hour whereas multitasking i.e. staff conducting two or more tasks simultaneously was more frequent and staff spent 7.8% (565 minutes) of their time multitasking.

Conclusion: This is the first time and motion study conducted in a Norwegian hospital pharmacy. The most frequently performed task was dispensing, which is one of pharmacists’ main task and can explain why they spend a large proportion of time behind the counter. Interactions with customers were commonplace but could increase further if less time was spent on logistic tasks.

Disclosure of Interest: None Declared
Identified drug-related problems and actions taken to solve them: intervention delivery within a clinical trial on comprehensive medication reviews in older hospitalised patients

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Background and Objective: Understanding how well clinical pharmacist interventions have been delivered in clinical trials is important for interpretation of the trials’ outcomes. In this study we aimed to assess the intervention delivery within a cluster-randomised controlled trial on comprehensive medication reviews in older hospitalised patients (MedBridge).

Setting and Method: Eight wards at in total four hospitals in Sweden. Patients aged 65 years or older, admitted to one of the study wards, were included in the MedBridge trial. Patients in the intervention group received a comprehensive medication review by a clinical pharmacist in collaboration with the ward physician. One-third of all intervention patients were randomly selected within each ward. The patients’ medical record was screened to classify medication discrepancies and drug-related problems (DRPs) identified during the medication review, and to classify proposed and implemented actions to solve DRPs. Results were analysed with descriptive statistics.

Main outcome measures: Number and types of identified medication discrepancies, DRPs and actions to solve DRPs.

Results: In total, 581 comprehensive medication reviews were assessed. The mean number of identified medication discrepancies was 1.1 (SD 1.7, range 0-12), of which 77% (480/624) were corrected. The most common discrepancy was that the patient’s medication list included a medication not taken by the patient (n=247). The mean number of identified DRPs was 2.0 (SD 1.8, range 0-10). The most frequent DRP was improper medication selection (n=198). Seventy-two percent (856/1193) of proposed actions to solve DRPs were implemented of which 526 were direct changes in patients’ medication treatment. Stopping medication was the most frequent action (n=175), which was more than twice as prevalent as starting medication (n=70).

Conclusion: The comprehensive medication reviews within the MedBridge trial have been well-delivered. These findings, including the understanding that proposed actions to solve DRPs lead to direct medication changes, can be used to interpret the trial outcomes which will be available in 2020.

Disclosure of Interest: None Declared
The role of the pharmacist in optimizing antipsychotic use among elderly patients with dementia in nursing homes: is there enough exhaustiveness in medical records?

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Background and Objective: Optimizing pharmacotherapy among nursing home residents is a challenge. Antipsychotic use has been linked to stroke risk among demented elderly. Medical records may include information to help healthcare providers, but the extent to which nursing homes' medical records is complete to optimize antipsychotic use is unknown and may vary. Our main goal was to evaluate the exhaustiveness of clinical and therapeutic variables in a selected sample.

Setting and Method: We conducted a cross-sectional study in two nursing homes in Portugal (09/2018-04/2019). Medical records (paper or electronic-based) were analysed by a pharmacist. Information compiled nursing notes, medical records, pharmacoterapeutic profile, emergency department and hospital discharge reports, laboratory tests and demographic characteristics. Data were extracted prioritising variables described in the literature to optimize antipsychotic use among demented elderly and were further divided into two groups: patient-related features (e.g. age, sex, hepatic function, renal function, comorbidities, weight, lipids, electrocardiogram (ECG), electrolytic imbalances, and perceived general health status (as recorded by the nurse)) and drug-related features (e.g. dose, frequency and previous medications). Data exhaustiveness was classified into high (missing values <1%), medium (missing [1–15%]) or low (missing values > 15%). Descriptive analysis was undertaken using Microsoft Excel 2016.

Main outcome measures: Exhaustiveness classification for each variable type.

Results: From 113 medical records, 59 patients had antipsychotics’ prescribed. Medical charts were mostly in electronic format (54,3%; n=27). High exhaustiveness was reported for age (0%; n=0), sex (0%; n=0), comorbidities (0%; n=0), general health (0%; n=0), blood pressure registers (0,02%; n=1) and medication intake frequency (0,03%; n=2). Medium exhaustiveness was seen for previous medications (10,2%; n=6). The remaining variables, representing the majority, had low exhaustiveness: hepatic function (33,9%; n=20), renal function and lipids values (35,6%; n=21), dose (39,0%; n=23), ionogram (42,4%; n=25), weight (66,1%; n=39) and ECG (96,6%; n=57). Pharmaceutical dosage form and family history (100%; n=0) were not found in any record, which seems worrisome.

Conclusion: Analysed medical charts were not complete enough to be useful for antipsychotic use optimisation. Complete information is a pre-requisite for pharmacists to ensure medication is effective and safe at an individual patient level, enabling safer transitions of care. Current data would only enable population-based analysis (e.g. Beers criteria).

Disclosure of Interest: None Declared
Mapping Clinical Pharmacy Education in Europe

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Background and Objective: Clinical pharmacy is a core area within pharmaceutical sciences, enabling pharmacists to perform specialised tasks in optimising medication safety and effectiveness. However, there is currently no general overview about clinical pharmacy education in Europe. This study was set up with the aim to characterise the education and practice of clinical pharmacy in Europe.

Setting and Method: Cross-sectional study conducted in 2018 using a survey developed by the EdComm. The survey comprised three sections characterising: pre-, post-graduate education and practice. It was pre-tested in 5 countries and then sent to all ESCP members using the members’ database, restricting to those practicing in academia. Further expansion was ensured by liaising with the European Association of Faculties of Pharmacy. We aimed to receive responses from 44 European countries/regions. All data will be analysed descriptively to produce a report to be uploaded to the ESCP website for peer validation.

Main outcome measures: Proportion of countries teaching clinical pharmacy at (1) undergraduate level; (2) post-graduate level; and (3) countries where clinical pharmacy is a pre-requisite to perform a specific activity within the profession.

Results: Preliminary data from 35 countries suggest further clarification is needed from 17 countries. From the 11 questions, discrepancies within countries were identified in 8 of them. Data therefore need to be interpreted cautiously. The number of pharmacy faculties varied widely between countries, from 1 to 56. The majority of countries (82%) reported to have clinical pharmacy embedded in their pre-graduate education. 57% stated to have post-graduate clinical pharmacy programs available (leading to certification), whereas 82% stated to have educational programs leading to a PhD. Roughly 58% stated to have a specialisation in clinical pharmacy. From these, only 52% report this grants exclusive professional rights; and in 41% the specialisation is embedded in the legislation. Some of the exclusive professional activities mentioned were: advanced medication review, integration in multidisciplinary teams at the wards, access to patient medical history and monitoring of clinical trials.

Conclusion: The data are promising but need further validation by the ESCP community. Ideally, countries that have not yet responded should also be represented in this overview.

Disclosure of Interest: None Declared
Background and Objective: Room of horrors are medical simulation tools created 12 years ago in Canada. They allow learners to identify patient care errors (hygiene, patient welfare, drugs…) intentionally added in a reconstituted patient room. These risk management tools allowed the training of tens of thousands of caregivers about risks associated with care giving. However, the implementation of these rooms of horrors requires significant human and material resources to renew the scenarios. Moreover, the novelty effect eroding over time, we must think about revised concepts.

To create a virtual and innovative solution of room of horrors focused on medication errors (ME), for the initial and continuous training of healthcare professionals.

Design: A multi-center inter-professional working group has been set up. It includes pharmacists and physicians from 3 healthcare institutions. The work was divided into six steps: choice of target audience and training objectives, definition of the business model, development of the scenario, shooting and editing, creation of the training tool and finally tests, adjustments and validation of the tool before diffusion.

Results: A total of 18 ME were proposed about storage, good administrative practices, hygiene, respect of dosage and patient monitoring management. In each area of the ward, it was possible to open points of interest (POI) by clicking on icons: 24 POI were defined and 6 POI were without errors. A questionnaire was included on the site to indicate the errors identified by the learner. Before to go online, the tool was tested and validated by experts. The tool was tested during a one-and-a-half hour session for pharmacy students using the recommended format for the health simulation: briefing, then simulation in the virtual ward to identify 18 EM, then debriefing. An evaluation of knowledge in pre- and post-training was carried out with 10 questions analyzed by a virtual reality tool (VOTAR). 79 participants found on average 7.1 ± 2 ME out of 18. The most identified concerned storage of thermosensitive drugs (identified by 88% of students), the misuse of narcotics (79%) and a modification of galenic form of patches (76%). The most difficult errors to identify concerned Sequential intravenous/oral (3%), a medication conciliation error (3%) and an error of use of a multi-dose vial (3%). The tool met the expectations of 97% of students and 86% gained useful knowledge for their exercise. Despite errors considered relevant (74%), 68% of students found the scenario difficult. This can be explained by a lack of field experience or training in iatrogenic medication.

Conclusion: The satisfaction of learners and trainers confirms the need to sustain the tool and to consider possible variations: similar rooms, focused on oncology care and medication reconciliation have since been added. Other tools are being developed in 2019 (medication management in operating room and neonatal intensive care unit) and should help combat adverse events associated with hospitalization.

Disclosure of Interest: None Declared
PEC001
Introduction of Rituximab Biosimilar: an opportunity to improve health system efficiency?
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Background and Objective: The introduction of a biosimilar drug represents similar efficacy at lower cost, providing savings without compromise patient treatment. In 2017 Rituximab biosimilar was approved in Italy and at the end of 2017 our hospital implemented a new policy for biologics’ utilisation. The purpose of this study is evaluate the prescription adherence, the safety profile and the economic impact of rituximab biosimilar after implementation.

Setting and Method: Retrospective analysis was conducted during two periods: 2017 (period 1: pre-switch) vs 2018 (period 2: post-switch). Clinical data was collected from hospital prescription database Farmasafe®, to identify the number of patients under Rituximab treatment, and hospital pharmacovigilance’s database to evaluate the safety profile. An analysis of cost has been conducted to evaluate economic impact.

Main outcome measures: Main outcome measures extracted and analysed were: number of prescription, safety profile and the economic impact of rituximab biosimilar after implementation.

Results: In the period 1, two-hundred and two patients were treated with Rituximab: 196 Ritiximab Originator and 6 Rituximab Biosimilar. During period 2, one-hundred and ninnythree patients were treated with Rituximab: 52 Ritiximab Originator and 141 Rituximab Biosimilar. The biosimilar proportion has increased to + 63 % in the total amount of rituximab utilization. During the period 2, the switch was performed in 47 of patients and 94 were naïve, and no switch reverted. The analysis of adverse reaction drugs (ADR), show that no significant problems in safety profile were identified. In period 1 total cost of rituximab (originator+biosimilar) was € 1,456,647, and during period 2 was € 721,370. Biosimilar rituximab introduction translated into a 50% cost reduction of € 735,370.

Conclusion: Hospital biosimilars policy was associated with substantial and quite rapid biosimilars’ incorporation and utilisation. Moreover Biosimilar rituximab introduction resulted in significant savings cost with no major changes in safety profile. The use of rituximab will release funds that can be invested elsewhere within the healthcare setting. This is relevant for all pharmacists involved in hospital pharmacy, particularly those working in therapeutic areas where biologics are used such as onco-ematology, rheumatology, nephrology etc.

Disclosure of Interest: None Declared
Background and Objective: The aim of this study was to evaluate the possible role of the pharmacist in risk screening for type 2 diabetes mellitus and referring the individuals with high type 2 diabetes risk to the physicians.

Setting and Method: This study was conducted in 100 individuals who applied to the community pharmacy for any reason between September and December 2018, Istanbul, Turkey. A 7-item diabetes screening test, which was presented in the 2018 guideline of the American Diabetes Association (ADA) (1), was applied in the community pharmacy in adults over 40 years of age who had not been diagnosed with diabetes before. Data such as the patient's demographic information, comorbidities, regularly used medications, history of alcohol used and smoking was collected. The patient's diabetes risk score was calculated by performing a screening test; and patients with 5 or more risk score were referred to the doctor.

Main outcome measures: Scores of ADA Type 2 Diabetes Risk Screening Test and the rate of diabetes diagnosing by the physicians after referring.

Results: The mean age of the participants was 50.81 ± 8.54 in all completed questionnaire. 76% of the patients were women. 69% did not have a chronic disease. Approximately half of the participants (51%) had a family history of diabetes. The mean body mass index of the patients was 30±5,38 and 54% were obese. The number of patients with diabetes risk score of 5 and above was 61. Of the 61 referred patients, 40 applied to the physicians. Among them, it was determined that 4 people were diagnosed with type 2 diabetes and 8 patients had pre-diabetic findings.

Conclusion: As a result, pharmacists can take an active role in increasing awareness of diabetes, referring people who are at risk to the doctor, and offering lifestyle recommendations to patients. This may contribute to the prevention of complications and possible serious damages by early diagnosis of diabetes, as well as better management of the disease and treatment process.

1. Standards of Medical Care in Diabetes—2018, Diabetes Care, Volume 41, Supplement 1, p.18

Disclosure of Interest: None Declared
Background and Objective: Tobacco use is one of the main causes of morbidity and mortality in Qatar. Pharmacists practicing in community pharmacy are the first port of call for smokers. However, they are not actively involved in tobacco control and many have not received any education or training about smoking cessation. The aim of this randomized controlled trial (RCT) is to design, implement, and evaluate an intensive education program on tobacco-use treatment for pharmacists in Qatar.

Setting and Method: A random sample of community pharmacists in Qatar was selected for participation. Consenting participants were randomly allocated to intervention or control groups. Participants in the intervention group received an intensive education program on treatment of tobacco-use disorder. A short didactic session on a non-tobacco-related topic was delivered to pharmacists in the control group. The pharmacists’ tobacco cessation knowledge and skills were assessed using an Objective Structured Clinical Examination (OSCE). Six-station OSCE targeting core smoking cessation competencies and skills was completed by participants in both groups. OSCE case scenarios targeted smoking in adults, pregnant women and adolescents, relapse prevention, smoking in cardiac patients, and pre-contemplating smokers. Each participant was allocated 10 minutes to interact with a standardized patient who is trained using a validated script. Performance of participants was assessed using validated assessment checklists that comprised analytical and global assessment sections.

Main outcome measures: The study objectives are to assess the effectiveness of the program on pharmacists’ knowledge and skills toward tobacco cessation.

Results: A total of 52 and 33 participants in the intervention and the control group respectively completed the OSCE. Overall, pharmacists in the intervention group performed better in the analytical and global assessment sections than those in the control group. For example, for case 1, mean scores for developing rapport, data gathering and management were 2.76 vs 0.97 (p<0.001), 5 vs 2.81 (p<0.001), and 3.5 vs 2.25 (p=0.001) respectively for the intervention group compared to the control group. Mean total analytical scores were 12.06 vs 6.4 (p<0.001) for intervention compared to the control group for case 1. Furthermore, mean global assessment scores for case 1 were 3.19 vs 2.41 (p=0.009) for the intervention compared to the control group.

Conclusion: This study is the first RCT conducted within Qatar and the Middle East that includes evaluating an intensive education program on tobacco-cessation treatment for pharmacists using OSCE. The study results suggest that provision of an intensive educational program on the treatment of tobacco use results in improved skills toward tobacco cessation. Such educational programs are essential for community pharmacists as they are the most accessible healthcare providers in the community.

Disclosure of Interest: None Declared
Background and Objective: On intensive care units (ICU) electronic health records with special features enabling easy and reliable care standardization, planning and documentation are in common use. Data is automatically collected from medical bedside devices such as infusion pumps, ventilators and monitors. Within the Viennese hospital trust basically one system is in use, that can be modified according to specialisation (SICU, MICU, NICU). Our ICU was the first to implement a clinical pharmacy note for each clinical pharmacist intervention.

Design: Carrying for critically ill patients requires accurate setting of priorities to provide the best value of pharmaceutical impact in the background of patient’s complexity level (e.g. clinical nutrition, difficulties in drug administration, fluids, electrolytes, septic conditions). The adoption of this supplementary pharmaceutical tool for our ICU and the direct access on the ward and in the pharmacy department enables to confirm the checked patient drug history for causality, the checked drug-drug interactions and to give verbal recommendations to the prescribers. Once a week in a short communication the interventions and the further patient management were additionally discussed with the consultant on duty.

Results: Clinical pharmacy interventions on the infectious diseases and tropical medicines ICU with 8 positions from December 2018 to March 2019 49 interventions were documented: Distribution of drug related problems: To determine which maintenance drugs should not be continued 10% were stopped; Severe side effects or drug-drug interactions (e.g. intoxication, electrolytes imbalances, voriconazole administration) were recorded in 26%; Suggestions for preferred route or time of administration and special information (e.g. suggestions for therapeutic drug monitoring, optimal dose-regimens, enteral feeding tubes) in 53%; Procurement Issues (e.g. drug alignment, supply of drug) in 11% of cases.

Conclusion: Critical care electronic health records offer access to high level impact of clinical pharmacists in a timely way. However configurations of the digital systems between the ICU wards are all different and are not exchangeable, if a patient is transferred. The IT interface for data exchanges between patient records and merchandise management program - a sustainable solution is not yet managed, but highly needed.

Disclosure of Interest: None Declared
MEDICATION RECONCILIATION IN THE ANGIOLOGY AND VASCULAR SURGERY SERVICE

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Background and Objective: Medication reconciliation (MR) has been defined as “the process of identifying the most accurate list of a patient’s current medicines and comparing them to the current list, recognizing discrepancies, and documenting any changes, thus resulting in a complete list of medications, accurately communicated.

The present study aims to analyze this process by:
· Identification and classification of discrepancies detected in the hospital.
· Pharmaceutical intervention on the unintended discrepancies detected.

Design: Prospective study carried out in the Angiology and Vascular Surgery Service from October to December 2018. Polymedicated patients (> 5 medications) who entered this service during the study period were selected. The pharmacist obtained 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. The variables evaluated included demographic data, total number and type of discrepancies between the chronic treatment and the prescribed one. Finally, the degree of acceptance of the interventions carried out was studied.

Results: A total of 118 patients were included, with an average age of 70.24. There were 550 discrepancies between the chronic treatment and the one prescribed in the admission, of which 297 (54%) were intended and 253 (46%) were unintended. The unintended discrepancies were classified as: Omission of medication: 92 (36.36%), different dosage/route of administration/regimen: 100 (39.53%), different medication: 11 (4.35%), start of medication: 47 (18.58%) and duplicity: 3 (1.19%). Regarding these discrepancies, the following recommendations were made: 96 medication starts, 32 dose changes, 64 route changes, 49 treatment suspensions, 36 therapeutic substitution, 1 change of time sequence and 1 change route of administration. The acceptance rate for our interventions was 92.9%.

Conclusion: The high number of discrepancies detected during the whole process, together with the high degree of acceptance of the interventions made by the pharmacist, justifies the realization of the MR in patients admitted to the Angiology and Vascular Surgery Service.

Disclosure of Interest: None Declared
Background and Objective: Antibiotic resistance is one of the biggest threats to global health, and it is important to have a restrictive and judicious antibiotic policy to help slow development of antibiotic resistance. The aim of this study was to evaluate whether a pharmacist working specifically with optimizing antibiotic prescription could improve the antibiotic treatment in internal medicine wards.

Setting and Method: The study took place at a medical unit with 63 beds in a general hospital in Central Norway. The data was collected by a dedicated antibiotic pharmacist who reviewed the antibiotic treatment for all patients in the internal medicine wards for 8 weeks. The review focused on choice of antibiotic, dose, formulation, dosing interval and duration, and drug interactions. Antibiotics that did not comply with national guidelines and other drug-related problems (DRPs) related to antibiotics were discussed with a physician.

Main outcome measures: Three outcomes were measured: 1. The number of patients prescribed antibiotics that did not comply with national guidelines, 2. The number of patients with DRPs related to their prescribed antibiotics, and 3. The number of antibiotic related DRPs identified by the pharmacist and accepted by the physician.

Results: The study included 253 patients that were prescribed antibiotics. For 45% of the patients the national guidelines were not followed when the antibiotic treatment was started. One or more antibiotic related DRPs were identified for 91 patients (36%). Of the 126 antibiotic related DRPs, 73 (58%) were accepted by the physician. The most common antibiotic related DRPs were interactions, dose and dosing interval.

Conclusion: Our findings indicate that an antibiotic pharmacist performing dedicated medication reviews can identify large number of antibiotic related DRPs that are seen as clinically relevant by the treating physician and thereby can improve the antibiotic treatment for individual patients.

Disclosure of Interest: None Declared
Background and Objective: Inpatient medication reconciliation in our geriatric unit was implemented in October 2015. Since the computerization of the process in February 2017, an activity report and an analysis of potential areas for improvement has been put in place.

Design: A retrospective study was carried out between February 2017 and February 2019. Any patient with at least one chronic treatment was eligible. Any patient living in EHPAD was excluded after September 2018. Each patient’s medication was built with the help of at least three reliable information sources and incorporated in the electronic medical record through the prescription software PHARMA®. Unintended discrepancies between the medication history and the admission medical prescription were detected and communicated to the physicians through the electronic medical record. The potential clinical severity of each discrepancy was jointly assessed by the physician and the pharmacist, using the Cornish classification. The full reconciliation data set was extracted from PHARMA® and a home-grown software. Furthermore, a satisfaction survey was conducted among the prescribers of the unit.

Results: 584 patients were reconciled retroactively (a quarter of admitted patients). The average delay of reconciliation after admission was 2 days (± 1.728). The mainly information sources were the medical file (97.3%), the medication order (90.4%) and the patient’s interview (66.1%). 118 unintended discrepancies were detected (52% were drug omissions and 38% were dosage modifications). The largest types of drugs involved were proton pump inhibitors, antidepressants, anti-asthmatics, beta-blockers and diuretics. After a pharmacuetic intervention (in 98% of cases), 79% led to a prescription’s modification. The survey reported a high satisfaction level from the prescribers (rated 8/10) with a significant added value in terms of patient’s quality management. Prescribers commented on the importance of developing proactive reconciliation.

Conclusion: The collaborative approach of reconciliation in the unit showed a significant improvement in medication error interception and patient management. Several areas of improvement were identified and are being investigated by the pharmacists.

Disclosure of Interest: None Declared
HP-PC015
What happens after ICU discharge? A within-hospital seamless care analysis of antimicrobial therapy
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Background and Objective: Many patients require continued antimicrobial therapy after intensive care unit (ICU) discharge. Besides appropriate selection, dosing and adequate duration are cornerstones for infection therapy. In Ghent University Hospital, medical and surgical ICU (MICU/SICU) teams review antibiotic treatment adequacy on a daily basis. After ICU discharge, a hospital-wide multidisciplinary infectious diseases team (MIT) is available for advice on different aspects of antimicrobial therapy. The aim of this study was to analyse if ICU initiated antimicrobial treatment continued in the ward was compliant with respect to dosing and recommended duration if available.

Setting and Method: A retrospective analysis of ICU discharge letters of consecutively discharged MICU and SICU patients requiring continued antibiotic therapy after ICU discharge was performed to identify rationale for, dosing and recommended duration of ICU initiated antibiotic therapy. A panel (ICU physician and ICU clinical pharmacist) evaluated whether antibiotic treatments following ICU were compliant with ICU discharge recommendations. Antibiotic treatments which diverted from these recommendations due to well-documented changes in clinical evolution or following MIT intervention were also considered as compliant. Ethical committee approval was obtained.

Main outcome measures: Completeness of ICU discharge letter defined as a containing a dosing scheme (including frequency and route of administration) and recommendation for total duration. Compliance/correctness of subsequent antimicrobial therapy (posology/duration) and reason for non-compliance. Number of patients in which MIT interfered to correct posology/duration.

Results: Between January – March 2016 and November 2017 – Mar 2018, 380 ICU patients were discharged on antimicrobial treatment (66.7% male, median age 63 [IQR 51-72] years). Median SOFA at ICU admission was 5 [2-8], and median ICU stay was 2.8 [1.4 – 4.7] days. Patients were primarily admitted for respiratory (23%), gastro-intestinal (22%) or cardiovascular reasons (17%). Five-hundred and seven antimicrobials (empirical:targeted 3:2) were identified. ICU discharge letters specified dosing in 468 (92%) but mentioned a recommended duration for 115 antimicrobials (23%) only. For 34 antimicrobials (30%) total duration following ICU discharge deviated from discharge recommendations, of which 7 were due to MIT intervention. Overall compliance for ICU discharged patients was 91%.

Conclusion: Although patients completed their ICU initiated therapy correctly in 91% of the cases, a recommendation on duration was only mentioned in 23% of discharge letters.

Disclosure of Interest: None Declared
PHARMACEUTICAL INTERVENTIONS THROUGH THE INTEGRATION OF THE PHARMACIST IN THE ORTHOPAEDIC SURGERY AND TRAUMATOLOGY SERVICE: MULTICENTER STUDY

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Background and Objective: Quantify and characterize the medication errors (ME) that occur in the Orthopedic Surgery and Traumatology Service (OSTS), as well as the interventions made by the pharmacist to resolve these errors.

Design: A one-year prospective study (January-December 2018) carried out in the OSTS of two Spanish tertiary hospitals in which the pharmacist is integrated into the multidisciplinary team. The studied variables were: number of reviewed patients, number and type of performed interventions, sanitary professional to whom the intervention is intended, communication method, clinical evaluation and degree of acceptance of the interventions carried out. The detected ME were classified according to the National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP). The informatic program (Farmatools® and Prisma®) and the electronic medical records (Mambrino XXI® and Diraya®) were used as sources of information. The statistical analysis was performed with the STATA® v.13 program.

Results: 922 patients were reviewed and 3,505 interventions were carried out. 4 interventions / patient were recorded. The types of interventions were: conciliation (2,366), electronic prescription error (339), related to the indication (260), related to the posology (184), drug not included in the drug-therapeutic guide (118), pharmacological adequacy (94), sequential therapy (47), pharmaceutical consulting (38), others (drug monitoring, side effects, nursing recommendations) (22), registration of allergies (17), interactions (14) and route of administration/dosage forms modification (6). 90% of the interventions were directed to traumatologists, the rest to other medical specialists and nurses. The most used communication method of the interventions was oral (91.04%) and in a lower frequency, written and telephone. Regarding the clinical evaluation: 2894 of the interventions had influence on efficacy, 429 on safety, 78 were not assessable, 73 only on cost, and 31 had influence on both safety and cost. According to NCCMERP, the most frequent ME (76.35%) were classified in the Category C (the error reached the patient but did not cause harm). 87.37% of the interventions were accepted.

Conclusion: The integration of the pharmacist in the multidisciplinary team of the OSTS allows a high degree of intervention, highlighting mainly those related to efficacy (82.57%). The high percentage of acceptance in the pharmaceutical interventions (87.37%), guarantees an optimization of the pharmacological therapy and probably a shorter duration of the hospital stay of the patients admitted at this Service. In this way, a rational and safe pharmacotherapy for the hospitalized patient can be assured.

Disclosure of Interest: None Declared
HP-PC017
COMPARISION OF DIFFERENT DECISION SUPPORT SOFTWARE PROGRAMS IN PERSPECTIVE OF POTENTAIL DRUG-DRUG INTERACTIONS IN ONCOLOGY CLINIC
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Background and Objective: Cancer treatment is one the most compelling situation for healthcare providers. The situation itself already complicated enough. In addition, cancer treatment requires multiple medication usage simultaneously. Drug-drug interactions (DDI) compose 20-30% of adverse effects. Drug-drug interactions are responsible 4% of mortality in oncology. Cancer patients are more prone to experience drug-drug interactions, because of taking multiple medications with anticancer agents to reduce or prevent the side effects that are caused by chemotherapeutic agents.

Since the clinical pharmacists have a key role to prevent DDIs and to enhance the patients’ quality of life, a multidisciplinary approach is an important necessity in cancer care.

Setting and Method: Cross-sectional observational study was conducted through interviews with 133 patients. In our study we would like to evaluate DDIs of patient who applied Oncology clinic of Bezmialem Vakif University Istanbul Turkey. This study has been approved by noninvasive Clinical Research Ethics Committee of Bezmialem Vakif University with decision number of 21/286 on 21.11.2017. Drug-drug interactions were evaluated using three sources: Lexicomp®, Medscape® and Micromedex®. Interaction levels have been taken into consideration were serious-use alternative and monitor closely for Medscape®, Serious-Use Alternative and Major Micromedex® and Category X and D for Lexicomp®.

Main outcome measures: Evaluation of DDIs in perspective of number and comparison between different clinical decision support systems.

Results: 244 different medicine prescribed 1712 times to 133 patients. According to our results number of DDIs were 265-1472 (1.99-11.07 DDI/patient) for Medscape®, 38-1006 (0.29-7.56 DDI/patient) for Micromedex and for Lexicomp® were 86-532 (1.99-4.00 DDI/patient).

Conclusion: This study revealed that DDIs is common problem among oncology patients in hospital settings. When pharmacist making a decision using various software and decision support systems with different level of evidences. This study showed us that trusting one software completely could lead clinician to failure. On the other hand, patients with comorbidities, renal impairment and polypharmacy are more prone to have more DRPs.

Disclosure of Interest: None Declared
REGISTRATION OF CLINICAL PHARMACEUTICAL INTERVENTIONS: A SURVEY AMONG BELGIAN HOSPITAL PHARMACISTS
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Background and Objective: During the last decade, clinical pharmacy has become a major activity for Belgian hospital pharmacists. However, a nationally standardized system for registration of drug related problems (DRPs) and clinical pharmaceutical interventions (PIs) is still lacking, thus complicating input in patient files, feedback to hospital management and government, and benchmarking.

Objectives
1) To identify current PI registration practices among Belgian clinical pharmacists.
2) To determine essential characteristics of an ideal DRP and PI registration system.

Setting and Method: After literature review of PI registration systems, a survey was developed (Dutch and French) and distributed to all 92 Belgian hospital pharmacies. Firstly, respondents were asked which clinical activities they perform, followed by which items they register for each activity, and if they perceive this as useful. Furthermore, respondents answered general questions about clinical activity registration and had to assess specific characteristics of an ideal DRP and PI registration system.

Main outcome measures: Useful items to register, essential characteristics of a registration system.

Results: Sixty-six pharmacists, working in 39 different hospitals, completed the survey. Following items were perceived most useful to register: executor, patient (characteristics), drug name, DRP, PI, detailed description of the advice, production/optimization of medication schedule, time spent, sources and physician’s acceptance. Specifically for medication reconciliation, the number and type of discrepancies were rated useful. Only five respondents used a validated registration system for DRPs and CPls. Forty-six respondents (70%) preferred a structure in which the DRP is registered first, followed by the performed intervention. Being able to register more than one DRP for each intervention was preferred by 47 respondents (71%) while 43 respondents (65%) would like to register more than one intervention for a detected DRP. The most important characteristics for a registration system were: easily integrated in electronic patient record, easily extractable data, well-ordered, fast and intuitive.

Conclusion: We identified indispensable characteristics of a national DRP-CPl registration system with practicality and time investment being rated as most important. Furthermore, use of validated systems is very scant, limiting use of obtained data. In combination with information obtained through literature review and a focus group with stakeholders, these findings have been used in the development of a national DRP-CPl registration system, which is currently being validated.

Disclosure of Interest: None Declared
Background and Objective: Clinical pharmacy services are rapidly expanding in Norway. Currently there are no formal requirements, postgraduate board certification or specialization for clinical pharmacists. However, postgraduate university courses in clinical pharmacy are available. In 2015, representatives from the four regional pharmacy trusts in North-, Central, West and South-East Norway, and the private hospital pharmacies of Diakonhjemmet and Lovisenberg established a working group to define the knowledge and skills needed to work as a clinical pharmacist in Norway. The first national report defining required core competencies, learning objectives and relevant activities for clinical pharmacist (as described by Integrated Medicines Management) was ready in 2016. The aim of this project was to assure the high quality of clinical pharmacy services within the hospitals, by evaluating and updating the previous report and present a continuous plan for the development of clinical pharmacists in Norway.

Design: In March 2019, the working group was reestablished with two original and four new members to evaluate and revise the report. Consensus was met by allowing all representatives to be heard in joint meetings with all representatives present, and finding a solution that all agreed upon.

Results: The revised report has a more easy-to-use layout, with suggested timelines, and is more adaptable to electronic competency systems. Similar core competencies defined for the different patient centered tasks in the 2016 report were merged and simplified, offering an overall clarification of competency needs for clinical pharmacists, their managers and leaders. The working group searched for and evaluated suitable courses and materials that could provide the necessary skills. A total of 11 core competencies for clinical pharmacists were defined: 1. Perform medication reconciliation, 2. Document in electronic health records, 3. Understand medication handling, 4. Communicate with patients and healthcare workers, 5. Understand medication adherence, 6. Act according to Health, Safety and Environment (HSE)-routines in hospital wards, 7. Discuss advanced pharmacotherapy, interactions and evidence-based medicine, 8. Consult on drug monitoring (incl TDM, side effects etc), 9. Consult on medicine reconstitution, administration, fluids and nutrition, 10. Perform medication review and 11. Discuss personalized medicine. The relevant learning objectives were linked to activities such as medication reconciliation, -review, and discharge services.

Conclusion: A consensus based national competency framework for patient oriented tasks in clinical pharmacy has been established, used and revised. The report will be revised on a continuous basis. The members of the working group believe the common framework will contribute to the development of a consistent and robust clinical pharmacy service in Norway.

Disclosure of Interest: None Declared
Background and Objective: Pharmacotherapy Review (FTP) is an advanced level medication review service (PCNE: type 3) performed by a clinical pharmacist (CP). The service is reimbursed and available in several community health centres across Slovenia, among them in the Community Health Centre Ljubljana - the largest GP clinic in Slovenia. The aim of the study was to evaluate implementation of FTP from the perspective of GPs in this health centre.

Setting and Method: A prospective observational study was conducted in Community Health Centre Ljubljana (February-June 2018). Few days after receiving the FTP report, GPs were invited for an interview. The interview consisted of five open ended questions addressing: reasons for referral to a CP, how the report meets GP’s expectations, which CP’s recommendations will be implemented and GPs perspective of the service in general. Only GPs of the patients who provided written informed consent were contacted for the interviews. GP’s provided demographic data and written consent for audio recording of the interview. The recordings were transcribed verbatim and analysed with NVivo11 Pro.

Main outcome measures: GPs’ perspective on FTP.

Results: Forty patients out of 82 (49%) provided written consent, giving a sample of 26 GPs of which 24 agreed to be interviewed. Polypharmacotherapy represented the main reason for referral (60 %), however in 2/3 of the cases there was a more in-depth reason behind (adverse effects, changes in vital functions, etc.). Participating GPs emphasized empowerment of the patients in medicines use as the major benefit of the FTP, which consequently assists GP’s work. Transferability of recommendations to similar cases was also stated as a benefit for the GPs. In majority they accept CPs recommendations, although the implementation time varies. When recommendation addresses medicines prescribed by a clinical specialist, forwarding the recommendation further to the clinical specialist is the preferred practice. Lack of time to recognize patients in need of the service and additional workload to study and implement the recommendations were identified as major challenges to be overcome.

Conclusion: GPs experiences with Pharmacotherapy Review are encouraging and supportive and present a base for further growth of the service.

Disclosure of Interest: None Declared
Appropriateness of LMWH prescriptions in the hospital and analysis of risk factors for inappropriate prescribing
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Background and Objective: Low molecular weight heparins (LMWH) are parenteral anticoagulants that are frequently used for the prevention and treatment of venous thromboembolism (VTE), especially in the hospital. Anticoagulants are high risk drugs that are not always prescribed according to the summary of product characteristics (SmPC) and/or guidelines in force. This study has the objective to (1) explore whether LMWH use in the hospital is conform the SmPC/guidelines and (2) identify risk factors for inappropriate prescribing.

Setting and Method: Retrospective drug use evaluation study in a 721-bed university hospital in Brussels, Belgium. A random sample of patients (12%) who received at least one dose of LMWH in 2017 was analysed. The following parameters were collected from the electronic medical record: type of LMWH, dose, duration, gender, age, weight, body mass index, renal clearance, length of hospital stay, hospital department, comorbidities, planned surgery, concomitant antiplatelet use, CHA₂DS₂-VASc and HAS-BLED score, bleeding history, thrombocytopenia, anemia and blood transfusion during admission. Risk factors for inappropriate prescribing were analyzed using binary logistic regression.

Main outcome measures: Proportion of appropriate LMWH prescriptions and patient related risk factors for inappropriate prescribing.

Results: A total of 984 patients were included for which 1253 LMWH prescriptions were issued. The median age was 66 years with 56.6% females. Half (n=623) of the LMWH prescriptions were inappropriately dosed of which 53.5% (n=333) were overdosed. The main indications were: prevention of VTE (73.6%), treatment of VTE (8.1%) and bridging (18.3%). The logistic regression analysis identified the following risk factors for inappropriate LMWH prescribing: weight (p<001; OR=1.015 [1.007-1.023]), renal function <30 mL/min (p=0.009; OR=2.028 [1.191-3.452]), no planned surgical intervention (p<0.001; OR=1.772 [1.354-2.319]) and diabetes (p=0.020; OR=1.447 [1.061-1.973]). Furthermore, it was found that tinzaparin is associated with less errors compared to nadroparin (p<0.001; OR=0.321 [0.175-0.590]). Treatment of VTE is also associated with less inappropriate doses compared to the other indications (p=0.013; OR=0.555 [0.349-0.882]).

Conclusion: One in two LMWH prescriptions are inappropriate with overdosing being more prevalent than underdosing. A possible cause might be the lack of clear guidelines in our hospital. These results will be used to issue guidelines as well as to construct a clinical decision tool to improve appropriate LMWH use.

Disclosure of Interest: None Declared
EFFECTIVENESS AND TOLERANCE OF ORAL MELATONIN PREMEDICATION IN SLEEP ABR IN PAEDIATRICS


Background and Objective: The early diagnosis of deafness in newborns and infants is performed using auditory brainstem responses (ABRs). For this exam, quiet sleep is essential but is often difficult to obtain with young children. Oral melatonin, a physiological sleep-inducing hormone, has been successfully used to induce sleep prior to EEG recording, without the risk of sedation. The objective of this work was to evaluate the efficiency and safety of melatonin as premedication in ABR with children.

Design: The methodology used is the outcome of a collaboration between ENT and Pharmacy department in order to produce an oral melatonin preparation, to inform parents and children, to collect data during the ABR, to monitor the safety 48 hours after administration, and to analyze data. All patients received oral melatonin, depending on their weight: less than 10 Kg: 2 mg, between 10 and 20 Kg: 5 mg and more than 20 Kg: 10 mg.

Results: From May 2018 to January 2019, 32 patients (13 girls and 19 boys) were monitored after melatonin administration before a sleep ABR. Mean age was 2.2 years old (range: 71 days - 10 years old). Sleeping rate was up to 78.1%. The average time to fall asleep was 23 ± 13 minutes (10-62 minutes). Sleep duration was 37 ± 18 minutes (15-90 minutes). Thus, it was satisfying despite an important proportion of spontaneous awakening (96%), bearing in mind that 53% of these children did not suffer from sleep deprivation the night before. Moreover, ABR’s quality was satisfying in more than 70% of cases. We also observed side effects just after the ABR (2 children were irritable and one child was sleepy) and within 48 hours following the administration (5 children were sleepy, and one child had headaches and was irritable).

Conclusion: The study shows a real efficiency of oral melatonin in sleep induction in children with a period and duration compatible with the ABR. No serious adverse effects were noted but some drowsiness within 48 hours following the exam were observed and now parents will be warned. These results are comparable to the studies found in the literature.

References

Disclosure of Interest: None Declared
Interaction screening of therapies with oral anticancer medicines: a retrospective evaluation
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Background and Objective: Due to the adverse drug reaction profile and the interference with metabolism pathways and transporter molecules, many oral anticancer medications (OAM) may interact with other drugs, supplements and herbs. In our pharmacy, all patient therapies with OAM are screened systematically for interactions using electronically available interaction databases. However, the severity grading and management of interactions differ among these applications. Hence, a decision tree was developed combining the information retrieved from the different sources. The purpose of this study is to evaluate this screening method and to investigate how to improve the implementation in daily practice.

Setting and Method: In a monocentric, retrospective, observational study, the medication list of patients treated with an OAM between July 2017 and February 2018 was screened for interactions using 3 databases: UpToDate®, Clinical Pharmacology® and Stockleys®. An interaction was relevant when it was considered as ‘severe’ or ‘major’ by at least 2 databases. For QT-prolonging drugs, the risk was assessed with the Azcert Credible Meds database. A recommendation was only registered in the electronic patient file when an action was necessary.

Main outcome measures: The measured outcomes were the number of relevant interactions and the number and type of recommendations. We also assessed the reasons why relevant interactions did not result in a recommendation.

Results: A total of 219 patient medication regimens were analyzed, corresponding with 1736 drugs, including 248 OAMs. An OAM was involved in 46.2% of 143 relevant drug-drug interactions. Forty percent of the interactions were pharmacokinetic and 60% were pharmacodynamic. For 22% of the relevant interactions, a recommendation was given to the treating physician (32). The most prevalent recommendation was ECG monitoring when two or more drugs with a known risk of QT-prolongation were combined (14). Dose reduction due to a CYP-interaction was recommended 4 times. Other recommendations included frequent monitoring of serum potassium levels (3), switching a proton pump inhibitor to an antacid (3) or changing the intake interval between the OAM and the concomitant drug or supplement (3). The most common reasons for not providing a recommendation concern interactions with 'if needed' medication (29), when the patient was treated already a significant time with the drug combination without any problem (26), when the interaction was already recognized and handled by the physician (14), or when the medication was already stopped at the time of the screening (8).

Conclusion: Drug interaction screening is essential in pharmaceutical care of patients treated with OAM. However, the assessment of the relevance of interactions is difficult. The development of a decision tree facilitates this process, but consulting 3 databases remains time-consuming and the screening may not be accurate enough when it is performed retrospectively. This study reveals the need of a more efficient screening tool at the moment of prescribing and/or dispensing of the OAM to the patient.

Disclosure of Interest: None Declared
Background and Objective: Long-acting benzodiazepine is responsible for many adverse effects within the geriatric population such as confusion, falls... The purpose of this study is to assess the impact of a team of pharmacists and doctors on the long-acting benzodiazepine prescription in a rehabilitation department of a French hospital.

Setting and Method: A 2-year prospective study through a computerised physician order entry (CPOE) was undertaken from 01 April 2017 to 31 March 2019. This study was conducted in a 26-bed rehabilitation department of a French Hospital. All the patients aged 75 or over (geriatric patients) were included. Each time a long-acting benzodiazepine was being prescribed, the pharmacist contacted the doctor via the CPOE to either substitute or to discontinue this treatment.

Main outcome measures: The number of patients with long-acting benzodiazepine at the point of admission and at the point of discharge were recorded as well as the number of substitutions of the long-acting benzodiazepine and the associations with short-acting benzodiazepine.

Results: From 01 April 2017 to 31 March 2019, in our rehabilitation department, 362 patients were included. At the point of admission, 7.46% of the patients had a long-acting benzodiazepine in their treatment. Among these patients, 37.03% also had a short-acting benzodiazepine. The main substance was Bromazepam (59.26%) followed by Prazepam (33.33%). During the hospital stay, the doctor, in agreement with the pharmacist, substituted 29.62% of long-acting benzodiazepine, in this geriatric population. However, a long-acting benzodiazepine was initiated for 0.55% of the geriatric patients during their hospital stay. At the point of discharge, only 5.8% of geriatric patients had a long-acting benzodiazepine in their treatment.

Conclusion: This study emphasises the fact that if pharmacists and doctors work closely together, the level of long-acting benzodiazepine between the point of admission and the point of discharge in a geriatric population in a rehabilitation department can decrease. Nevertheless, the ultimate target would be that long-acting benzodiazepine is no longer being prescribed by the time geriatric patients are discharged from a medical department.

Disclosure of Interest: None Declared
The prevalence and severity of potential drug-drug interactions among polypharmacy patients in Jordan
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Background and Objective: Given the rise tide of elderly patients living multiple comorbidities, chronic co-prescription of several drugs (i.e., polypharmacy) is becoming more prevalent in this age group. However, the concomitant use of multiple medications is also associated with undesirable outcomes primarily due to drug-drug interactions (DDIs).

Objective: to assess the prevalence of potential drug-drug interactions (pDDIs) among polypharmacy patients in Jordan using Lexicomp®. Additionally, this study aims to categorize and rate the identified pDDIs according to the interaction risk, severity and reliability.

Setting and Method: A descriptive cross-sectional study was conducted at six different hospitals in Jordan representing different public health sectors in Jordan (ministry of health, royal medical services and university-affiliated hospitals). Polypharmacy patients from outpatient clinics (e.g., cardiology, internal medicine) were identified, recruited and interviewed by clinical pharmacists. pDDIs were assessed using Lexicomp® Mobile App and classified according to interaction risk rating, severity and reliability rating. Furthermore, the prevalence of pDDIs across chronic medical conditions was assessed. All P-values were two-tailed. P-value < 0.05 was considered as significant.

Main outcome measures: The prevalence and severity of pDDIs among polypharmacy patients

Results: A total of 801 patients with polypharmacy were identified. The average number of drugs per patient was 6.6 ± 1.96 with an average of 4.2 ± 3.0 pDDIs per patient. Potential drug-drug interactions were detected in 769 patients (96%) with a total of 3359 interactions. Blood pressure lowering agents were involved in 39.9% of the pDDIs. While diuretics had the major share of interactions among cardiovascular system drugs (16.2%), drugs used in diabetes had the highest share (17.1%). The majority of pDDIs were of “C” risk rating with a moderate interaction severity while 1.6% of pDDIs should have been avoided at first place as the concomitant administration of these agents is contraindicated (i.e., risk rating X). Patient with chronic obstructive pulmonary disease, gout, hearth failure and chronic kidney disease were associated with the highest number of potential drug-drug interactions.

Conclusion: Our study showed that 96% of polypharmacy patients at outpatients’ clinics have at least one potential DDI. Almost half of these interactions involved cardiovascular medications. The majority of these PDDIs have moderate severity with no more than 10% of interactions that require therapy modification.

Disclosure of Interest: None Declared
A survey of physicians' knowledge, attitudes and perceptions about the antimicrobial stewardship programme in a Belgian university hospital with the aim to identify barriers and facilitators of guideline adherence.

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Background and Objective: As part of an antimicrobial stewardship programme (ASP) multiple antimicrobial guidelines were developed at the Ghent University Hospital to ensure appropriate antimicrobial prescribing. An ASP is generally led by infectious diseases physicians, clinical microbiologists or clinical pharmacists. However, it is not clear how the ASP is perceived by the other physicians in the hospital. This study aimed to identify barriers and facilitators of physicians' guideline adherence and to assess their knowledge, attitude and perception of guidelines and the ASP.

Setting and Method: A 31-item web-based survey was developed after a literature search of published surveys in MEDLINE (using the PubMed interface). The developed survey was discussed with the members of the Ghent University Hospital Antibiotic Policy Committee. In addition, an expert in motivational psychology was consulted to increase the validity of the survey. The questionnaire was provided to all 977 physicians (staff members and residents) in a structured electronic survey tool in November 2017. The survey was voluntary, anonymous and open for 12 weeks.

Main outcome measures: The survey included measures of knowledge, perceptions and attitudes of physicians to the locally developed antimicrobial guidelines in terms of its aims, utility and ease of use. Attitudinal and perceptual items about the guidelines and the ASP were measured on 5-point Likert scales and there was an opportunity to make open-ended comments.

Results: The survey was completed by 92 (9.4%) physicians who were mostly female (67.4%) and staff member (59.8%). Seventy-one percent of the respondents prescribe antimicrobial agents at least weekly. The survey showed that 52.8% of the respondents did not use one of our locally developed antimicrobial guidelines the past month, mainly because they did not know of their existence (45.2%) or how to consult them (54.8%). There was enthusiasm to increase the knowledge of the guidelines by incorporating them systematically in the electronic medical record (EMR), either by clinical decision support systems (CDSSs) (73.8%) or in the laboratory report (75.0%). The survey indicated an important support of the local multidisciplinary infectious diseases team with the majority (78.0%) believing it to be extremely valuable for the rational use of antimicrobial agents in our institution.

Conclusion: This study showed that lack of awareness (which affects physicians knowledge of guidelines) and guideline-related barriers (physicians do not know where to consult them) were the most important identified barriers towards a successful implementation of our ASP. A facilitator to overcome these barriers included the incorporation of antimicrobial guidelines into the EMR by using CDSSs.

Disclosure of Interest: None Declared
TDMP002
Early proactive therapeutic drug monitoring program for management of infliximab in inflammatory bowel disease: long-term durability of treatments
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Background and Objective: Therapeutic drug monitoring (TDM) of trough serum concentrations of infliximab (TSIC) has been used mainly in case of loss of response in patients with inflammatory bowel disease (IBD). The aim of this study was to evaluate the long-term durability of infliximab treatments after the implementation of an early proactive TDM (p-TDM) program for dose adjustment.

Setting and Method: A 3-years prospective study, including patients diagnosed with Crohn's disease (CD) or ulcerative colitis (UC) who started treatment with infliximab and with the first TDM at week 14. A historical group of patients served as control. Informed voluntary consent was obtained from all patients. Dose adjustments were based on TSICs and clinical response in the p-TDM and control group, respectively. Demographic, clinical, treatment and reason for treatment failure (TF) data were collected. TSICs were determined by ELISA technique and dose adjustments using Bayesian estimates using a homemade population-based pharmacokinetic model. The probability of TF was analyzed by multivariate Cox survival analysis.

Main outcome measures: TF.

Results: The study group included 81 patients (33 women) diagnosed with CD (n=56) and UC (n=25) with a median (range) of age at start of infliximab of 38 (18-71) years. The control group included 76 (38 women) patients, with an age at the start of 38 (18-66) years, diagnosed with CD (n=61) and CU (n=5). Patients with p-TDM had a lower number of TF (15 vs 31) with an 3-years absolute risk reduction of 23%. Indeed, a reduction in the risk of TF was observed [Hazard ratio: 0.51; 95% confidence interval: 0.27-0.96; p=0.037) in the Cox multivariate analysis. No other variable influenced the TF. Reasons for TF in the control group were inadequate clinical response (22.1%), severe infusion reactions (SIR) (9.0%), adverse reactions (AR) (3.9%), good clinical response (1.3%) and undefined (2.6%). In the p-TDM group, 7.4%, 1.2%, 2.5%, and 4.9% were inadequate clinical response, SIRs, ARs and presence of anti-infliximab antibodies, respectively.

Conclusion: The implementation of the p-TDM program has improved the long-term durability of infliximab treatments in IBD. Although more studies are needed to determine the effectiveness of p-TDM, these results support its use in clinical practice.

Disclosure of Interest: None Declared
Information on interactions with other medicinal products in the Summary of Product Characteristics (SmPC) of 38 centrally approved vaccines

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Background and Objective: The SmPC is the legal document with information on approved vaccines; it is regarded as an essential source of information for healthcare professionals (HCPs). Interactions between vaccines or vaccines and other medicines may impact on the effectiveness and safety of vaccination. The objective of this study is to describe the information on potential drug interactions in the SmPCs of vaccines approved by centralised procedure in the European Union (EU).

Setting and Method: SmPCs of all authorized vaccines in February 2017 (n = 38) were obtained from the website of the European Medicines Agency (EMA). Data from each SmPC were iteratively extracted and categorised by one of the authors into a database with 16 variables; this process was aided by discussion within the research team, to ensure consistency. Data were analysed using SPSS.

Main outcome measures: Cross-referencing between different SmPC sections with drug interaction information; mean number of potential interactions per SmPC; nature of the drug interaction information.

Results: More than one-third of the SmPCs (n=16) had been updated between January and February 2017. Most vaccines in the sample were injectable suspensions (76.3%, n = 29). Thirty vaccines were non-live; among these 22 had adjuvants. About 10% (4/38) of the SmPCs reported information on potential drug interactions on section 4.3 ("Contraindications"). Only one of these four SmPCs had a unidirectional reference from section 4.5 ("Interactions with other medicinal products") to 4.3. In the remainder (n=3) interactions presented on section 4.3 were absent in section 4.5. Most SmPCs (78.9%; n=30) presented drug interaction information on section 4.4. ("Special warnings and precautions for use"); only one had bidirectional referencing to section 4.5. Twenty-seven SmPCs reported co-administration studies, yielding a total of 140 potential drug interactions. On average, each SmPC reported more studies on vaccine-vaccine interactions than vaccine - other medicines (5; SD 4.1 versus 1; SD 0.5). Most SmPCs (86.8%; n=33) reported interactions with immunosuppressors, although not necessarily based on experimental evidence. Only four of the eight SmPCs for live vaccines presented information on the concomitant administration of immunoglobulins.

Conclusion: The usefulness of centrally approved SmPCs of vaccines for clinical decision-making about interactions with other medicines is curtailed by the absence of information and its spread across different sections without cross-referencing. HCPs may have to use other information sources to support decisions in clinical practice.

Disclosure of Interest: None Declared
Potentially Inappropriate Medication Use in Older Patients in 8 Central and Eastern Europe countries participating in the Horizon 2020 EUROAGEISM project: a narrative literature review

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Background and Objective: Potentially Inappropriate Medication (PIM) use is highly prevalent among older adults, but studies on this topic from Central and Eastern Europe (CEECs) are rare. Therefore, the focus of the Horizon 2020 EUROAGEISM FIP7 project (2017-2021) is to describe PIM use in CEECs in comparison to Western Europe and Asian countries (Belgium, Spain, Ireland, India, and the United Arab Emirates). The objective of our study was to summarize existing evidence on PIM use (prevalence and risk factors) in CEECs.

Setting and Method: The last search of SCOPUS and MEDLINE databases was conducted in April 2019. We included full-text articles on the prevalence of PIM use in older adults (60+) in different settings of care in 8 CEECs participating in the Horizon 2020 EUROAGEISM FIP7 project (Albania-(AL), Bulgaria-(BG), Croatia-(HR), Czech Republic-(CZ), Estonia-(EE), Lithuania-(LT), Serbia-(RS) and Slovakia-(SK)). We excluded studies: measuring the prevalence of PIM use as an outcome of the intervention, focusing only on a specific patient group (e.g. palliative patients), disorder or medication class.

Main outcome measures: PIM prevalence and risk factors.

Results: Of 146 records only 14 studies met the inclusion criteria. The majority of studies were published in HR (5) and no studies in BG and EE. Prevalence of PIM use ranged: 20.0%(SK)–68.8%(HR) in acute care, 22.7%(CZ)–62.4%(HR) in outpatient care and 15.7%(CZ)–50.5%(RS) in community-dwelling older adults. Only one study was conducted in long-term care—34.3%(SK). The most frequently identified factor for PIM use was the increasing number of medications (OR range 1.4–68.0).

Conclusion: The lack of evidence on PIM use in CEECs is substantial and contributes to slower development of clinical pharmacy services. Planned large prospective data collection and analyses describing aspects of PIM use and its´ risk factors in different settings of care (Horizon 2020 EUROAGEISM FIP7 project) could stimulate better prescribing and clinical pharmacy development in CEECs.

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Disclosure of Interest: None Declared
The use of z-hypnotics in a cohort of nursing home residents: a five years longitudinal study
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Background and Objective: Sleeping disorders are prevalent health complaints affecting approximately 50% of older adults. Although behavioral therapy is the recommended treatment, sleeping pills are typically used. This study examines the use of z-hypnotics in nursing home residents from 2009 to 2013 in terms of prevalence, type of medicines, dosages, persistence, inappropriate use and factors associated with such use.

Setting and Method: We collected annually point-prevalence drug dispensing data for a cohort of nursing home residents (n=311) for five consecutive years from 2009 to 2013. Z-hypnotic doses >5 mg was considered inappropriate. Logistic regression analysis was used to assess the association of factors (sex, age, number of medicines) with inappropriate use of z-hypnotics.

Main outcome measures: Proportion of residents taking the different z-hypnotics, persistence of use over time, prevalence of residents with inappropriate use, and factors associated with inappropriate use of z-hypnotics.

Results: The mean use of prescribed medicines (SD) decreased from 7.0 (3.1) medicines in 2009 to 5.8 (2.9) medicines in 2013. Totally, 103 residents (33.1%) used z-hypnotics in one or more years during the period; 90.3% used zopiclone only vs. 5.8% used zolpidem only. Almost 1/10 of nursing residents were prescribed z-hypnotics daily. The average dose of zopiclone decreased from 6.47 mg to 6.00 mg (p=0.110) for women and increased from 6.25 mg to 6.38 mg (p=0.857) for men. The prevalence of inappropriate use (doses> 5mg) was 51.5%, while the proportion of residents receiving z-hypnotics in the five year period dropped from 24.1% to 18.3%. None of the investigated factors in the logistic analysis were associated with inappropriate use of z-hypnotics.

Conclusion: Zopiclone is by far the most prescribed z-hypnotic. The total yearly prevalence and the average prescribed dose decreased during the study period. For those who were prescribed z-hypnotics, 51.5% received doses >5 mg, which is considered inappropriate in the older population. Non-pharmacological intervention to treat sleep disorder for 1/3 of the residents should be considered to prevent side effects and risk of fall.

Disclosure of Interest: None Declared
Analysis of drug-related problems in patients after kidney transplantation
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Background and Objective: Patients after kidney transplantation (KTx) are regularly monitored by nephrologist and other specialists, depending on the comorbidities. This, together with polypharmacy and long-term immunosuppression, may increase the risk of drug-related problems (DRPs). The aim of this study was to analyze the prevalence of DRPs in KTx outpatients by pharmacists and to determine the riskiest areas of their pharmacotherapy.

Setting and Method: This cross-sectional study was conducted at the University Hospital Hradec Kralove in the Czech Republic. We included adult outpatients at least 3 weeks after KTx who were on maintenance immunosuppression. Data were collected during one-year period (3/2016 – 3/2017) from electronic medical documentation. Personal, family, occupational, allergic and drug history, including selected physical and laboratory parameters, were recorded in a pre-created electronic database. DRPs were identified through the review of pharmacotherapy and classified according to the modified Pharmaceutical Care Network Europe classification V5.01 and their significance was assessed by several pharmacists. The evaluation of DRPs was followed by panel discussion with the nephrologists at the hospital. The data was evaluated by descriptive statistics.

Main outcome measures: Frequency, type and seriousness of DRPs.

Results: We enrolled 211 patients (123 men; 55.8 ± 12.41 years old), of the total 412 outpatients at the clinic. Patients were 7.4 ± 5.75 years after KTx and used in average 11.3 ± 2.96 drugs per day. We found 668 DRPs, which was equivalent to 3 DRPs per patient. A number of 43 DRPs concerned immunosuppression. Most frequent DRPs were missing supplementation of calcium (70 cases) and vitamin D (67 cases), no clear indication for aspirin use (44 cases) and gastroprotection (34 cases). Drug contraindication was found in 15 cases, mainly due to severe renal impairment (e.g. rosuvastatin, nitrofurantoin, moxonidine) or drug-drug interaction (e.g. cyclosporine and simvastatin/lercanidipine). Obvious duplicity was found in 5 cases (e.g. two betablockers).

Conclusion: DRPs were common in KTx outpatients, the most prone area was the long-term pharmacotherapy. Review of medical documentation conducted by pharmacists represents one of the tools how to manage those DRPs.

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PT004
Which therapeutic strategy is most effective for relapse in schizophrenia?
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Background and Objective: Schizophrenia is a chronic psychiatric disorder during whom most of patients experiencing multiple relapses. Relapses prevention is a major concern in patient’s care because of serious repercussions of relapses including worsening symptoms, cognitive deterioration and reduced quality of life. In order to evaluate the effectiveness of therapeutic strategies set up after a relapse, a retrospective observational study was conducted in our public mental health institution.

Setting and Method: Every patient with schizophrenia hospitalized in 2016 for relapse were included. Patient medical records and prescription software were used to collect different parameters and to highlight the therapeutic strategy implemented during the hospitalization. Effectiveness of the strategies was assessed via the relapse caused re-hospitalization rate within one year of discharge (patients with relapse caused hospitalizations/total of patients). Links between the variables collected were studied by ANOVA or Chi-squared test performed with R software.

Main outcome measures: Relapse caused re-hospitalization rate

Results: A total of 102 patients were included in the study (sex ratio M / W: 3.4, mean age: 31 +/- 4.9 years). The cause of relapse was mainly non-adherence to antipsychotic medication (56%), drug inefficiency (19%) or substance abuse (14%). At admission, 87% of patients were treated with antipsychotic monotherapy (90% with a second-generation antipsychotic), 8% with combination therapy, and 6% without any treatment. Eighty percent of the patients were treated orally and 20% by long-acting antipsychotics. Three types of strategies have been identified: maintenance of treatment (same molecule, same dosage and same route of administration, n = 26); optimization (same molecule, change in dosage or route, n = 37); change of molecule (n = 39). No link was found between the cause of relapse and the chosen strategy. Thirty-six patients (35%) were re-hospitalized for relapse within one year of discharge. No statistically significant association was found between the strategy implemented, the class of antipsychotic, the route of administration and the occurrence of a re-hospitalization during last year. Relapsed patients were those who had the most history of relapses.

Conclusion: Non adherence to treatment is a major problem in schizophrenia. The lack of association between antipsychotic management and relapse occurrence shows significance of non-pharmacological therapies such as therapeutic patient education or psychoeducation. Each treatment has to be individualized (efficiency, tolerance), started as early as possible, and education practices has to be establish to improve treatment adherence.

Disclosure of Interest: None Declared
POSTER DISCUSSION FORM III

CP-PC006
Majority of the general public prefers convenience over cognitive pharmaceutical services in community pharmacy practice
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Background and Objective: Background: Community pharmacy as a profession is shifting its focus from traditional, product focused roles, such as compounding and dispensing, to the provision of care related services. Previous research has shown that community pharmacists predominantly want to devote their capacity to cognitive pharmaceutical (CPS) services. However, the preferences that the general public may have in this regard, are currently less understood.

Aim: To study the preferences of the general public on the type of CPS related services provided by the community pharmacy. Secondly, we aimed to assess the perceived importance of the availability of these different services.

Setting and Method: Method: An online survey was conducted among 1500 members of the Dutch Health Care Consumer Panel.

Main outcome measures: The survey contained questions regarding preferences in convenience (e.g. short waiting times) and CPS related services (e.g. extensive information on medicines) provided by community pharmacies, the relative importance of the different type of services and conceptions regarding the pharmacist. Descriptive statistics and linear regression analysis were performed to investigate the relationship between preferences and participant characteristics.

Results: Results: A total of 799 panel members responded (53%) to the survey of which 714 completed the complete set of questions regarding preferences. The majority of participants prefer convenience related services over CPS related services (66.7% versus 27.2%). However, they do consider it important that care related services are provided and perceive the pharmacist predominantly as a healthcare provider (73.8%). Participants who prefer care related services over convenience related services are generally older, have more concurrent diseases and use more medicines.

Conclusion: Conclusion: The preference of the general public for convenience related services within community pharmacy practice is in contrast with the current development of the pharmacy profession. However, results also indicate that CPS related services are perceived as important, especially for patients who use more medicines. This may indicate that community pharmacists should make sure that dispensing is organized efficiently to address convenience preferences directly, but should also focus on the provision of CPS related services, as these are considered important by the general public.

Disclosure of Interest: None Declared
The patient's perspective on a Combiconsultation with the community pharmacist
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Background and Objective: The Combiconsultation is a consultation with the community pharmacist for patients with diabetes, COPD and/or CVRM, after or before the annual- or quarterly consultation with the practice nurse or general practitioner. This Combiconsultation is a new concept and it is unknown how patients experience this consultation. The aim of this study is to get insight into the patients’ experiences regarding the Combiconsultation.

Setting and Method: Patients who had a Combiconsultation were invited to focus groups. The focus groups were recorded, transcribed ad verbatim and thematically analysed using NVivo.

Main outcome measures: Qualitative evaluation of the impact of the Combiconsultation by the community pharmacist via focus groups with the participating patients.

Results: Four focus groups with in total 23 patients were conducted by four researchers. The analysis showed that patients’ opinions about the Combiconsultation were influenced by four topics: content of the consultation, organisation, professionalism of the health care providers, and their reason for attending the Combiconsultation. Patients were positive about the content of the conversation, because the pharmacist gave advice about their medication and answered their questions. Patients did not find it necessary for the consultations to be consecutive. Most patients found the pharmacist was easily approachable. Patients were of the opinion that the pharmacist has a different knowledge field than the general practitioner and therefore their roles were seen as complementary.

Conclusion: Patients were positive about the Combiconsultation because the pharmacist gave advice about their medication and answered their questions. The patients experienced no added value from the consecutiveness of the consultations.

Disclosure of Interest: None Declared
Prioritization of patients eligible for medication reconciliation in gerontopsychiatry: are there predictive factors for unintentional medication discrepancies?

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Background and Objective: Since 2017, medication reconciliation (MR) is performed in our psychiatric hospital in an addiction and in a gerontopsychiatry units. As our staffing is limited, we are looking for relevant criteria to target patients to reconcile in order to be more effective and thus expand reconciliation to other care units. The objective is to assess whether there are predictive factors of unintentional medication discrepancies (UMD) in order to select patients to be reconciled, specifically to our hospital.

Setting and Method: This was a one-year retrospective, single-center study performed in an addiction unit of a psychiatric hospital in 2018. All patients hospitalized during the study were included. Different parameters have been recorded: age, gender, time since diagnosis, number of hospitalization during the year before hospitalization, date of MR (month), number of UMD and the therapeutic class. We focused our study on parameters easily collectable at admission. The parameters that can cause UMD have been tested with Chi-square test for qualitative parameters (gender and month of MR) and with Student test for quantitative parameters (age range, time since diagnosis and number of hospitalization). Then the parameters that could explain the number of UMD in patients with UMD were tested using an ANOVA (R Core Project software).

Main outcome measures: Unintentional Medication Discrepancies (UMD)

Results: A total of 206 patients (mean age: 42.5 +/- 11.2 years) were included in the study and 223 MR were performed. Seventeen percent of MR (38 MR) have shown at least one UMD. Fifty-six UMD were highlighted with 41% of psychotropic, 20% of pneumological, 14% of cardiology, 4% of gastrological and dermatological drugs. In our addiction unit, none of the tested parameters are statistically significant for the apparition of UMD. No age group showed significant difference between patients with and without UMD after the MR. In addition, ANOVA test showed that none of the parameters influence the number of UMD.

Conclusion: Our hospital specialization explains the predominance of psychotropic drugs in UMD. Although 59% of UMD concerns somatic treatments, given the diversity of somatic disorders, we can’t identify an accurate and reproducible factor to predict UMD. Unfortunately, the statistical analysis doesn’t allow us to determine an easy-to-follow parameter, easily to collect at patient admission, and reliable with a high probability to highlight UMD. The best way to improve and extend reconciliation activity is therefore to increase pharmacy staffing, which seems to be a wishful thinking, or more realistically, to reorganize pharmacy activity in favor of MR which must be done with carefulness considering benefit/risk balance.

Disclosure of Interest: None Declared
Extended Medication Plan for Patients with ORal Tumortherty (EMPORT)


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Background and Objective: Due to the increasing number of oral anticancer agents the responsibility for the management of oncologic therapies shifts more towards the patient. In 2016 a national medication plan (Bundeseinheitlicher Medikationsplan, BMP) was introduced in Germany and has the potential to assist patients in the management of their therapy and to inform all healthcare providers about the medication.

The aim of this project is to identify relevant information on oral anticancer drugs that should be added to the BMP in order to increase its value for cancer patients.

Setting and Method: To evaluate which information should be added to the BMP, we conducted a needs assessment among oncologists, specialized oncology pharmacists and cancer patients. Oncologists were invited to participate by the Scientific Institute of Office-Based Hematologists and Oncologists (WINHO) and the Central European Society for Anticancer Drug Research (CESAR), oncology pharmacists by the German Society of Oncology Pharmacy (DGOP). Patients were recruited in the University Hospital Cologne.

Based on the results we developed an oncological extension to the BMP. To detect its feasibility in routine, it was piloted in 10 patients.

Main outcome measures: Feasibility

Results: 130 pharmacists, 167 oncologists and 50 patients participated in the needs assessment. Information that should be added to the BMP is amongst others how to take the drug (oncologists: 87.8%, pharmacists: 97.0%), therapy regimens (oncologists: 75.5%, pharmacists 67.0%), symptoms when the patients need to see a doctor (oncologists: 49.0%, pharmacists: 82.0%), and how to proceed with missed doses (oncologists: 42.18%, pharmacists: 74.0%). Most important for patients is the interaction of their anticancer drugs with OTC medicines (83.0%).

The 10 patients recruited in the pilot phase were treated with ruxolitinib (5), lenalidomide (4) or lenalidomide/ixazomib (1). In total, the BMPs of 6 patients have been updated by pharmacists (3) and by the patients themselves (3). Some updates have been made on additional forms e.g. notepads written by patients (3), doctor’s letters (2) or other medication plans (1).

Conclusion: The results suggest that the extended BMP is a useful tool to provide patients with relevant information on their oral anticancer therapy. It will be further optimized based on patient interviews and process mapping.

Disclosure of Interest: None Declared
Patients’ views on self-administration of medication during hospitalisation: a mixed-method study
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Background and Objective: Self-administration of medication by patients during hospitalisation could positively affect medication safety, medication adherence, patients’ understanding about their medication, and medication waste. Successful implementation of self-administration of medication strongly depends on patients’ willingness thereof. This study aimed to identify the views of patients towards self-administration of medication during hospitalisation and to assess patients’ willingness thereof.

Setting and Method: A mixed-method study was conducted among adult hospitalised patients in four Dutch hospitals. Firstly, qualitative semi-structured interviews were conducted with patients to identify their views towards self-administration of medication, including (dis)advantages thereof and preconditions that should be met. Interview transcripts were subjected to thematic-content analysis. Thereafter, these outcomes were used to construct a quantitative questionnaire that was distributed among hospitalised patients. Patients were asked to report their willingness towards self-administration of medication and socio-demographic characteristics. Data was descriptively analysed.

Main outcome measures: Outcomes included the views of patients and the proportion of patients that was willing to perform self-administration of medication.

Results: Nineteen hospitalised patients (mean [SD] age 61.0 [13.4] years; 52.6% male) were interviewed. Most patients had a positive view towards self-administration of medication during hospitalisation. Reported advantages included recognition of medication, increased knowledge on medication, awareness about medication management, autonomy, trust in pharmacotherapy, time saved by nurses, and medication waste reduction. Few disadvantages were identified, which included safety concerns when patients are not capable of self-administration and lower medication recognition by nurses. Preconditions that should be met were assessing patient’s eligibility for self-administration (based on health condition), having a choice to participate in self-administration of medication, and monitoring of medication intake by nurses.

A total of 210 patients (mean [SD] age 66.7 [13.2] years; 54.8% male) participated in the survey. Of these, 116 (55.2%) were willing to self-administer medication. Patients’ preferences were medication administration by nurse (49.5%), themselves (39.5%) and no preference (11.0%) respectively.

Conclusion: Patients tend to have positive views towards self-administration of medication when several preconditions are met. When theoretically proposed to self-administer medication during hospitalisation, around half of patients is willing.

Disclosure of Interest: None Declared
Evaluation of the Quality of Life, Attitudes and Perceptions in Patients with Benign Prostatic Hyperplasia

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Background and Objective: The aim of our study is the evaluation of quality of life, illness perception, attitude toward medication of patients with benign prostatic hyperplasia in the urology outpatient department.

Setting and Method: One hundred patients with benign prostatic hyperplasia over 40 years old constituted the study group that is conducted in an outpatient urology clinic of a university hospital in Istanbul. All patients were using at least one medication for BPH with a period of at least last 4 weeks. The following scales were used: 1. Morisky Green Levine Medication Adherence Scale to measure medication adherence, 2. Benign Prostatic Hyperplasia-Quality of Life Questionnaire to degree disease specific quality of life, 3. Brief Illness Perception Questionnaire (IPQ) and 4. Beliefs about Medicines Questionnaire (BMQ-T) to measure patients’ perceptions of illness, treatment beliefs, and moods.

Main outcome measures: The main used measures were to evaluate patient adherence, Benign Prostatic Hyperplasia related quality of life, beliefs of patients in the prescribed medication and the perceptions of the patients. after that was the measurement of the effects of these factors over the adherence and the quality of life

Results: The mean age of the participant was 64.61±8.97 in the present study. Of them, 26% defined as polypharmacy. Out of 100 patients, 64% were adherent to their medication. The mean score of quality of life was 18.93±9.91 (min 2, max 44). The mean scores of BMQ-T for the necessity, concerns, harm, and overuse domains were 2.85±0.60, 3.39±0.765, 2.96±0.58, and 2.62±0.588, respectively. The mean score of brief illness perception was 39.26±13.71. There was significant correlation between the number of medication used and the score of specific concerns-BMQ-T (p<0.001 r=0.369). However, there was negative correlation between the number of medication used and the score of general overuse-BMQ-T (p=0.01 r=-0.318), strong significant correlation between BPH specific quality of life with IPQ (p<0.001 r=0.776).

Conclusion: According to the result we obtained from the study most of the patients were not aware about the causes, time line and the role of their medications in their symptoms improvement, the patients with BPH have moderate scores for BPH quality of life, brief illness perception and beliefs about medicines. Pharmacists could play important role in patient education to improve patients’ knowledge and perception regarding illness and medication in patients with BPH.

Disclosure of Interest: None Declared
Background and Objective: Medication is frequently being wasted, for example after patient’s discharge from hospital. This wastage has undesirable economic and environmental consequences. Medication waste may be the result of the current medication process in hospitals. Continuation of Patient’s Own Medication (POM) during hospitalisation may reduce medication waste and also decrease time spend by hospital staff on the medication process. This study aimed to investigate the economical impact of POM during hospitalisation on medication waste and hospital staff’s time spend.

Setting and Method: This prospective pre-post intervention study was conducted at seven wards, including surgical and medical wards. Data were collected for two months at a time. Medication waste, defined as value (€) of wasted medication per hundred patients, was measured by identifying all disposed medication. Time spend on medication process activities by hospital staff was measured ten times per ward per staff member. Total mean time spend on the medication process (per staff member) per hundred patients was calculated for the pre- and post-implementation medication process.

Main outcome measures: The primary outcome of the study was the mean economic value (€) of wasted medication per hundred patients.

Results: The mean value of wasted medication was €4,885 versus €2,866 per hundred patients, during pre- and post-implementation of POM respectively; a decrease of 41.3%. The mean time spend on the medication process increased, namely 8196.7 versus 8275.0 minutes per hundred patients. A change in division of medication process activities was observed, as physicians and nurses spend less time and pharmacy practitioners have a greater role in the medication process. When time effort was correlated to salary €1,731 could be saved per hundred patients.

Conclusion: This study shows that POM implementation may have a positive economic impact, as the value of medication wasted decreases and staff deployment is more efficient.

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Analysis of pharmacotherapy as one of the fall-related risk factors and the role of clinical pharmacist in risk minimization

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Background and Objective: Falls have become a major burden in healthcare facilities worldwide. The aim was to analyze the effects of pharmacotherapy on falls in hospitalized patients, focusing on the relevance of clinical pharmacist evaluation of fall risk-increasing drugs (FRIDs) in the context of physician assessment.

Setting and Method: A prospective study of inpatients with falls was performed in 2017 retrieving data from 16 wards of 4 hospitals in the Czech Republic. Patient and fall-related data was collected from medical documentation and inserted in an interactive database, which enabled the evaluation of the overall effect of pharmacotherapy on falls by physicians and clinical pharmacists using 4-item Likert Scale (1-yes/4-no). Clinical pharmacists detected population and individual FRIDs for each patient as well as generated recommendations aimed at minimizing the risk of FRIDs sent to treating physicians via the database. Univariate and multivariate correlations were performed with a significance level of p <0.05.

Main outcome measures: Frequency of population and individual FRIDs and drug-related causes of falls from the view of clinical pharmacists.

Results: A total of 280 falls were included (51.1% females; mean age 77.0±12 years; min 27, max 95). Patients used 1,134 population FRIDs (mean of 4.1±2.4 per fall), of which 498 FRIDs were assessed as individually risky (1.8±1.7). 60% of falls were associated with population FRIDs from “N” and “C” groups according to the first level of ATC classification. Incidence of falls decreased quarterly (p<0.001). Clinical pharmacists were more likely to attribute the fall-related risk to the use of drugs, compared to the physicians’ opinion (p<0.001). The mean score of pharmacists and physicians was 2.4±0.8 and 3.0±0.8, respectively. An increase in the number of drugs used by patients raised the suspicion of the drug-related cause of falls in both professionals (p<0.05).

Conclusion: Clinical pharmacists predicted more frequently the drug-related cause of fall, while decreasing number of falls during the study period confirmed the importance of collaboration between physicians and pharmacists in fall-related risk minimization in hospital settings.

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Medication information needs of patients visiting the outpatient hospital department: a mixed-method study
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Background and Objective: Providing adequate medication information to patients is important for optimal medication intake, disease management, and can improve shared-decision making. Therefore, it is important that medication information meets the needs of patients. Few studies have identified medication information needs of patients visiting an outpatient clinic. This study aimed to identify the medication information needs and experiences of patients visiting the outpatient hospital department.

Setting and Method: A mixed-method study was conducted among adult patients who received prescription medication and visited the cardiology, oncology or rheumatology department in five Dutch hospitals. Focus groups and individual interviews with patients were held. Patients were asked about their experience with the current medication information provision, their information needs and possibilities for improvement. Interviews were subjected to thematic content analysis. Qualitative outcomes were used to construct a questionnaire that included quantitative items on patients’ experiences and needs with medication information and the Satisfaction with Information about Medicines Scale. Survey data were descriptively analysed.

Main outcome measures: Main measures include medication information needs of patients that should be fulfilled, and patients’ experience and satisfaction with the current medication information.

Results: In total, 40 (20 cardiology, 15 rheumatology and 9 oncology) patients were interviewed. Three main themes regarding patients’ information needs that should be fulfilled were identified, including content (adverse events, medication use, long-term effects, duration of therapy, and indication), channel (verbal, written, and digital), and quality (reliability, accessibility, comprehensiveness, and information moment). Patients addressed that information should be tailored to their individual needs. In the survey, 316 (119 cardiology, 146 rheumatology, and 51 oncology) patients completed the questionnaire. In general, patients were sufficiently informed and information was of satisfactory quality. Patients had extensive needs for all medication information domains. Most patients reported that information should be up to date, provided through multiple channels, with 80% desiring information from the healthcare provider, and should be continuously accessible. No substantial differences among the specific diseases were observed.

Conclusion: Patients have high needs for medication information and there overall experience with the current provision was sufficient. For optimal medication therapy management, information should be tailored to the individual needs of patients.

Disclosure of Interest: None Declared
The Attitude and Knowledge of Patients towards Medication Adherence and Wastage
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Background and Objective: The aim of this study was to evaluate current disposal practices on unused and/or out of date medications and to identify the possible relationship with attitude of patients including medication adherence, the medication consumption habits, and environmental awareness.

Setting and Method: This descriptive study was conducted in June-December 2018 with patients aged over 18 years old who came to the pharmacy for any reason, using at least one medication over a month.

Main outcome measures: Adherence to taking and refilling medications was evaluated with The Turkish version of the Adherence to Refills and Medications Scale (ARMS-7) and medication consumption habits and environmental awareness of patients were evaluated by a structured questionnaire.

Results: 107 (65 female) individuals were included in this study. The mean age was calculated as 59.53±13.67. Of them, 67.3% graduated from at least 8-year education. The mean number of drugs used were 4.29±3.37 and 35.5% of the participants had polypharmacy. The mean of the total score of Turkish Adherence to Refills and Medications Scale was 9.83±3.06. Among participants, the most common medications that were storage at home was analgesics and the most favorable medication storage places were kitchen cupboards, dining room and bedrooms. The most preferred methods for disposal “take it to the pharmacy” (43.0%) and “throw into a trash”(28.0%). Majority of individuals stated that the reason for unused medication is quitting medication taking with advice of physician. Although, 86.0% of them expressed that they were aware of the medication wastage had possible harms to human health and environment, only 42 participants had been informed about that. Twenty-seven participants declared that they have been informed about potential harm of medication wastage to environment by pharmacists.

Conclusion: Consequently, patients were adherent to refills and medications. Although they were aware of the harmfulness of medication wastage, less than half of the patients were informed about this issue. If it is considering that pharmacists informed the most of these patients, raising this awareness is one of the responsibilities of the pharmacist.

Disclosure of Interest: None Declared
PT005
Treatment and challenges with antiepileptic drugs in patients with juvenile myoclonic epilepsy

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Background and Objective: Patients with juvenile myoclonic epilepsy (JME) may have an uncontrolled seizure situation and challenges regarding use and adherence to medication. The purpose of this study was to investigate use of antiepileptic drugs (AEDs), patients' view of adherence and treatment challenges in patients with JME.

Setting and Method: A questionnaire about use and adherence of AEDs and quality of life was given to patients with JME recruited from Drammen Hospital, Norway. Additional clinical interviews were used in a mixed method approach. Data about AEDs were confirmed from medical records (2007-2018).

Main outcome measures: Answers from questionnaires and medical records: Seizure situation, use of antiepileptic drugs and qualitative answers of challenges with the treatment.

Results: Ninety patients with a defined JME diagnosis, 54/36 women/men aged 14-39 (mean 25) years were included. Only 29 (33%) were seizure free. Within the last year, 21% had a generalized tonic-clonic seizure, and 68% had myoclonic jerks. There were 76 (84%) who used AEDs, 78% used monotherapy, most commonly valproate (33), lamotrigine (27) and levetiracetam (21). One third replied that they forgot to take their medication on time. Fourteen percent sometimes/often deliberately deviated from the AED dosing schedule prescribed by their physician. The majority of patients reported a good quality of life (76%). No significant correlations between commonly used drugs, poor adherence, quality of life score and seizure freedom were demonstrated. Half of the patients measured serum concentrations every year and two thirds thought that this was of importance to them. Qualitative interviews by neurologist and clinical pharmacist elucidated treatment challenges in JME regarding adverse effect burden, adherence and daily life.

Conclusion: In patients with JME only one third were seizure free, in spite of the use of AEDs in the majority. Challenges include persisting seizures, polypharmacy with risks of interactions, use of valproate in women, and variable adherence. These findings point to a need for closer follow-up in patients with JME where a multi-professional team could elucidate treatment challenges.

Disclosure of Interest: None Declared
Background and Objective: Hypertension is the worldwide leading global burden of disease risk factor. In Africa, adults with raised blood pressure (BP) has alarmingly increased from 0.6 to 1.1 billion between 1975 and 2015. BP-lowering medicines are cornerstone of cardiovascular risk reduction. Large-scale data on use of anti-hypertensives drugs in Sub-Saharan Africa are scarce. Our study aims to describe antihypertensive drugs strategies in Africa.

Setting and Method: We conducted a cross-sectional survey in urban clinics during outpatient consultation specialized in hypertension cardiology departments of 29 medical centers from 17 cities across 12 African countries (Benin, Cameroon, Congo (Brazzaville), Dem Rep of Congo, Gabon, Guinea, Ivory Coast, Mauritania, Mozambique, Niger, Senegal, Togo).

Main outcome measures: Data were collected on demographics, treatment and standardized BP measures were made among the hypertensive patients attending the clinics. Country income was retrieved from the World Bank database. All analyses were performed through scripts developed in the R software (3.5.1-2018).

Results: A total of 2198 hypertensive patients (58±12 years; 40% male) were included. Among whom 2123 (96.6%) had at least one antihypertensive drug. Overall, 31% (n=653) received monotherapy and calcium-channel blockers (50%) was the most common monotherapy prescribed follow by renin-angiotensin system (RAS) blockers (19%). Two-drug strategies were prescribed for 927 patients (44%). Diuretics and RAS blockers was the combination most frequently prescribed (42%). A combination of three, four, five drugs was prescribed for 20% (n=425), 5% (n=107), 0.4% (n=11) patients respectively. The proportion of drugs strategies differed significantly according to countries (p<0.001), monotherapy ranged from 12.7% in Niger to 47.1% in DR of the Congo. Furthermore, we observed a significantly difference of strategies between low (LIC) and middle income countries (MIC) (55.3% and 44.7% of monotherapy respectively (p<0.001).

Conclusion: Our study described antihypertensive drugs use across 12 sub-Saharan countries, and identified disparities specific to the income context. Inequity in access to drugs combination is a serious barrier to tackle the burden of hypertension in Africa.

Disclosure of Interest: None Declared
Prevalence and factors affecting the use of complementary and alternative medicine (CAM) amongst adults with diabetes: A systematic review
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Background and Objective: This study aims to systematically review the prevalence of use and factors affecting the use of CAM amongst adults with diabetes.

Design: Nine databases were searched for studies conducted between the year 2009 to current (last 10 years) using search terms that were gathered based on House of Lords Committee on Science and Technology Sixth Report of 2000 and the US National Centre for Complementary and Integrative Health. Included participants were “Adult diabetic patients 18 years of age and older, Health care professionals involved in the care of diabetic patients and carers and/or families of diabetic patients. Outcomes of the study relate to prevalence of adult diabetic patients using CAM for the management of diabetes in conjunction with conventional treatments and/ or as a replacement for the conventional treatments. In addition, the review is set to gather information available regarding types of CAM being used by diabetic patients, patients’ perspectives on the use of CAM in diabetes including their knowledge, beliefs, attitudes and factors associated with the use of CAM, health professionals’ knowledge and attitude toward their diabetic patients’ use of CAM, carers’ and/or families’ of diabetic patients perspectives on CAM use for the patients and factors that affect the use of CAM by diabetic patients.

Results: Forty-one studies were included from 29 countries which met the inclusion criteria. 38 studies were cross-sectional studies. Two studies were qualitative in depth interviews and one study was based on data collected from a previous cohort study. The data is being extracted at the moment and final results will be available by the symposium date.

Conclusion: This systematic review will enable health care professionals to consider patients’ perspectives on the use of CAM when counselling them to provide advice, support adherence and identify the risks of interactions and adverse effects when CAMs are used in conjunction with prescribed treatments. The review will help develop diabetes management guidelines while taking into consideration the use of CAM by diabetic patients and will serve as an evidence based platform for future research.

Disclosure of Interest: None Declared
Background and Objective: Heart failure (HF) is characterised by a reduced cardiac ability to pump blood in adequate quantities. Drugs used against HF are mainly ACE-inhibitors and beta-blockers. Since February 2016, the new sacubitril/valsartan association has been authorized. The objective is to analyse the sacubitril/valsartan prescriptions of an Italian district and to compare them with national and regional trends. Parameters like tolerability, therapy interruption, drug interactions and previous therapies are being evaluated. Finally, prescriptive evolution is compared to ESC guidelines 2016.

Setting and Method: Sacubitril/valsartan prescriptions from April 2017 to September 2018 have been analysed and compared with national and regional trends. Data are imported into Microsoft Access® and processed through (processed through) queries; Microsoft Excel® is used to draw graphics.

Main outcome measures: The use of the Sacubitril/valsartan association is steadily increasing, showing that it is often chosen for HF care. In the studied district, 202 patients have been treated (77% males; mean age: 70 years old). Therapies required specialists’ prescriptions and they have been carried on by general practitioners: the dosage increase for 38% of patients and its reduction for 1% of patients is a safety and tolerability indication. Patients exposed to potentially interacting drugs count up to 13%: those drugs include atorvastatin (it can increase systemic levels), ACE-inhibitors (potential angioedema risk) and lithium carbonate (possible concentration increase). 163 patients started the association therapy only after ACE-inhibitor or ARB subministration at least for six months, as indicated in ESC guidelines.

Results: Patients exposed to potentially interacting drugs count up to 13%: those drugs include atorvastatin (it can increase systemic levels), ACE-inhibitors (potential angioedema risk) and lithium carbonate (possible concentration increase). 163 patients started the association therapy only after ACE-inhibitor or ARB subministration at least for six months, as indicated in ESC guidelines.

Conclusion: The use of the Sacubitril/valsartan association have increased and it often concerns frail and polypathological elderly patients. Over-prescription and prescription cascade should be avoided. It is important for the pharmacist to evaluate prescriptive trends, concomitant therapies, approved indications and to make sure that the guidelines are respected. Moreover, hospital pharmacists and general practitioners should collaborate to share updates, they should communicate about inappropriate prescriptions and interact in order to protect patients and optimize the use of resources.

Disclosure of Interest: None Declared
Background and Objective: Not all children with eczema use their medicines as prescribed. Non-adherence may be the result of corticophobia or incorrect knowledge about treatment. Pharmacy staff has an important role to inform (parents of) children with eczema on the appropriate use of topical corticosteroids and emollients. However, we previously showed that pharmacy staff themselves also expressed concerns towards use of topical steroids. This may lead to non-adherence at the patient level. We aimed to implement an intervention for community pharmacy staff to improve knowledge and stimulate positive perceptions towards use of topical steroids in order to optimize patient counseling and support good medication use by the patient.

Setting and Method: We developed an intervention consisting of a knowledge test, background information about eczema and its treatment and materials to be used during patient counseling. The intervention was implemented in 10 Dutch community pharmacies. At baseline and follow-up (after 3 months), pharmacy staff filled out a questionnaire.

Main outcome measures: The validated TOPICOP questionnaire was used to assess steroidphobia (beliefs and worries). Higher scores indicate a more negative attitude. Knowledge was assessed using the Royal Dutch Pharmacy Association knowledge test for eczema, with sum scores ranging between 0 and 10.

Results: A total of 32 pharmacy staff members participated, 19 of them also filled out the follow-up questionnaire. There was a decrease in both (negative)beliefs (38.4% at baseline vs. 31.6% at follow-up) and worries towards use of topical steroids (36.1% at baseline vs. 19.1% at follow-up). Knowledge of pharmacy staff increased from 7.3± to 8.4±. All participating pharmacy staff members mentioned the information in the toolbox to be useful and clear. In particular the materials for patient education were appreciated. In addition, most of them indicated that they have been able to improve the patient's treatment by giving advice on proper use of medication, but also practical tips such as advice on (limited) bathing.

Conclusion: Knowledge and opinions of pharmacy staff regarding the treatment of eczema in children can be improved by implementation of a relatively simple intervention. This will lead to improved patient counseling with better adherence rates on the patient level as a result.

Disclosure of Interest: None Declared
Evaluation of Patient Education Satisfaction and Treatment Outcome in Hypertensive Patients in Pharmacy

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Background and Objective: The incidence of hypertension is increasing in all over the world. The prevalence of hypertension was found to be 33.7% in a study in Turkey. The rational drug use in patients with hypertension reduces the total costs of treatment by decreasing the complications associated with hypertension. Patient education is very important in order to ensure the rational drug use in hypertension. Although the appropriate treatment is chosen, the desired treatment goals cannot be achieved if the patient does not comply with this treatment.

Setting and Method: This prospective study was conducted in a total of 100 hypertensive patients who were randomly selected from patients coming to the pharmacy with prescription. Patient information was collected by the pharmacist via the questionnaire of rational drug use in the treatment of hypertension.

Main outcome measures: The purpose of the study is to measure patient's satisfaction of patient education and treatment outcome.

Results: Patients with high BMI were found to consume less vegetables (R: 0.271, p<0.01). Patients with high HDL levels were found to consume more vegetables (R: 0.199, p<0.05). LDL levels were found to be lower in patients with high education level (R: -0.200, p<0.05). A positive correlation was found between HDL/LDL levels and patient age (R: HDL 0.242, p<0.05, R: LDL 0.270, p<0.01). Patients with high LDL levels consulted with the pharmacists mostly than the doctors for a drug-related problem and they were more satisfied with the pharmacist's patient education (R: 0.234, p<0.05, R: 0.211, p<0.05). It was found that patients who used multiple drugs for hypertension had more frequent blood pressure measurements (R: 0.209, p<0.05). Also, it was found that elderly patients and patients with chronic diseases consulted pharmacists mostly for drug-related problems (R: 0.226, p<0.05, R: 0.293, p<0.01).

Conclusion: Non-pharmacological approaches may positively affect the treatment outcome of hypertension. The contribution of pharmacists is beneficial for rational drug use to increase patient compliance in hypertensive patients.

Disclosure of Interest: None Declared
Evaluation of parents' knowledge and attitude about antipyretics
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Background and Objective: By spreading conjugate vaccines, bacterial and viral infections which causes fever have been decreased recently. However, high fever still ranks number one reason among children who refer to health care facilities. In this study, we aimed to evaluate the knowledge and attitudes of the parents about antipyretic treatment.

Setting and Method: The study was conducted with the parents who had children between 0-12 years of age and applied to the pharmacy with at least one prescribed antipyretic drug. Knowledge levels of the parents about fever and antipyretics were evaluated with the questionnaire consisted of 15 questions. The data was compiled in a community pharmacy located in Kızıltepe, Mardin, Turkey. The study was conducted between December 15, 2017 and January 15, 2018. 140 parents participated in the study and 66% of participants were female.

Main outcome measures: Evaluation of parents' knowledge and attitude about antipyretics by survey method.

Results: The participants have indicated that they consult pharmacists (27.1%) and physicians (69.3%) about antipyretics. Paracetamol was the predominantly (57.9%) used drug as an antipyretic. According to the question "How much do you know about the side effects of antipyretics?", 46.4% of the parents replied that they have no idea, and 7.1% of the parents replied that they only know what they learned from the internet. 52.9% of the parents think that fever starts over 38°C. 71% of the parents have a thermometer in their home and 30.8% of them use mercury thermometer. The rate of antibiotic use with antipyretics was 80%. Overall, when asked to the parents that if they use antipyretics in their home without consulting any pharmacist or physician, 71% of them answered positive.

Conclusion: Even though parents use antipyretics generally in accordance with the instructions, there are still many things to be done by health care professionals to prevent irrational drug use. Safe thermometers to use, intervals to measure the fever and drug side effects are some of the topics which parents should be informed about.

Disclosure of Interest: None Declared
Background and Objective: Medication errors, polypharmacy and non-adherence to treatment are commonly associated with therapeutic failure and have an important impact in patients’ health quality and health system’s costs. To prevent these medication problems, it is important to have a tool which incorporates all patient’s health information, in an easily available way, and that can connect, in real time, patients and healthcare professionals. Health services, throughout the world, aim to provide safe and high-quality care to people, to assist them when they are not feeling well and to help them staying well. drBox comes up with the determination to overcome the lack of an integrated management informatic tool to improve patients’ health.

Design: drBox is a healthcare platform that was developed by designing specific algorithms in a cloud server that allow its use in computers and mobile phones. This e-platform is designed to integrate all patients’ health information including medication, previous adverse reactions and tests results. To promote patients’ medication adherence and improve health outcomes, there is an alert whenever is time to refill the medicines or to do the regular monitorization of health indicators. drBox is based on Dader methodology of pharmacotherapeutic monitoring and it allows study statistics on therapy, diseases, age groups, etc. Likewise, it is designed to help community pharmacies monitoring pharmaceutical appointments, weekly medication dispensers’ preparation, and managing the execution of manipulated medicines.

Results: The platform was first tested in January 2017 and has already more than 70000 users/patients registered. Moreover, the platform is used by community pharmacies, higher education institutions and health professionals, including doctors and pharmacists. Also, this platform was already requested by patients from other countries.

Conclusion: Interaction between all healthcare professionals is essential and must be promoted. drBox improves this communication, saves time and assembles important information to enable health professionals to act quickly and whenever necessary. It is an essential tool integrating all procedures and registries regarding patients’ health.

Disclosure of Interest: None Declared
Background and Objective: Oral anticoagulation (OAT) with vitamin K antagonists (VKA) are widely prescribed for the prophylaxis and treatment of many thromboembolic disorders. The iatrogenic effects of vitamin K antagonists (VKA) represent a public health problem. Disregard by patients of the basic rules regarding their treatment is a major risk factor for both bleeding episodes and thrombotic recurrence. The aim of this study was to assess patient knowledge about OAT and factors associated with patient knowledge.

Design: We conducted a descriptive cross-sectional study of 84 patients treated with acenocoumarol in three clinics external pharmacies over a period of three months. Patients were interviewed using a questionnaire containing 23 items assessing the various aspects of anticoagulant therapy. The data was analyzed using SPSS software version 20.0. The test used was the chi-square test to study the correlations between variables. The threshold of significance was set at p less than or equal to 0.05

Results: Knowledge in the field of knowledge, 87% did not know what blood test is used to monitor the effectiveness of their treatment, 81% did not know the value of their target INR, only 57% knew the clinical signs of overdose, only 2% of patients knew how they manage their missing dose, 52% of patients did not know the interaction between acenocoumarol and aspirin, 90% did not know the possible food interactions. In univariate analysis, three predictive factors are related to insufficient knowledge in the field of cognitive knowledge: age> 65 years (p<0.001), lower education level (p=0.004) and dependence in the management of treatment (p<0.001). In the behavioral field, only the low level of education seems to influence the level of knowledge of patients (p=0.023).

Conclusion: Level of patients' knowledge about the oral anticoagulant treatment was very low among our outpatients. So, it seems very appropriate to develop special anticoagulant clinics in Tunisia.

Disclosure of Interest: None Declared
A stepwise pharmacist-led medication review service in interdisciplinary teams in rural nursing homes

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Background and Objective: The provision of responsible medication therapy to old nursing home residents with comorbidities is a difficult task and requires extensive knowledge about optimal pharmacotherapy for different conditions. Herein, we describe a stepwise pharmacist-led medication review service in combination with an interdisciplinary team collaboration in order to identify, resolve and prevent DRPs in rural nursing homes residents.

Setting and Method: The service included residents from four rural Norwegian nursing homes during August 2016 – January 2017. All residents were eligible if they (or next of kin) supplied oral consent. The interdisciplinary medication review service comprised four steps; 1. patient and medication history taking, 2. systematic medication review, 3. interdisciplinary case conference and 4. follow-up of pharmaceutical care plan. The pharmacist collected information about previous and present medication use, clinical and laboratory values necessary for the medication review. The nurses collected information about potential symptoms related to adverse drug reactions. The pharmacist conducted the medication reviews, identified drug-related problems (DRPs) which were discussed at case conferences with the responsible physician and the responsible nurses.

Main outcome measures: Number and type of DRPs. Percentage agreement between physicians and pharmacists. Associations between DRPs and sex, number of medications and nursing homes.

Results: The service was delivered for 151 (94%) nursing home residents. The pharmacist identified 675 DRPs in 146 (97%) medication lists (mean 4.0, SD 2.6, range 0-13). The DRPs most frequently identified concerned “unnecessary drug” (22%), “too high dosage” (17%) and “drug interactions” (16%). The physicians agreed upon 64% of the pharmacist recommendations, and action was taken immediately for 32% of these. We identified no association between number of DRPs and sex (p=0.485), but significant relationships between number of DRPs and the number of medications and the individual nursing homes.

Conclusion: The pharmacist-led medication review service in the nursing homes were highly successfully piloted with many solved and prevented DRPs in interdisciplinary collaboration between the pharmacist, physicians and nurses. Implementation of this service as a standard in all four nursing homes seems necessary and feasible. If such a service is implemented, effects related to patient outcomes, interdisciplinary collaboration and health economy should be studied.

Disclosure of Interest: None Declared
Background and Objective: The Methadone Maintenance Treatment (MMT) is the most accurate method to treat opioid dependent-patients. This program includes the dispensing of methadone to patients who follow an opiate rehabilitation treatment in some community pharmacies that are authorized to do it. Since opioids derivatives are metabolized by P450 cytochrome, a high number of drug interactions can occur. In addition, although methadone must be prescribed by a psychiatrist and dispensed by the practitioner, it is not integrated in patients’ medical records, being anonymous for the rest of the healthcare professionals.

The aim of this work was to find potential interactions among methadone and other prescribed drugs to avoid future drug related problems in patients undergoing MMT.

Setting and Method: An observational retrospective study was undertaken to 42 patients in MMT in a community pharmacy located near Barcelona. The evaluation of the potential interactions were done thanks to the extraction of patient data back in December 2018. In addition, a survey was conducted to find out patient opinion.

Main outcome measures: The obtained results show the patients’ prescription drugs while receiving the treatment with methadone.

Results: Among current medication, we found different drugs, which might cause relevant clinical interactions with methadone such as QT interval alteration, an increased depression of the nervous system, serotonin syndrome and altered liver function.

Regarding the elaborated survey, more than 60% of the requested patients would agree about the rest of the healthcare professionals would know their treatment with methadone as they do with the other prescription drugs.

Conclusion: Despite the small sample, every detected interaction suggested how important is the pharmacological follow-up in patients in MMT, due to the possibility of being using other addictive substances. Patients included in a MMT program are anonymous for the rest of healthcare professionals, and it could not guarantee patient safety. It would be highly recommended to include this program in everyone’s medical records and this reasoning agrees with patient opinions.

Disclosure of Interest: None Declared
Background and Objective: This study involved the use of two haemoglobin (Hb) point-of-care testing (POCT) devices namely Diaspect Tm and Stat-Site MHgb. The objectives were to compare performance characteristics of the two devices against standard laboratory testing and to evaluate the feasibility of introducing this service in community pharmacy practice.

Setting and Method: In the first part of the study, 72 subjects were recruited from a government health care centre. Testing was implemented on patients who were undergoing a routine venous blood test and were suffering from chronic kidney disease (CKD) (n=24), diabetes (n=24) or were otherwise healthy (control group) (n=24). Testing involved finger pricking with a lancet and using the second and fourth drop of blood to generate a result using STAT-Site MHgb and Diaspect Tm, respectively. In the second part of the study, 20 subjects from each patient group (n=60), were recruited and tested once using Diaspect Tm only. A questionnaire was given to the 60 subjects after testing. Twenty-five community pharmacists, selected by convenience sampling, were given a questionnaire.

Main outcome measures: Hb results generated by the standard method and POCT devices, Patient and community pharmacists perspectives on point-of-care Hb testing.

Results: Sensitivity was higher for STAT-Site MHgb (100%), specificity was higher for Diaspect Tm (51%) and accuracy was higher for Diaspect Tm (56%). On testing with Diaspect Tm only, there was an improvement in all the performance characteristics: sensitivity 100%, specificity 75%, positive and negative predictive values 38% and 100% respectively and accuracy 78%. The mean Diaspect values (g/dL) for the 3 patient groups were 13.9 (control), 12.9 (diabetes) and 11.8 (CKD), and the mean lab values were 14.7 (p=0.010), 13.4 (p<0.001) and 12.9 (p=0.117). The service charge which the participants are willing to pay is comparable to the pharmacists’ service charge (p=0.142).

Conclusion: The better performance characteristics, rapidity and ease of use of Diaspect Tm render it a superior Hb POCT device compared to STAT-Site MHgb. Results were in accordance with the standard at Hb concentrations between 10.4 and 13.9 g/dL (CKD) while significant differences were observed at higher Hb concentrations. Hb POCT may be offered from community pharmacies to support patient monitoring especially in patients who are known to be anaemic.

Disclosure of Interest: None Declared
Supplementary Pharmacist Prescribing and Point-of-care Testing in Community Pharmacy

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Background and Objective: Pharmacist prescribing has yet to be introduced in Malta. Supplementary pharmacist prescribing was found to be an appropriate model for the local scenario. The study aims to put forward a feasible model for point-of-care testing (POCT)-led supplementary pharmacist prescribing.

Setting and Method: Treatment frameworks for common conditions in adults, specifically hypertension and Type 1 and Type 2 diabetes mellitus, were developed based on the recommendations by the National Institute for Health and Care Excellence, UK. These are to be used by pharmacist prescribers when deciding upon individual patient treatment, following diagnosis by a physician.

A questionnaire was developed to identify pharmacist and physician opinions on the introduction of pharmacist prescribing using the developed treatment frameworks. POCT commonly available and perceived reliability for use in such prescribing scenarios was determined. Questionnaires and frameworks were disseminated to all community pharmacies (218) and physicians (250). Treatment frameworks were updated based on feedback received and revalidated within a focus group.

Main outcome measures: Analysis of local pharmacist and physician opinions on introduction of POCT-led supplementary prescribing and validation of treatment frameworks developed.

Results: A response of 57 physicians and 142 pharmacies was obtained. Suggested changes for the treatment frameworks were implemented. Changes included colour coding of major decision trees and the provision of a generic example for each drug class mentioned.

The overall opinion when asked if pharmacists are competent to prescribe with their current level of knowledge and training was in the affirmative, with 51% physicians, 74% community pharmacists and 67% locum pharmacists agreeing or strongly agreeing. Physicians scored significantly lower mean rating scores (p = 0.002), where scores provided were 3.33, 3.84 and 3.81 for physicians, community and locum pharmacists respectively.

The greatest limitation to the implementation of pharmacist prescribing was identified as being time restriction, followed by additional paperwork and patient awareness.

Conclusion: Pharmacist and physician opinions are in support of supplementary pharmacist prescribing for hypertension and diabetes mellitus.

Reference
1 – Scerri M. Use of NSAIDs and Pharmacist Prescribing [Dissertation]. Department of Pharmacy, Faculty of Medicine and Surgery, University of Malta, Msida, 2013.

Disclosure of Interest: None Declared
Access to Antidiabetic Medication and Patient Self-Monitoring

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Background and Objective: Patient self-monitoring of blood glucose (SMBG) levels contributes to patient empowerment and optimisation of diabetes management. To investigate the perception of patients with type 1 diabetes mellitus (T1DM) regarding SMBG and Continuous Glucose Monitoring (CGM) and to identify problems encountered when carrying out BG monitoring.

Setting and Method: Fifteen community pharmacies; 3 from each of the 5 districts in Malta. A questionnaire on SMBG in English and Maltese language completed by semi-structured interview developed and validated in a previous study by Cassar¹ was updated with the inclusion of a section on CGM. The questionnaire was disseminated to T1DM patients ≥18 years recruited by convenience sampling after ethics approval. Descriptive statistics were calculated.

Main outcome measures: Perception of patients with T1DM, identification of barriers in self-monitoring practices.

Results: The mean age of the 70 patients interviewed was 39 (range 18-69) years, 38 were female and 52 had a duration of T1DM >5 years. The most frequent problems encountered with daily SMBG were painful finger pricking (n=37) and high cost of buying extra test strips (n=33). Forty-seven patients stated that time was a barrier for SMBG. Five patients currently use a CGM device and 30 patients are willing to use a CGM device in the future. Forty patients stated that they perform SMBG more than once daily and 6 patients expressed that they only test their BG when experiencing signs and symptoms of hypoglycaemia. Twenty-five patients do not believe that self-monitoring will improve their condition.

Conclusion: Patients are not adhering to the recommended daily schedule for SMBG for various reasons including access to test strips and time limitations. Frequency of self-monitoring should be catered on an individual patient basis, depending on patient’s medical condition. Improving awareness and access to CGM may contribute to overcome the self-monitoring problems identified in this study.

References: Cassar J. Diabetic patient management (project).Msida (Malta):Department of Pharmacy, University of Malta; 2009

Disclosure of Interest: None Declared
Background and Objective: Over the last few years, the pharmacy profession has shifted from product dispensing to provision of pharmaceutical care. Community pharmacists are in a unique position to identify and resolve drug therapy problems. The pharmaceutical care framework necessitates a patient–pharmacist professional relationship that is based upon caring, trust, and communication. Many studies have been conducted to assess the public’s attitudes toward the role and practice of community pharmacists in different Middle Eastern countries. Yet there is a need to synthesize this available evidence in order to obtain an aggregate picture of community pharmacist’s image in the Middle East from the public’s perspective.

Setting and Method: A systematic search of 12 electronic databases was conducted between September and October 2018 to identify all published relevant studies from inception till October 2018. Middle Eastern countries included: Qatar, Iraq, Syria, Lebanon, Oman, Jordan, Palestine, Saudi Arabia, Bahrain, United Arab Emirates, Yemen, Kuwait, and Egypt. Data was extracted using a designed and tested tool. Studies were assessed for quality using Crowe Critical Appraisal Tool.

Main outcome measures: The objectives of this systematic review are to synthesize, appraise and summarize the available evidence in relation to public: attitudes towards the role and practice of community pharmacist in the Middle East, use of community pharmacy in the Middle East, views of and satisfaction with the services currently provided by community pharmacists in the Middle East and perceptions on how to improve community pharmacy services and image among the general public in the Middle East.

Results: The final study results included 30 studies that met the inclusion criteria, twenty-eight of which were quantitative and two were qualitative. Most of these studies were done in the gulf region (n = 22). The quality score of the studies ranged between 45% and 88%. Twenty-one studies have reported consumers’ attitudes towards community pharmacists’ role. The pharmacists were ranked second after physicians as main sources of drug information (n = 9). Satisfaction with services was measured in 25 studies. Patients satisfaction with the time spent in counselling ranged from 33% to 64.9% in 12 studies. The main reasons for use of pharmacy (n = 16) were purchasing prescription medications, over-the-counter medications, or non-medication items. Fifteen studies explored public’s needs and recommendations for future services such as blood pressure measurement.

Conclusion: Community pharmacists are highly trusted healthcare providers. However, the public is not fully aware of the roles and services that pharmacists can provide. This leads to underutilization and low satisfaction with currently provided pharmacy services. On the regional level, actions should be taken in order to improve community pharmacy performance to meet public’s needs and expectations.

Disclosure of Interest: None Declared
Assessment of selected pharmaceutical care components for coaching community pharmacists in medication therapy management (MTM) for patients with diabetes

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Background and Objective: Different RCTs have already shown that pharmaceutical care provided by community pharmacists can improve the glycaemic control of diabetes patients. Most effective pharmaceutical care components could be identified such as reviewing the patients’ medication, setting individual goals, sending feedback and recommendations to the physicians, monitoring of blood glucose measurements and assessing patients’ medication knowledge. [1] To spread the knowledge and pharmaceutical care a case series of MTM in diabetes patients was started to assess selected pharmaceutical care components for coaching community pharmacists in medication therapy management (MTM) for patients with diabetes for a later coaching programme for community pharmacists.

Setting and Method: Six diabetes patients with HbA1c values above 7.5% and/or acute drug-related problems had been included. Relevant patient data were collected using electronic case report and forms for medication analysis, communication with the patient and physician. Further most effective pharmaceutical care components identified [1] were used for the implementation of MTM. Two follow up visits after one and three months following medication review were conducted.

Main outcome measures: 1. Assessment of the usefulness of all developed electronic documents

2. Assessment of the pharmaceutical care components through glycaemic control (HbA1c value), number of (solved) drug-related problems (DRP) according to PCNE [2] and the medication appropriateness index (MAI) [3], evaluation of the results from the WHO-5 well being index [4]

Results: Six patients with diabetes mellitus type 2 were on average 71 years old, had 7 other diseases and 12 different medications. At least four of the most effective pharmaceutical care components were implemented and have proven usefulness in practice: medication review, setting individual goals, sending feedback and recommendations to the physician and monitoring of blood glucose measurements. However, on top of these standard components additional patient individual factors had to be considered to increase the effectiveness of MTM.

Conclusion: The designed electronic case report forms with implemented pharmaceutical care components were helpful to improve the outcomes.

Disclosure of Interest: None Declared
Evaluation of Diabetic Patients' Medication Adherence and Attitudes towards Diabetic Foot Care
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Background and Objective: Infected or ischemic diabetic foot ulcers account for approximately 25 percent of all hospital stays for patients with diabetes. Therefore, it is aim to evaluate medication adherence and the attitudes behaviour of diabetic patients towards diabetic foot care.

Setting and Method: The research was held between 1 January 2019 - 1 April 2019 in patients with diabetes who visited a community pharmacy at Istanbul province. The study was performed by face-to-face interview by using self-structured questionnaire.

Main outcome measures: 17-item self-structured questionnaire and Morisky Green Levine Medication Adherence Scale were used for assessing medication adherence.

Results: In this study, 60 diabetes patients were included. The average age of participants was 63.18 ± 8.60. 60.0% of patients were female. 45.0% of the patients were adherent to their medications. 95.0% of the patients declared that they regularly washed their feet. However, only 43% of them mentioned that they completely dried their feet. 40% of them indicated that they used warm water to wash their feet. 55.0% of them stated that they were not barefoot at home. 40% of them pointed out that they did not use moisturizing cream or lotion when they felt drying at their feet or legs. The smaller percentage of them stated that they did not stand for a long time (23.3%) and not take precautions for the formation of calluses or warts (21.7%).

Conclusion: Survey results showed that some of the patients did not correspond with the treatment and showed incorrect attitudes toward the diabetic foot care. Because of small study population; the relationship between diabetic patients' medication adherence and attitudes towards diabetic foot care could not be established.

Disclosure of Interest: None Declared
An assessment of parents' attitudes towards the use of medicines in their children: preliminary results
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Background and Objective: The study aimed to assess parents’ attitudes towards use of medicines in their children.
Setting and Method: This study was conducted since December 2018 among parents whose children aged between 0-12, came to a community pharmacy to receive any medication for their children.
Main outcome measures: Turkish version of The Children’s Medicine Use Questionnaire (CMUQ) was applied. This scale comprises 30 items. Each item is scored with a 5-point Likert scale. The responses of parents were assessed as positive, neutral and negative.
Results: Fifty-two parents participated in this ongoing study. The mean age of parents was calculated as 31.5±4.1, and the mean age of their children was calculated as 7.0±3.1. Most of the participants stated items such as “The more you use analgesics the less effective they are for pain” (88%), “Long term use of analgesics reduces the pain threshold” (85%), “Medicines are dangerous, even when used according to the instruction” (89%), “It is better to avoid giving medicines to children where possible” (98%) and “Side effects of children’s medicines worry me” (96%) as positive. The items that received the most negative responses were “Children’s minor ailment should be taken care of by using OTC medicines” (68%), “It is better for children to use herbal/homeopathic medicines before using anything else” (67%), “The pharmacist’s advice on OTC medicines should be sought as first line treatment for children” (79%) and “A doctor should only be seen when other treatment options for children have failed” (83%).
Conclusion: It was observed that parents did not have enough information to use drugs in their children. The result of this study would be important for that the pharmacists to consider how to conduct patient education to parents in the community pharmacy setting.
Disclosure of Interest: None Declared
Clinical Pharmacist-led Medication Review in Elderly Patients at Community Pharmacy

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Background and Objective: We aimed to perform clinical pharmacist-led medication review in elderly patients at community pharmacy setting.

Setting and Method: The cross sectional study was carried out in elderly patients (65 years old or more) used at least one medication and came to a community pharmacy for any reason and accepted to participate this study between June-December 2018.

Main outcome measures: Medication review was performed by using medication appropriateness index (MAI) and 2019 Beers Criteria. The MAI consists of 10 questions about the indication, effectiveness, dosage, directions, interactions, duplication and duration regarding the treatment.

Results: A total of 71 elderly patients (59.2% male) with a mean age of 73.41±6.60 were included the study. The median value of the number of chronic disease and medications used was measured as 4 (4-5) and 8 (6-9); respectively. Of them 95.8% had polypharmacy (using four or more medications concurrently). It was determined that 549 medications were used by 71 elderly patients. The mean MAI score per medication was 6.58±2.57. The mean of summated MAI score per patient was 51.05±20.57. More than half of the patients (53.5%) had at least one potentially inappropriate medication (PIM) according to 2019 Beers Criteria. It was observed that MAI scores were significantly higher in females (p<0.05). Number of PIM number was significantly correlated with number of medications used and MAI scores per patient (p<0.05). The most common medications with highest MAI score were nonsteroidal anti-inflammatory drugs (NSAIDs), analgesics and proton-pump inhibitors (PPIs). Also, these were the most common medications for PIM use.

Conclusion: According to result of this study, it is indicated that the most common medication groups with inappropriate use in elderly are the same according to both MAI and Beers criteria in Turkey. The pharmacist-led medication review primarily on medications with high risk for potential inappropriateness would promote appropriate medication usage in older patients.

Disclosure of Interest: None Declared
Evaluation of drug related problem among proton pump inhibitors users; Community Setting

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Background and Objective: Proton pump inhibitors (PPIs) are one of the most widely used drugs for the treatment and prevention of gastric acid secretion related disorders locally and worldwide. PPIs are extremely safe for short-term use however may cause serious side effects in long-term use. This study aimed to identify PPI use related DRPs and their causes in a community pharmacy in İstanbul, Turkey.

Setting and Method: A prospective study included a total of 100 PPI users patients who visit saide pharmacy between October 2018 and January 2019. Patient demographics and medications were evaluated. Data regarding recent medications were analyzed by two clinical pharmacist. The DRPs were identified with PCNE V8.02. Medscape was used to assess the drug-drug interactions. Uptodate recommendations and national guidelines were used in the assessment of adherence to the national and international guidelines.

Main outcome measures: Number and causes of the potential DRPs according to PCNE V8.02.

Results: 75 potential DRPs were identified with average of 0.75±0.575 per patient. The causes of DRPs were errors in drug selection (56%) and patient related (44%). Problems related drug selection were drug-drug interactions and PPI use with no indication. Patient related problems were inappropriate timing or dosing intervals.

Conclusion: Missuse of PPI is a serious problem that can be diminished by increasing the awarness of pharmacists. Pharmacists can enhance patients understanding drug instructions and improve their adherence. In addition, by being evaluating the prescription, pharmacists can serve as the first line of defense in recognizing problematic patterns in prescription drug use and prevent it.

Disclosure of Interest: None Declared
Assessment quality of life in patients treated with hyaluronic acid for knee osteoarthritis: Case Control Study

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Background and Objective: The aim of this study was to assess quality of life in patients treated with hyaluronic acid for knee osteoarthritis.

Setting and Method: This case control study was carried out at a community pharmacy located in Antalya, Turkey between September and December 2018. Patients who are over 40 years old or older and who have been diagnosed with osteoarthritis for the last 6 months or patients who did not take hyaluronic acid were attended to study. Womac criteria include pain, stiffness and function parameters. Quality of life index include self-mobilization, ability to do ordinary works, self-care, pain, anxiety and VAS score.

Main outcome measures: The changes in the severity of osteoarthritis levels and the decrease in the need for NSAID use assessed by the Womac criteria, Quality of life index (EQ-5D-5L) and VAS score, respectively.

Results: This study was conducted in 101 patients. Mean age was calculated as 60.55±8.13. Of them 86.10% (n=87) were female. Patients who took hyaluronic acid (n=60) during the last 6 months and patients who did not take (n=41) were attended the study. Of them, 51.5% (n=52) had low educational level and only 16.8% (n=17) had high educational level. Of them, 96% (n=97) used at least 1 medication chronically and 17.8% (n=18) use only hyaluronic acid for treatment of knee osteoarthritis. Polypharmacy was observed in 39.60% (n=40) of the patients. Among patients, hyaluronic acid non-users had statistically higher Womac score (p<0.01), Quality of life index (EQ-5D-5L) score includes self-mobilization (p<0.01), ability to do ordinary works (p<0.01), self-care (p<0.01), pain (p<0.01), anxiety (p>0.05) and lower VAS score (p>0.05) when compared with users.

Conclusion: As a conclusion, the quality of life of patients with knee osteoarthritis using hyaluronic acid was found to be higher, but more research is needed on these area.

Disclosure of Interest: None Declared
Evaluation of medication discrepancies identified in patients after hospital discharge in the community pharmacy
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Background and Objective: Medication discrepancies are a high risk for patients and often occur at care transitions, specifically at hospital admission and discharge. The aim of the study was the evaluation of medication discrepancies identified by pharmacy students in patients discharged from hospital to their regular community pharmacy.

Setting and Method: A cross-sectional study with pharmacy students from the University of Basel was conducted between April-August 2018. During their internship in Swiss community pharmacies, students performed medication reviews (based on the medication history and a patient interview) under supervision of a pharmacist. Patients discharged from hospital, with a history of ≥ 4 medications taken for ≥ 3 months and aged ≥ 18 years were eligible. During the medication review, the pharmacy students compiled a list of the medications prior to hospital admission. They compared this list to the hospital discharge prescription and all discrepancies were documented as free text. Two researcher independently classified these discrepancies using MedTax, a validated classification system for medication discrepancies.

Main outcome measures: Number and types of medication discrepancies identified by pharmacy students in patients discharged from hospital.

Results: Fifty-one pharmacy students identified 558 medication discrepancies in 51 patients discharged from hospital [range 3-19]. The average number of medications per patient prior to admission was 11.1 ± 4.0 and 11.0 ± 4.5 after discharge. The mean age of the patients was 74.1 ± 15.6 years and 54.9% were male. The three most frequent medication discrepancies were omission (n=148), commission (n=133), and discrepancy in the name [brand name or generic name] (n=126), while 98.0% of all patients were affected by either an omission or a commission. The ATC main groups causing highest number of medication discrepancies were the groups C (cardiovascular system), A (alimentary tract and metabolism), N (nervous system), B (blood and blood forming organs), and M (musculo-skeletal system).

Conclusion: The most frequently detected medication discrepancies after discharge were omission and commission of a medication, while the most commonly affected ATC group was medication for the cardiovascular system. Therefore, the implementation of a systematic medication reconciliation after each hospital discharge is essential to uncover such clinically relevant risks.

Disclosure of Interest: None Declared
Medication Review in Elderly Patients at Community Pharmacy Setting: The Association between Occurrence of Potentially Inappropriate Prescribing and Medication Regimen Complexity

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Background and Objective: The aim of the study is to evaluate medications in elderly patients at community pharmacy setting by using Community Ghent Older People’s Prescriptions Community Pharmacy Screening (GheOP3S) – tool and examine the association between occurrence of potentially inappropriate prescribing (PIP) and medication regimen complexity.

Setting and Method: This cross sectional study was conducted between December 2018 and April 2019 in a community pharmacy setting. Elderly patients (>65 years old) who are regularly using at least one medication and admitted community pharmacies for any reasons were included.

Main outcome measures: Clinical pharmacist led medication review was performed by using GheOP3S tool (1). Medication regimen complexity was calculated by using Turkish version of Medication regimen complexity index (2).

Results: Among 158 elderly patients, the mean age was 72.96± 6.04. Of them, 59.5% (n=94) was male. The median of the number of chronic diseases is 3 (2-5) and the median of the number of medication is 6 (4-8). Polypharmacy was observed in 81.6% of them. The median MRCI scores was calculated as 12.5 (7-19.6). It was determined 398 GheOP3S items in 132 of 158 included patients (%83.5). The median of the number of GheOP3S items is 2 (1-4)). Two hundred forty five PIPs were detected in 119 patients (%75.3). The median of the number of PIP is 1 (0,75-2). Higher number of PIPs was correlated with greater MRCI score. (r=0.520, p<0.001). Elderly patients with history of hospital admission during last 6 months had higher MRCI score when compared with patients with no history (p<0.05). The most common PIPs are ‘any proton pump inhibitors (PPI) at full dose >8 weeks use’ (n=57), ‘any recently marketed drug (black triangles) use’ (n=30), and ‘any oral nonsteroidal anti-inflammatory drugs use’ (n=25). The most common potential prescribing omission (PPO) is ‘the patient has an elevated risk for osteoporosis (determined via FRAX tool) and is not prescribed calcium/Vitamin D supplementation’ (n=25). It is detected that the most common type of drug-drug interaction is any combination of anticholinergic drug use (n=43).

Conclusion: It is concluded that there is association between occurrence of PIP and medication regimen complexity in elderly patient at community pharmacy.


Disclosure of Interest: None Declared
An online approach to enhance awareness on pharmacogenetics among pharmacists and physicians

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Background and Objective: Clinical implementation of pharmacogenetics (PGx) may be facilitated through increased awareness among healthcare professionals. Online-based learning methods provide improved access to information for healthcare professionals. The aim was to develop, disseminate and evaluate PGx-related information to promote awareness among pharmacists and physicians.

Design: A fifteen-minute tutorial entitled ‘PGx: A tool for precision medicine’ was developed and recorded. Topics included were: Nomenclature, benefits of PGx, PGx-related information resources, clinical application of PGx using three case studies (oncology, cardiology, infectious disease) and future directions. Content validation was carried out by five pharmacists and two physicians through a discussion. An online questionnaire to evaluate the tutorial was developed using SurveyMonkey® and validated by the same panel. The tutorial was disseminated online to pharmacists and physicians using the respective social media groups and delivered as a live presentation to pharmacists and physicians attending a workshop.

Results: Sixty-six participants completed the questionnaire (57 online, 9 live presentation). Thirty-three participants were pharmacists (25 female, 8 male, mean age 30 years) and 33 were physicians (15 female, 18 male, mean age 33 years). Participants agreed that the information presented (i) was up-to-date (n=61); (ii) may help to improve application of theory to practice (n=56); (iii) inspired them on the topic (n=52); (iv) helped them to identify their strengths and weaknesses in PGx (n=50); (v) is helpful for use in their practice (n=37). The topic perceived as most relevant was the clinical application of PGx in oncology (n=60). Nomenclature related to PGx was perceived as the least relevant (n=43). Fifty-six participants were willing to follow future online-based learning related to PGx.

Conclusion: Participants in this study recognised the relevance of the discussed topics and considered the acquired PGx-related information to be applicable in their practice. Both healthcare professionals were receptive towards following future online-based learning on PGx.

Disclosure of Interest: None Declared
Drug Related Problems in Intensive Care Patients at University Hospital in Northern Cyprus
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Background and Objective: Drug-related problems (DRPs) are one of the leading causes of morbidity and mortality, especially in ICU Patients. The critically ill patients in ICU are more vulnerable to DRPs than others. The aim of this study is to assess the prevalence and distribution of DRPs in Near East University Hospital (NEUH) in-patients, who were admitted to the Intensive Care Unit.

Setting and Method: A retrospective observational study was carried out on patients (aged 18 years and more) admitted to the Intensive Care Unit (ICU) of Near East University Hospital (NEUH) in Northern Cyprus between 01 Jan-30 Jun 2018. DRPs were documented and classified using Pharmaceutical Care Network Europe (PCNE) DRP classification system V 8.02. DRPs were reviewed by a clinical pharmacist and specialist physician and documented by the researcher.

Main outcome measures: Prevalence and characteristics of DRP and associated risk factors

Results: out of 70 patients 53 were assessed, 35 cases (66%) had atleast a DRP; 21 (60%) of these patients were men and 14 (40%) of them were women, with an average age of 71.7 (SD ±13.9). The most frequently reported DRPs were unnecessary drug treatment in 38.6% of cases, followed by untreated symptoms or indication (22.9%). Drug selection (C1) was the most identified error to cause a drug-related problem 87.1%. Patients had cardiovascular disease counted for the highest frequency of DRPs 46%. The 90 days mortality rate in these patients was 19%

Conclusion: High prevalence of drug related problems was identified in critically ill patients in North Cyprus associated with a significant mortality rate.

Disclosure of Interest: None Declared
Analysis of prescriptions and biological monitoring of patients with bleeding risks treated by Low Molecular Weight Heparins (LMWH)

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Background and Objective: Prescriptions of LMWH, which are High Alert Medications, depend on appropriate clinical and biological parameters. A previous study evaluating LMWH prescriptions conformity was conducted in 2015 and corrective actions were implemented at the University Hospital Center (UHC), namely the establishment of a good practice sheet and a reminder informatics memo following the prescriptions pharmaceutical validation. The objective of this work is to re-evaluate the respect for the correct use of tinzaparin treatment in patients with an increased bleeding risk.

Design: This retrospective study was realized over 3 months in all medical units of medicine, surgery and obstetrics of the UHC. Prescription data were collected using Pharma® software (age, weight, length of stay, prescription duration…) and biological monitoring data (Activated Partial Thromboplastin Time (APTT), platelet level…) using Axigate® software. Results were compared to the previous study.

Results: 249 prescriptions of 209 patients (68 ± 12 years old) were analyzed. The average length of stay was 13 ± 10 days and tinzaparin prescription duration was 6 ± 5 days. Weight was reported for 214 patients (86%) with extreme weight (BMI less than 18 or more than 30) for 79 patients (32%). 192 patients (77%) suffered from renal impairment at different degrees. Before prescription, the platelet level was known for 228 patients (92%) and monitored at 48 hours for 161 patients (65%). A monitoring of the APTT was carried out for 130 prescriptions (52%) whereas it had been performed for 81% of the cases in 2015. The anti-Xa activity was assessed in only 46 cases (18%) versus 37% in 2015.

Conclusion: Tinzaparin prescriptions data are similar with the study conducted in 2015. The corrective actions implemented in 2015 allowed to optimize the biological monitoring of patients treated with tinzaparin by limiting an unnecessary APTT test. However, anti-Xa activity remains insufficiently monitored. A close collaboration between the laboratory and the pharmacy is therefore set up to initiate a proactive approach to optimize the biological monitoring of patients with bleeding risk.

Disclosure of Interest: None Declared
HP-PC031
Exploring factors associated with poor health-related quality of life in patients with osteoporosis
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Background and Objective: The concept of health-related quality of life (HRQoL) is frequently used in clinical research as a humanistic outcome of clinical Pharmacy service for patients with chronic diseases including osteoporosis. Nevertheless, little is known about HRQoL in patients with osteoporosis in Jordan. The aim of the present study was to explore the significant predictors of poor HRQoL in patients with osteoporosis.

Setting and Method: The study was conducted at the Royal Rehabilitation Centre (RRC) in the Royal Medical Services (RMS) in Amman / Jordan. Variables collected included sociodemographics in addition to information about medication use and HRQoL assessment using the EQ-5D tool. The stepwise logistic regression analysis was performed in order to identify variables that independently and significantly were associated with poor HRQoL

Main outcome measures: Predictors of poor HRQoL in patients with osteoporosis

Results: The median of the total HRQoL score was 0.620. Mild problem in pain or discomfort was the major problem identified by the participants (72.3%). Logistic regression revealed that participants with higher Serum Vitamin D were 0.942 the odd of having poor HRQoL. Each unit increase in the number of prescribed medications was associated with 1.273 the odd of having poor HRQoL. Participants who were found to have problem in movement were 2.525 the odd of suffering from a poor HRQoL.

Conclusion: The quality of life for patients with osteoporosis in Jordan has considerable scope for improvement. Future osteoporosis management programs should focus on improving HRQoL, with specific attention to be given for patients with elevated serum Vitamin D, those who are prescribed multiple medications and those who have limited movement ability

Disclosure of Interest: None Declared
**HP-PC032**

**Awareness and perception of thromboembolism and thromboprophylaxis among hospitalized patients in Jordan**

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**Background and Objective:** Despite the established importance of thromboprophylaxis in patients with VTE, limited number of studies have assessed the awareness of VTE and the thromboprophylaxis therapy among the affected patients. The current study aim was to assess awareness and to explore variables associated with limited awareness about VTE and its thromboprophylaxis

**Setting and Method:** A cross-sectional study was conducted on hospitalized who had received thromboprophylaxis (5000 units of heparin subcutaneously (SC) q8–12 h, or 30–40 mg of enoxaparin SC once daily). In addition to the sociodemographic variables, awareness about VTE and its thromboprophylaxis was assessed using a validated questionnaire. Single and multiple predictor analysis was conducted using SPSS software version 23.

**Main outcome measures:** Predictors of poor awareness about VTE and its thromboprophylaxis

**Results:** A total of 225 had participated in the study, with only 38.2% and 22.2% of the participants were aware of deep vein thrombosis (DVT) and pulmonary embolism (PE) respectively. Logistic regression showed that the participants with low education level were 3.046 the odds being not aware of DVT or PE compared with participants with high education level. Also, participants without a personal history of VTE were 7.374 the odds being not aware of DVT or PE compared with those who had a personal history of VTE. Participants who had a negative perception of VTE were 2.582 the odds being not aware of DVT or PE compared with participants who had a positive perception and those who had not received information about DVT or PE were 13.727 the odds being not aware of DVT or PE.

**Conclusion:** The findings reveal that there is a lack of awareness about VTE and its thromboprophylaxis among the study participants. Patients with lower educational level and those with no history of previous VTE need awareness improvement about VTE and its thromboprophylaxis. Clinical Pharmacists need to focus on providing information about VTE and improving patients’ perception about VTE and its thromboprophylaxis with the aim of improving the awareness about VTE and hence enhance improving health outcomes.

**Disclosure of Interest:** None Declared
Implementation of a medication reconciliation at patients' admission into an internal medicine department: feasibility study
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Background and Objective: In January 2019, our pharmacy department has been reorganized to allow the development of new clinical activities. Thus, after two unsuccessful attempts (2013, 2017), a new approach of medication reconciliation (MedRec) was proposed at patients' admission in internal medicine and rheumatology (IMR). The objective is to describe the approach and tools implemented to sustain the MR with the existing workforce and assess the impact of this new activity on a routine basis.

Design: A working group composed of several pharmaceutical personnel (department head, 4 assistant pharmacists and 2 residents) was set up to propose tools and organisational models compatible with the functioning and staffing of the pharmacy. Several proposals have been submitted to the IMR department in order to jointly agree on an operating mode suitable for both departments.

The realisation and impact of the reconciliation process have been evaluated by a monocentric prospective observational study over a period of 9 weeks.

Results: Integrated into the IMR department, a pharmacy student selects each morning together with the physicians the patients to be reconciled on the basis of predefined criteria (≥ 65 years old admitted via emergency department). The student performs the optimized drug balance and compares it to the prescription at admission. The analysis is then carried out by a resident in pharmacy. In order to solve the unintentional discrepancies, a pharmaceutical intervention is proposed in the afternoon. Using a pool of 3 people trained, substitutions have been described. From January 24 to March 29, 2019, 36 patients took advantage of retroactive MedRec of which 36,1% were reconciled outside selection criteria at the request of physicians. The average entry-reconciliation time was 2 days and the average MedRec time was 4h06 [1h30;10h00].

Conclusion: After experiencing this organisation in routine for 2 months, the average duration of MedRec has been optimized by one hour with existing means. From now on, the prospects are the systematic integration of city prescriptions into the patient’s computerized file when admitted to the emergency department. Including a pharmacy dispenser to reconcile more than one patient per day is also envisaged.

Disclosure of Interest: None Declared
Association between medication adherence and medication regimen complexity in patients with chronic kidney disease – preliminary data
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Background and Objective: In this study, it is aim to evaluate potential association between medication adherence and medication regimen complexity in patients with chronic kidney disease (CKD).

Setting and Method: A cross sectional study, which was started to conduct in November, 2018, have been continuing in nephrology outpatient clinic of a training and research hospital in Istanbul, Turkey. Patients with chronic kidney disease were included who were 18 years old or more and applied to nephrology outpatient clinic for routine follow-up.

Main outcome measures: Medication regimen complexity index (MRCI) calculated for each medication. Patients’ medication adherence was assessed by using Morisky Green Levine Adherence Scale.

Results: In this ongoing study, 78 patients with CKD were included during 6 months. More than half of 78 patients were female (52.6%) and the mean age of the patients was 55.09 ± 14.86 (25-88). Education level of participants was low, only 21.8% of them were educated ≥8 years. The most common etiology of CKD was hypertension (37.2%). Of them 83.3% were on dialysis treatment as hemodialysis (43.6%) and peritoneal dialysis (39.7%). The median value for number of drugs used by patients was 8.0 (5.0-10.0). It was observed that 52.6% of them were adherent to their medication treatment. The median value of overall MRCI score was 28.0 (14.0-45.1).

Conclusion: Since only preliminary results were obtained regarding the research, descriptive data were expressed. The study will continue until the number of patients is sufficient to carry out the necessary analyzes in order to investigate the association between patients’ medication adherence and medication regimen complexity index.

Disclosure of Interest: None Declared
Background and Objective: Nivolumab is an immune checkpoint inhibitor (ICI) used for lung cancer of no small cells (LCNSC). Adverse reactions such as colitis and pneumonitis among other immune-related reactions to this family of drugs are frequent. However, the appearance of cardiac complications, other than myocarditis, has scarcely been described in literature.

Objective: To describe a case of acute coronary syndrome (ACS) and immune-related colitis in a patient with LCNSC secondary to nivolumab, and to perform a bibliographic search of ACS associated to nivolumab.

Design: A bibliographic search with no date limit was performed in Pubmed database using the following keywords: “Coronary toxicity”, “Acute coronary syndrome” and “Nivolumab”.

Results: 79 year old patient was diagnosed with epidermoid LCNSC stage II (T2N0M0). Initially he was treated with radiotherapy and vinorelbine. Subsequently nivolumab was prescribed at a dose of 3mg/Kg for two weeks. He was given ten cycles with “Stability of his disease”. Ten days after the last cycle he was admitted to hospital with ACS with rise of the segment T and with a peak of troponin higher than 50,000 pg/ml. The patient was treated with AAS, nitroglycerin, antiplatelets agents, b-blockers and enalapril with a positive outcome. Whilst in hospital he presented with colitis grade III, so he was treated with systemic corticosteroids. The diarhoeal episode ceased and nivolumab was withdrawn. Two months later the patient was readmitted suffering from immune-related colitis grade IV. He was treated with methylprednisolone, gelatine tannate and loperamide. The patient`s condition deteriorated and he died two days after admission.

Results of bibliographic search: Two articles on ACS associated to nivolumab were found, and both are case reports. A bibliographic revision of the literature and the French pharmacovigilance register summarise three other cases. The average age was 65 years. Three cases were pulmonary adenocarcinoma, one case metastasic melanoma and the last one was a Hodking lymphoma. The average nivolumab cycles was 5 and troponin levels were high in all cases except in one case (normal levels). All patients had a history of cardiovascular risk.

Conclusion: Immune-related colitis is an adverse reaction quite often associated with ICI; however, toxicity related to the coronary system as the ACS is uncommon. Nivolumab could trigger this type of cardiotoxicity in patients with a history of cardiovascular risk, and so consequently it is important to physicians to consider undertaking a risk-benefit assessment for this type of patients.

Disclosure of Interest: None Declared
CONCILIATION OF MEDICATION ON ADMISSION AND PERIOPERATORY IN AN ORTHOPAEDIC AND TRAUMATOLOGY UNIT
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Background and Objective: Failure to reconcile medications across transitions in care is an important source of potential harm to patients. Objective: To identify and solve discrepancies between medication prescribed on admission by the orthopaedic and traumatology unit (OTU) and the domiciliary treatment in hip fracture (HF) patients. To reconcile the perioperative (PO) treatment in patients admitted as emergencies who are pending surgery.

Design: A four-month-long prospective study in which we included all patients with (HF) who had been admitted in emergency and the ones with a scheduled surgery for a hip prosthesis and polymedicated. The domiciliary treatment (DT) was compared with the hospital one, for this we used the pharmacotherapy-history according to their medical records and the interview with the patient. The data collected were: age, perioperative state, either urgent or scheduled surgery, justified (JD) and non-justified discrepancies (NJD), how important were the (NJD), the medicaments and the therapeutical group involved in (NJD).

Results: 76 patients with average age of 81.3 ±9.5 years and range (61-98) were included. 97.3% had some type of chronic disease with average of 14±3 medicaments including DT and hospital treatment. 92.1% hip surgeries were urgent, the others were scheduled. PO medication was reconciled in 67.1% patients. 251 discrepancies were detected in 72 patients (94.7%): 134 were justified and 117 non-justified. Most frequent in last ones were: medical interactions (42.7%), omission of medicament (38.5%) and different dosage/route of administration/frequency (15.4%). Less frequent: medicament was not available (2.6%) and different medication (0.85%). As for the (NJD) 92.3% were not serious, 5.1% didn't reach the patient and 1.7% caused slight/moderate harm. Potential error was only registered in one patient and it didn't take place eventually. The therapeutical group with higher number of (NJD) was “other opioids”.

Conclusion: Pharmaceutical intervention meant a meaningful reduction of medication errors, as a result, security of patients during PO and of patients with HF at admission was higher

Disclosure of Interest: None Declared
Background and Objective: Patients diagnosed with cardiovascular disease are strongly recommended to adopt healthier behaviors and adhere to prescribed medication. Previous research on patients with a wide range of health conditions has explored the role of patients’ illness perceptions in explaining coping and health outcomes. However, among coronary heart disease patients, this has not been well examined. The purpose of this study was to explore coronary heart disease patients’ illness perception beliefs and investigate whether these beliefs could predict adherence to healthy behaviors.

Setting and Method: A cross-sectional descriptive survey model was conducted to all patients who entered cardiology department of Near East University Hospital between November 2018 to January 2019 and fits inclusion criteria. Data of the study were collected with a survey form that consists of socio-demographical section, Brief Illness Perception Scale and Brief Morisky Adherence Scale.

Main outcome measures: Prevalence of non-adherence and illness perception scores

Results: The patients who participated in the study involved 49 (61.2%) male and 31 (38.8%) female. The mean ± SD age of the sampled group was 61.16 ± 12.60 with 15 (47.5%) being older than 65 years old. 31 patients (38.7%) were considered non-adherents, genetic and nutrition or diet were the most common causes of illness as perceived by (77.5%) and (57.5%) of the patients respectively. The data showed that there is a significant positive correlation between different subscales of perception scale (p < 0.05), while no significant correlation between adherence score and illness perception scores (p > 0.05) was seen.

Conclusion: Significant non-adherence was seen in the current study population, differences were observed among demographic groups as an important strategy in educational interventions in order to increase adherence to treatment.

Disclosure of Interest: None Declared
Medication Error patients Admitted to Medical Ward in Primary Hospital, Ethiopia: Prospective Observational Study
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Background and Objective: Medication error (ME) is broadly defined as any error in the prescribing, dispensing, or administration of a drug. ME is the single most preventable cause of patient harm. An infinite number of medication error exist because of the rapidly expanding array of drug products available, the growing number of diseases being recognized & diagnosed, and the growing number of patients entering the health care system. To evaluate the most frequently encountered drug class undergo medication errors, to identify sources of medication error and evaluate predictors of medication errors among patients admitted to medical ward in primary hospital, northwest Ethiopia.

Setting and Method: Prospective observational study was conducted from April 1/2018-October/2019G.C. All adult patients who met inclusion criteria were included in the study. Patient medication adherence was evaluated using Morisky adherence scale. Independent predictors of outcome identified and strength of association between dependent and independent variables determined by using binary logistic regression analysis and statistical significance was considered at p<0.05. Two hundred sixty patients were included in the analysis.

Main outcome measures: Presence or absence of medication error

Results: A total of 260 patients were included in the study. Of which 162 (55.7%) were males. Overall response rate was about 97%. Among these, majority of them were encountered medication errors. Average number of drugs per day for a patient was 3.5. Anti infective drugs were mostly prescribed as well as medication error encountered. Unnecessary drug therapy is the most common error. Proportion of patients with medication error is lower among patients who are on 1-3 drugs as compared to those patient who are on more than five drugs(p=0.025). Patients who stayed less than one week less likely encountered medication errors as compared to those stay more than a week(p=0.024).

Conclusion: Medication error is very prevalent in this hospital. Length of hospital stay, number of medication availability are determinant factors for medication errors. Since medication availability is significant determinant for medication error, hospital should try to avail medication and prevent medication errors. Clinical pharmacists should involve in multidisciplinary team and continuous patient medication reconciliation should be integral part of patient medical management.

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Facilitation of Transition of Care between Outpatient Diabetic Clinic and Community Pharmacies

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Background and Objective: Pharmacist-led interventions have shown to decrease drug related problems (DRPs) and improve clinical outcomes. The aim of the study was to develop and implement a pharmaceutical service at the outpatient setting for diabetic patients focusing on medicine reconciliation and effective transition of care.

Setting and Method: A prospective investigational study conducted at Mater Dei outpatient diabetic clinic. Patients ≥18 years of age, having at least one antidiabetic medication were eligible to participate in the study. A Transition of Care Document, aimed at compiling all the necessary medicine information obtained during the medicine reconciliation undertaken during this study, was compiled and disseminated to the patient’s community pharmacist via e-mail. A questionnaire was sent together with the transition of care document (ToC) to assess the effectiveness of the ToC document by the community pharmacist.

Main outcome measures: DRPs were classified into six categories using the Pharmaceutical Care Network Europe classification (PCNE) while the transition of care document was assessed using a questionnaire.

Results: One hundred ninety-four DRPs were identified during the medicine reconciliation (N=100). ‘Lack or misinterpretation of information’ (n=48), ‘Insufficient awareness of health and diseases’ (n=47), ‘Inappropriate timing of administration and/or dosing interval’ (n=36) and ‘Non-adherence to treatment’ (n=27) were the four most prevalent DRPs were. Eighty-five patients required verbal intervention from the clinical pharmacist, 9 patients required written advice and 4 patients required both written and verbal intervention (N=100).

Forty-one pharmacists (N=73) completed the questionnaire which was sent together with the ToC document. All pharmacists (n=41) participating in the study agreed that there is the need to enhance the communication between healthcare professionals while the majority (n=36) found the ToC document informative and useful. The preference in the questionnaires were assessed using the likert scale.

Conclusion: The implementation of this developed pharmacist-led transition of care service was shown to be relevant to the out-patient diabetic group as demonstrated by the identified DRPs which is a service totally innovative to our healthcare system.

Disclosure of Interest: None Declared
Temporary Authorizations for Use (TAU) drugs in a French child-hospital
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Background and Objective: In pediatrics, Temporary Authorizations for Use (TAU) requests are frequent because of the lack of appropriate treatments for this population (lack of pediatric marketing authorization (MA), unsuitable forms). In addition, compounds cannot be made if the drug already exists according to French law. In this context, this study represents a review of TAU prescriptions in a French university child-hospital. The main objective is to describe the use of TAU drugs and its evolution over the years. The secondary objectives are to describe population, type of drugs concerned and characteristics of TAU.

Design: This is a retrospective, descriptive and monocentric study. All inpatients or outpatients in a university child-hospital from January 1, 2016 to December 31, 2018 and treated with one or more TAU drugs were included. Study protocol was accepted by the local ethic committee (N°2019/436). Data collected concerned: age, drug indication, ATC class, clinical unit and TAU treatment length.

Results: Over 3 years, 929 patients aged from 0 to 25.2 years (5 ± 5.6 years) were treated with one or more TAU drugs, representing 1,756 requests. The TAU were for 1,605 nominative and 151 cohort authorizations. It represents 70 specialties with overall 24% ATC class A (alimentary tract and metabolism), 17% ATC class L (antineoplastic and immunomodulating agents), 16% ATC class N (nervous system). 67% were administered orally, 30% by injection and 3% by other way (ophthalmic and intracerebroventricular). 5 drugs were since withdrawn from the market (amlexanox, atropine, ephedrine, etidronate and mazindol) and 12 obtained MA, including 3 without going through cohort TAU stage. The most requesting departments were general pediatrics, hematology and neurology, respectively 195, 135 and 116 requests. The most requested drugs were isoniazid 10mg/mL (16%), ursodeoxycholic acid 250mg/5mL (14.7%) and cidofovir 375mg (7%). Nominative TAUUs usually last 3 months [1 day - 1 year]. 404 patients (43.5%) had their treatment renewed. Data lists up to 10 renewals for a patient treated regularly with cidofovir injections.

Conclusion: TAU requests allow children to have access to drugs not commercially available. The TAU are often the first step to the MA. Renewals being frequent, clinical pharmacist has an important role to play in TAU drugs follow-up.

Disclosure of Interest: None Declared
Inappropriate prescriptions of metoclopramide and domperidone in pediatrics

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Background and Objective: Inappropriate prescriptions (IPs) and omissions of prescription (OPs) are public health issue. In pediatrics, they have been little studied, despite their heavy consequences. A detection tool specific to pediatrics has been developed by French experts, called POPI (Pediatrics: Omissions and Inappropriate Prescriptions). Two POPI’s items were chosen in priority for the health risk represented: IPs of metoclopramide and domperidone. Indeed, these drugs pose a high risk in children of neurological and cardiovascular adverse effects. The goal of this study is to describe the inappropriate use of metoclopramide and domperidone in France in 2018.

Design: A retrospective cohort study was performed using the Cegedim™ prescription software network database used by 3000 representative physicians. Eligible patients were under 18 and had at least one prescription of metoclopramide or domperidone in 2018. Anonymized extracted data concerned the patients (sex, age, weight, diagnoses) and drugs (prescribed and dispensed treatments, ATC class and galenic form).

Results: 1,545 prescriptions of metoclopramide by 520 physicians were identified, representing 1,475 patients, half girls, aged from 1 month to 18 years (10.6 ± 5.6 years). Physicians were mostly men (73.7%) and GP (99.2%), aged from 28 to 78 (56.2 ± 10.6 years). Metoclopramide was mostly prescribed in drinkable solutions (50.2%) or tablets (42.0%). 11,352 prescriptions of domperidone by 1,042 physicians were identified, representing 10,504 patients, half girls half boys aged from 10 days to 18 years (7.3 ± 5.2 years). Physicians were mostly men (70.1%) and GP (98%), aged from 29 to 81 (56 ± 9.9 years). Domperidone was prescribed in drinkable solutions (75.1%) and tablets (24.9%).

For both drugs, gastroenteritis, vomiting and nausea are the most frequent diagnoses. Associated treatments are mainly part of digestive ATC class, as phloroglucinol and racecadotril. Only 368 prescriptions (3.7%) mentioned an oral rehydration solution for children under 2 years. The financial impact (drug reimbursement by health insurance) will be presented on the poster.

Conclusion: Thousands of children are still concerned by metoclopramide and domperidone prescriptions despite health authorities’ recommendations. These are the first POPI’s item extracted from the Cegedim™ prescription software network database. The same methodology would now be used for other POPI’s items.

Disclosure of Interest: None Declared
Background and Objective: New Oral Anticoagulant Drugs (NOACs) are glycoprotein-P (gp-P) substrate, a membrane transporter protein and principally they are metabolized by CYP3A4. It’s not recommended NOACs administration with antibiotics because they are powerful CYP3A4 and gp-P inhibitors. It would lead to a NOACs metabolism reduction, increasing plasma concentration and consequently the exposure to the active substance with the risk of bleeding.

The aim consists in search patients with concomitant NOACs and antifungal therapies, examining general practitioners prescriptions.

Setting and Method: Prescriptions from an Italian district about 2017, in charge of Italian national health system, are been analysed. The molecules considered are NOACs: Apixaban, Edoxaban, Rivaroxaban, Dabigatran and the antifungal Itraconazole. Data have been extracted from a database called S2i-italia and they have been elaborated with Access.

Main outcome measures: In 2017, 7404 patients have been treated with NOACs and 2580 with Itraconazole. 13 patients have concurrent prescriptions of NOACs and Itraconazole (0.18% of all patients with NOACs prescriptions), they have a medium age of 72 years old, in a range from 43 to 83 years old. The age≥75 years old is a risk factor because NOACs metabolism is slowed down and it’s possible that it increases more plasma concentration.

The NOACs molecules prescribed in concurrently with Itraconazole are: Apixaban for five patients, Dabigatran for four, Rivaroxaban for three and Edoxaban for one.

The average number of NOACs packs delivered to a patient is 5.5 (72 in total), the exception is about the case of two patients 76 years older with 14 and 24 packs prescribed concurrently with acetylsalicylic acid for the whole analysed year, although they should have been avoided in this case of increased hemorrhagic risk.

Results: The NOACs molecules prescribed in concurrently with Itraconazole are: Apixaban for five patients, Dabigatran for four, Rivaroxaban for three and Edoxaban for one.

Conclusion: In 2017, 1.72% of examined patients has NOACs and/or Itraconazole prescriptions, but only 0.18% of them has concurrent therapies, even if it’s contraindicated cause of the increase of bleeding risk. The advanced average age which causes the metabolism slowing, the frequent polypharmacy with the possibility of drug interaction increase the bleeding risk. It’s appropriate to focus on each case and evaluate dose reduction and make a therapeutic reconciliation, especially in elder patients in polytherapy.

Disclosure of Interest: None Declared
Comparison of APACHE II, SAPS II, SAPS II Expanded and GCS scoring systems in an intensive care unit in Turkey

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Background and Objective: There are many intensive care unit (ICU) scoring systems to obtain an objective and quantitative definition of the assessment of the degree of organ dysfunction and morbidity in ICU patients. ICU scoring is an important parameter for the clinical pharmacists as pharmaceutical-care needs increase with increasing scores.

Setting and Method: A prospective randomized study included 156 inpatients in the intensive care unit of the university hospital in December 2015 and August 2016. GCS, APACHE 2, SPAS 2 and Extended SPAS 2 values were calculated. The sensitivity and specificity of the scores were evaluated according to ROC analysis.

Main outcome measures: The aim of research was to assess the abilities of APACHE II, SAPS II, SAPS II Expanded, and GCS scoring systems to predict mortality in adult patients admitted to the ICU in Turkey.

Results: Out of 156 patients included in the study, 89 (57.1%) patients were male and 67 (42.9%) patients were female. Mean (SD) age was 61.17±17.86 years (range 19-91). One hundred and two (65.4%) patients survived and 54 (34.6%) patients died. The reasons for hospitalization in the intensive care unit were coma (GCS ≤8) (30.1%), respiratory failure (59%), infection (41.7%) and other cardiological issues (35.3%). The sensitivity (95% CI) of the scores was 85.2% (79.1-91.4) for SAPS 2 expanded, 85% (78.4 - 91.6) for SAPS 2, 79% (71.9 - 86.1) for APACHE 2 and 71% (62.2 - 79.8) for GCS. There was a significant correlation between the total number of drugs used and APACHE 2 score (R: 0.329 p<0.01) and SAPS 2 expanded score (R: 0.182 p<0.05). There was a significant correlation between the total number of antibiotics used and APACHE 2, SAPS 2, and SAPS 2 expanded scores (R: 0.341, R: 0.224, R: 0.262 respectively; p<0.01 for all). There was a significant correlation between the total number of drugs and the number of consultations and pharmacist interventions (R: 0.404, R: 0.422, respectively; p<0.01 for both). The pharmacist made more intervention in patients with respiratory failure (p <0.01).

Conclusion: The SAPS II expanded scoring system was the scale with the highest predictive power of fatal outcomes in our patients. While assessing the pharmaceutical care needs of the patients, the clinical pharmacist should keep the patients’ ICU score in mind, as higher scores are correlated with higher number of drugs, drug-related problems and interventions.

Disclosure of Interest: None Declared
Evaluation of Drug Use in Geriatric Patients in Internal Medicine Clinic
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Background and Objective: Many geriatric patients need to use regularly more than one drug every day due to their chronic diseases. It is very difficult to optimize drug therapies because of pharmacokinetic and pharmacodynamic changes caused by aging. The presence of specialized geriatric physicians and clinical pharmacists in this field is essential for optimizing treatment and improving the quality of life of patients. Beers and START-STOPP criteria are useful for preventing drug related problems in geriatric patients in order to provide the drug use more rational in the elderly patients.

Setting and Method: This retrospective study was conducted in 97 randomly selected inpatients in the Internal Medicine Clinic of Istanbul Faculty of Medicine. The confidence interval for sample size was taken as 95%. Patient information was collected from patient folders and hospital computer records. The appropriateness of drug use was evaluated according to the Beers and START-STOPP criteria.

Main outcome measures: The aim of study is to evaluate the appropriateness of drug use in geriatric patients according to Beers and START-STOPP criteria.

Results: The mean age was 75.45±7.59 years (range 65-97). 49.50% of the patients were male, 50.50% were female. The majority of patients (92.8%) (n=90) had at least one chronic disease. The mean number of drug was 8.98±3.72 (range 1-19). A total of 108 Beers criteria (27 different criteria) were identified in patients. A total of 231 START criteria (23 different criteria) were identified in patients. A total of 62 STOPP criteria (30 different criteria) were identified in patients.

Conclusion: This study showed that the evaluation of appropriateness of drug use is important in geriatric patients according to Beers and START-STOPP criteria by clinical pharmacists.

Disclosure of Interest: None Declared
Monitoring of prescriptions on prophylaxis of venous thromboembolism (VTE) in medical patients in Beatriz Ângelo Hospital

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Background and Objective: VTE is an important public health problem because of its impact in terms of morbidity, mortality, and associated costs. (1) VTE prevention is a priority strategy to improve patient safety. (2) More than half of all hospitalized patients are at risk for VTE. Previous studies have reported overall VTE prophylaxis rates ranging from 13% to 64%. (3) Although the percentage of patients at risk of VTE is higher in surgical patients, the medical patients has a lower rate of prophylaxis. (3)

To assess the risk of VTE in patients hospitalized for medical pathology, using clinical records using the Padua score. Classify patients according to prescription, risk factors (RF) and contraindication (CI). To verify the use of a VTE risk assessment model. Create a computer application with the Padua score and integrate it into the prescription program.

Setting and Method: Descriptive observational study during the month of September in the medical patients admitted with age ≥18 years. All patients with anticoagulant prescription dose were excluded. Patients were classified according to the Padua score, LMWH prescription and contraindications in 5 populations: (a) with prescription and without RF or CI, (b) without prescription and without RF or CI. Pharmaceutical intervention was performed in patients classified in (a), (b) and (c), pharmaceutical intervention, medical justification and information on the use of a VTE evaluation model were recorded.

Main outcome measures: Of the total number of patients (218), 66.5% had a risk of VTE of these 58.7% had no CI for pharmacological prophylaxis. Of the 58.7%, 42% do not have prescription of prophylaxis or have dose misfit.

Results: Of the total number of patients (218), 66.5% had a risk of VTE of these 58.7% had no CI for pharmacological prophylaxis. Of the 58.7%, 42% do not have prescription of prophylaxis or have dose misfit. Of the population without risk of VTE 35.6% have a prescription of prophylaxis. Of the population at risk of VTE and cancer, 39% do not have prophylaxis whereas in the population at risk of VTE and without cancer, 18% have no prescription. A pharmaceutical intervention was performed in 81% of the prescriptions with an acceptance rate of 29%.

Conclusion: According to the results, it was concluded that 42% of the patients do not have prophylactic prescription or have an unadjusted dose. In patients with score ≥4 and without CI, the prophylaxis percentage is lower in cancer patients. The vast majority of physicians still do not use a VTE risk assessment model. The application with Padua score was presented to physicians.

Disclosure of Interest: None Declared
Comparative incidence of acute kidney injury in critically ill patients receiving vancomycin depending on concomitant β-lactam

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Background and Objective: Critically ill patients are frequently treated with empiric antibiotic therapy including vancomycin and β-lactams. Recent evidence suggests an increased risk of acute kidney injury (AKI) in patients who received the combination of vancomycin and piperacillin/tazobactam (VPT) compared with patients who received vancomycin in combination with cephalosporins (VC), carbapenems (VP) or monobactams (VM), but most studies have been conducted predominately in the non-critically ill population. The aim of the study is to describe the development of any AKI in critically ill patients treated with vancomycin and a β-lactam in a critical care unit (ICU).

Setting and Method: A two-month prospective study was conducted in the ICU of a tertiary hospital where the clinical pharmacist is integrated into the multidisciplinary team. Collected data included: gender, age, comorbidities, vancomycin dosage and length of treatment, concomitant β-lactam received, chronic kidney disease (CKD) and other concomitant nephrotoxic drugs.

Main outcome measures: The rate of any AKI was defined by the KDIGO guidelines. Data was obtained from the electronic medical records (Mambrino XXI®).

Results: 12 patients were included, 7 were men and the median age was 64.6±15.1 years. 21.4% of patients had CKD. The most frequent comorbidities were: hypertension (33.3%), cardiovascular disease (33.3%), diabetes mellitus (16.7%), dyslipidemia (16.7%) and obesity (16.7%). Vancomycin diary dose was 2.1±0.9 g/day and the length of treatment was of 8.6±4.6 days. 7 patients (58.3%) received VPT, 3 patients (25.0%) received VP, 1 patient (8.3%) received VC and other patient (8.3%) received VM. The rate of any AKI was 42.9% for VPT patients (stages I and II), 33.3% for VP (stage III), and VC and VM patients developed no nephrotoxicity. Every patient with CKD and 66.6% of patients who received concomitant nephrotoxic drugs developed any rate of AKI. 50.0% of patients with AKI needed renal replacement therapy.

Conclusion: Critically ill patients receiving the combination of VPT had the highest incidence of AKI when compared to critically ill patients receiving either VC, VP and VM. The ICU clinical pharmacist has to closely monitor the renal function of patients treated with VPT, specially in those with CKD and/or receiving concomitant nephrotoxic drugs. Further research in the critically ill population is needed.

Disclosure of Interest: None Declared
Patterns of drug-related problems at hospital discharge with a focus on drug-drug interactions

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Background and Objective: Drug-related problems (DRPs) at hospital discharge occur frequently. Solving these DRPs may require pharmacists to contact the treating hospital physician. A discharge, prescription review by a pharmacist prior to hospital discharge could reduce these DRPs. The aim of this data analysis was to depict the pattern of DRPs at hospital discharge in order to make some suggestions, which DRPs should be prioritized.

Setting and Method: In a regional hospital in Switzerland pharmacists review all discharge prescriptions before they are handed over to the patient. They document all DRPs discovered on these prescriptions using a hospital internal classification system with 16 different categories. All DRPs documented between June 2016 and May 2018 were included in the data analysis.

Main outcome measures: The main outcome was the frequency of the different DRPs documented. The secondary outcome was the frequency of drug-drug interactions.

Results: Preliminary analysis showed that during the study period, the hospital pharmacists reviewed 9539 prescriptions and discovered 2539 DRPs. The five most frequent DRPs included missing medication (n=363; 14.3%), overdosing (n=354; 13.9%), duplication (n=252; 9.9%), drug-drug interactions (n=221; 8.7%), and missing dosage (n=220; 8.7%). Most frequent medication combinations involved in the interactions were: A) mineral supplements with thyroid therapy, B) mineral supplements with antibacterials for systemic use, C) antibacterials for systemic use with psychoanaleptics, D) psycholeptics with psychoanaleptics. Interactions of the combinations A) and B) were often a problem of complexation, C) and D) often a problem of QT interval prolongation.

Conclusion: DRPs needing hospital physicians for clarification should be solved within the hospital setting. Hospital pharmacists often have less barriers to contact treating hospital physicians than community pharmacists. In addition, they often have access to patient’s hospital records. The analysis of drug-drug interactions revealed two frequent types: complexation and risk of QT-interval prolongation. While the problem of complexation can easily be solved in community pharmacies after discharge, hospital pharmacists should focus on the second type before discharge. Risk of QT-interval prolongation may require an electrocardiogram, which either exists in patients’ hospital record or can be ordered by treating hospital physicians.

Disclosure of Interest: None Declared
Implementing clinical pharmacy practices into the management of pediatric patients with pituitary or adrenal pathology to improve medication safety and adherence

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**Background and Objective:** Pituitary and adrenal pathologies are rare diseases (prevalence 1/10 000). Chronic adrenal insufficiency is characterized by a lack of secretion of adrenocortical hormones +/- adrenal medulla. We are located in a university pediatric hospital, national reference center for rare pituitary disorders. The process of medication reconciliation is daily performed for pediatric patients admitted in the unit. Our objective was to describe the profile of pediatric patients with pituitary or adrenal pathology that need hospitalization in the unit, in order to optimize pharmaceutical management, especially patients' medication safety, and improve clinical outcomes.

**Setting and Method:** We conducted a prospective observational single-center study from April 2014 to March 2019 in a pediatric population with pituitary or adrenal pathology. Medication reconciliation and prospective data collection on an observational basis were performed (collection of the usual treatment and identification of discrepancies with the medical prescription on admission).

**Main outcome measures:** Hospital pharmacists have a central role in improving therapeutic management in children with chronic disease. Medication reconciliation upon admission associated with patient education can help to reduce drug-related problems and readmissions.

**Results:** 27 patients were included, i.e., 84% of hospitalized patients in our active patient list (66 patients); mean age 110+/−75 months, sex ratio 2.9, average length of stay 2.8 days. 8 patients had classical congenital adrenal hyperplasia (CAH), 1 had CAH with 11β-hydroxylase deficiency, 6 had Addison's disease, 7 had corticotroph deficiency and 5 were affected by other pituitary pathologies. 37% of admissions were unplanned 41% were related to medication. In medication history, we found 3+/−2 medications per patient and 1/3 patients had the combination therapy with hydrocortisone and fludrocortisone. Medication reconciliation unveiled 14 unintentional discrepancies (UD), and 1/3 of patients had at least 1 UD. The main identified UD were treatment omissions (86%) and dosing errors (14%), they were all corrected. These results are similar to that we have been able to highlight with medication reconciliation in the pediatric population. Regarding the number of drug-related admissions in this study, a patient education program is going to be created to promote the autonomy of patients and their families in the management of daily treatments. This will allow early treatment of acute adrenal insufficiency, which remains the most important risk of readmission for these chronic patients.

**Conclusion:** Despite a comprehensive interdisciplinary management of patients implemented with medication reconciliation, improving safety through the reduction of medication errors, the establishment of a therapeutic education program seems us essential regarding drug-related hospitalizations. It should be noted that patient education is recommended by international consensus on the management of primary adrenal insufficiency.

**Disclosure of Interest:** None Declared
HP-PC049
Evaluation of medication regimen complexity and medication adherence in patients with Benign Prostatic Hyperplasia
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Background and Objective: This study is aim to evaluate the complexity of the medication regimen and patients’ adherent to the prescribed medication in patients with benign prostatic hyperplasia (BPH) in the urology outpatient department.

Setting and Method: This study was conducted in outpatient urologic clinic of university hospital located in Istanbul. Patients aged older than 40 years were included if they used at least one medication for BPH with a period of at least last 4 weeks. Morisky Green Levine Medication Adherence Scale was used to measure medication adherence of the medication Regimen Complexity Index (MRCI) is calculated to measure and assess medication regimen complexity.

Main outcome measures: The main measures of our study was the measurement of the complexity of medication regimen and the patient adherence to the prescribed medication and to evaluate any effects of the complexity of medication over the adherence to the medications.

Results: Forty-five patients with benign prostatic hyperplasia included in this study. The mean age of the participants was 66.68±8.95. The median of co-morbidity was 3 (2-4). The median of number of medication was 4 (3-6). The mean score of Medication Regimen Complexity Index (MRCI) was 13.83±7.75 (3-36). Thirty patients (66%) were adherent to their prescribed medication. Although lower MRCI score was calculated in patents adherent to their medications when compared with non-adherent patents (in adherent patients MRCI mean was 13.83±7,75 vs in non-adherent patient was 14.26±8,57) but there is no statistically significant difference between them.

Conclusion: It is concluded that there is no association between medication adherence and medication complexity in patients with BPH. There is limitation to this study such as small sample group. Further investigation must be done in order to assess the factors enhancing the adherence including the complexity of the regimen and poly pharmacy along with patients’ disease factors.

Disclosure of Interest: None Declared
Background and Objective: There has been a dramatic increase in the emergence of antibiotic-resistant bacterial strains, which has made antibiotic choices for infection control increasingly limited and more expensive. Orthopaedic infection is common and many of them are complicated infections. Antibiotics play a crucial role in the treatment of these orthopaedic infections, apart from adequate and appropriate surgical intervention. The objective of this study is review the antibiotic consumption in orthopaedic wards between 2013 and 2018, identify the microorganisms that are responsible for common musculoskeletal infection, their antibiotic sensitivity in CHUC and assess current antibiotic patterns use in orthopaedic wards.

Setting and Method: Literature review on orthopaedic infections and the appropriate antibiotics to treat them. All the patients who were admitted in the orthopaedic wards in Coimbra University Hospital from 2013 to 2018 were reviewed. Demographic, clinical, analytical and therapeutic data were collected retrospectively by consulting the patient’s informatic clinical process.

Main outcome measures: The consumption of the five most prescribed antibiotics in orthopaedic wards presented in Daily Defined Dose (DDD). Antibiotic prescription data was classified using the Anatomical Therapeutical Chemical (ATC) system and converted into DDD.

Results: In the period under analysis, 24989 patients were treated in the orthopaedics wards, whose main diagnoses of infection including chronic osteomyelitis, pin tract infection, infected implants, traumatic and surgical wound infection. The main isolated microorganisms were Methicillin-sensitive *Staphylococcus aureus* (MSSA), Methicillin-resistant *Staphylococcus aureus* (MRSA), *Klebsiella* and multiresistant gram negative bacilli. MRSA remains the leading cause of infection in our community.

During these 6 years, the most frequently prescribed antibiotic was cefazolin (1695.66 DDD), amoxicillin (1102.53 DDD), vancomycin (491.96 DDD), piperacillin+tazobactam (349.56 DDD) and sulfamethoxazole+trimethoprim (159.55 DDD).

Conclusion: The ATC/DDD methodology provided delineation and interpretation of antibiotic usage patterns in the hospital. The antibiotic most consumed in the studied period was cefazolin, mainly as prophylaxis. The most common microorganism in orthopedic infections at our hospital was MRSA frequently treated with vancomycin.

Disclosure of Interest: None Declared
Proper use of systemic antibiotic treatments in acute geriatric unit


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Background and Objective: Due to the increase of antimicrobial resistance, the proper use of antibiotics is a public health priority in Europe. A French national study assessed that 25% of patients hospitalized in acute care received antibiotics in 2017 although there was no specific data for geriatric care. The goal of this study was to assess the prevalence and the proper use of systemic antibiotic therapy (AT) in acute geriatric unit (AGU).

Design: All patients hospitalized in the AGU of our French university hospital in January 2019 were included. A systemic AT was defined as all antibiotics received by a patient for an indication. Data were collected daily to assess the proper use of antibiotics: indication, antibiotics (dosage, administration route, duration), renal clearance, AT reevaluation and patient’s outcome. The proper use of ATs was assessed by an expert opinion (geriatrician and infectious disease specialist) after release of all patients included.

Results: Among the 50 patients included (24 women and 26 men, mean age 87 ± 2.8 years), 29 (58%) were treated by antibiotics, corresponding to 32 ATs analyzed: 20 patients had one AT, 6 had two and 3 patients had long term AT and therefore were not analyzed. Most of ATs were started in the acute geriatric (60%) and emergency (22%) units, mainly for pulmonary (50%) and urinary tract infections (22%).

Overall, 69 antibiotics were prescribed, mostly cephalosporin (n=18), amoxicillin/clavulanic acid (n=13), piperacillin/tazobactam (n=8) and metronidazole (n=10).

Out of the 32 ATs, indication was relevant in all cases but 10 were considered inappropriate (31%): 7 due to inappropriate treatment duration, 2 to inappropriate dosage (severe renal failure) and 1 to both.

Most of the antibiotics (94%) were reevaluated after 72 hours: 23% of reevaluations resulted in antibiotics modifications and 13% in treatment discontinuation.

Conclusion: Due to elderly patient’s vulnerability and susceptibility to infections (especially during winter), AT seems to be more frequent in geriatric unit than in other wards. Although most of the ATs were considered appropriate, a potential for improvement remains. The presence of a pharmacist in the unit could help preventing inappropriate prescriptions in particular by watching the adaptation to renal clearance.

Disclosure of Interest: None Declared
A suggestion of what “independent double checks“ really are
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Background and Objective: Double checking or using a “four-eyes principle” is considered as a useful strategy to detect errors and is part of pharmacists’ daily activities. However, the term “double check” is neither consistently nor clearly defined in research or in practice guidelines. In practice, a variety of procedures falls under the term, for example checking prepared drugs by a colleague, reviewing prescriptions for plausibility, or calculating doses by two persons. It is recommended to ensure that checks are independent, while it is not clear what this actually means for practice.

Design: We developed a framework differentiating and defining procedures that were up to now subsumed under the term “double check”. Furthermore, we developed a systematic definition of check independence.

Results: In the framework, we conceptualized a check as a comparison of two pieces of information (e.g., a prescription to a prepared drug). If this comparison is performed once or twice, it is called a single or a double check, respectively. Depending on how many persons are involved in each information comparison within a double check, eight different forms of double checks can be differentiated. If one person performs both checks alone, it is a single-person double check, but it is theoretically also possible to perform a double check with 4 persons: each comparison of information is performed by a different pair of persons. Furthermore, we distinguish between checks – that are cognitively a rather mechanistic procedure – and plausibility reviews. In plausibility reviews, information is critically reviewed by an individual using own experience and knowledge, e.g., of the patient. We furthermore distinguish checks from other information producing procedures, such as determining doses on the basis of another information (e.g., insulin dose depending on glucose), or calculating the volume needed for a prescribed dose. These produced pieces of information can later be compared with the prescription or with each other if produced twice, which would then be a check according to the framework. Check independence can be achieved on two dimensions. First, in order to maximize the independence between the person and the information to be checked, confirmation bias needs to be prevented in reducing any influence of prior knowledge. The second dimension is the independence of the two checks, for which a temporal, spatial or personal factor can be differentiated. A fully independent double check would be performed at two different points in time, in two different places by different persons who do not know what result to expect.

Conclusion: The framework differentiates procedures subsumed under the term “double check” or “four-eyes principle”. The definitions support pharmacists in clearly defining what type of activity they suggest to be performed in their hospitals. The framework is furthermore useful to evaluate existing checks. Clearly defining the dimensions of independence enables informed decisions about which kind of independence to enhance when designing check procedures.

Disclosure of Interest: None Declared
To implement a medication reconciliation program upon admission in surgical patients to reduce medication errors during healthcare transitions, and evaluate the results obtained after its implementation.

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Background and Objective: To implement a medication reconciliation program upon admission in surgical patients to reduce medication errors during healthcare transitions, and evaluate the results obtained after its implementation.

Design: Observational prospective study carried out between October 2017 and September 2018. Patients older than 65 years who received at least 5 drugs with more than 24 hours of admission in the General Surgery Unit were included. Variables considered: age, sex, number of prescribed drugs and medication errors (ME). The best pharmacotherapeutic history was developed, including diagnosis, medical history, allergies/intolerances, and complete list of chronic home medication, consulting the electronic history and APD-Prisma® (program of electronic prescription) and electronic recipe. This information was completed with the interview with patient/caregiver. We validated the electronic prescription, communicating to the prescribing physicians those discrepancies that needed clarification, verbally or through the internal messaging of APD-Prisma®, and resolving the discrepancies detected.

Results: 384 reconciliated patients. Median age: 74 years (66-83). 55.21% were male. 80 patients had a registered allergy. A total of 3023 drugs were reconciled, finding a total of 995 discrepancies (32.91%). Of these discrepancies, 433 (43.51%) were justified, while 562 (56.49%) were classified as unjustified or ME. The most frequent ME were: omission (91.52%), dose (3.38%), posology (3.2%) and therapeutic duplicity (1.9%). Of those 562 ME, the intervention of the pharmacist was accepted in 465 (46.73%) and the discrepancy was corrected (in 455 (97.85%) of them it was corrected before 24 hours, and in 10 (2.15%) after more than 24 hours). The communication with the doctor was carried out by electronic messaging in 75% of the cases and by direct oral route in 25%. Considering the ATC classification, the groups most frequently involved in ME were cardiovascular system, specifically the agents that act on the renin-angiotensin system (17.65%) and diuretics (8.82%).

Conclusion: The data of our study coincide with those obtained in other similar published reports, which reinforces the role of the pharmacist as a key element in the reconciliation of medication upon admission to surgical services.

Disclosure of Interest: None Declared
ABSENCE OF RESPONSE TO THE TREATMENT WITH CICLOPHOSAMIDE IN VASCULITIS OF CENTRAL NERVOUS SYSTEM: A CASE STUDY

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Background and Objective: Primary vasculitis of Central Nervous System (PVCNS) is a unusual type of vasculitis, of which there are very few studies about its treatment. The combined treatment with corticosteroids and cyclophosphamide has a better prognosis. We present the case of a patient diagnosed with PVCNS treated with cyclophosphamide.

Objective: To analyse the response of a patient with PVCNS to treatment with cyclophosphamide and corticosteroids.

Design: Male, 38 years old, admitted to the Intensive Care Unit (ICU) for intraparenchymal hemorrhage with hypertensive emergency. Variables collected: sex, age, diagnosis, pharmacological treatment, dose and duration of treatment with cyclophosphamide.

Results: Analytical and autoimmunity studies, magnetic resonance and angiography confirmed the diagnosis of PVCNS. Despite treatment with several antihypertensive drugs, the patient continued with hypertension. Treatment with high dose corticosteroids was started (1g/24h for 3-5 days). After the absence of response, treatment was started with cyclophosphamide 1000 mg/m² every 4 weeks. After 3 days, the patient presented neutropenia secondary to the treatment, complicated by an infectious process. Cyclophosphamide was temporarily suspended. The second dose of cyclophosphamide (600 mg / m²) was administered at 6 weeks. This time without any indication of secondary neutropenia. In cranial CT there was no improvement compared to the previous one.

Discussion: There are no controlled studies of therapy to establish which is the best treatment. In the authors’ experience, a 6-month period is a preferable duration of cyclophosphamide. Some clinicians opt for a maintenance therapy with azathioprine or mycophenolate mofetil, citing such an approach in other systemic vasculitis (1-2). In our patient the treatment with Cyclophosphamide was not prolonged due to the poor response obtained. Currently the patient continues in a coma, and given the severity of the injuries, the recovery prognosis is very low.

Conclusion: In this case, the treatment of PVCNS with cyclophosphamide and corticosteroids has not been effective. The incidence of adverse effects was high, reducing with lower doses of cyclophosphamide. Due to its potential toxicity, it is convenient to individualize its administration. More longitudinal studies are needed to accurately characterize the response to therapy in patients with PVCNS.

Disclosure of Interest: None Declared
HP-PC055
HOW TO OPTIMIZE THE USE OF INTRAVENOUS IMMUNOGLOBULIN DOSES IN OBESE PATIENTS WHILE THE SUPPLY CHAIN IS UNDER PRESSURE?
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Background and Objective: Intravenous Immunoglobulin (IVIg) is widely used in the high dose in autoimmune indication. Obese patients represent a significant and growing proportion of patients in our institution. To maximize efficacy while minimizing cost and risk of adverse events in obese patients (body mass index (BMI) ≥ 30kg/m$^2$), the OMEDIT IDF Guideline, recommended a systematic 20% IVIg dose reduction or an adaptation of the IVIg dose to lean body mass by bioelectrical impedance analysis (BIA).

The objective is to assess the implementation of the guideline and the estimated cost savings by the pharmacist while the dispensing.

Design: We prospectively studied the recommendation. Patients were selected on the basis of (1) IVIg treatment for in autoimmune indication (1 to 2g/kg), (2) BMI ≥ 30kg/m$^2$, (3) period between November 2018 and April 2019 in the institution. Every prescription of IVIg was analyzed to compare the standard dosing or the adaptation of the IVIg dose to the ideal dose (ID) obtained either by BIA or calculated using ID = (weight x 2) - 20%.

Evaluation of the avoided overconsumption of IVIG and the cost savings made.

Clinical evaluation was performed before every IVIg cure.

Results: Among 212 selected patients, 17 met inclusion criteria. Of these 17 patients, the recommendations were only respected for one patient (5.9%). The dosing adaptation was made for 16 patients (irrespective of weight) and it represents 578.4 gram of IVIg saved and 17,757 euros in savings (IVIg cost of 30.7 euros per gram).

Four patients have been clinically reassessed and are stable.

Conclusion: Despite a limited number of patients included, in most cases, the OMEDIT IDF Guideline recommendation was not respected. The further study will allow to confirm this practice.

To optimize the efficacy and safety use of IVIg, the dosing adaptation in obese patients is a real public health interest while the supply chain is under pressure.

Disclosure of Interest: None Declared
Background and Objective: The inappropriate use of Antimicrobials is the main cause of antibiotic-resistance development, resulting in significant clinical and economic consequences. In 2017 Italian hospitals recorded 7000 deaths due to bacterial infections. The Ministry of Health developed a "Antimicrobial-Resistance National Plan 2017-2020", then implemented in our Region to promote effective Antimicrobial Stewardship programs. Our Unit of Pharmacy introduced the computerized model of Personalized Prescription (PP) for injectable Antimicrobials to monitor their prescriptive appropriateness and spending trends.

Design: We analyzed the PPs of Antimicrobials received in our Pharmacy in the 1st January-30th April2017 and 1st January-30th April2018 periods, with particular attention to: Tigecycline, Ertapenem, Ceftolozane+Tazobactam, Daptomycin, Amphotericin B, Voriconazole, Caspofungin, Micafungin, Anidulafungin.

Results: Comparing the two periods, the PPs increased by 15.32% in 2018, causing an increase of 17.81% of the dispensed units. Nevertheless the overall spending decreased by 20.53%. The molecule that most affects the expense is Caspofungin (59.71%) followed, with a very important gap, by Daptomycin (11.11%). Anesthesiology Unit was responsible for the most significant increase in the use of Antimicrobials, both in terms of DDD/patient ($\Delta_{18vs17}=+99.18\%$) and PDD ($\Delta_{18vs17}=+80.22\%$), due to the doubling of patients treated with the innovative technique Extracorporeal-Membrane-Oxygenation. In Infectious Diseases Unit patients increased tenfold in 2018, the PDDs increased by 38.57%, but the DDD/patient only of 8.57%; expenditure increased significantly ($\Delta_{18vs17}=+252\%$). In 2018, patients with Antimicrobials polytherapy increased by 66.67% compared to 2017. In almost all cases an Antibacterial agent was associated with an Antimycotic. In 2018 patients with a therapy shift increased by only 2%; 10.64% of the patients treated in 2017 and 18.96% in 2018 had, for the same therapeutic indication, shift towards generic Antimicrobials (Linezolid, Meropenem, Levofloxacin).

Conclusion: The increasing incidence of infections caused by multiresistant microorganisms leads to an increase in morbidity, mortality and costs associated with healthcare. Antimicrobial Stewardship is an essential tool for surveillance, prevention and control of infections and bacterial resistance. The introduction of the computerized model of PP allows to limit the incorrect use for indication and dosage and to promote the appropriateness. It is possible to reduce the relative expense, orienting the prescription towards cheaper antimicrobials while maintaining the criteria of appropriateness suggested by the guidelines.

Disclosure of Interest: None Declared
NUTRITIONAL PARENTERAL DISPENSATIONS PERFORMED BY PHARMACY IN DIFFERENT HOSPITAL SERVICES
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Background and Objective: The parenteral nutrition validation, elaboration and dispensing are some of the most important functions carried out from the hospital pharmacy services. The realization of an analysis situation by studying the distribution of the requests made, allows improving the adequacy and optimization of these preparations. The objective is study and interpret in a quantitative way the dispensation of parenteral nutrition according to the type of nutrition and service demanded.

Setting and Method: Retrospective observational study about number of central and peripheral parenteral nutrition elaborated from the pharmacy service for patients admitted to hospitalization facilities from November 2017 to September 2018 inclusive. The data was obtained from the Kabisoft® parenteral nutrition prescription program.

Main outcome measures: To calculate the number of preparations, it was considered a unit each nutrition that it was prepared per patient and day. The prescriptions were associated with a medical specialty depending on the prescribing physician and not with the hospitalization floor.

Results: 1,767 requests for parenteral nutrition were received, of which 1339 were central and 428 peripheral. The highest demand for parenteral nutrition took place in the surgery department with a total of 986 preparations, intensive care unit (302), nephrology (173) and oncology (145). 1326 tricameral standard formulations and 441 individualized nutrition were prepared. The digestive and pediatric services performed all the individualized prescriptions. The main cause of suspension was transition to oral diet, being 83% of cases. Other minor reasons for termination were clinical improvement and worsening of the patient’s condition.

Conclusion: The appropriate adaptation of the parenteral nutritional treatment is reflected in the high proportion of patients who progress orally. The clinical service with the highest demand for parenteral nutrition was surgery, which can be explained as a consequence of the habitual appearance of paralytic ileus in post-operative periods. Digestive physicians and pediatricians performed 100% individualized nutrition, due to the higher gravity of their patients.

Disclosure of Interest: None Declared
The effect of a Clinical Decision Support System (CDSS) on the number and type of consultations of clinical pharmacists

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Background and Objective: Drug-related problems (DRPs) often occur in hospitalized patients. DRPs can lead to consultation of the clinical pharmacist by caregivers. In Tilburg a computerised physician order entry system (CPOE) with integrated clinical decision support system (CDSS) was implemented hospital wide in April 2018. The extra information about medication, given by the CDSS, may result in other/new kinds of questions about DRPs, but evidence on this is lacking. Therefore, the primary objective of this study was to determine the influence of implementing CDSS on the number and type of consultations of clinical pharmacists.

Setting and Method: The study was conducted in a 1000-bed teaching hospital in the Netherlands. We conducted a pre-CDSS/post-CDSS implementation study with an interrupted time-series design. Before implementation (pre-CDSS) data were collected during the months October 2017, December 2017 and February 2018. On April 1st 2018 an Electronic Health Record including CPOE/CDSS (EPIC®) was implemented hospital wide with a Big Bang implementation. After implementation (post-CDSS) data were collected during the months April 2018, June 2018 and August 2018. During daily pharmacy practice all consultations concerning hospitalized patients were registered and classified by using a standardized, locally developed classification method.

Main outcome measures: The primary outcome was the number and type of consultations per admission of clinical pharmacists.

Results: Interim analysis showed that pre-CDSS the clinical pharmacist was consulted 557 times and post-CDSS 688 times per 10,000 admissions. Consultations were classified into three main categories: patient (increase 8%), product (decrease 21%) and process related (increase 100%). Increase was mainly seen in the subcategories electronic prescribing (n = 22 pre-CDSS vs 80 post-CDSS), therapeutic drug monitoring (21 vs 52), administration (30 vs 56) and allergy/intolerance (13 vs 27).

Conclusion: Implementation of CDSS changed the number and type of consultations of clinical pharmacists. Especially consultations about process-related issues increased. After implementation of the CDSS the physician had easier access to and more information about drugs and potential DRPs. This could explain the increase in number and shift in types of consultations of clinical pharmacists.

Disclosure of Interest: None Declared
Energy and protein intake during the transition from parenteral to oral nutrition in adults undergoing gastrointestinal surgery

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Background and Objective: Weaning from total parenteral nutrition (TPN) to oral diet should be done when >60% of energy requirements can be met via enteral route. The aim of the study is to evaluate this transition in adults undergoing gastrointestinal surgery.

Design: We conducted a prospective observational study between January and April 2019 in a tertiary university hospital. The sample included gastrointestinal surgical patients receiving TPN as the unique source of nutritional support who started oral diet. Exclusion criteria were: TPN weaning interruptions, inability to record dietary intake, critical care and renal impairment.

Patient demographics, clinical and nutritional data were obtained from medical and nutrition records. TPN composition was recorded on an in-house software. During the TPN weaning period, daily dietary intake was registered by patients or caregivers on a record sheet. Surgeons decided when to start oral diet and when to stop TPN, at their discretion.

Energy and protein requirements were estimated by Harris-Benedict equations (stress factor 1.3) and 1.5 g protein/kg/day (adjusted body weight was used in obese patients).

Results: A total of 21 patients met inclusion criteria. Patient’s characteristics were (mean): 67.7 years, 38.1% women, 5.7 Charlson comorbidity index, 70.1 kg, body mass index 24.9 kg/m². The following types of gastrointestinal surgery were included: bowel resection(14), pancreaticoduodenectomy(3), esophagectomy(2), gastrectomy(1) and bariatric surgery(1). Mean durations of TPN and weaning from TPN to oral diet were 15 days (range: 4-36) and 2 days (range: 1-3), respectively. On the last day of TPN, 17 patients had a total nutrition intake (parenteral and oral) that met energy needs and 14 patients achieved protein needs (considering 75-110% of requirements). Oral intakes provided an average of 8.2 kcal/kg/day and 0.39 g protein/kg/day. At this time, all patients had an oral intake <60% of energy needs and in 9 of them it was <30%.

Conclusion: In all cases, TPN was discontinued when adequate oral intake had not yet been reached. Ideally, clinicians and surgeons should have easy access to real-time data to assess the energy and protein received. This study suggests that an accurate, automated system to record total nutrition intake could substantially benefit decisions on TPN withdrawal.

Disclosure of Interest: None Declared
Analysis of the fall-related risk of pharmacotherapy: a case-control study in Czech hospitals
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Background and Objective: Drugs are perceived as an important modifiable risk factor of falling, while falls are among the major problems occurring in hospital settings. The aim was to analyze the effect of pharmacotherapy on the risk of falls in hospitalized patients.

Setting and Method: A multicenter prospective case-control study was conducted from January to December 2017, using the data from 4 hospitals in the region of South Bohemia, Czech Republic. An online database was constructed to collect patient and fall-related data. Each fall was assigned to appropriate controls (min. 5) based on gender, age, length of hospitalization, and the number of drugs. Use of drugs was evaluated using the ATC Classification system. Univariate and multivariate correlations were performed with a significance level of p<0.05.

Main outcome measures: Difference of fall-risk increasing drugs according to ATC Classification between fall cases and controls.

Results: A total of 222 fall cases (107 males, median age 81 years) and 1,076 controls (516 males, median age 80 years) were included. According to the first ATC level, drugs from S, N, and P groups were associated with fall-related risk compared to controls (p<0.05). Further analysis of ATC levels showed that only psycholeptics (N05), antipsychotics (N05A), tiapride (N05AL03), and ophthalmological (S01) were associated with falls (p<0.001). Regression analysis revealed use of psycholeptics N05 (OR 2.06; 95% CI 1.56-2.76) or ophthalmologicals S01 (OR=2.72; 95% CI 1.37-5.41) as the factors with the highest fall-related risk.

Conclusion: Apart from the commonly considered fall-risk increasing drugs, other groups, such as ophthalmological, should be taken into account in hospital settings. However, due to the multifactorial nature of falls, it is difficult to evaluate the effects of individual drugs in the context of other risk factors of falls.

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Clinical Pharmacist-Led Medication Review for Pediatric Patients at Hospital Setting
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Background and Objective: The aim of this study is to evaluate clinical pharmacist-led medication review for pediatric patients at a hospital setting.

Setting and Method: This cross-sectional study was conducted between 13 November 2017- 13 April 2018 in an education and research hospital in Istanbul. Clinical pharmacist-led medication review was conducted by using Pharmaceutical Care Network Europe (PCNE) Classification V8.02 in pediatric inpatients at general pediatric service.

Main outcome measures: Frequency and type of drug-related problems identified; the percentage of accepted recommendations by the physician.

Results: In the study, 43 patients (21 male, 22 female) were included and the median age of the patients was calculated as 6 (3-36) months. 11(25.58%) of the 43 patients had 16 DRPs. 9 (56,25%) of the possible DRPs related to drug-drug interactions, while 5 (31,25%) were related to dose selection. It was observed that 63% of the problems were found at the drug selection stage. Of these problems, 87,5% detected were accepted by the physician.

Conclusion: In conclusion, numerous studies have been performed in adult patients by using PCNE to ensure rational drug use; however not enough in pediatric patients. Clinical pharmacists have an important role in the classification of DRPs and to provide rational drug use in pediatric patients.

Disclosure of Interest: None Declared
Evaluation of Medication Adherence of Hypertensive Patients with Cardiovascular Comorbidities

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**Background and Objective:** The aim of the study was to evaluate the medication adherence of hypertensive patients with cardiovascular comorbidities.

**Setting and Method:** This study was conducted in internal medicine ward of a training and research hospital in Istanbul between January-April 2019. Hypertensive inpatients who had at least one cardiovascular disease and who used at least one drug for these indications were included in the study.

**Main outcome measures:** The valid and reliable Turkish adaptation of 13-item Medication Adherence Self-Efficacy Scale-Short Form (MASES-SF) was used to evaluate adherence of participants. The higher score shows the better adherence. Scores range from 1 to 4.

**Results:** Among a total of 51 patients (43.1% male) the mean of age was calculated as 71.96±11.27. Of them 74.5% were educated <8 years. It was observed that alcohol consumption (5.9%) and smoking (11.8%) rates were low. Twenty participants stated that they had a family history of cardiovascular disease. The median value of medications used daily was 7 (6-8). Mean item scores of MASES-SF ranged from 2.94 to 3.59. There was no statistically significant correlation in education level and gender with MASES-SF scores. Despite a decrease was observed in adherence scores of patients with an increase in the number of medications used, this association was not found as statistically significant.

**Conclusion:** Although patients had an additional cardiovascular disease to hypertension, a higher rate of adherence was determined compared to other studies conducted in Turkey¹,².


**Disclosure of Interest:** None Declared
Background and Objective: There are limited data about the role of clinical Pharmacist as a direct care provider for renal transplant recipients, especially in the Arab world. This study aims at describing a single center experience in providing clinical pharmacy services for recently kidney transplanted patients.

Design: A pilot descriptive study has been conducted from January 2019 till April 2019 in the renal transplant unit of the Armed forces hospitals southern region, Saudi Arabia. A clinical Pharmacist attended the renal transplant selection committee weekly meetings, attended daily rounds, provided necessary drug therapy recommendations, responded to drug information requests, conducted medication reconciliation upon patients' admission and discharge and provided verbal and written pre and post-transplant patient education (during admission, post-transplant clinics visits and through social media).

Results: During the study period, 21 patients transplanted in the unit (52.4% females, mean age = 40.5 years SD=17.35 years). The clinical Pharmacist had 141 recommendations (6.7 recommendations per patient). Sixty-two recommendations (44%) were medication reconciliation related, 11 recommendations (7.8%) based on drug information requests while the remaining 48.2% were pharmacotherapeutic recommendations provided during daily rounds. Clinical Pharmacist's recommendations involved immunosuppressive agents (34.8%), Antimicrobials (13.8%), bone-mineral disorders medications (11.5%), Electrolytes (9.4%), Anemia management medications (8.6%), Anticoagulants (4.3%), Antihypertensives (3.6%), antidiabetics (2.9%) and Miscellaneous medications (11.1%). The recommendations involved medications doses increases (38.2%), medications added (25%), doses reductions (16.2%), therapeutic drug monitoring lab requests (11.8%), medication discontinuation (5.9%) and medication substitution (2.9%). The overall physicians' acceptance rate of clinical Pharmacist's recommendations was 95.6%.

Conclusion: The study findings suggest that clinical pharmacists could positively impact the quality of care for renal transplant recipients and promote their medication safety.

Disclosure of Interest: None Declared
Analysis of medication reconciliation service at admission to the University Rehabilitation Institute Soča
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Background and Objective: Medication reconciliation is the process of identifying the most accurate current medication list and comparing it with the hospital admission medication orders. Systematic reviews and meta-analysis have shown evidence that pharmacy-led medication reconciliation interventions at hospital admission reduce medication discrepancies. Our objective was to analyse the medication reconciliation service at hospital admission.

Setting and Method: University Rehabilitation Institute, Republic of Slovenia – Soča (two wards); retrospective analysis (3 months in 2018) of medication reconciliation service at hospital admission based on High 5s protocol and classification of medication discrepancies.

Main outcome measures: Frequency of medication discrepancies between the best possible medication history and admission orders, classification of discrepancies, also in regards to their intention and documentation, the proportion of accepted pharmacist’s proposals for resolving unintentional discrepancies.

Results: 101 patients (14-85 years, average 58.0 years; 35.6% female) were included in the study. 97/101 (96%) patients had altogether 922 prescription medications (median 9 medications per patient, range 1-23). For 388/922 (42.1%) prescription medications the discrepancies were identified and 87/97 patients (89.7 %) had at least one medication discrepancy (median 4 discrepancies per patient, range 0-12). Most frequently classified types of discrepancy were medication omission (141/388; 36.3 %), change in dosing regiment (121/388; 31.2 %) and addition of a new medication (94/388; 24.2 %). 130/388 (33.5 %) of all discrepancies were intentional and documented, 64/388 (16.5 %) intentional and undocumented, 65/388 (16.8 %) unintentional and 129/388 (33.2 %) unspecified (undocumented and with unknown intention due to non-clarification with the prescriber). 38.5 % of unintentional and 9.5% of unspecified discrepancies were resolved after pharmacist’s intervention. The pharmacist discussed the discrepancies with the prescriber in 50/87 (57.5%) patients. Altogether pharmacist’s proposals for discrepancy resolution were accepted in 36/181 (19.9 %) of unintentional and unspecified discrepancies.

Conclusion: The number of identified discrepancies confirms and justifies the need for pharmacist-led medicines reconciliation to ensure precise and accurate medication list at hospital admission. The benefit of medication reconciliation could be improved by better integration of this service in a multidisciplinary team.

Disclosure of Interest: None Declared
The role of a clinical pharmacist in a preoperative assessment clinic in Norway
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Background and Objective: The preoperative assessment clinic (POAC) is a measure to reduce bed occupancy and length of stay at surgical wards by screening elective patients in an outpatient setting. This includes the preparation of the patient’s medication history. A previous study in Norway has found medication discrepancies in 80% of medication histories obtained without a structured medication reconciliation (MR) process [1]. Several studies in other countries has shown that involving a clinical pharmacist in a preoperative setting has a positive effect on patient safety. To our knowledge, St. Olav’s University Hospital is the only hospital in Norway employing a pharmacist in such a function. We therefore aim to describe the role of the clinical pharmacist in the POAC at our hospital.

Design: The clinical pharmacist prepares a structured medication history for each patient admitted via the POAC, by conducting an interview according to the Integrated Medicines Management model (IMM) [2]. This includes the listing of prescribed drugs, OTC drugs, supplements and herbal medicines, in addition to an evaluation of potential interactions, patient adherence, drug allergies and experienced side effects. The medication history is documented in the hospital’s medical records, and used to prepare the drug chart upon admittance.

Results: In the three months where the clinical pharmacist was employed in the POAC for all surgical disciplines (January to March 2019), a structured medication history was prepared for 486 patients. This amounts to 46.9% of all patients scheduled for elective surgery in the study period. The pharmacist spent 276.8 hours in the POAC, averaging 21.3 hours and 37.4 patients per week. This is a substantial number of patients reached compared to bedside medicine reconciliation conducted at a ward, where the average number is approximately 15 patients per week. The two situations are not directly comparable, however, since the latter process also includes a structured medicine review.

Conclusion: A structured medication history prepared by a pharmacist in the POAC is effective in terms of patients screened, and could potentially increase patient safety by reducing medication discrepancies. Since other studies have established the effect of this type of intervention on patient safety, further research should be directed towards evaluating its cost-effectiveness.

References:

Disclosure of Interest: None Declared
A pharmacist in the emergency ward: are you satisfied?

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Background and Objective: Since November 2016, a pharmacy resident is present in the emergency ward. His main activities are medical reconciliation (MR), pharmaceutical analysis and follow-up of iatrogeny. After one year and a half we wanted to measure prescribing doctors satisfaction and attest the usefulness of such a presence.

Design: A questionnaire was submitted to prescribing doctors during a 10 days period in April 2018. It consisted of 3 sections about clinical pharmacy activities, the impact of MR and optimized medical reconciliation at entrance (OMRE) on patient safety and the information to be transmitted to patients or general practicioner (GP) at exit.

Results: 48 prescribers (32 seniors and 16 residents) were present during this period and 32 (66%) answered the questionnaire.

Concerning clinical pharmacy activities 28 found the completion of OMRE very relevant and 4 relevant. Transmission of pharmaceutical interventions was considered very satisfactory for 12 (37%) of prescribers and satisfactory for 18. But only 10% found the document used for the OMRE easy to understand by themselves without explanations. 75% were very satisfied and 25% satisfied with the availability of pharmaceutical team to answer them. The drug equivalence tables put in place satisfied 30 of the 32 respondents.

69% were very satisfied with the involvement of pharmaceutical team in the monitoring of pharmacovigilance, and 22% satisfied (time saving for medical team).

Only 13 (41%) strongly agreed OMRE be delivered directly to patients and 53% agreed. 31 would like the OMRE to be recorded in computerized medical record (CMR). Finally, 21 prescribers would find very relevant that the OMRE be included in the outgoing letter addressed to patient's GP.

Conclusion: The presence of a pharmacy resident strongly satisfies the majority of prescribers both for help with treatment prescription as for its involvement in pharmacovigilance. Concerning the transmission of OMRE directly to patient, only 41% would be quite for it. This can be explained by the wish to ensure information by official channels. Ideally, OMRE should be included in the CMR as well as in the outgoing letter adressed to the GP, after validation by the doctor and the pharmacy resident.

Moreover, the non computrization of the ward made pharmaceutical analysis and transmission of pharmaceutical intervention uneasy increasing the risk of misunderstanding. We should redo this study after computerization of emergency ward.

A similar questionnaire was also submit to nurses to evaluate their opinion on this presence. Moreover, a full study on the impact of the presence of a pharmacy intern is currently underway.

Disclosure of Interest: None Declared
Antibiotic utilization patterns in children admitted to a pediatric general medical ward in North Cyprus

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Background and Objective: Antibiotics have many advantages in treating infections, but at the same time it can be unnecessary, harmful or life threatening if used in the wrong way. In hospitals, up to 50% of antimicrobial use is inappropriate. Pharmacists play an important role in prevention of antimicrobial resistance. The aim of the study is to assess usage of antibiotic in hospitalized children, and based on the findings recommend solutions and recommendations in an effort to appraise the rational use of antibiotics in pediatric wards.

Setting and Method: A retrospective study of antibiotic utilization patterns in pediatrics between 1st September 2017 and 30th September 2018. Patients’ information and data was obtained from patient archives and electronic records in Near East University Hospital (NEUH). There were 332 pediatric patients admitted to NEUH during 1st September 2017 and 30th September 2018. 229 patients were using antibiotics and were included in the analysis. The rationality of antibiotic prescriptions were analyzed using Infectious Diseases Society of America (IDSA), Centers for Disease Control and Prevention (CDC) guidelines, Up TO Date, World Health Organization (WHO) e-pocketbook guidelines. Also, The rationality of antibiotic prescriptions was analyzed by a team of an infectious diseases clinician, a pharmacologist, clinical pharmacist and a researcher step by step looking to the drug selection, dose, route of administration, duration of therapy, lab tests and cultures each case individually.

Main outcome measures: prevalence of irrationality and associated risk factors.

Results: Out of 332 patients, 229 cases (67%) were using antibiotics and were included in the analysis. Of them 107 (46.7%) were females and the rest 122 (53.3%) were males. In general 153 (66.8%) of the patients including newborns received antibiotics rationally while 76 (33.2%) were identified as irrational. Preterm newborns infections was the most commonly associated disease with an irrational antibiotic use practice (p<0.001) followed by Pneumonia (p<0.001). The most common identified problem was Missing culture 39 (12.5%), followed by Irrational drug selection 30 (9.6%) (p<0.001).

Conclusion: High prevalence of irrationality in antibiotics use was observed in hospitalized pediatric patients in North Cyprus.

Disclosure of Interest: None Declared
Evidence of a risk management program for the use of valgancyclovir on an outpatient regimen

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Background and Objective: Valgancyclovir is a hospital-exclusive drug whose outpatient use has been mostly intended for disseminated cytomegalovirus infection. Hematologic alterations are the most common adverse effects. For this reason, regular monitoring of analytical values (complete blood count and platelet count) is recommended because if the results so require, treatment with hematopoietic growth factors and/or dose interruption may be necessary. To evaluate the hematological profile of patients on outpatient valgancyclovir use and the occurrence of frequent laboratory adverse reactions described in the summary of product characteristics (SPC), as well as the importance of a risk management program in control of them.

Setting and Method: Prospective collection, since the opening of pharmacy services until July 2018, of clinical and laboratorial data based on clinical processes of patients undergoing valgancyclovir therapy on an outpatient basis. Through its analysis it was possible to define the mean time of therapy and distribute the patients by degree of anemia, leukopenia, neutropenia and thrombocytopenia.

Main outcome measures: Categorization into degrees of anemia, leukopenia, neutropenia and thrombocytopenia. Definition of average treatment time.

Results: There were included 48 patients with mean age of 45.5 years and predominantly HIV-positive (62.5%). 43.7% of them were male. Infectiology had 69% of the cases and the most prevalent diagnosis was the disseminated disease state. The mean treatment time was 114 days. In the first week, 17 patients had grade 2 anemia and 4 patients had already grade 4 anemia. Also, 1 patient had grade 3 thrombocytopenia and 2 patients had grade 4. Likewise we identified 6 patients with grade 3 and 1 with grade 4 leukopenia and 1 patient with grade 3 neutropenia and another 1 with grade 4.

Conclusion: Knowing that the worsening of hematological parameters, described in the drug's CEP, is frequently observed when patients receive valgancyclovir treatment on an outpatient basis, the need for frequent monitoring of these parameters is very clear. Thus, there appears to be evidence of the advantage of implementing a Risk Management Program to monitor such cases.

Disclosure of Interest: None Declared
Analysis of Therapeutic Adherence in Multiple Sclerosis Patients determined with the Portuguese Version of the Beliefs about Medicines Specific Questionnaire

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Background and Objective: Multiple Sclerosis (MS) is a chronic, inflammatory and demyelinating disease which affects the Central Nervous System. It is considered the most incapacitating disease in young adults. The Therapeutic Adherence (TA) is extremely important in chronic diseases in order to achieve the intended effectiveness of the established therapeutic.

The Pharmacists of the Beatriz Ângelo Hospital (HBA) Pharmacy Department are responsible for the follow-up of the MS patients in the Pharmaceutical Appointment. In this appointment, the Pharmacists managed to measure the TA by using the Beliefs about Medicines Specific Questionnaire (BMQ). This questionnaire is valid for the Portuguese population and it has proven itself very useful in the evaluation of the patients’ believes and the relation between these and the adherence to the treatment, in several illnesses. The Portuguese version of the questionnaire features a good internal consistency, the structure being similar to the English version.

This is a exploratory analysis of the TA in MS relapsing-remitting patients followed in the HBA, using the BMQ. This questionnaire is valid for the Portuguese population and is very useful in the evaluation of the patients’ believes and the relation between these and the lack of TA.

Design: Using the hospital software, it was possible to analyze the medication dispense dates and correlate these with the BMQs fulfilled on the same time frame, between two periods of time: June 2017 and January 2018.

Results: 79 patients who fulfilled the BMQ were included and their adherence data validated. The adherence rate of the sample was 1,00 (SD of 0,108, IC 95%). 5 subgroups were analyzed: naïve (A, n=5); 1st line who kept the treatment (B, n=37); clinical trial (C, n=3); change of therapeutics in first line (D, n=21); 2nd line patients (E, n=13). Correlating the BMQ with the therapeutic adherence, it was possible to verify that patients with poor adherence rates (<0,9 e >1,1) have a lower medium BMQ score than the patients within the ideal adherence rate range (0,9 – 1,1), -0,47 vs. 2,52, respectively (p<0,05). In the groups B and D it seems to exist a positive correlation between the BMQ and the adherence rate. Between oral and subcutaneous formulations there were significant differences in the BMQ score, 3,452 vs 0,854 (p<0,05) but no difference in the adherence rate (p=0,93).

Conclusion: The BMQ seems to be a suitable tool to evaluate the treatment adherence. Despite the reduced sample size, the 1st line patients who kept the treatment (B) and the 1st line patients (D), seem to present a more significant correlation between the BMQ score and the adherence rate.

The administration route seems to have little impact in the real adherence of patients, despite differences in the BMQ score.

Disclosure of Interest: None Declared
Evaluation of carboplatin prescriptions among obese patients
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Background and Objective: Carboplatin is a widely used platinum compound in chemotherapy regimens for the treatment of gynaecologic, pulmonary or urothelial malignancies. Carboplatin posology relies on glomerular filtration rate (GFR) and area under the curve (AUC). The Calvert formula is a method used to determine the dose for a given target AUC. In overweight and obese patients, GFR may be overestimated because real body weight is used instead of ideal body weight (IBW) or adjusted body weight (AjBW) (Kaag, 2013). It may result in differences in carboplatin dosage that correlate with clinically relevant events, such as dose-limiting haematotoxicity. The objective of this study was, first, to evaluate carboplatin physician prescriptions among obese patients (body mass index (BMI) > 30 kg/m²) and then, to identify presence of haematotoxicity, treatment delays, and dose reductions.

Setting and Method: A retrospective monocentric study using data from the chemotherapy prescribing software and patients' medical records through year 2018 for those who received carboplatin therapy.

Main outcome measures: - Demographic information: age, sex, weight, height, creatinin levels, pathologies, protocols and associations.
- Grades and delay of haematotoxicity occurrence according to NCI common toxicity criteria.

Results: 21 obese patients (mean BMI: 34.1 kg/m²) underwent carboplatin-based chemotherapy in 2018. 25 patients with normal BMI (18-25 kg/m²) were also analyzed as a control, paired on chemotherapy protocols with the obese group. In comparison with AjBW, obese patients were overdosed at mean 23.6% in carboplatin. There were no significant differences in haematotoxicity occurrence between both groups, unless for neutropenia which was higher in normal BMI patients (52.0% vs 19.1%, all grades, p<0.05).

Conclusion: There was an overall slight trend for more toxicity in normal BMI patients. It could be due to older age (mean 71.8 vs 66.3 years), or uncapped creatinin serum concentration. 30.2% were under 61.6 µmol/L versus 23.3% for obese patients. Thus, more normal BMI patients should be overdosed in carboplatin. Carboplatin prescriptions don't seem to cause more toxicity among obese patients. However, a serum creatinin concentration threshold will be discussed with oncologists in order to avoid carboplatin overdose for all patients.

Disclosure of Interest: None Declared
ANALYSIS OF ADVERSE EVENTS CAUSED BY OCRELIZUMAB IN A TERTIARY LEVEL HOSPITAL
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Background and Objective: Multiple sclerosis (MS) is a demyelinating, degenerative and autoimmune disorder of the central nervous system. Ocrelizumab has been approved for patients with relapsing-remitting multiple sclerosis (RRMS) with active disease, defined by clinical or imaging features, and early primary progressive multiple sclerosis (PPMS) with imaging features characteristic of inflammatory activity. Our objectives are to describe the protocol implemented for the preparation and administration of ocrelizumab in our Pharmacy Service (PS) and the adverse effects (AEs) detected.

Setting and Method: Retrospective observational study of patients treated with ocrelizumab in a tertiary level hospital. Main outcome measures: Demographic parameters, diagnostic, previous treatments for MS, number of ocrelizumab doses administered and developed AEs. The electronic protocol prescribing were developed at the PS. This protocol design ensures greater safety, facilitates the prescription, proper administration and standardization of treatment among patients. The protocol includes the first and second ocrelizumab 300mg infusion and the premedication drugs (metyhprednisolone, antihistamine and acetaminophen). The maintenance protocol consists of an ocrelizumab 600mg infusion every 6 months after first dose.

Results: Five patients (4 men) were included in the study. Median age: 47.4 years (27.9-55.5). Diagnostic: 4/5 with PPMS and 1/5 with RRMS. 1/5 patient had been treated with interferon beta-1b and the others had not received any treatment by the time they started being treated with ocrelizumab. 4/5 had just received the first and second doses and 1/5 the first maintenance dose. Developed AEs during first infusion were skin erythema (2/5), pruritus (1/5), hypotension (1/5) and dizziness (1/5). All the AEs were controlled with the premedications drugs and it was not necessary to stop the ocrelizumab infusion in any patient.

Conclusion: The role of the pharmacist is critical at various stages, from the preparation and the administration guidelines, to detection, monitoring and reporting of adverse effects. Ocrelizumab is presented as an alternative for those patients who do not respond to standard therapies or who have rapidly evolving severe RRMS, and most especially in PPMS where there are no more options of treatments. Because of its mechanism of action it is important to closely monitor patients. There is no enough follow-up to determine the effectiveness of ocrelizumab.

Disclosure of Interest: None Declared
PROTON PUMP INHIBITORS INTERACTIONS WITH NEW ORAL ANTINEOPLASTIC THERAPIES: AN OUTPATIENT ASSESSMENT.

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Background and Objective: The amount of interactions between oral antineoplastics drugs described in the scientific literature is huge. Some are very important because of their weight in the safety or the efficacy of the treatments. In this study we want to assess the frequency of interactions with Proton Pump Inhibitors (PPI) of three antineoplastic drugs dispensed in the outpatients area of our hospital.

The objective of this study is to describe the amount of interactions between PPIs and three oral antineoplastic drugs: pazopanib, gefitinib and palbociclib, dispensed in the outpatients area of our hospital. We also wanted to assess in which cases there were PPI stopping when the interaction was detected.

Setting and Method: We performed a research of the patients who were treated with these three drugs, collecting demographic data, dose of the antineoplastic, presence of PPI or ranitidine before starting the antineoplastic treatment and if it was interrupted with it.

Main outcome measures: With this data we performed a statistical analysis.

Results: Clinical records of 38 patients were reviewed. 19 patients were on palbociclib 125 mg treatment. 8 were on gefitinib 250 mg and 11 were on pazopanib 400 mg.

Within palbociclib patients, 17(90%) were women. The median age was 59(52-68) years. 3(15%) of this patients never changed their PPIs prescription or stopped it. 8(40%) patients stopped their prescription of PPI and 4(20%) changed their prescription to ranitidine.

Among gefitinib patients, 6(75%) were women with a median age of 73(56-75) years. 2(25%) patients had not PPI treatment at the beginning. 1(12.5%) patient did not stop PPI treatment and 5(62.5%) patients stopped their PPI. Pazopanib patients were 7(63.63%) women. They had a median age of 67(60-71.5) years. Prescriptions of PPIs were not present in 8(72.72%) patients. The three patients with PPIs prescriptions continued with their treatment.

Conclusion: A great number of interactions between PPIs and this drugs were detected. Only 36, 84% of the patients did not have any clinically relevant interaction. We observed that deprescription or change of PPIs due to an interaction with an oral antineoplastic agent was not done in 100% of the cases in the drugs we assessed.

Disclosure of Interest: None Declared
ASSESSMENT OF THE INTERACTION BETWEEN PROTON PUMP INHIBITORS AND CAPECITABINE.
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Background and Objective: Interactions of oral antineoplastics are widely known and some of them are of great relevance, since they can influence the efficacy and safety of a treatment. In this study, the interaction of capecitabine, an oral antineoplastic drug widely used in breast and colon cancer therapy, with proton pump inhibitors (PPIs) was evaluated. The objective of tis study is describe the frequency of the interactions between PPIs and capecitabine, dispensed in the outpatient area of our hospital. We wanted to evaluate in which cases the therapy with PPIs was suspended, or was changed by ranitidine once the interaction was detected.

Setting and Method: An evaluation of patients treated with capecitabine was made in our hospital, collecting demographic data (age, sex), average daily dose of capecitabine, presence or absence of PPIs before the start of capecitabine treatment and whether it was suspended or changed by ranitidine.

Main outcome measures: With these data we performed a statistical analysis.

Results: The medical records of 55 patients were reviewed. 50.9% of the patients were men. The median age is 68 years. The average dose of capecitabine was 1500mg every 12h.
Of the 55 patients, 17 patients (30.9%) did not previously have a PPI prescription or started a PPI treatment once they started with capecitabine. Of the rest of the patients who initially had PPIs, 7 (12.7%) discontinued it once the therapy started. 3 (5.4%) switched to ranitidine, and 28 (50.9%) did not discontinue it.

Conclusion: Despite we detected this interactions, 50% of the patients evaluated continued taking PPIs. It is known that this interaction can decrease the efficacy of capecitabine treatments and it is possible that some health professionals are unaware of it.

Disclosure of Interest: None Declared
EVALUATION OF COMPLIANCE WITH GUIDELINES OF THE ENERGY AND PROTEIN INTAKE IN CRITICAL ILL PATIENTS.

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Background and Objective: Critical ill patients are a real challenge for clinicians to fulfill their energy and protein needing. According to the recent ESPEN guidelines, the energy requirements had to be achieved during the first week of hospitalization. In order to prevent overfeeding (OF) or underfeeding (UF), energy intake has to be in the range of 70% - 110% of the estimated requirements. Protein intake varies with clinical condition but there is enough evidence to say that critical ill patients need at least 1.2 g/kg/day. We wanted to analyze compliance with ESPEN guidelines in our patients.

Setting and Method: We studied patients who entered in Intensive Care Unit (ICU) from January to March. We estimated patients energy requirements with Harris-Benedict equation applying an standard stress factor of 1.3. To determine the minimum intake of proteins we calculated protein requirements with 1.2 g/kg/day.

Main outcome measures: We registered energy and protein intake from prescriptions at day +7 of ICU stay of patients with Artificial Nutrition (AN) which includes Parenteral Nutrition and Enteral Nutrition. Finally we analyzed the data.

Results: We collected 78 patients in this period. Of these one 27 were on AN therapy. Only 19(70.4%) were correctly evaluated in the nutrition setting. 8 patients had no height or weight data to estimate requirements. 10 patients(52.6%) had correct intakes of energy (between 70% and 110%). 6(31.57%) patients were underfed and 3(15.8%) overfed. 9 patients(47%) had protein intakes below 1.2g/kg/day.

Conclusion: There are several patients who are not evaluated to estimate their energy and protein requirements. Only a half of our patients on NA treatment had correct intakes of proteins and energy on day +7 of ICU stay. We encourage our colleagues to study their critical ill patients in order to determine guidelines compliance and to propose interventions to evaluate and so reach nutritional requirements of these specific patients.

Disclosure of Interest: None Declared
EVALUATION OF “EARLY ENTERAL NUTRITION” AND “MAINTAINING APPROPRIATE BLOOD GLUCOSE LEVELS” QUALITY INDICATORS FROM THE SPANISH SOCIETY OF INTENSIVE MEDICINE AND CORONARY CARE UNITS (SEMICyUC) IN A COHORT OF CRITICAL ILL PATIENTS.

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Background and Objective: “Early enteral nutrition (EEN)” is a quality indicator proposed by SEMICyUC as fundamental indicator to achieve in Intensive Care Units (ICU). Following European Society of Parenteral and Enteral Nutrition (ESPEN) guidelines, it should be established during the first 48 hours of stay in ICU if oral intake is not possible. The standard compliance should be of 100%.

“Maintaining appropriate blood glucose levels” is another fundamental quality indicator proposed due to its relevance in the evolution of critical ill patients. The glycemic target should be between 150-180 mg/dL. SEMICyUC consider appropriate to treat every hyperglycemia above 150 mg/dL. SEMICyUC define hyperglycemia as 2 consecutive glucose levels above 150 mg/dL. The standard compliance should be of 80%.

The objective of this study was evaluate these two quality indicators in ICU patients of our hospital.

Setting and Method: We collected data from January 2019 to April 2019. Every patient who was admitted to the ICU was considered. Finally we analyzed the data and calculate percentage of compliance of our patients.

Main outcome measures: Day and hour of admission, day of starting Enteral Nutrition (EN), every glycemia and patients treatments were registered.

Results: 73 patients were studied. 30 had hyperglycemia and 29 were on insulin treatment in the day of determination. The compliance was 96.7%.

24 patients needed EN as oral intake was impossible. 22 patients started EN during the first 48 hours of ICU stay. EEN compliance was 91.7%. These 2 patients were not able to start EN due to hemodynamic instability.

Conclusion: In our hospital these fundamental quality indicators were achieved. EEN does not reach 100% of compliance but it was justified by the clinical situation of these 2 patients. Multidisciplinary teams are necessary to achieve the best quality in healthcare of critical ill patients and Clinical Pharmacy has a very important role on it. Validation of prescriptions and review of laboratory data are examples of daily routine to propose treatments and artificial nutrition in ICU.

Disclosure of Interest: None Declared
IS THE USE OF PARENTERAL NUTRITION ADEQUATE IN INTENSIVE CARE UNITS?
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Background and Objective: Parenteral Nutrition (PN) is an alternative route to feed the critical patient, completely or partially, when the digestive tract can not be used for any reason. PN monitoring has been established by the Spanish Society of Intensive Medicine and Coronary Care Unit (SEMICYUC) as a clinical quality indicator for intensive care units (ICU).

To evaluate the fulfillment of the Clinical Indicator: “adequate use of parenteral nutrition in an Intensive Medicine Service”.

Setting and Method: Our investigation is a retrospective descriptive study. Data were collected from every patient admitted to our intensive care unit who received artificial nutrition (Enteral or Parenteral Nutrition) in the last four months. The quality indicator was evaluated using SEMICYUC criteria: number of patients with indication of PN / total number of patients needing artificial nutrition x 100 (standard = 16% with PN, and 25% with complementary PN). To assess whether the indication of PN is correct or not, we followed the criteria included in the guide of quality indicators in critical patient of SEMICYUC 2017.

Main outcome measures: The variables collected were age, sex, PN indication and number of days from admission until PN was prescribed.

Results: During the study period 75 patients were analyzed. 66.6% were men, the mean age was 64.77 years and the average number of days from admission to the prescription of NP was 5.3 days. Only 24 were indicated to receive PN, 8 with complementary parenteral nutrition (CPN) and only 2 patients received PN without indication. 6 patients received PN as they were not expected to be fed in 5-7 days by oral or enteral route, 4 had intestinal insufficiency, 1 mesenteric ischemia and 5 intestinal obstruction. Using the formula described, the proportion of patients with NP indication was 32% and 10.6% with CPN.

Conclusion: The quality standard of this indicator is not reached. The exclusive administration of EN is impossible in certain scenarios like gastrointestinal dysfunction associated with the critical process. Depending on the clinical diagnosis at admission, the value of this standard will fluctuate, but monitoring this indicator is important to assess both, under and overprescription.

Disclosure of Interest: None Declared
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Background and Objective: Multiple Sclerosis (MS) is a chronic, demyelinating and degenerative disease of the central nervous system with an immune based pathology that entails the inflammation and injury of the myelin and neuronal axons, inducing brain and spinal cord lesions. The objective of the study is to assess if the change in the route of treatment administration increases the proportion of adherent patients and to explore the change in quality of life in a group of patients who experienced both oral and parenteral treatment.

Setting and Method: Prospective, longitudinal and observational study. Inclusion criteria: patients with RRMS, who used to receive immunomodulatory parenteral treatment (injection or intravenous infusion) and were ready to change to a new oral treatment due to the evolution of the disease and Neurologist’s recommendations, in accordance with clinical practice in real world. Data on MS course and pharmacological treatment were collected by retrospective analysis of patient clinical records (basal visit), and during the study period MS data were prospectively collected at clinic visits. The study included two visits: Basal visit: under parenteral treatment, before oral DMT was to be started and Visit 1: Three months after oral DMT was started.

Main outcome measures: Demographic information included age and gender. Clinical characteristics collected: time elapsed since the diagnosis, spinal involvement and Expanded Disability Status Scale (EDSS) score. To evaluate the quality of life, the "Quality of life of multiple sclerosis" test (MSQOL-54) was used. Adherence was evaluated through MoriskyGreen test.

Results: 30 patients met the study criteria. The average age was 43.2 years and women comprised the 60% of the total sample. The mean time since diagnosis was 11.1 years and 80% of patients had previous marrow involvement. The median value of EDSS (Expanded Disability Status Scale) (Q1, Q3) was 2.21 (1.37, 2.62).

After the change of route of administration, a significant improvement was observed in the physical and mental health dimensions of the MSQOL-54 (p<0.001). In addition, an improvement in the scores was found in all the dimensions of this questionnaire (p <0.005). The number of nonadherent patients fell from 60% to 43.3%

Conclusion: After the change of route of administration, there was an improvement in the parameters of quality of life and this could be related to the change in adherence. It seems that the subjects who really modify their quality of life score are those who have also modified their status from non-compliant to compliant.

Disclosure of Interest: None Declared
Background and Objective: Long-acting injectable antipsychotics have become an ideal maintenance treatment for patients suffering from schizophrenia. Patients with poor medication adherence could be candidates of these preparations. As injection intervals have been lengthened, the risk of skipping scheduled doses could be expected. Besides, carefully monitoring drug-related problems is required while patients are initiated with longer-acting injectable antipsychotics. Therefore, this practice was developed, in which pharmacists served as case manager, to ensure patients had their injections on time and perform comprehensive medication review to optimize medication treatment outcomes.

Design: Once patients’ paliperidone extended-release injections switched from 1-month preparation to 3-month preparation from July 2018 to February 2019, they were included in this pharmacists-directed case manager practice. In this practice, pharmacists assessed whether patients met criteria for receiving this long-acting injection and performed comprehensive medication review. If any medication use-related problem was identified, pharmacists would provide suggestions to prescribers. Afterward, the time to receive 3-month paliperidone extended-release injectable preparation for each eligible patient were arranged by pharmacists. After receiving injections 1.5 months, pharmacists contacted patients for understanding their general therapeutic outcomes and reminded them of their next administration time. Pharmacists also develop re-initiation regimen for patients who might miss the injection administration time.

Results: 27 patients were included in this practice, and 25 of them received their injections regularly. Two patients were back to 1-month paliperidone extended-release injectable preparation due to poor response and undesirable side effect. None of them was readmitted in this period. Among 25 patients, all of them revealed they had comparable responses as previous 1-month paliperidone extended-release injectable preparation and no patient complained of new or worsening adverse effects. Pharmacists found several patients who were under long-term injectable antipsychotic use without renal function evaluation. Thus, suggestions requiring renal function test for these patients were proposed.

Conclusion: In this pharmacist-directed practice, patients had their injections on time in successive months. No patient was readmitted due to worsening symptoms or severe adverse effects. The efficacy and safety of this 3-month paliperidone extended-release injectable preparation can be promised under pharmacist surveillance.

Disclosure of Interest: None Declared
EXPERIMENTAL PROJECT: CITISINE GALENIC PREPARATIONS FOR TOBACCO ADDICTED PATIENTS
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Background and Objective: Therapeutic strategies for smoking cessation are many and united by a high cost and in the long term often have a relapse in addiction. In May 2017, the experimental supply of galenic preparations in capsules containing the active ingredient cytisine for motivated patients was agreed with the Hospital Pharmacy. The work aims to demonstrate the clinical and pharmaceutical-economic motivations that led to the decision to produce such preparations for the requesting service.

Setting and Method: The literature presented by the requesting structure was analyzed with other clinical and pharmacological studies found on online databases. The costs of this therapy with varenicline, similar in the mechanism of action to cytisine, were also compared according to the dosages currently used.

Main outcome measures: From the analyzed literature, it was concluded that the two drugs are clinically superimposable but cytisine has a more favorable cost-effectiveness ratio. In fact, on the economic side, a 12-week varenicline-based treatment would cost € 434, while a 24-week one would cost € 808. Therapeutic schemes based on cytisine, on the other hand, have a duration ranging from 25 days to 40 days. A standard 29-day dosing schedule (including the inductive phase) was agreed for a total of 115 capsules containing 1.5 mg of active substance. The excipient used to estimate the costs is rice starch. The result obtained, following the national tariff was € 33.50 for 115 capsules.

Results: Therapeutic schemes based on cytisine, on the other hand, have a duration ranging from 25 days to 40 days. A standard 29-day dosing schedule (including the inductive phase) was agreed for a total of 115 capsules containing 1.5 mg of active substance. The excipient used to estimate the costs is rice starch. The result obtained, following the national tariff was € 33.50 for 115 capsules.

Conclusion: After analyzing the costs and scientific publications, in the session of the Internal Pharmaceutical Commission, the hospital pharmacy decided to endorse the request for the experimental provision of galenic preparations. At the end of the experimental phase, the real costs incurred for shipping the received recipes will be analyzed and feedback will be requested from the service regarding the clinical aspect.

Disclosure of Interest: None Declared
Background and Objective: Infection is the most common serious complication associated with the use of central venous catheters. In pediatric patients, the nosocomial catheter-related bloodstream infection leads to catheter loss and removal, increasing thus the average length of hospital stay. However, catheter removal may not be a viable option if there is no alternative venous access. Intraluminal colonization by microbes is associated with the formation of a biofilm. Antimicrobial lock therapy is a current strategy to sterilize infected catheters. The use of an ethanol lock has been promoted for infected intravascular catheters and as prophylaxis in immunocompromised patients. We aimed to evaluate the efficacy of ethanol lock therapy used in pediatric patients in our hospital.

Design: We retrospectively studied all patients with ethanol lock therapy in our hospital. Variables included were type of catheter, indication of lock therapy (secondary prophylaxis or treatment), type of systemic antimicrobial treatment, adverse events and duration of the lock therapy and previous lock therapy used. In our department two types of lock solution with ethanol are protocolized: ethanol 70% plus heparin Na 3UI/ml and ethanol 70% plus heparin Na 20UI/ml and micafungin 5mg/ml for treatment and prophylaxis infections caused by C. albicans.

Results: In total only four pediatric patients were treated with ethanol lock, of whom three received ethanol combined with micafungin and one patient ethanol alone. All of them had a Hickman catheter. Blood culture results were negative in 3 patients and C. albicans was isolated in 1 patient. All patients also received appropriate systemic antibiotic therapy (gentamicin, ampicillin, cefepime, teicoplanin and micafungin iv in the patient with C. albicans). All of them had received previous lock therapy (vancomycin and amphotericin B plus caspofungin). The maximum duration of therapy was 12 weeks, and the minimum 1 day; in this last case it was removed due to clinical impairment. No adverse events related to lock therapy were recorded.

Conclusion: Ethanol lock therapy was used in our hospital only in several cases, as rescue therapy in patients who did not have a response with conventional lock therapy. Almost all patients presented good response to the therapy. In most of the cases lock solutions were used empirically or as prophylaxis.

Disclosure of Interest: None Declared
HP-PC081
Parental perceptions of unlicensed and off-label medicines used in children in the Arab world
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Background and Objective: The present study aimed to explore views and attitudes of parents towards the use of unlicensed and off-label medicines in children, paediatric clinical trials, and the role of pharmacists in the safety and effectiveness of medicines.

Setting and Method: A cross-sectional electronic survey was conducted over social media networks in the Arab world to assess parents’ views and attitude towards use of unlicensed/off-label medicines and clinical trials in children. Validated questionnaire was adopted to achieve the study goals

Main outcome measures: Parental knowledge of unlicensed and off-label medicines and their willingness to allow their children take part in clinical trials

Results: A total of 4740 respondents completed the online questionnaire. 55.2% have no previous knowledge of use of unlicensed medicines in children. Most of parents thought that they should be told about the use of such medicines, with the doctor (55.0%) selected as the person who should tell parents. Respondents thought that the use of medicines in children was extremely safe or safe. However, this proportion is decreased dramatically ($P < 0.001$; McNemar test). Views of parents towards clinical trials vary according to child health (child in good health 14.8% versus child suffering of life-threatening condition 50.4%). The majority of respondents thought that pharmacist has a significant role in assuring the safety and efficacy of medicines.

Conclusion: Limited parents’ knowledge about the use of medicines in children and the importance of clinical trials. General consensus about pharmacists’ role in ensuring medicines’ safety and efficacy.

Disclosure of Interest: None Declared
Background and Objective: The elderly are a sensitive population that requires special caution regarding pharmacotherapy. Lists of potentially inappropriate medications (PIMs) for the elderly are useful for recognizing critical patients, but advanced medication review represents the most suitable intervention for rationalization and optimization of therapy in clinical practice.

Setting and Method: We performed a retrospective analysis of medication reviews, which were made by clinical pharmacists between 2014 and 2016. We included 175 patients older than 65 years and compared their therapy before and after the advanced medication review. The research was approved by National Medical Ethics Committee.

Main outcome measures: The aim of the study was to examine the impact of advanced medication review on number of prescribed medications, potential drug-drug interactions according to Lexicomp interactions checker and PIMs for older patients considering the EU(7)-PIM list and the Priscus list.

Results: With advanced medication reviews provided, clinical pharmacists contributed to a 10.1% reduction in the total number of medications used by all patients, number of medications for regular use decreased by 15.5% (from 1934 to 1634 medications) while the number of 'as needed' medications increased by 44.5% (from 191 to 276 medications). The average number of type D potential drug-drug interactions decreased from 1.8 to 0.6 interactions per patient, while type X drug-drug interactions decreased from 0.3 to 0.03 interactions per patient. Advanced medication review also reduced the average number of PIM for older people. Average number of PIM per patient decreased from 2.7 to 1.9 and from 0.9 to 0.6 medication considering both the EU(7)-PIM list and the Priscus list, respectively.

Conclusion: Advanced medication review proved to be an effective intervention for optimizing pharmacotherapy in the elderly by reducing three key risk factors, that are associated with adverse drug reactions: polypharmacotherapy, PIMs and drug-drug interactions. Therefore, it should be systematically implemented into the clinical practice for pharmacotherapy optimization of the elderly.

Disclosure of Interest: None Declared
Interfaced softwares = Secured prescriptions
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Background and Objective: The purpose of validating medical prescriptions is to verify the correct use of drugs, their adequacy with the patient’s clinical-biological data and the search for drug-drug interactions (DDI). In our centre, several Computerized Physician Order Entry softwares (CPOEs) are used: CHIMIO® for cancer chemotherapy treatments and CROSSWAY® for other treatments. The CHIMIO® software is the commonest in France but does not have a complete interface with other CPOEs. This dual circuit and a lack of communication between these CPOEs represent a risk in the management of patients’ medication.

Design: The main risks inherent in the use of several separate CPOEs have been identified: duplication of prescriptions, inappropriate or inadvisable combinations, incorrect dosages... A systematic re-entering of prescriptions into a drug database (e.g. VIDAL® or THERIAQUE®) must be performed to ensure a complete pharmaceutical analysis. In order to limit these risks related both to the use of several CPOEs, and to information re-entering, we worked with the CHIMIO® and CROSSWAY® software editors to build an interface that meets the specific needs of our centre as the end user of these softwares.

Results: For several months, both software editors have worked with us as a team project to develop an interface that fits our needs. The CHIMIO® and CROSSWAY® softwares are now 100% interfaced. The automatic detection of DDI between all drugs (chemotherapy and others) is now possible directly at the level of each patient's CROSSWAY® computerized prescription. This interface has thus made it possible to optimize and secure patient drug management.

Conclusion: The creation of an interface between the various CPOEs has not only made it possible to secure the overall drug management of patients but also to optimize the pharmaceutical validation activity in our centre. The time saving generated by the absence of re-entering has allowed the development of new complementary activities (drug reconciliation, pharmaceutical interview...)

Disclosure of Interest: None Declared
ENDOBRONCHIAL INSTILATION AND NEBULIZED VORICONAZOLE IN A PULMONARY TRANSPLANTED PATIENT. ABOUT A CASE.

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Background and Objective: Inhaled administration of antimicrobials is a strategy used as prophylaxis/treatment in lung transplanted patients colonized/infected by microorganisms. The evidence for the use of nebulized antifungals is only well documented with lipid amphotericin B.

We describe the case of a patient bronchially colonized by fungi with nebulized voriconazole home treatment and endobronchial instillation during fibrobronchoscopies.

Design: Descriptive study of a clinical case. The clinical, analytical, microbiological and therapeutic data were collected from the electronic medical record. Review of the available literature on nebulized therapy with azoles.

Results: Male, 47 years old, bipulmonary transplanted in Mar 2018 without isolations prior to transplantation. He received antifungal prophylaxis with inhaled Amphotericin B lipid complex and oral fluconazole, replaced by oral voriconazole on Sep 2018. Since May 2018 has required bronchial dilation by fibrobroncoscopies due bronchial occlusion with fluctuating frequency.

Since Aug 2018, Penicillium spp. and Paecilomyces lilacinus have been repeatedly isolated from bronchial aspirate samples. Paecilomyces lilacinus was also isolated in bronchial biopsy (resistance to amphotericin B and echinocandins and sensitivity to azoles). Inhaled amphotericin B was suspended and it was changed to endobronchial instilled voriconazole during fibrobronchoscopies and daily nebulized, which started in Dec 2018, associated with previous oral voriconazole. Voriconazole for endobronchial instillation and nebulized were prepared from the formulation for parenteral administration. The used dose was 40mg and the Hospital Pharmacy Service dispensed the voriconazole and instructed the patient for home administration.

Until Apr 2019, the patient received 6 endobronchial instillation doses of voriconazole and 3.5 months of nebulized therapy with good tolerance and no toxicity. Plasma levels of voriconazole have remained constant, with no increase since inhaled administration started. In last cultures (Mar 2019), Paecilomyces lilacinus has not been isolated.

Published experience on inhaled azoles therapy is anecdotal: 3 case series with a total of 7 patients in which posaconazole or voriconazole was used in lung infection by Scedsosporium spp or Aspergillus spp, with clinical and/or microbiological resolution in 6 cases and withdrawal in 1 case due to intolerance.

Conclusion: Topically voriconazole in endobronchial instillation and nebulized may be an alternative in patients with intolerance, failure or microbiological resistance to nebulized amphotericin B.

Disclosure of Interest: None Declared
Effectiveness and safety of alectinib: Clinical experience in a tertiary hospital

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Background and Objective: About 80% to 85% of lung cancers are non-small cell lung cancer (NSCLC). Alectinib is a tyrosine kinase inhibitor that targets anaplastic lymphoma kinase (ALK). Alectinib is indicated for the treatment of adult patients with ALK-positive advanced NSCLC (in first line or previously treated with crizotinib).

Objective: describe the effectiveness and safety of alectinib.

Setting and Method: Transversal observational study (04/22/19) of all patients treated with alectinib in a spanish tertiary hospital.

Main outcome measures: Demographic data, ECOG, stage, previous treatment lines, effectiveness of the treatment (progression-free survival (PFS)), best response and adverse effects (AE) (CTCAE v5.0) were collected.

Best response obtained according to the RECIST v1.1. criteria: complete (CR) or partial (PR), stable disease (SD) or Progressive disease (PD).

Statistical analysis using Stata® 15.

Results: 14 patients (57.14% women). 85.71% stage IV (12) and 14.29% locally advanced disease. Basal ECOG: 78.58% ECOG 0-1. The mean age at the beginning of treatment with alectinib were 61.74±12.73 years. The median of previous lines of treatment was 1 (Range: 0-5), 71.42% previously treated with crizotinib (N=10).

4 patients died during treatment with alectinib (28.57%) and 4 stopped treatment due to disease progression.

The PFS median in the patients in which the event occurred (death or PD) was 1.87 months (0.36-11.57). The median time treatment, among the patients who continued to receive treatment until of the data cut-off date, was 11.43 months (1.5-19.71).

Best response rate reached: 1 CR (7.14%), 4 PR (25.57%), 3 SD (21.43%) and 2 PD (14.29%). In 4 patients, the response rate had not yet been evaluated.

71.4% of the patients presented AEs. Most frequent AEs: asthenia G1-3 (n=7), arthralgias G1-2 (n=5) and Gastrointestinal disorders G1-2 (n=5). 4 patients needed dose adjustment due to AEs (pulmonary toxicity, liver toxicity, edema and thrombocytopenia).

Conclusion: During the study time, 57.14% of the patients presented an event (death or progression), which agrees with the clinicals trials data (58.1%>57.1%). The PFS is not comparable due to the short follow-up period in our patients. From the point of view of safety, the data obtained show a toxicity profile in line with that described in the trials, highlighting the high rate of asthenia in our population.

Disclosure of Interest: None Declared
A COMPARISON OF MEDICATION HISTORIES OBTAINED BY A HEALTH CARE PROFESSIONAL VERSUS CLINICAL PHARMACIST IN GASTROENTEROLOGY DEPARTMENT

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Background and Objective: Clinical pharmacists have received extensive training in medicines and provided comprehensive medication counseling to patients and health care professionals, too. The pharmacist's contributions on the best patient care can be multiple points like; the drug choice, drug dose arrangement, prevention of adverse drug events, drug interactions, discharge training, medication reconciliation and also pharmacoeconomics. In order to optimize drug treatment for the best patient care, the knowledge of pharmacists is crucial. Obtaining the right medication history is an important first step of the patient's initial evaluation that provides us the bottom line for counseling of patient’s current treatment and the subsequent treatment choices.

Aim of this study is to compare inpatient medication histories across disciplines and evaluate the nature of discrepancies.

Design: Patients who were hospitalized in our university hospital's Gastroenterology inpatient clinic were included in this study prospectively. Medication histories taken by nurses and physicians compared with the medication histories taken by pharmacists. Medication discrepancies were identified by comparing medication histories. Drug name, dose, frequency, administration route were asked by pharmacist to determine the drug history. The lack of histories obtained by physicians and nurses were classified as "whole drug information", "dose", "frequency" and "administration route".

Results: Total of 144 different drugs were recorded completely right by the pharmacist; this number was 8 for physicians and 0 for nurses.

The lack of histories obtained by physicians was 49 whole drug information, 58 dose, 80 frequency and 22 administration route.

The lack of histories obtained by nurses was 62 whole drug information, 57 dose, 87 frequency and 24 administration route.

According to our study; inadequate medication history rate was 94% for physicians and 100% for nurses. Most common lack for the both group was frequency.

Conclusion: Presence of pharmacist in the multi-disciplinary health team and pharmacist involvement in medication history and reconciliation will be effective in reducing drug-related problems.

Disclosure of Interest: None Declared
Background and Objective: Clinical pharmacists have received extensive training in medicines and provide comprehensive medication advice to patients and health professionals. The pharmacist’s contributions include the drug choice and the dose appropriateness, prevention of adverse drug events and drug interactions, discharge training and pharmacoeconomics. For this reason, in order to optimize drug treatment and eliminate the conditions that cause noncompliance, the knowledge of pharmacists is also used in the clinic. One of the missions of clinical pharmacists is to advise for appropriate dose adjustment in patients with renal or hepatic impairment. The evaluation of drug use by the pharmacist in the gastroenterology department, which is particularly intense in patients with impaired liver function, will contribute positively to the efficacy of treatment.

The aim of this study was to determine the frequency of use of drugs that require dose adjustment in hepatic insufficiency and to evaluate their use in patients who were hospitalized in Gastroenterology department.

Design: The patients who were hospitalized in a university hospital's Gastroenterology department were included in the study. Drugs which used by the patients in the hospital were evaluated by clinical pharmacists. Only the drugs in the patient’s chart were included. The Child-Pugh score is used for assessing hepatic impairment. The appropriateness of the drugs was evaluated by drug information systems such as UpToDate, Medscape and RxMediaPharma.

Results: Twenty-eight patients included in the study. It was observed that 28% of all drugs used in patients required dose adjustment according to their liver function. For the dose adjustment required drugs in hepatic insufficiency were evaluated according to the patient’s Child-Pugh score.

Total use of dose adjustment required drugs in hepatic insufficiency and patients number listed in Table 1. The rate of drugs used in the appropriate dose was found to be 68%, and the rate of those used in inappropriate doses was 22%. The remaining 10% could not be evaluated due to insufficient data for the classification of hepatic insufficiency and was included in the “other” group.

Conclusion: González et al. conducted a study in Spain, which was determined that 69.8% of the oral antineoplastics used by patients with hepatic insufficiency should be adjusted.

Carcelero et al. was determined that the dose-related problems were 43.3% of all prescribing errors.

Similar to these studies, in our study all patients in the gastroenterology department were examined and the dose adjustment requiring drugs were found to be 28%.

According to the studies in our country and in the world, it has been revealed that many drugs that require dose adjustment in hepatic insufficiency are widely used. It is thought that the role of clinical pharmacists in taking part in services and calculating the drug doses will contribute to the treatment efficiency.

Disclosure of Interest: None Declared
Background and Objective: Pharmacy curricula started also to shift focus global from product-oriented to patient care-oriented courses. The Accreditation Council for Pharmaceutical Education (ACPE) (2016) emphasizes the importance in systematically evaluating bachelor’s pharmacy education with reliability and safety scales. The aim of this study is to assess pharmacy students perceptions of preparedness to provide pharmaceutical care in Turkey and Northern Cyprus.

Setting and Method: A cross-sectional study was conducted on the third and fifth year pharmacy students in Turkey and Northern Cyprus using a pre-validated 34 items “The Preparedness to Provide Pharmaceutical Care (PREP)” survey tool. The permission for using this scale was taken from authors. Each item was scored on a Likert scale ranging from 1 to 7. Data was collected from the second semester of 2017-2018 year from April till July 2018. Of 34 faculties of pharmacy, only 20 matched the inclusion criteria of having fifth year pharmacy students. Mann Whitney U test was applied for comparisons.

Main outcome measures: Students scores on the PREP Scale

Results: A total 235 (95.5%) fully completed the survey 155 (66%) females and 80 (34%) males. Among the participants there were 92 (39.1%) students from the universities in Northern Cyprus and the rest 143 (60.9%) were from Turkish universities. We find between the 5 aspect we have in the survey that the highest rating between students goes to the Communication aspect (4.948±1.03) and the lowest rating aspect is for Research part (3.991±1.05). Within the technical part the highest rated item were provide counseling to the patient (4.66±1.62) followed by devise method to seek optimal patient compliance (4.61±1.64). No significant differences was observed based on demographic groups.

Conclusion: The growing of knowledge of students about pharmaceutical care improve with getting more courses specially after the third year. The Turkish and the Northern Cyprus universities seems to give equal education for students in pharmaceutical care

Disclosure of Interest: None Declared
Effect of nurses´ education led by the clinical pharmacist on appropriate medicine administration via enteral feeding tube
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Background and Objective: For patients who have proper functioning gastrointestinal tract, but are unable to take feed per os, the medicine administration through the enteral feeding tube (EFT) is used. This type of medicine administration meets several practical problems resulting in clinical effectiveness decreasing of medicine and/or patient safety – inappropriate drug formulation, incompatibilities of drug (active substance or excipients) with tube material or enteral feed and nutrients, risk of tube blocking, even exposition of healthcare staff to prepared medications.

Setting and Method: The study was set in the teaching hospital. The methodology was based on observation of the clinical pharmacist (every third Friday during March – July 2018) within the seven hospital departments. The proprietary of drug formulation and its preparing for enteral tube administration, as well as administration of drugs were observed. Based on results, the nurses´ education led by the clinical pharmacist and principles of good practice of drug administration via EFT were prepared and realized. The observation was repeated one month after education.

Main outcome measures: The number of correct and incorrect medicine administrations via EFT before and after nurses´ education.

Results: Before nurses´ education we’ve observed 151 medicines administered via gastric EFT in 24 patients (6.3 of medicines per patient) by 88 administrations (63 administrations were correct, 25 administrations were incorrect, on average crushed and administered together were 3.25 medicines in one administration). We have observed 175 inappropriate administration mistakes: 45 times (25.7%) were crushed more than one solid dosage forms together; 14 times (8.0%) were crushed modified release tablets; 15 times (8.6%) were crushed enteric-coated tablets and 13 times (7.4%) were crushed enteric-coated capsules administered to the stomach; EFTs were not flushed correctly (before and after administration) 88 times (50.3%). After the education we’ve observed 134 medicines administered via gastric EFT in 20 patients (6.7 of medicine per patient). by 113 administrations (93 administrations were correct, 20 administrations were incorrect, on average crushed and administered together were 2.05 medicines in one administration). We have observed 67 inappropriate administration mistakes: 22 times (32.8%) were crushed more than one solid dosage forms together; 16 times (23.9%) were crushed modified release tablets; 12 times (17.9%) were crushed enteric-coated tablets and 10 times (14.9%) were crushed enteric-coated capsules administered to the stomach; EFTs were not flushed correctly 7 times (10.4%).

Conclusion: Recommendations and nurses´ education led by the clinical pharmacist seem to lead to improving of appropriate administration of medicines via enteral feeding tubes. The solid dosage forms with modified release and enteric-coated forms seem like the most problematic. The role of the clinical pharmacist as the medicine specialist should be in education and counseling for appropriate medicine administration via enteral feeding tube.

Disclosure of Interest: None Declared
Background and Objective: Background: Asthma is heterogeneous disease which is characterized by chronic airway inflammation. It is a common chronic respiratory disease affecting 1-18% of population in different countries. It can be treated mainly with inhaled medications in several forms, including the pressurized metered dose inhaler (MDI). MDI use is difficult for patients even with repeated demonstration and re-evaluation.

Objective: To evaluate the effect of intervention on MDI use technique and its association with treatment outcome among adult asthmatic patients who attend respiratory clinic in Jimma university medical center (JUMC), Southwest Ethiopia.

Setting and Method: Setting and Method: Interventionsal study was conducted from March 22/2018-July 22/2018. Structured questionnaire was used to assess patient demography; inhalation technique was assessed using a standard check-list of recommended steps National Institute of Health (NIH) guidelines, adherence using asthma inhalation test and asthma control status was assessed by GINA, 2017 guideline. At visit 2, asthma control and inhalation technique were reevaluated. Independent predictors of outcome and strength of association determined by using binary and ordinal logistic regression analysis and statistical significance was considered at p<0.05. McNemar and willcoxon rank test were used to compare pre- post result of inhalation technique and asthma control respectively.

Main outcome measures: Inhalation efficiency and asthma control status

Results: Result: One hundred forty patients were included in the analysis. The most frequent critical step missed in both pre and post intervention was short duration of the inhalation 87.1%. At the first visit, 121(86.4%, 95%CI: 81-92) patients were inefficient and dropped to 103(73.57%, 95%CI: 66-81) after intervention. The mean critical error was 2.69 in pre intervention and dropped to 2.09 after intervention. Intervention has significant impact on inhalation technique (p=0.007, McNemar test). Before intervention, 18(12.9%) patients were controlled and increased to 26(18.4%) after intervention. Asthma control status is significantly associated with inhalation technique (p=0.006).

Conclusion: Most of study participants were inefficient to use inhalation technique before intervention. After intervention, the number of patients who were efficient is increased and intervention found to be highly significant on inhalation technique. Asthma controlled status were significantly improved after intervention. Inhalation technique is a significant independent predictor for asthma control status. Patient should ask health care professionals how to take medication and they should bring their device to recieve demonstration during visit. Health professionals should re-evaluate the patient during their Hospital visit and encourage to bring their device to give demonstration.

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**HP-CE009**

SimUPAC 360°: the first French digital cytotoxic preparation unit developed in virtual tour for staff training

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**Background and Objective:** Cytotoxic Preparation Units (CPU) are working areas adapted to develop medical simulation tools. Simulation methods facilitate skill training and assessment of pharmacists and pharmacy technicians (PT). Their playful and interactive aspects are useful to improve the quality of initial and continuous training. Digital simulation tools could also help to reduce the use of the CPU for training.

To create a virtual CPU, SimUPAC 360°, for the initial and continuous training of pharmacists and PT.

**Design:** A multi-center inter-professional working group has been set up. It includes 7 pharmacists and 2 PT from 3 healthcare institutions. 3 were experts of the immersive virtual tour technique applied to health. The work was divided into six steps: choice of target audience and training objectives, definition of the business model, development of the scenario, shooting and editing, creation of the training tool and finally tests, adjustments and validation of the tool. Locations, shooting procedures and the type and number of errors were defined to design the virtual CPU. The simulation tool met the following criteria: affordable, educational and upgradeable.

**Results:** After brainstorming, 77 errors were proposed about: good manufacturing practice (N=35), personal and collective protective equipment (N=17), hygiene (N=10), storage (N=9), waste management (N=3), respect of dosages (N=2), patient monitoring management (N=1). Errors were universal, instructive and with suitable level. Photos and videos were chosen because they allow observing linked sequences. Three areas have been defined and allowed a 360° displacement in the CPU: covering area, storage and production area, and isolator. 20 points of interest (POI) were defined. In each area, it was possible to open POI by clicking on icons: 15 errors were selected and 5 POI were without errors. The shooting was carried out over 2 days in 2 hospitals. Assembly was carried out by a service provider specialist in real virtuality. A questionnaire was included on the site to indicate the errors identified by the learner. Before to go online, the tool was tested and validated by experts.

**Conclusion:** Creation of a virtual reality training requires a consistent and structured methodology. This tool is available online with a kit for the trainer (instructions of use, educational support including well-argued response) since 2018. The evaluation phase will make it possible to carry out a usage assessment, to consider extending the scope of this tool. Furthermore, POI were designed to facilitate the integration of new media, allowing to provide low-cost new future scenarios.

**Disclosure of Interest:** None Declared
Background and Objective: Virtual Medical Simulation (VMS) makes health professionals training innovative, playful and easily accessible. However, the lack of VMS training tools, in particular for Medical Devices (MD) is prejudicial, in a context of increased users of MD becoming ever more numerous, complex and risky. The objective of this work was to design a module of VMS concerning the urinary catheterization to train health care professionals. The proposed tool was based on the concept of virtual "rooms of errors" available online, which is immersive at 360° and in virtual reality.

Design: A working group consisting of pharmacist, pharmacy dispenser, doctors and nurses from 5 hospitals has been created to deliver the first format applied to MD of VMS 360° in France. The work was carried out in five phases: brainstorming on the errors to be integrated, choice of errors and conception of a clinical case, realization of the shots, creation of the teaching aids then assembly and validation of the tool.

Results: All the pedagogical elements were produced by the working group, based on the recommendations in effect in France and good practices. These contents have been integrated in the immersive environment like "room of errors" previously created by the French Association for Digital and Information in Pharmacy (ADIPh). In order to meet the educational objectives set, a screening of 60 errors related to the MD and which may also involve the medicinal product (recognition, storage, condition of use, traceability) was carried out. After scoring according to defined criteria (technical feasibility, target audience, pedagogical aspect, frequency/severity/detectability, universality and difficulty) 18 errors were selected. From the immersive environment, a scenario was developed based on an invasive act performed in the patient’s bed. New shots have been embedded in the environment. This technology offers an innovative pedagogical aspect through error learning and an immersive digital setting in a familiar and realistic universe.

Conclusion: This variation of previous ADIPh tools also proves that it is possible to develop attractive and innovative training at a lower cost. A future evaluation of the satisfaction and pedagogical effectiveness of the health professional tool may confirm the value of this format in initial and continuing education.

Disclosure of Interest: None Declared
**Background and Objective:** The incidence of cancer increases steadily over the lifespan. Cancer in people aged 65 and over thus represents 62.4% of cancers estimated for all ages in 2017 (Data from the French National Cancer Institute). Multiple therapeutic management with oncology treatments, supportive care, but also co-morbidity treatments promotes iatrogenic risk in this population. While the literature is beginning to provide abundant data on the role of reconciliation in reducing iatrogenic risk, the data are still poor for the geriatric population treated for cancer.

**Design:** Drug reconciliation was implemented in the haematology and oncology wards of a French comprehensive cancer centre. Optimized drug evaluations comprise all treatments including self-medication (complementary and alternative medicines). After comparing the hospital prescription and discussing with the medical team, the medication discrepancies are classified in 3 types: documented (DMD), intentional (IMD), and unintentional (UMD). The objective is to understand the specificities of reconciliation in cancer care, and to evaluate discrepancies in terms of type and frequency.

**Results:** Between January 2017 and December 2018, 284 patients (14.4% of hospitalized patients) were reconciled, 79.9% of whom were patients over 65 years of age. The average age of the enrolled patients was 74 years and the number of drugs per patient was 11 ± 4. 220 patients (96.9%) had at least one discrepancy (documented, intentional, or unintentional). Intentional and unintentional discrepancies were identified, respectively for 156 patients (68.7% of prescriptions and 64 patients (28.2% of prescriptions) with an average of 3.8 IMD per patient, and 1.8 UMD per patient. In 84% of cases, these UMD, potential sources of medication errors, concern treatments for non-cancer related diseases (mainly digestive and metabolic drugs and cardiovascular drugs).

**Conclusion:** Most of the observed discrepancies concern the treatment of non-cancer related diseases. Indeed, the hospital doctor focuses on chemotherapy and supportive care than other treatments. The rate of discrepancies is higher than in the literature for the general population (50% on average). These initial results will serve as suggestions for improvement to be implemented by the centre's working group on drug care pathway with elderlies.

**Disclosure of Interest:** None Declared
A survey of the level of satisfaction regarding the medication educational video in the hospital
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Background and Objective: Traditionally most hospitals in Taiwan would design simple educational pamphlets for patients. But some dosage forms that require body coordination such as inhalers or subcutaneous insulin injection may not be best explained by text alone. Taipei City Hospital has provided educational videos for special pharmaceutical dosage forms to enhance patient understanding of the correct usage.

Setting and Method: To understand patient's level of satisfaction regarding the medication educational videos.

Main outcome measures: The instructional videos of special pharmaceutical dosage forms were available online and their web addresses were made available as QR code printed on the medication bag. Patients can assess these websites through QR-scanning Apps available on the smart phone or use the computer equipment available at the pharmacy drug information desk. A questionnaire was used to survey patient's level of satisfaction regarding these educational videos. A total number of 200 patients or patient's family members were randomly chosen to view these videos and to answer the questionnaire.

Results: A total of 200 people were recruited to answer the questionnaire. 74% of respondents chose to listen to the video doped in Mandarin. 85% of respondents felt the instructional videos were helpful in understanding the correct method of taking the medication. 84% of respondents were satisfied with the service and 91.5% of the respondents would recommend to others of this multimedia service.

Conclusion: Using medication instructional videos can indeed reinforce patient's understanding on the correct usage of medications. These videos provided more convenient means for patient to access medication education and helped to improve patient's understanding of the correct medication usage and improve drug use safety.

Disclosure of Interest: None Declared
Analysis of health information needs and source preferences of hospital outpatients

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Background and Objective: Patient-centered care increases treatment adherence and safety. The aim was to perform a descriptive analysis of health information needs and source preferences of hospital outpatients, based on the responses obtained during a questionnaire validation process.

Design: A questionnaire prepared for validation was used. It consists of 15 common items plus one specific ones for Neurology or Rheumatology. It is structured in six areas, according to outpatient's perception of information received about the disease, medical examinations, treatments, management outside the hospital, individual aspects and satisfaction. A supplementary question (“Would you like more information?”) is added in all items to identify needs of information. Patients should respond how much information they had received on a Likert scale (1- not at all, 2- a little, 3- quite a bit, 4- very much) and besides the extra yes/no question for each item. Following this, the questionnaire is divided into two sections: “Variables of interest” and "Preferred sources of information". Ethics approval for the study was obtained.

Results: 153 outpatients consecutively filled in the questionnaire (mean age: 53.2 years, 56% males, mean time of diagnosis: 12.1 years) when medication was dispensed at the hospital pharmacy. Patients’ diseases were grouped into psoriasis (34%), HIV (22%), rheumatic diseases (20%), multiple sclerosis (5%) and others (20%). They received "quite a bit" (35-48%) or "very much" (31-56%) information about the different areas, and they were satisfied (41-48%) with their quantity, quality and usefulness. However, they were not informed (45-48%) about the management outside the hospital, particularly psychological support or rehabilitation. 1 out of 3 patients would like to receive more information, especially about potential adverse drug effects (34%). They preferred (68%) to be informed by a medical specialist, followed by the rest of health professionals (23-31%).

Conclusion: In the current context of patient empowerment, it is crucial to analyze and identify information needs and source preferences from the patient’s point of view. Not only had to tailor the information provided directly from the hospital, but also their management outside the hospital. As a preferred information source, it is the responsibility of health professionals to tackle patients’ concerns and to counsel towards reliable sources.

Disclosure of Interest: None Declared
Parents’ knowledge and awareness about antibiotics efficacy and antimicrobial resistance in Macedonia

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Background and Objective: The introduction of penicillin in clinical use (1946) contributed to a revolutionary change in the treatment of bacterial infections in children. In the past decades in pediatrics, bacterial infections such as meningitis and septicemia have again become a threat. Inappropriate and unnecessary use of antibiotics, wrong treatment indication as viral respiratory infections and incorrect therapy duration has favoured the development and spread of antimicrobial resistance. This study aims to evaluate and increase parent’ knowledge and awareness about antimicrobial resistance, and encourage best practices among clinical pharmacists.

Setting and Method: A survey among 134 parents (63 males and 71 females) aged 34 years on average (range 22-45) was conducted during January-February 2019 at the University Clinics for Child Diseases. The questionnaire consisted of seven adapted questions: Has your child taken any antibiotics in the last 12 months? What was the reason for their last taking the antibiotics? Were blood/urine test or throat swabs taken to find out what was causing the illness? When should the child stop taking antibiotics? True or false: “Unnecessary use of antibiotics makes them become ineffective”, “Taking antibiotics often has side-effects”. How do you plan to use antibiotics in the future?

Main outcome measures: The rate of parents’ knowledge and awareness about antibiotics efficacy and resistance.

Results: Seven in ten children have taken antibiotics during the last 12 months. 39% were taking antibiotics for cold or flu, 40% for symptoms only, 21% for confirmed disease. Over half (56%) had blood/urine or throat swab before antibiotics use. 80% think they should stop taking antibiotics after directed course, 17% when the kids feel better. One third of parents is aware that antibiotics are ineffective against viruses and colds. Two thirds are aware that frequent use of antibiotics can lead to side-effects. 81% will always consult a doctor before antibiotics use, 9% will self-medicate their child, 7% will keep left over antibiotics for next time.

Conclusion: Parents still have an insufficient knowledge and attitudes towards antibiotics, their ineffectiveness against viruses and colds, side-effects and resistance. Thus, it remains as a serious task to improve parents’ knowledge and delay the emergence of antibiotic-resistance microorganisms.

Disclosure of Interest: None Declared
Evaluation of the need and feasibility of pharmaceutical call-phone at return-home for children in a hematology departement who benefited therapeutic education before hospital discharge.

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Background and Objective: In pediatric, several factors make children medication care more complex, especially on their return home. Medication error and poor compliance both limit the effectiveness of treatment, particularly for children treated for hematopoietic stem cell transplant or acute leukemia.

This preliminary study aimed to assess the benefit and the feasibility of carried out pharmaceutical follow-up using post discharge phone-call in order to detect medication error, lack compliance, and difficulties of each children, and assess the impact of pharmacist involvement in transition of care.

Design: This is a prospective monocentric interventional study performed in a Reference Center of immuno-hematology pediatric unit. From November 2018 to April 2019, patients who return home and having a pharmaceutical consultation were eligible. Patients treated at least with a high-risk medication (oral chemotherapy, immunosuppressing drug, narrow therapeutic range drug or drug with particular monitoring) in the discharge prescription were included. During hospitalization, a pharmaceutical consultation included therapeutic education is performed with a patient-specific pharmaceutical care plan to explain and educate parents on the use of medication.

At the discharge, a telephone consultation is programmed at day 7. Poor adherence, medication error and stopped treatment due to transition of care, was evaluated using a questionnaire. Advices and treatment re-explication was given if necessary.

Outcomes measures were: socio-economic, cultural and environmental children’s attributes, high-risk medication error, miss or delayed medication and the reason, the presence of difficulties in medical administration and their action faced with this difficulties, the parent satisfaction rate and duration of each telephone consultation.

Results: A total of 37 patients were included and 30 were treated with oral chemotherapy or immunsupressing drug and majority of them were treated for acute leukemia (81.1%). 15 errors on the high-risk medication were detected. 18 miss or delayed medication were detected and 2 due to the transition of care (stop treatment). 23 children had difficulties in taking treatment and 13 parents didn’t do anything face to this difficulties. Advice and re-explication were given for each difficulty, which 16 have been proven to be beneficial for the patient.

Among this 37 follow-up, only 5 patients only presented no medical error or lack of compliance or difficulties in taking treatment.

The parent satisfaction rate was 97.10 % and the mean duration of each phone-call was 16.5 +/- 10 minutes.

Conclusion: It seems inefficient to deploy the follow-up for all patients at the hospital discharge because the majority of patient had medication error, lack observance or difficulties in taken medication. The co-existence of these parameters is important to know in order to target children who need close monitoring and to develop personalized interventions for the neediest children.

Disclosure of Interest: None Declared
Retrospective evaluation of teicoplanin dosing, therapeutic drug monitoring practices and target attainment in a Belgian tertiary hospital

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Background and Objective: Teicoplanin is a glycopeptide antibiotic used for the treatment of Gram-positive infections. Trough levels are monitored in routine practice to ensure efficacious treatment. To date, the starting dosing regimen at the Ghent University Hospital consists of a loading dosing scheme of three consecutive doses (1600 mg, 800 mg and 400 mg) administered with a 24h dosing interval followed by trough-guided dosing (therapeutic target: 20-30 mg/L for common infections and >30 mg/L for serious infections).

Setting and Method: Over a one-year period, dosing regimens, therapeutic drug monitoring (TDM) practices and trough levels were retrospectively reviewed in 50 hospitalized, non-critically ill adult patients treated with teicoplanin.

Main outcome measures: - Appropriateness of initiated dosing regimen.
- Therapeutic, subtherapeutic and potentially toxic trough levels on day 3 of the treatment.
- Number of therapies failed to achieve the target concentration during the treatment.
- Number of days to achieve the target concentration.
- Appropriateness of timing of trough level monitoring.

Results: Fifty-five therapies in 50 patients were evaluated. A wrong dosing regimen was initiated in 11 (22%) therapies. From the 44 correctly initiated and evaluable dosing regimens, 2.2% resulted in a therapeutic, 79.5% in a subtherapeutic and 2.2% in a potentially toxic trough level on day 3 of the treatment. Nineteen (43.1%) of these therapies failed to achieve the target concentration during the treatment. In 25 (56.8%) therapies the target concentration was achieved but it took 5 days (median) for the common infections and 13 days (median) for the serious infections.

Trough level monitoring was minimally needed a 188 times from which 53.2% was monitored at the appropriate time, 31.9% too late (median of 1 dose, range: 1-1) and 1.6% too soon; in 13.3% of cases no trough level was taken. A dose adjustment was justified in 166 cases from whom 59.3% were performed. 45.8% of the dosing adjustments were performed at the appropriate time, 5.6% too late (median of 1 dose, range: 1-2) and 40.7% was not performed at all.

Conclusion: A poor target attainment rate was observed using the current teicoplanin hospital loading dose scheme. Based on these results, higher doses should be used. This study also demonstrates the stringent need for thorough education on TDM guidelines to improve teicoplanin treatment.

Disclosure of Interest: None Declared
Making the transition from trough based dosing of vancomycin to area under the curve (AUC) based dosing using Bayesian pharmacokinetic modelling software

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Background and Objective: Vancomycin is a glycopeptid with a narrow therapeutic range. For Methicillin-resistant Staphylococcus aureus infections a vancomycin AUC0-24h/Minimum inhibitory concentration (MIC) >400 is associated with improved clinical outcomes. Historically, a vancomycin trough concentration between 15-20 mg/L was used as surrogate marker for an AUC0-24h >400 mg*h/L due to the challenge of estimating AUC0-24h in clinical practice. However, troughs between 15-20 mg/L are associated with increased odds of nephrotoxicity compared to troughs <15 mg/L. Moreover, an AUC0-24h > 400 mg*h/L is achieved in most patients with a trough <15 mg/L. In addition, in patients with troughs between 15-20 mg/L, an AUC0-24h higher than 600-700 mg*h/L may be reached, a threshold associated with 3-4-fold increased risk for nephrotoxicity. Model-based approach to target an AUC0-24h/ MIC >400 is recommended by the European Medicines Agency. BestDose® is a clinical software that uses non-parametric, multiple-model Bayesian statistics to estimate AUC0-24h of vancomycin.

Design: All patients treated with vancomycin between January 2017 and April 2019 and for whom at least two serum vancomycin concentrations were available were included. For patients treated with vancomycin between August 2018 and April 2019 the dose was adjusted to target an AUC0-24h between 400-600 mg*h/L. Between January 2017 and July 2018 vancomycin dose was adjusted to achieve a trough concentration between 15-20 mg/L. AUC0-24h was estimated using BestDose®. Trough concentrations and AUC0-24h were compared between the groups using the Mann-Whitney test.

Results: 43 patients were included in the final analysis, 29 of whom in the trough-based group and 14 in the AUC-based group. The median age (years), weight (kg), creatinine clearance (mL/min) and daily vancomycin dose (mg/day) were 70, 70, 60 and 1500 in the trough-based group compared with 69, 75, 113 and 2000 in the AUC-based group, respectively.

The median AUC0-24h in the trough-based group compared to AUC-based group was 639 and 521.5 mg*h/L, respectively (p=0.754). The median trough concentration in the trough-based group compared to AUC-based group was 18.4 and 10.2 mg/L, respectively (p=0.028).

Conclusion: Trough-based dosing of vancomycin resulted in statistically significant higher trough concentrations compared to AUC-based dosing. Median AUC0-24h exceeded the threshold associated with increased risk for nephrotoxicity in the trough-based group. Clinical pharmacy services utilizing Bayesian software to estimate AUC0-24h may enhance the efficacy and safety of vancomycin use.

Disclosure of Interest: None Declared
Amikacin dosage in critically ill elderly patients
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Background and Objective: The apparent volume of distribution (Vd) of aminoglycosides can be increased in critically ill patients. In this population, standard doses of amikacin (15-20mg/kg/24h) may be insufficient to achieve the desirable peak concentration (Cmax). Moreover, elderly patients often present a renal function decline which can lead to drug accumulation and toxicity.

Our aim was to assess if higher doses of amikacin with longer dosing interval are required in critically ill elderly patients to optimize antibiotic therapy.

Setting and Method: Observational retrospective study conducted in a tertiary university hospital. Elderly critically ill patients (≥75 years) treated with amikacin due to severe documented or suspected Gram-negative infections or neutropenia were included from January 2015 to April 2018.

We collected data on demographics, biochemical values and individual pharmacokinetic (PK) parameters from the first amikacin monitoring register which were estimated assuming a one compartment PK model and Bayesian forecasting (PKS®Abbot Software). Daily dose was adjusted to achieve a minimum amikacin concentration (Cmin) of 1-4mg/L and a Cmax of 40-45mg/L. Creatinine clearance (CrCl) was calculated by the Cockcroft and Gault formula. Data were compared using paired Student’s T-test.

Main outcome measures: Daily dose and dosing interval before and after therapeutic drug monitoring (TDM).

Results: Sixty-two patients were included, 74% (n=46) male. Results expressed as mean (±standard deviation) were: age 78.9(±3.2) years, weight 73.7(±12.9) kg and CrCl 55.4(±21.0) ml/min. Fourteen patients were neutropenic, 22 had a documented Gram-negative infection and in 26 it was suspected. Patients were split in two groups according to CrCl: above or below 50ml/min.

The initial mean (±sd) amikacin dose was lower than the recommended dose after TDM in both groups. For the CrCl≤50ml/min group, initial and after TDM dose was 12.8 (±2.6) mg/kg and 13.9 (±2.3) mg/kg, respectively (p=0.033). For the CrCl>50ml/min group, values were 14.0 (±2.9) mg/kg and 15.1 (±2.7) mg/kg, respectively (p=0.010).

Twenty-nine patients (93.5%) in the CrCl≤50ml/min and 28 (90.3%) in the CrCl>50ml/min group had an initial dosing interval of 24 hours. After TDM, dosing interval was extended to every 48 hours in 24 and 13 patients, respectively.

Conclusion: Results show that critically ill elderly patients would require an initial higher-than-standard amikacin dose and an extended dosing interval, mostly if CrCl<50ml/min, in order to optimize amikacin once-daily therapy.

Disclosure of Interest: None Declared
Patients with short bowel syndrome: dose adjustment and guidelines
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Background and Objective: Short bowel syndrome is a rare disease due to a 150 to 200 cm intestinal resection of post duodenal gut. Drugs are directly impacted by digestive malabsorption resulting from digestive pH and solubility modifications. Gut metabolization is also enhanced and adaptation of the medicinal dosage is required for affected patients.

Setting and Method: We conducted an exhaustive literature review of available publications on large jejunum resections. Then we developed a cross tabulation (classified by drugs international nonproprietary name, princeps, therapeutic class and recommended use) in order to help gastroenterology physicians for dosage adjustment. Finally, we gathered medicine galenic data to elaborate guidelines.

Main outcome measures: To set drug guidelines, dosage and galenic advices to prescribers for patients with short bowel syndrome.

Results: Our guidelines batch 49 medications often prescribed in short bowel syndrome. Drugs for digestive system (proton-pump inhibitors, gut motility drugs, antidiarrheal microorganisms) were the most commonly used (26.5%), along with antihypertensive drugs (16.3%), vitamins and minerals (14.3%), antithrombotics/antihemorrhagics (12.2%) and thyroid hormones (8.2%). Talking about galenic, it is wise to use solubilized forms (oral solutions, syrups) and orodispersible tablets. Capsules, matrix tablets, extended release and delayed release forms must be avoided. Molecules already dissolved will be faster absorbed. Quite the contrary, liquid forms are not advised for patients with significant diarrhea (>8 stools/day) because gut motility is enhanced and the intestinal residence time falls. Sorbitol, as excipient, is not recommended for may cause osmotic diarrhea. Transdermal, sublingual, nasal and rectal routes (without diarrhea) are privileged but parenteral administration is always the last resort.

Conclusion: This cross tabulation summary allows ease physicians with latest short bowel syndrome dose adjustment and recommendations. This work is an example of multidisciplinary collaboration necessary to optimize patient's pharmaceutical and therapeutic cares. We plan to study on others frequently prescribed drugs in short bowel syndrome in order to provide physicians with new reliable data for dosage adjustment.

Disclosure of Interest: None Declared
**Background and Objective:** Graft-versus-host disease (GVHD) is one of the main complications of allogeneic hematopoietic stem cell transplantation (allo-HSCT). To prevent it, tacrolimus is the most commonly used drug. The objective of the study was to evaluate the suitability of the current tacrolimus dosing regimens used in GVHD prophylaxis and the time until the first tacrolimus concentration should be taken.

**Design:** Retrospective observational study of the tacrolimus concentrations in whole blood of patients who received an allo-HSCT during the year 2018 in a tertiary hospital. Demographic, clinical and pharmacotherapeutic data were obtained, as well as blood concentrations of tacrolimus and time until the first monitoring of it. A concentration of tacrolimus located between 5-10 ng/mL was considered adequate, <5 ng/mL infratherapeutic and >10 ng/mL toxic.

**Results:** We included 66 patients (56.1% males) with a median (range) age of 52 (9-68) years. In 38 patients (57.6%) a conditioning regimen of reduced intensity was used. In these, two different combinations were used: 22 patients used oral tacrolimus (0.1mg/kg) with rapamycin and 16 received intravenous tacrolimus (0.02mg/kg) with mycophenolate mofetil (MMF) and cyclophosphamide. In the first group, the time elapsed until the monitoring was 2±0.6 days, obtaining 10 infratherapeutic and 5 toxic concentrations, compared to 1±0.1 days of the second group, in which 1 infratherapeutic and 7 toxic were registered.

The remaining 28 patients (42.4%) received myeloablative conditioning and also used two different schemes: 23 used a combination of intravenous tacrolimus (0.015mg/kg) with methotrexate and the remaining 5 patients received intravenous tacrolimus (0.02mg/kg) with MMF and cyclophosphamide. The first obtained 1 infratherapeutic concentration and 19 toxic, with a time until the monitoring of 5±1.37 days. In the second group, 2 infratherapeutic and 1 toxic concentrations were observed, determined after a time of 1±0.54 days.

**Conclusion:** In a high percentage of patients (69.7%) with GVHD prophylaxis the dosage of tacrolimus established did not reach adequate concentrations. The percentage of intoxicated patients seems to be greater as the time from the beginning of the treatment to the first drug concentration determination increases, so it would be advisable to modify the timing strategy and determine tacrolimus concentrations early.

**Disclosure of Interest:** None Declared
Preliminary results of a multidisciplinary monitoring program of plasma clozapine concentrations.
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Background and Objective: Trough clozapine plasma concentrations (TCPC) are related to the efficacy and appearance of some of their adverse effects. Therefore, each time more scientific societies recommend monitoring them. The objective was to describe the characteristics of a population treated with clozapine, the doses used, their genetic polymorphisms, and the resulting TCPC.

Setting and Method: Descriptive study of patients treated with clozapine in which TCPCs were determined during the period March 2018-March 2019.

Demographic, genetic, and treatment data were collected and TCPCs were determined using a liquid chromatography technique/tandem masses. To evaluate the suitability of treatment, an optimal therapeutic range of clozapine between 350-700 ng/mL was established, and TCPCs >1,000 ng/mL were classified as toxic.

Main outcome measures: TCPC, genetic polymorphisms, body mass index (BMI).

Results: We included 27 patients (13 women), with a median age (range) of 50 (29-67) years, with schizophrenia (n=22) and schizoaffective disorder (n=5). Only 19% of patients had a normal BMI, 44% were classified as overweight and 37% as obese.

In 20 patients, the genetic polymorphisms affecting the cytochromes involved in the metabolism of clozapine (CYP1A2, CYP3A4, CYP2D6, CYP2C9 and CYP2C19) could be reviewed, with mutations found in 79%, 10%, 65%, 15% and 35% of them respectively. Only two of the patients did not present any polymorphisms that affected the metabolic route of clozapine. The median (range) of clozapine daily dose was 300 (100-800) mg, and the mean (±SD) daily dose/kg was 4.5 (± 2.75) mg/kg/day.

45 TCPCs were analyzed, with a median (range) of 310 (89-1,513) ng/mL. 22% of the TCPCs were therapeutic, 51% below the therapeutic range and (13.5%) potentially toxic.

Conclusion: Our results showed a high variability of TCPCs, finding a large proportion of underdosed patients and some potentially overdosed. These outcomes justify the use of clozapine monitoring programs. The majority of the patients were overweight and had some genetic peculiarity that affects the metabolism of this drug, especially in CYP1A2 and CYP2D6, which could explain part of the variability found.

Disclosure of Interest: None Declared
Background and Objective: Gentamicin is a frequently used antibiotic, mainly at surgical departments. A gentamicin dose, which the physicians select, frequently does not take any pharmacokinetic parameters into consideration.

Setting and Method: Our retrospective study includes 379 patients (299 men, 80 women) who were treated by gentamicin during 4-years period. They were hospitalised at departments in Teaching hospital Nitra, Slovakia. We measured all gentamicin concentrations mentioned in this work by the FPIA method on the analyser AxSYM of company ABBOTT.

Main outcome measures: To analyse the results of Therapeutic drug monitoring (TDM) of gentamicin at patients who have not had the gentamicin dose adjusted at the beginning of therapy (1st group). To analyse the results of Therapeutic drug monitoring (TDM) of gentamicin at patients who had the gentamicin dose adjusted by clinical pharmacist at the beginning of therapy (2nd group). Comparison results of TDM of gentamicin between both groups due to the pharmacokinetic parameters and dosage regimens of gentamicin.

Results: The patients in 1st group and 2nd group were divided according to the body mass index (BMI). In 1st group of patients without dose adjustment at the beginning of therapy, low percentage of patients had both optimal levels (trough, peak levels). As for patients with BMI > 25 m²/kg, it was only 17 %, and the patients with BMI ≤ 25 m²/kg only 18.8 %. In 2nd group of patients with dose adjustment of gentamicin at the beginning of therapy, all trough and peak levels in optimal therapeutic range at obese patients, overweight patients and also at patients with normal weight (p<0.001).

Conclusion: Adjustment of dosage regimens immediately at the beginning of therapy will provide for administering sufficient doses of antibiotics at the beginning of therapy, which is a pre-condition for a successful anti-infective therapy. Therapeutic monitoring of levels allows for administration of sufficient dose of gentamicin without fear of any undesirable effects. On the other hand, TDM identifies usage of inadequate dosage regimens, which do not take the pharmacokinetic parameters into consideration and decreases the risk of under dosing.

Disclosure of Interest: None Declared
Elevated cyclosporine blood concentration due to metformin related diarrhoea: a case report
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Background and Objective: Cyclosporine has a narrow therapeutic index, numerous interactions and its metabolism is influenced by different medical conditions, including acute gastroenterocolitis. This case report describes a sudden elevation in patient’s cyclosporine blood concentration without any changes in therapy or any recognized interactions, but while experiencing diarrhoea as an unwanted side effect of a concomitant use of metformin.

Design: Performing our TDM service we identified unexpected elevation of cyclosporine blood concentration in an otherwise stable patient with aplastic anaemia. No drug – drug and food – drug interactions were identified when checking in different databases. With the help of a pharmacokinetic software DoseMe® we calculated a new dosing regimen. The measurement was repeated after a week of lower doses.

Results: 65-year old man with aplastic anaemia on permanent cyclosporine treatment (therapeutic range for C₀ being 150 – 200 µg/L) was maintaining therapeutic concentrations of cyclosporine for three months while receiving an oral dose of 125 mg twice a day (cyclosporine blood concentration measurements: 15 Nov 2018 C₀ = 180 µg/L, 20 Dec 2018 C₀ = 176 µg/L, 10 Jan 2019 C₀ = 188 µg/L). On 7th Feb 2019 the C₀ value was 260 µg/L without any previous changes in therapy. We calculated a new dosing regimen of 100 mg in the morning and 75 mg in the evening, aiming at the therapeutic range of 150 – 200 µg/L. After a week, the measured concentration was lower than expected (14 Feb 2019 C₀ 131 µg/L). We found out that during the first measurement in February the patient was experiencing diarrhoea, related with the use of metformin. At the second concentration measurement after a week, the problems with diarrhoea were no longer present, since the patient skipped a few doses of metformin. Presence or absence of diarrhoea obviously affected patient’s cyclosporine blood concentration.

Conclusion: During the state of acute gastroenterocolitis the metabolism and elimination of cyclosporine in enterocytes is disturbed, therefore larger amount of cyclosporine is found in blood. The aim of this case study was to highlight the possible connection between cyclosporine whole blood concentration and metformin treatment, which may not seem important after looking up interactions in databases like Micromedex, UpToDate.

Disclosure of Interest: None Declared
Effectiveness of providing a TDM service for vancomycin treatment
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Background and Objective: To assess the effectiveness, extent and importance of providing a TDM service in optimisation of vancomycin treatment for every patient at University Medical Centre Maribor.

Setting and Method: 12-month retrospective study in a large teaching hospital in Slovenia; every patient receiving vancomycin treatment during the year 2018 with at least one vancomycin concentration measurement was included; the number of measured concentrations was compared with the number of clinical pharmacist’s recommendations regarding vancomycin dosing optimisation written in patients’ medical records.

Main outcome measures: The number of patients with at least one vancomycin concentration measurement, age and gender of included patients, the number of vancomycin concentration measurements, the number of clinical pharmacist’s recommendations regarding vancomycin dosing optimisation written in patients’ medical records, percentage of interpreted vancomycin concentration measurements, average number of clinical pharmacist’s recommendations per patient, average value of vancomycin concentration measurement.

Results: There were 264 patients with at least one vancomycin concentration measurement during the year 2018, 59 % were male and 41 % were female, mean age was 62 years (range 0 – 93 years, median 66 years, STDEV 20 years); the overall number of vancomycin concentration measurements was 1802, the number of recommendations written in patients’ medical records by clinical pharmacists was 1714; 95 % of vancomycin concentration measurements were interpreted, average number of recommendations per patient was 7 (range 1 – 50, median 5, STDEV 7.1) and the average value of vancomycin concentration measurement was 17.5 mg/L (range <2.5 – 76.1 mg/L, median 16.6 mg/L, STDEV 7.1 mg/L).

Conclusion: Our retrospective analysis confirmed that the majority of vancomycin concentration measurements at UMC Maribor are interpreted by clinical pharmacists – during the year 2018 the result was 95 %. However, this is only an estimation since the result was obtained by dividing the number of recommendations with the number of measurements, which does not necessarily mean that one recommendation fits to one interpreted measurement. We can still conclude that the TDM service for vancomycin treatment in UMC Maribor is used to a great extent, while providing an effective tool for maintaining vancomycin concentrations within the therapeutic range (10 – 20 mg/L).

Disclosure of Interest: None Declared
Background and Objective: Adalimumab is an anti-TNF drug for the treatment of inflammatory bowel disease (IBD). Dose escalation is frequently needed to maintain sustained response over time. A new presentation of adalimumab 80 mg has been recently marketed for IBD patients who need dose intensification due to a loss of response. The aim of this study was to determine trough adalimumab concentrations and evaluate efficacy after administering adalimumab 80 mg every other week (eow) to IBD patients under maintenance treatment with 40 mg eow who needed dose intensification.

Setting and Method: Prospective and observational study including all IBD patients at our hospital under therapy with adalimumab 40 mg eow, whose regimens were changed to 80 mg due to a loss of response and for whom data was available after the change in February 2018.

Main outcome measures: The following variables were collected: gender, age, weight, and faecal calprotectin (FC) before and after the change. Good response was determined to be FC < 100 mg/kg after the change. Trough adalimumab levels were determined before and after the change using the ELISA technique. The therapeutic range= 7.5- 12 µg/mL.

Results: Eight patients were included (5 women), with a median [range] of age and weight of 53 [40-78] years and 78.5 [58-118] kg, respectively. In 5 patients, despite dose intensification, expected trough adalimumab levels were not reached with the 80 mg presentation, and presented an average (SD) of: 6.3 (±1.95) µg/mL and 6.5 (±2.18) µg/mL, before and after the change, respectively. The median [range] for FC before and after the change was 510 [367-2116] mg/kg and 129 [15-1147] mg/kg, respectively.

Three patients achieved the expected trough adalimumab levels after the change, with an average (SD) of: 4.6 (±1.49) µg/mL and 9.5 (±1.05) µg/mL, before and after respectively. For them, the FC values were: 223 [60-812] mg/kg and 47 [15-64] mg/kg.

Conclusion: The preliminary data observed in this small sample indicate that several patients achieved neither therapeutic levels of adalimumab nor good clinical response after changing to a single dose of adalimumab 80 mg eow. More data is needed to confirm this finding and to understand the causes.

Disclosure of Interest: None Declared
TDM of tacrolimus in kidney transplant patient with voriconazole interaction: a case report

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Background and Objective: Tacrolimus, in combination with other immunosuppressive drugs, is a drug of choice to prevent renal transplant rejection. Since it's a CYP3A4 substrate, strong inhibitors and inducers significantly change its pharmacokinetics. In the case described, we intend to show that with the help of a software-assisted TDM service, even in a case of clinically expressed interaction, tacrolimus dosing can be safe and efficient.

Design: In a patient with a transplanted kidney, voriconazole therapy was initiated due to pulmonary aspergillosis. On the third day of treatment, blood concentrations started to rise significantly, and Clinical Pharmacy TDM service was consulted. With the help of the pharmacokinetic (PK) software DoseMe, we proposed a dose adjustment. The patient was transferred to another facility where tacrolimus dosing was adjusted without support of PK software. When tacrolimus concentrations were normalized, we obtained data on the final dosing regimen and compared them with our recommendation.

Results: A 67-year-old woman who received a kidney transplant two years ago was stable at a dose of tacrolimus XL 3 mg daily (Co between 4.2 and 5.3 ng/ml). Due to pulmonary aspergillosis, she was treated with voriconazole 400mg/12h i.v. for two days, followed by 200mg/12h orally. On the third day of treatment, tacrolimus concentration was 14.9 ng/ml, on the seventh day it was 27.8 ng/ml. The patient presented difficulties to breathe, and was edematous despite furosemide. Clinical Pharmacy TDM service was consulted, and we proposed to stop tacrolimus for five days to achieve therapeutic range of 4-11 ng/ml. Our dose recommendation afterwards, based on both drug levels, would be tacrolimus XL 0.5 mg daily. Nevertheless, the patient was transferred to another facility where she was treated for another 18 days. Tacrolimus doses were not omitted, only decreased. Therapeutic range was reached on day 15. During the treatment, the concentration was determined 7-times. The patient was stabilised on a dose of tacrolimus XL 0.5 mg daily.

Conclusion: With TDM software, we were able to determine optimal time to restart dosing of tacrolimus, as well as the right dose to remain within the therapeutic range, sooner and with fewer concentration measurements than with regular monitoring.

Disclosure of Interest: None Declared
TDMP014
RELATIONSHIP BETWEEN INDUCTION PHASE VEDOLIZUMAB SERUM CONCENTRATIONS AND THERAPEUTIC RESPONSE IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE
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Background and Objective: Vedolizumab is a monoclonal antibody indicated for inflammatory bowel disease. Recent studies support monitoring minimum vedolizumab serum concentrations (VSC) during the induction phase, since adequate concentrations have been linked to good response to treatment. The objective of the study was to establish an experimental cutoff point for VSC determined in the sixth week of induction which allows for differentiating between patients who will be responsive and non-responsive at weeks 6, 14 and 32 after treatment was initiated.

Setting and Method: Observational, prospective study carried out between July 2017 and April 2019. The study included patients diagnosed with Crohn’s disease (CD) and ulcerative colitis (UC) being treated with vedolizumab. We collected: 1) demographic variables; 2) inflammatory biochemical variables: fecal calprotectin (FCP); and 3) response variables: Harvey Bradshaw (HB) index in CD and partial Mayo index (pMI) in UC. VSC were determined in week 6 using ELISA. Responsive patients were those who presented a clinical response defined as HB<5 or pMI<3 or a biochemical response defined as FCP<100 mg/Kg, at weeks 6, 14 and 32 after treatment was initiated. A relative operative characteristic (ROC) curve was carried out in order to evaluate the discriminatory capacity of VSC in week 6 for predicting a good response.

Main outcome measures: VSC, clinical response, biochemical response.

Results: The study included 18 patients (11 women), 7 diagnosed with UC and 11 with CD, with an average (SD) age of 51.9 (17.8) years. The ROC analyses with the greatest significance were obtained with a biochemical response at week 14 and with a clinical response at week 32. The optimum cutoff point, considering responsive patients who presented biochemical response at week 14, was 43.6μg/mL [AUC= 0.60 (IC95%: 0.60-0.89)]. The cutoff point was determined to be 36.6 µg/mL considering responsive patients who presented clinical response at week 32 [AUC=0.66 (IC95%: 0.52-0.99)]. No discriminatory cutoff point was found between responsive patients and non-responsive patients in week 6.

Conclusion: VSC near 40 μg/mL determined in week 6 were predictive for biochemical response at week 14 and clinical response at week 32 of treatment. Elevated serum concentrations were not predictive of good response at week 6.

Disclosure of Interest: None Declared
DIRECT ORAL ANTICOAGULANTS (DOACs) USE IN PATIENTS WITH CARDIAC IMPLANTABLE DEVICES AND NON-VALVULAR ATRIAL FIBRILLATION: THE COMPLEXITY OF DOSE ADJUSTMENTS

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Background and Objective: Direct oral anticoagulants (DOACs) are the first line therapy for stroke prevention in non-valvular Atrial Fibrillation (NVAF). The fact that regulatory agencies, guidelines and drug labelling are worldwide different hamper the adjustment of DOACs doses in clinical practice. Moreover, observational studies are evidencing widespread discordance between guidelines and real-world practice regarding DOACs doses. This study aimed to evaluate DOACs dose adjustment in a real-world population and evaluate the complexity of this adjustments.

Setting and Method: A single-centre observational retrospective study was performed enrolling all patients implanted with a cardiac device between January 2011 and March 2012 in Cardiology Department of Coimbra Hospital and University Centre (Portugal). Therefore, 102 patients with NVAF and taking DOACs during the study time were included and, considering DOACs switch, 143 dose adjustments were considered for analysis. Baseline demographic and clinical characteristics were evaluated, and the adjustment was assessed according with EMA guidelines, including particularly renal adjustments, age and concomitant administered drugs.

Main outcome measures: Dose adjustment; underdosed; overdosed.

Results: In this cohort, mean age was 82.4±8.2 years and 64.7% of the patients were male, with a mean body mass index of 28.9 kg/m². Among these patients, 32 have switched DOAC during follow-up (25 switched one time, 5 switched two times and 2 switched 3-4 times). Focusing on dose adjustment considering only the renal function, 47.9% of the patients received an adjusted dose. But when all the data were integrated (weight, age, concomitant drugs and increased bleeding risk), 65.0% of the dose adjustments were in accordance to the European guidelines. This data analysis also revealed that 18.2% of the patients received underdosed off-label doses while 16.8% were overdosed. Edoxaban was the DOAC most frequently underdosed while dabigatran was the DOAC most frequently overdosed.

Conclusion: Among NVAF patients with implantable devices under DOAC therapy herein included, 35.0% of them were administered with off-label doses which can lead to an increased risk of stroke, bleeding and/or adverse effects. All clinical information must be assessed, namely regarding renal function, age, weight, increased bleeding risk and concomitant drugs to improve DOACs dose adjustments in clinical practice.

Disclosure of Interest: None Declared
Background and Objective: Assessing adherence to treatment with antiepileptic drugs is crucial for finding the causes of inadequate seizure control and excluding drug resistance situations. Poor adherence to antiepileptic medication is associated with increased mortality, morbidity and healthcare costs. This study aimed at assessing levetiracetam (LEV) adherence of adult Portuguese epileptic patients, employing plasma concentrations and pharmacokinetic monitoring data.

Setting and Method: A retrospective study was performed including 30 epileptic patients (12 male/18 female, age mean: 33.1 ± 14.7 years) admitted to the Refractory Epilepsy Reference Centre of Centro Hospitalar e Universitário de Coimbra and treated with LEV. LEV monitoring was performed by collecting a plasma sample at the morning of the first hospitalization day before drug administration and by collecting two additional plasma samples on the last hospitalization day (30 min before drug administration and 1h post-dosing). Demographic, analytical and therapeutic data of each patient were compiled. Plasma concentrations obtained on the last day of hospitalization were used to estimate the clearance and volume of distribution of LEV for each patient, resorting to a 1-compartment model with first-order absorption and elimination applying the Abbottbase PKS software. Accordingly, the plasma concentration of LEV at the admission day was estimated.

Main outcome measures: The adherence to LEV therapy was assessed by comparing the predict and the observed plasma concentration on the first day of hospitalization: patients were considered adherent if the absolute difference between the predict and the observed plasma concentration was ≤30%.

Results: Only 16 (53%) of the 30 screened patients presented absolute differences between the predicted and the observed plasma concentrations of LEV ≤30% and were considered adherent (values varied from 0,1 to 29%). Fourteen (47%) patients presented absolute differences >30% and were considered nonadherent to LEV treatment. Regarding to the 14 (47%) patients presenting absolute differences >30% and considered nonadherent, 12 (40%) were under-consumers and 2 (7%) were over-consumers.

Conclusion: The results herein presented suggest that adherence to LEV therapy is poor among the patients herein enrolled, highlighting the importance of therapeutic drug monitoring on assessing patient’s adherence.

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Disclosure of Interest: None Declared
Analysis of complementary and alternative medicine enquiries in the Drug Information Centre

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Background and Objective: Major activity of the Drug Information Centre (DIC) of the Faculty of Pharmacy in Hradec Kralove, Charles University, and University Hospital Hradec Kralove is to deliver expert information to various medicines-related enquiries from healthcare professionals in the Czech Republic. Provision of high-quality information to enquiries related to complementary and alternative medicine (CAM) is challenging and insufficiently described. The aim of this study was to analyse all enquiries related to CAM received in the past 24 years.

Setting and Method: CAM-related enquiries were retrospectively searched from the complete DIC database in the period of 1994–2017 including total of 2,204 enquiries. Data were processed using descriptive statistical methods.

Main outcome measures: The analysis was focused on profession of enquirer, urgency and type of enquiry, professional information resources used, and time needed to answer the enquiry.

Results: The total number of CAM enquiries was 205; the mean number of CAM enquiries was 8.5±6.4 per year (median 6). They were mostly sent from community and hospital pharmacies (126; 61.5%) or by inpatient physicians (21; 10.2%). The mean time taken to resolve CAM enquiries was 141 minutes, while 41 (20.0%) enquiries required processing within 24 hours. Most enquiries were focused on vitamins and minerals, phytotherapy, and other food supplements. Specifically, these issues were related to indications or contraindications of CAM (58; 28.3%), characteristics of substance (50; 24.4%), and drug interactions (34; 16.6%). The most frequently used information resources were Micromedex (107; 52.2%), Summary of Product Characteristics (100; 48.8%), and Medline (100; 48.8%). CAM specific resources were used in only 9 (4.4%) cases.

Conclusion: CAM-related enquiries made up about one tenth of all recorded enquiries, most frequently coming from the pharmacists and concerned (contra)indications. Based on the time needed to solve enquiries, they seemed to be quite complex, requiring use of general information resources rather than specifically focused on CAM.

Disclosure of Interest: None Declared
Towards a digital compendium of chemotherapeutic regimens for Dutch pharmacists
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Background and Objective: Chemotherapy regimens, consisting of combinations of oncological and supportive drugs, are often a mainstay of oncological treatment. Information on chemotherapy regimens can vary (inter)nationally and among different hospitals. Information is not always readily available and it takes time to find the proper information on the regimen from different sources, such as study protocols and treatment guidelines. Therefore, we founded a compendium of various chemotherapy regimens for Dutch pharmacists. The first objective of this project was to integrate drug information for chemotherapy regimens into singular digital monographs in order to harmonise this information. The second objective was to provide a clear presentation of the information on specific chemotherapy regimens to pharmacists.

Design: Information on the most frequently used chemotherapy regimens was collected from national and international guidelines and standards. The information was integrated in uniform monographs containing the indication, composition, dose information, dose adjustments, treatment schedule, method of administration, possible variants on the regimen and background information. The monographs also refer to current guidelines and study protocols. The monographs were published in the Informatorium Medicamentorum, the leading drug information database for pharmacists in the Netherlands. An expert group of hospital pharmacists was approached to gather feedback on the chemotherapy monographs.

Results: Drug information on over 20 chemotherapy regimens were published at of the date of this publication. In addition, drug information from separate drug monographs was linked to the information on the chemotherapy regimens. We asked feedback from hospital pharmacists. They were enthusiastic because the information was informative and useful for clinical practice. Their opinion was that the information on the chemotherapy regimens is accessible and easy to understand.

Conclusion: In this project, we founded monographs with accessible and plain information on chemotherapy regimens for (hospital) pharmacists. Because information from different sources is integrated, digital information on chemotherapy is easily accessible and can be used for clinical practice.

Disclosure of Interest: None Declared
What kind of information do the Direct Healthcare Professional Communications offer?

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Background and Objective: 9% of the drugs need to implement some action related with safety 1, and one of the available tools for communication of updated information on drug security matters (pharmacovigilance) is the publication of Direct Healthcare Professional Communications (DHPC) by pharmaceutical companies. The aim of this study was to characterize and describe the medications involved in the DHPC.

Design: A cross-sectional descriptive study was carried out analyzing DHCPs published on the website of the Spanish Agency for Medicines and Health Products (AEMPs) between January 2015 and December 2018. The variables were: number of letters, active principle (AP), therapeutic group (Anatomical therapeutic chemical (ATC) classification system), prescription conditions, additional follow-up, post-authorization safety study (PASS), new biological, new AP, orphan drug, biosimilar medicine, type of alert, alert with death, alert in authorized indication, type of recommendation, average of years between the first marketing authorization and the year that letter was published. A descriptive statistical analysis of the variables was carried out.

Results: 77 DHCPs were analyzed, of which 48% were published during the first 5 years of commercialization of the drug. Of the 92 PA included, the majority (29%) belong to group L of the ATC classification (Antineoplastic and immunomodulating agents). 98% were prescription drugs, 17% were biological drugs and 10% were orphan drugs. 47% of the drugs were under additional monitoring, of which 23% were PASS. Most type of alerts were adverse reactions (34%). Regarding alerts, 39% were published with a history of death of patients in undergoing treatment (of which 30% were for use in contraindicated situations and 20% for off-label use). 38% of the recommendations to healthcare professionals indicate extreme surveillance of the patient and 23% indicate not to use in certain circumstances.

Conclusion: It should be noted that only 2% were non-prescription drugs, although there may be under-reporting of suspected adverse reactions of these medications. Risk management must be done throughout the life cycle of a medication, and it is important to emphasize that safety letters provide new and updated information to promote a safe use of medicines.

Reference:

Disclosure of Interest: None Declared
DI008
PROTOCOL OF USE OF LOW-MOLECULAR-WEIGHT HEPARINS TO PREVENT EPIDURAL HEMATOMA. A CASE REPORT
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Background and Objective: The use of low-molecular-weight heparins (LMWH) has been associated with the development of epidural hematoma. The objective is to develop a protocol of use of LMWH in surgical patients in whom has been inserted a spinal needle or epidural catheter placement.

Design: An epidural hematoma occurred in a patient operated of an aortoabdominal aneurysm during the intensive care unit (ICU) stay. She was a 68 years old woman with a personal medical history of atrial fibrillation, aortic mecanic valve and peripheral artery disease. She was being treated with warfarin which had been discontinued and replaced by enoxaparin 60mg/12h since five days and until 24h before the surgical procedure. Due to high thrombotic patient's risk she was prescribed enoxaparin 80mg after twelve hours from intervention, although she was already carrying an epidural catheter. She received a total of two doses of enoxaparin 80mg before the catheter removal, that occurred twelve hours after the last dose of LMWH. After two hours from the withdrawal of the catheter the patient started feeling lower limbs paresthesia and progressive paraplegia. A nuclear magnetic resonance was performed where two small acute-subacute hematomas in the epidural region were observed.

Results: The responsible pharmacist for the ICU service together with the critical care physicians developed a protocol for the entire hospital in which anesthesia and hematology services were also involved. This protocol collected the following recommendations from the American Society of Regional Anesthesia and Pain Medicine: (1) the minimal effective dose of LMWH should be administered perioperatively; (2) initiation of these agents should be delayed for 24 hours after the insertion of a spinal needle or epidural catheter placement; (3) when LMWH that require twice-daily dosing are used, indwelling catheters should be removed before the initiation of prophylaxis, with the first dose given at least 2 hours after catheter removal; (4) when LMWH that require single daily dosing are used, indwelling catheters can be safely maintained but should be removed no sooner than 10 to 12 hours after administration of the last dose.

Conclusion: The elaboration of multidisciplinary protocols for the use of medications is essential to prevent errors from occurring in the administration.

Disclosure of Interest: None Declared
Background and Objective: Within a CCPU, pharmacy technicians training is a major element of quality management. To meet this need, a « playing cards » designed for pharmacy technicians has been presented in the GERPAC to improve their theoretical knowledge on injectable antineoplastic drugs. We have chosen to use this tool within our unit, in response to a request for training from our team. The objective of our study was to implement and evaluate the "playing cards" tool as part of a new ongoing training program.

Setting and Method: The study ran from January to March 2019. The tool has been reviewed and adapted according to the drugs used in our unit. A training program of 7 collective training sessions has been established by the pharmaceutical team. The pharmacy technicians were trained to read the cards available in several formats (paper and digital). A knowledge assessment questionnaire was conducted before and after the training. At the end of the training, a survey was conducted to assess the pharmacy technicians’ satisfaction.

Main outcome measures: The primary endpoint was the evaluation of the pharmacy technicians’ acquired knowledge. The secondary endpoint was the evaluation of their satisfaction with the tool.

Results: The evaluation of the pharmacy technicians’ knowledge acquisition (n=8) showed that the scores after the use of the tool are significantly higher than those before its use (Student test p<0.10). The satisfaction survey revealed that 100% of the team were satisfied with the training program. The main format used was the PDF version on smartphone (67%). The cards contained too much information for 33% of the team. Finally, 50% of the team would like sessions dedicated to the different families of drugs, mechanisms of action and protocols.

Conclusion: The “playing cards” is a good training tool that has allowed the overall team's performances. The final evaluation demonstrated user satisfaction, but also identified areas for improvement. The main difficulty encountered is the lack of time dedicated to learning and training. However, the definite interest of this tool is proven and will integrate the initial and ongoing training program of our unit.

Disclosure of Interest: None Declared
**Background and Objective:** MELAS (Mitochondrial Encephalomyopathy, Lactic Acidosis and Stroke-like episodes) syndrome is a rare mitochondrial disease characterized by multisystemic disorders. The symptoms result from a NO deficiency in cerebral arteries triggering impaired vasodilation. Intravenous arginine supplementation could have a beneficial effect by promoting NO synthesis. The aim of this study was to assess the use of ARG in MELAS stroke-like episodes in French hospitals.

**Setting and Method:** The survey was conducted in November 2018 in 19 hospitals and reference centers for mitochondrial diseases. Clinicians from neurology, pediatric and genetic wards were contacted by email.

**Main outcome measures:** A standardized questionnaire was used to evaluate the number of patients treated, the doses, the efficacy and the side effects observed during the past 4 years.

**Results:** Seven clinicians from 5 reference centers and 2 hospitals answered the questionnaire. In 2015-2018, 8 patients were given ARG for the treatment of MELAS stroke-like episodes at a loading dose of 500 mg/bw during 3h followed by a maintenance dose of 500 mg/bw during 24h. Mean total treatment duration was 5 days. ARG was used either in monotherapy or in association with oral citrulline or N-acetylcysteine. Clinical signs (headache, visual field impairment) disappeared or regressed in 4 patients but were unchanged in 4 patients after ARG treatment. No death was observed following the stroke-like episodes. No side effects were reported which is consistent with literature data that indicates a safety profile for IV arginine use.

**Conclusion:** According to this survey, ARG was used to treat MELAS stroke-like episodes, but its efficacy is unclear. In 2017, the Mitochondrial Medicine Society stated that IV arginine should be administered urgently in MELAS stroke-like episodes. Controlled trials are needed before considering whether ARG is essential.

**Disclosure of Interest:** None Declared
Background and Objective: Pharmaceutical Establishment of Paris Hospitals Group (PE AP-HP) provides French health care professionals with placebo hospital preparation 'Formule 515 AP-HP tablet' (F515). In order to evaluate its therapeutic interest, an observational survey was conducted in French Hospitals.

Setting and Method: The survey from July to December 2018, has been sent by email to pharmacists and clinicians of 79 French Hospitals which were the largest users of F515 during the past 4 years.

Main outcome measures: Therapeutic uses, mean duration of the treatment, clinical interest.

Results: Seventy-nine hospitals were contacted, 39/79 responded. This survey showed:
- prescriptions in various clinical wards:
  - geriatric;
  - psychiatry;
  - follow-up care and rehabilitation, internal and polyvalent medicine in the treatment of pain, anxiety and insomnia;
  - allergology;
  - otorhinolaryngology for tinnitus (cochlear implants);
  - medico-judicial unit and administrative detention center for anxious, alcoholic, drug-addicted patients or with substitution treatments;
- numerous therapeutic uses: hypnotic, anxiolytic, analgesic, in allergology (drug re-introduction test) and in otorhinolaryngology (cochlear implanted patients) for treating tinnitus;
- a generally short duration of treatment (most often few days to 1 month) and always adapted to each patient; few prolonged treatments (3-4 months) have been reported;
- the unit packaging very appreciated

Eighteen hospitals declared they were still interested in using F515 in the future, 10/39 were not, 11/39 didn't answer.

Conclusion: The therapeutic interest of F515 was confirmed by most professionals in this survey. It is appropriate that PE AP-HP must continue to manufacture this drug for French hospitals. A low response rate to this survey may be due to the ethical issues raised by the use of this particular drug.

Disclosure of Interest: None Declared
Background and Objective: An intelligent virtual assistant prototype to facilitate self-care in older people with type 2 diabetes is currently being developed. The application prototype targets medication adherence and lifestyle. Effectively informing patients about medicines side-effects and their management is important in supporting medication adherence. All medicines marketed in the EU must have a package leaflet (PL), which includes a heading on possible side-effects. Such information seemed potentially usable in the application prototype. Our objective is to describe the management of side-effect information from the PLs of antidiabetic medicines for this purpose.

Setting and Method: A list of all antidiabetic medicines (except insulins) were retrieved from the national database on human medicines; the most recently approved PL was selected for each drug (or fixed-dose combination) and strength. Side-effect information in each PL was extracted to a database. Then, inclusion and exclusion criteria were applied and changes of information extracts (thematically-related textual data) were categorised into harmonisations, eliminations and additions; to maximise consistency both processes were conducted iteratively and guided by discussion within the research team.

Main outcome measures: Number of harmonisations, eliminations and additions.

Results: We report preliminary results of 20 out of 47 antidiabetic medicines. On average, side-effect information of each medicine was subjected to 5.7 (SD 3.0) harmonisations and 13.4 (SD 6.5) eliminations. Replacing medical for plain terms plus the standardisation of information on risk factors for adverse reactions and frequency descriptors are examples of harmonisations. Information extracts on side-effects associated with laboratory tests or caused by drug associations not presented in fixed-dose combinations are examples of eliminations. Information pertaining to side-effects rare or of unknown frequency was also eliminated. Rare but serious side-effect information that was part of risk minimisation recommendations was maintained (e.g. diabetic ketoacidosis caused by SGLT2 inhibitors). On average, 2.1 (SD1.7) additions were made to the side-effect information of each medicine; a common example is explaining signs and symptoms of conditions mentioned in the PL.

Conclusion: Overall, side-effect information from PLs of antidiabetic medicines requires substantial changes to serve as a basis to adequately counsel patients through a virtual assistant. Additional on-going work explores evidence-base strategies to present this information within the application prototype.

Disclosure of Interest: None Declared
Pharmacy Students' Knowledge and Perception on High-Alert Medications
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Background and Objective: This study is aim to evaluate pharmacy students’ knowledge and perception on high-alert medications by using valid and reliable Turkish version of high-alert medications (HRM) knowledge questionnaire.

Setting and Method: This descriptive study was conducted in March-April 2019 in a faculty of pharmacy (5-year bachelor’s program), Istanbul with forth and fifth grade pharmacy students.

Main outcome measures: The reliable and valid questionnaire consisted 20 true-false knowledge items was used. Better knowledge regarding HRM represented with the higher score.

Results: This study was conducted on 186 pharmacy students. The response rate was 77.5%. The mean age of the participants was calculated as 23.54 ± 1.59 (21-34). Of them, 73.1% was female. The mean score of high alerts medications knowledge test was 7.42±2.71. Students from fifth grade (n=95) have higher score on high alerts medications knowledge test when compared with students from fourth grade (n=91) (p<0.05). There is no statistically difference in between female and male students (p>0.05). Participants thought about risks associated with HRM as following: insufficient knowledge (n=146, 79.6%), confused prescription (n=107, 57.5%), unclear dose calculation (n=103, 55.4%). Pharmacy students had less knowledge regarding intravenous electrolyte solutions and dose adjustment/calculation on chemotherapeutics. In addition participants stated that they prefered Rx Media (n=69, 37.1%), Medscape (40.9%) and senior pharmacist (22.0%) to get HRM related information.

Conclusion: Although it was concluded that pharmacy students had low knowledge level regarding HRM, paradoxically most of them are aware that insufficient knowledge is a risk regarding with HRM.

Disclosure of Interest: None Declared
**What does patient know about their chronical treatment?**

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**Background and Objective:** The increase of patients with chronic disease induces increase of medications which is known to be related to a drop of compliance. Hospitalization can be the right time to review patient's knowledge and compliance to these medications mostly prescribed by city doctors.

**Setting and Method:** From 15 November to 15 December 2018 a prospective study was conducted in the wards of internal medicine and nephrology by pharmacy students. Patient inclusion criteria were: at least 3 chronic medications before hospitalization and no cognitive disorder. Surveys were divided in 2 parts: treatment’s knowledge assessed with 4 question’s score and compliance estimated by questions of forgetting and faced to opinion of healthcare professionals.

**Main outcome measures:**

Assessment of patient’s knowledge and compliance regarding their medications.

**Results:** Among 120 questionnaires, 97 met inclusion criteria. Patients (mean age = 62y) were treated by an average of 7,1 medications before hospitalization (principally cardiovascular, diabetes mellitus, psychotropic drugs). Among 694 medications, results show an average patient’ knowledge score of 2,8/4. The therapeutic classes with the worst score were antidepressant, statins and anti-hypertensive drugs. Patients are aware of their treatment and require almost informations regarding adverse effects (48%). For that purpose, 72% of them read the package leaflet, 59% ask to healthcare professional, mostly a physician and 33% use internet (Google etc.). Considering compliance, 16% of the patients declare forgetting medications less than one time in the last week. Those have been considered as non-compliant. From the healthcare professional point of view, 38% of patients are considered non-compliant which is more important than what has been declared by them. Discordance in compliance opinion is confirmed by the fact that among the 16% of non-compliant, 75% were labeled as compliant by healthcare professional.

**Conclusion:** Treatments prescribed by city practitioners seem to be badly known which shows that pharmacists can play an important role both in hospital and in local pharmacy. Discordance of opinion about compliance shows that time has to be taken to help patients. Hospitalization can be the right time to perform this by hospital pharmacists.

**Disclosure of Interest:** None Declared
EVALUATION OF ADVERSE DRUG REACTION REPORTS SUBMITTED IN A COMMUNITY PHARMACY VIA A WEB-BASED TOOL

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Background and Objective: Reporting adverse drug reactions (ADRs) is the most important method of generating safety signals and providing constant surveillance of drugs after they are placed into the market. The issue of underreporting can be effectively addressed by using online ADR reporting tools, that reduce the time required to submit an ADR report.

Setting and Method: We evaluated the main characteristics of 125 ADR reports, submitted during 2 years in 20 community pharmacies by 18 pharmacists. A previously existing web-based ADR reporting tool www.nuz.si was used. Drugs, suspected of causing ADRs, were classified according to anatomic therapeutic chemical classification (ATC) codes and ADRs to CTCAE (Common Terminology Criteria for Adverse Events) classification.

Main outcome measures: Aim of the study was to explore the population of patients that experienced an ADR regarding age, sex and number of prescribed drugs. In addition, we wanted to assess the severity of reported ADRs and evaluate the causality between suspected drug and ADR. We were also interested in which drugs according to ATC groups were most often suspected of causing the ADRs.

Results: In the study we found that the average age of a patient, experiencing an ADR was 63,3 years (SD = 16,0 years) and was using 5,2 drugs concomitantly (SD = 3,1 drugs). 58 % of affected patients were women. Most of the reported ADRs (73 %) were labeled moderate in terms of strength (grade 2). The pharmacists mostly reported that the ADR ceased with discontinuation of the suspected drug (53 %), but could not confirm the association between the drug and ADR, since the suspected drug was not reintroduced after ADR cessation in 85 % of reports. Reported ADRs were most often linked to cardiovascular drugs (28 reports), alimentary tract and metabolism drugs (25 reports), and nervous system drugs (20 reports).

Conclusion: Online ADR reporting tools confirmed to be a tool, that enables healthcare professionals to report ARDs in their routine practice. As such it helps community pharmacists to fulfill their important role in pharmacovigilance system.

Disclosure of Interest: None Declared
Medication Errors Associated With Non-vitamin K antagonist oral anticoagulants (NOACs) In Adult Patients
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Background and Objective: Background:
Non-vitamin K antagonist oral anticoagulants (NOACs) has become preferable choice in clinical practice for treatment and prevention of recurrent thromboembolic events. However; they have been recognised as a common drug class that is associated with adverse drug events (ADEs): stroke and hemorrhage. Despite their wide use, research about medication errors (MEs) associated with the NOACs class is lacking. The present work aims to undertake a systematic review of literature to assess medication errors associated with the use of NOACs in adult patients.

Objectives:
1. Identify the epidemiology (incidence and/ or prevalence) of medication errors associated with NOACs along with their contributory factors contributing to errors associated with NOACs.
2. Identify types interventions used to prevent and minimise errors associated with the NOACs and evaluate their effectiveness.
3. Review the use of theoretical frameworks in research related to identifying causative factors and interventions to minimise medication errors related to NOACs.

Setting and Method: The proposal of the systematic review has been registered in PROSPERO as CRD42019122996. A systematic search was undertaken in Medline, Embase, IPA, CINHAL databases using the relevant indexed terms and specific keywords looking for published research in English languages during the period from 2008 to 2019.

Main outcome measures: 1- Prevalence of medication errors associated with novel oral anticoagulants in adult patients
2- Key factors associated with errors while using novel oral anticoagulants use in adult patients
3- Nature and effectiveness of interventions to minimize and prevent medication errors associated with novel oral anticoagulants in adult patients

Results: The initial literature search resulted in 5060 articles. By screening the title and abstract, 403 papers were found to be eligible for full text screening A total of 34 full text articles have been included. Currently data extraction and quality assessment is underway and will be accomplished by the symposium date.

Conclusion: The systematic review will inform the current prevalence and factors associated with medication errors in relation to with the use of NOACs. This study will inform the design of a mixed methods study to identify strategies to minimise the errors from the perspectives of healthcare professionals and patients.

Disclosure of Interest: None Declared
Anticholinergic Drug Burden in the elderly's admitted to the emergency department for delirium.
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Background and Objective: Anticholinergic drugs may cause delirium or confusional syndrome due to the cumulative effect of multiple chronic medications with modest antimuscarinic activity prescribed concomitantly in older patients. The aim of this study is to measure the Anticholinergic Drug Burden (ADB) of chronic medication in patients admitted to the Emergency Department (ED) for delirium.

Design: Descriptive, cross-sectional study conducted in an ED of a 650-bed university tertiary hospital. The ED pharmacist registered 36 elderly patients (≥ 65 years) admitted to ED for delirium or as a primary or secondary diagnosis. Patients who presented symptoms of voluntary acute drug poisoning were excluded. Patient’s demographic characteristics (including cognitive impairment) and the patient’s medication history was obtained from the electronic health record after patient admission to the ED. The ADB was calculated according to Rudolph 2008 USA (Anticholinergic Risk Scale ARS). For drugs not included in this guideline we used bibliographic evidence. It was considered null if the value = 0, moderate = 1, strong = 2 and very strong ≥ 3. Quantitative outcomes were expressed as mean and standard deviation (sd) and qualitative outcomes were expressed as a percentage.

Results: 36 patients with an average age of 83±7.22 years were admitted to the ED for delirium. 72% (26) were women, 83% (30) were taking 4 or more drugs and 56% (16) had a history of cognitive impairment and dementia. The mean ADB was 1.92 (sd 1.73). Six patients were admitted with zero ADB (17%), 11 with moderate load (30%), 11 with strong load (31%) and 8 with very strong load (22%).

Conclusion: More than 50% of the patients admitted to the ED for delirium had a high or very high ADB. Further investigation with multivariable logistic regression analysis, after adjustment for dementia will be required to clarify the complex relationship between drugs, anticholinergic burden and delirium.

Disclosure of Interest: None Declared
**PE009**

**Drug-related emergency department visits in young population.**

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**Background and Objective:** Drug Related Problems (DRP) are a major public health problem that impact on patients' quality of life. Considering that many DRPs are avoidable, it is necessary to determine their causes in each health setting in order to plan future preventive strategies.

The aim of this study is to identify and classify the main DRP that result in Emergency Department (ED) visits in young patients.

**Design:** Descriptive, cross-sectional study conducted in an ED of a 650-bed university tertiary hospital between January 2017-April 2019. Patients between the age of 18 and 65 who consulted the ED for DPR according to the ED physician diagnosis, were included. Exclusion criteria were symptoms of voluntary acute drug poisoning and oncohaematological, paediatric and psychiatry emergencies.

Demographic variables were collected included sex, age and the existence of polypharmacy (defined as ≥ 4 drugs, Patterson 2012).

All identified DRP were classified according to the Third Consensus of Granada that defines three domains: need, effectiveness, and safety. Drugs were classified according to the Anatomical Therapeutic Chemical (ATC) Classification System.

Within each ATC group, it was analysed which drug was most often involved in DRP and if it was a narrow therapeutic range drug.

**Results:** A DRP in was detected in 179 patients analysed. 51.4% (92) were men. The distribution by age was 16.7% (30) between 18-34 years old, 22.9% (41) between 35-49 years old and the rest between 50-65 years old. 59.7% (107) of the patients were polymedicated, with homogeneous distribution among age groups.

According to the Third Consensus of Granada 23.5% (42) of DRP corresponded to need criteria, 34% (61) to effectiveness and 42.5% (76) to safety.

Drugs most frequently involved in DRP were: 40.2% (72) psychopharmaceuticals (group N) where antiepileptics (43); 24% (43) drugs with action on the alimentary tract and metabolism (group A), only involving insulin; and 10% (18) drugs acting on blood (group B) mainly involving acenocumarol (10) in the more mature population. In all cases, the outstanding drugs had a narrow therapeutic range. The remaining ED consultations were regarding drugs acting on the cardiovascular system, anti-infectives and immunomodulators (groups C, J and L respectively) and with greater variability between the drugs involved.

**Conclusion:** ED visits related to DRP in the young population are largely due to safety issues. Main drugs responsible of the consultations were those that act on CNS and alimentary tract and metabolism, specifically antiepileptics and insulins.

A closer pharmacotherapy follow up is needed to identify the main causes of DRP and to avoid such events in our setting.

**Disclosure of Interest:** None Declared
Background and Objective: Since 2015, the Piedmont region has decided to invest in biosimilar medicines with the aim of obtaining price reductions and to promote the switch not only in naïve patients but also in those already treated with an ‘originator’. In 2017 an etanercept biosimilar was awarded in a regional tender and an exchange procedure was implemented by all the health services. The aim of the work was to check the switch rate in 2017 from the etanercept originator to biosimilar and verify the adequacy of non-substitutability reports. Data collected were compared with the regional and national ones to understand the impact of the regional measure and, lastly, the economic implications of the operation were analysed.

Design: 2017 was the examined year. A drug dataset was extracted from data flow and processed to obtain the switch rate towards the biosimilar etanercept. Patients’ paper files were analysed to catalogue the non-substitutability reports. Data were compared with those published by the Italian Biosimilar Group at regional and national level. Any switch or swap from the etanercept originator to other active substances was verified and a data analysis was carried out to check dispensed units and the expenditure for their purchase from 2014 to 2017.

Results: One-hundred and thirteen of 165 patients (68.5%) shifted towards the biosimilar compared to 12% at the national level. Twenty-four patients continued therapy with the originator, 20 switched to other active substances or to another dose of etanercept (25 mg) and eight stopped the treatment. Prescribing hospitals have non-substitutability rates ranging from 10% up to 40%–60%. The patient pool was unchanged from 2014 to 2017, while costs fell by about 19% in 2017 compared to the previous year.

Conclusion: Biosimilars’ introduction is a valid chance to ensure quality, safety and effectiveness, even in a public spending rationalisation context. Etanercept, with its large pool of patients, is a significant cost-saving possibility. Results obtained confirm decisions implemented with high exchange rates compared to the other Italian regions, reduction in costs and the preservation of high assistance levels.

Disclosure of Interest: None Declared
Background and Objective: Hypercholesterolemia pharmacological therapy aims to reduce circulating low-density lipoproteins (LDL) concentration. Other therapies for patients who fail to achieve the desired targets have been evaluated. The most studied consists of monoclonal antibodies (mAB) that selectively and irreversibly bind the circulating proprotein convertase subtilisin/kexin type 9 (PCSK9) to prevent its binding to the LDL-R (LDL receptor)/LDL complex on the hepatocytes surface. Increased LDL-R liver levels result in a serum LDL cholesterol reduction. This work intends to define the two inhibitors alirocumab and evolocumab effectiveness using the changes in the lipid parameters and ratios of patients during the therapy. Furthermore, an other goal is the calculation of 10-year cardiovascular risk according to Framingham Heart Study.

Design: The study examine the period from May 2017 to September 2018. The enrolled patients had at least a six month re-evaluation. The data were extracted from the registers compiled and updated on the AIFA (Italian drugs agency) web platform. Patient data such as age, sex, smoke, diabetes, hypertension were extracted and processed using Microsoft Access®. In the same way, the lipid ratios were calculated and finally the factors and the percentage of cardiovascular risk at 10 years were calculated using an online application on the MSD manuals® platform based on the Framingham Heart Study algorithm.

Results: The average age is 63 and the male sex is preponderant (68%). About 60% of examined patients have arterial hypertension and 22% have diabetes mellitus. Concomitant therapy with statins is taken respectively by 42% and 56% of patients, while intolerance is found in 52% and 47% of cases. Adherence to therapy is maximum. The LDL and triglycerides concentrations decreased (LDL -60%), while the HDL values remained constant over the period considered. The lipid ratios examined are decreased from the first to the other re-evaluations. The risk of a 10-year cardiovascular event is reduced from about 35% to 15% in 6 months and remains stable at 12 months.

Conclusion: Obtained results confirm LDL cholesterol levels reduction. Those drugs represent a valid alternative treatment for patients subject to therapeutic failure. Alirocumab and evolocumab are innovative drugs with high costs. Their use is to be limited only in patients categories who have no real feedback with the conventional pharmacological alternatives used in patients with hypercholesterolemia.

Disclosure of Interest: None Declared
Comparing tapentadol vs. oxycodone/naloxone: what is their pattern of use?
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Background and Objective: Opioids are used for the treatment of moderate to severe pain. Their use is limited due to the risk of adverse effects and there is no evidence for pain control in the long term. [1, 2] The aim was to determine and compare prescription patterns of tapentadol and oxycodone/naloxone in primary health care.

Setting and Method: Design: A cross-sectional descriptive and multicenter study. Setting: 53 primary health care centres, covering 1,300,000 inhabitants. Target population: Patients with an active prescription of tapentadol or oxycodone/naloxone (December, 2018). The Summary of Product Characteristics (SmPC) of marketed medicines were reviewed for checking rational prescribing.

Main outcome measures: Variables studied: patient data (age, sex, GFR, chronic active liver disease), and prescribing data related to pain (prescribed daily dose, dosage form, duration of treatment, patient diagnosis, concomitant analgesic treatments). Patient information was obtained from medical records (e-CAP computer program).

Results: There were 1,840 patients with an active prescription of tapentadol and 985 patients with oxycodone/naloxone. In both cases, 74% of patients were women, with an average age of 70 years. 4% of the patients had chronic active liver disease and 1.5% of patients had severe chronic kidney disease. Almost half of the patients had durations of treatment between one and three months in both medicines and the longer treatment duration the more increased daily dose used. Over 80% of patients had concomitant pain and used co-analgesics, antiepileptics, antidepressants and anxiolytics. Around 24% of tapentadol diagnoses and around 18% of oxycodone/naloxone were prescribed by neuralgia, spondylosis or lumbago with sciatica.

Conclusion: The prescribing patterns in both medicines were the same: more women than men, with advanced age despite the existing risk of renal and/or hepatic deterioration and for a wide range of diagnoses. It should be noted the increase in daily doses of tapentadol in elderly patients could be owed to medication tolerance. In addition, most of patients had concomitant pain management. It should insist on starting treatment with other drugs with more experience of using. Finally, some interventions for improving opioid prescription practices and reducing patient

References:

Disclosure of Interest: None Declared
Analysis of the pharmaceutical coordination activity and the management of experimental drugs in clinical trials.

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Background and Objective: In the context of institutional clinical trials, the hospital pharmacist provides coordination, management and supply of experimental drugs to investigatory centers. Monitoring and evaluation of pharmaceutical activity are essential to assure optimal management of experimental drugs which represents an important part of clinical trial budget, essentially with the development of internal-promotion clinical trials.

The main objective is to evaluate the pharmaceutical coordination activity by the analysis of experimental drugs waste occurring. The secondary objective is to evaluate the expense related to the coordination activity in order to estimate a budget at the beginning of research project.

Design: For this study, four institutional clinical trials sponsored by university Hospital of Tours which the recruitment period has been over on 1st January 2019 have been selected. The studies design is different: double blind (n=1) or unblinded study (n=3), number of treatment arms and cost of different drugs (from €0.04 to €1 346 per unit).

The waste of investigational products (IP) calculated from expired and non used investigational products. It is expressed as the percentage of drugs waste reported to the theoretical waste attempted and also as financial amount. The conformity waste rate (established with a precedent study) must be inferior to 20%.

The analysis of three pharmaceutical coordination roles which have an important impact on the budget was performed. We evaluated their cost by the purchase of the IP, the time affect to labelling and packaging and the supply of IP. The conformity rate is expressed as the ratio of cost occurring for each activity and the theoretical budget affected these missions. A rate inferior to 15% for the purchase, and inferior to 10% for the others activities was defined as acceptable.

Results: Firstly, the rate waste is conform only for two clinical trials, the rate varies from +12.1% to +28.2% (from €8 372 to €18 402). One study was extended by 2 years, following the insufficient number of inclusion, for this study the waste rate amounts to 63.5%.

The budget allocated for the purchase of the ME, it is no conform for three studies, and the percentage varies from -9.6% to +34.2%. The number of production campaigns is only conform for one study (+13.6%); for the other studies, the difference varies from +36.4% to +368.9%. The comparison of the actual number of shipments reported to theoretical is not conform (variation from +22% to +140%). At the beginning of research project, the budget is not estimated for this activity.

Conclusion: In a difficult economic context, the development of institutional clinical research imposes special attention on pharmaceutical coordination activities. This analyze demonstrates that this new role have to be improve and Simple and inexpensive adjustments are require. We observed an underestimation of these activities. Also a dynamic drug supply scheme was implemented, with a strategy of smaller supply and more frequent site shipments, then waste of clinical supplies and storage burden will be minimized.

Disclosure of Interest: None Declared
PEC003
ECONOMIC IMPACT OF PHARMACEUTICAL INTERVENTIONS IN THE EVALUATION OF HIGH COST INDIVIDUALIZED TREATMENTS
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Background and Objective: The numerous therapeutic alternatives and the elevated cost of the new drugs suppose a challenge in the choice of the most efficient treatment, being the pharmacist one of the sanitary professionals who can contribute the most in this field.

Purpose
To evaluate the economic impact of pharmaceutical interventions in the evaluation of high cost individualized treatments.

Setting and Method: The analysis of the pharmaceutical interventions was performed in a prospective study carried out from June 2017 to October 2017, involving a part-time working pharmacist.

Main outcome measures: In order to perform the study, the following data were collected: petitioner medical service, active principle, expense of the requested treatment, intervention carried out, savings after the intervention and time invested per intervention.

Finally, interventions were classified by: favourable, unfavourable, therapeutic alternative and accepted with use conditions.

Results: A total of 42 requests of high impact treatments that would suppose an annual cost of 948.214€ were evaluated obtaining the following results:

The distribution by expense of the petitioner services were: onco-hematology 49.8%, internal medicine 17.3%, urology and nuclear medicine 7.8%, pneumology 7.6%, digestive 5.7%, dermatology 4.9% and other services 6.9%.

The five drugs that would suppose the bigger expense were: Daratumumab (13.7%), Blinatumomab (13.3%) Canakinumab (13.3%), Pembrolizumab (12.1%) and Radium-223 (7.8%).

The average time per intervention was 90 minutes and the cost was reduced to 608.594€ (a reduction of 339.620€ that supposed 38.3% of the expense).

Regarding the interventions performed on the 42 requests; favourable informs were carried out in 14 requests, favourable with use conditions in 13 requests, therapeutic alternatives proposed in 6 requests and unfavourable informs in 9 requests. Favourable informs with use conditions supposed savings of 59.780€ (17% of the total savings) therapeutic alternatives supposed 258.480€ (76.1%) and unfavourable informs supposed 21.360€ (6.3%).

Conclusion: High impact individualized treatments imply an elevated economic cost, being onco-hematology the medical service with greater expense requested.

Only five active principles comprise more than 60% of the expense requested.

The interventions performed by the pharmaceutics’ suppose high savings, mainly by proposing more cost-effective alternatives, and prove the efficiency of the pharmacist in the hospital field.

Disclosure of Interest: None Declared
Use of Mobile and Web-Based Applications to Promote Self-Management of Diabetes: A Systematic Review
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Background and Objective: Diabetes is a serious global issue. This chronic disease was the seventh most common cause of death worldwide in 2016, accountable for around two million deaths. Globally, approximately 425 million patients are living with diabetes which is around 8.8% of the world’s population. Managing diabetes by keeping blood sugar close to the normal level is paramount in preventing long-term complications. However, good management cannot be accomplished without patient involvement. Self-care and self-management are important in maintaining patient health. Thus, many initiatives have been performed to support this, including AADE7 Self-Care Behaviors®. Many different digital health technologies look promising in facilitating self-management, such as mobile and web-based applications. This systematic review aims to explore the nature and effectiveness of mobile and web-based applications to support self-management of type 1 and type 2 diabetes. Our research question: ‘Are mobile and web-based applications proving effective on diabetes self-management and being accepted by patients and healthcare providers?’ will be answered by setting two objectives. First, to systematically review the nature and effectiveness of mobile and web-based applications to encourage the self-management of diabetes. Second, to systematically review patients’ and healthcare professionals’ perspectives on the use of mobile and web-based applications in the self-management of diabetes.

Setting and Method: Embase® and Medline® CINHAL®, EBSCOhost® and Google Scholar will be searched. Each database will be searched separately to maximise the sensitivity, specificity and benefit from indexing tools that are unique to each database. Databases between January 2010 and April 2019 will be searched.

Main outcome measures: Outcomes will include HbA1c, adherence, behaviour and lifestyle changes, quality of life and any other related outcome.

Results: This ongoing study is expected to be completed by September 2019. The preliminary results that will undergo screening are 1291, 1327 and 854 for Embase®, Medline® and CINAHL Plus® respectively.

Conclusion: The results of this systematic review will enable patients, healthcare providers and policy makers to make informed decisions regarding the use of mobile and web-based applications by having the most up-to-date evidence.

Disclosure of Interest: None Declared
Evaluation of the efficacy of intravenous immunoglobulin treatment in Spanish women with immunologic abnormalities and recurrent spontaneous abortion

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Background and Objective: In the first three months of pregnancy spontaneous abortions occur in 1% of women, of whom 50% are of unknown cause. It is believed that most of them are due to an immune response to pregnancy, since the endocrine and immune systems are closely interrelated. There have been studies in which it has been seen that the intravenous administration of nonspecific immunoglobulins was associated with a significant increase in rates of the implantation, pregnancy and births. The objective of this study was to evaluate the efficacy of intravenous immunoglobulin (IVIG) treatment in women with immunologic abnormalities and recurrent spontaneous abortion (RSA).

Setting and Method: Prospective study of observational type in women with fertility problems in treatment with IVIG in our hospital, during the period from March 1, 2018 to March 1, 2019. The criteria for inclusion in the study were: 1) immunologic abortion, which was defined as three or more miscarriages and 2) presence of specific immunologic abnormalities. All the patients included in the study received treatment with IVIG at a dose of 0.4 g/kg every 3-4 weeks up to week 13 and, subsequently, 0.2g/kg every 3-4 weeks until the week 36. For the collection of data (demographic, clinical and analytical) we used computerized medical records of the hospital, which also includes laboratory data. The data were analyzed with the IBM SPSS Statistics 19 software.

Main outcome measures: Successful pregnancy or recurrent abortion.

Results: Fifteen women were enrolled in the study. The mean age of the women was 39 years (range, 34-46 years), and the mean number of prior miscarriages was 3.5. Immunologic abnormalities included antiphospholipid antibodies (26.6%), increased immunoglobulin (Ig)M level (33.3%), and 60% of patients had more than one immunologic abnormality. Of these women, eleven (73.3%) had a successful term pregnancy. Two women had mild allergic reactions during IVIG infusion, and these reactions resolved when the IVIG brand was changed. Fetal abnormalities were not observed.

Conclusion: Treatment with intravenous immunoglobulin appears to be a useful option for women with recurrent spontaneous abortion associated with immunologic abnormalities. In addition, this therapy is safe and effective.

Disclosure of Interest: None Declared
Awareness about gluten content of medicines prescribed and dispensed to celiac patients: results from a systematic literature review
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Background and Objective: Celiac disease is one of the most common chronic intestinal diseases. Although the only effective treatment is a strict gluten-free diet, other sources of risk such as the presence of gluten in excipients of medications administered to the patient may be unnoticed. Although there are numerous guidelines on the composition of foods and drinks that may contain gluten, it remains in doubt whether this knowledge is taken into consideration for medicines. The aim of this study was to describe the current evidence and awareness about gluten content of medicines prescribed and dispensed to celiac patients.

Setting and Method: A systematic literature review was conducted through PubMed and Trip Database. 16 search strategies were designed considering terms located by MeSH vocabulary and free terms. No time or language limit was determined. The identified studies were evaluated by two independent reviewers to assess their inclusion in this project following PRISMA methodology.

Main outcome measures: Full text references that analyzed the gluten content in pharmaceutical products and the evidence about best practices for prescribers and pharmacists in the management of the therapeutic profile in celiac patients.

Results: All search strategies resulted in 287 results. Duplicates removal resulted in 254 references for analysis, 15 of which were finally considered after inclusion criteria application. The primary objective in most of the studies (n=13) was the identification of gluten content in prescription and non-prescription drugs, mainly based on labelling information. 10 of these studies were developed in the US and the others in Canada, Australia and the UK. There is an evolution on research, from the first studies that created awareness about the presence of gluten in pharmaceutical products to further studies that aimed to create databases of gluten-free drugs. Only 2 references provided evidence about the role of prescribers and pharmacists in avoiding unintentional intake of gluten from medicines in celiac patients.

Conclusion: Although the awareness about celiac disease and gluten content of medicines has increased over time, the evidence about strategies for prescribing and dispensing medicines and nutritional products to celiac patients is scarce and needs further development.

Disclosure of Interest: None Declared
High intravenous dose amoxicillin/clavulanate for in-hospital empirical treatment of infections with high presumption of Enterobacterales

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Background and Objective: If Enterobacterales are to be expected when starting an empirical treatment in a hospitalized patient, higher MICs can be the case [EUCAST.org] and a high dose amoxicillin/clavulanate (AMC) might be needed [1]. Therefore Ghent University Hospital guidelines (2017) prescribe 1.2 G AMC q4h in patients with the following infections: pyelonephritis, blood stream infection (BSI), intra-abdominal (IAI), orthopedic/prosthetic, necrotic infection or early nosocomial infection and with a renal function: eGFR > 30 ml/min/1.73m² [CKD-EP-I Chronic Kidney Disease Epidemiology Collaboration]. The aim of this study was to analyse compliance with and outcome of the new guideline 1 month and 3 months post implementation.

Setting and Method: Retrospective analysis of electronic AMC prescriptions (high dose 1.2 G q4h; low dose 1.2 q6h; adaptation of dosing according to renal function) in the patient data management system of the Ghent University Hospital. Compliance of dosing with the new guideline was analysed through panel discussion with an infectious disease specialist and a clinical pharmacist.

Main outcome measures: Infections for which AMC was prescribed (%), median treatment duration [min; max]. Compliance (high and low dose) with new guideline indications for empirical treatment. Documentation of later microbiological result to test accuracy of the new guideline.

Results: AMC prescriptions of 260 patients were analysed during 4 weeks in total (two consecutive weeks in December 2017 and in February 2018). Treatment with AMC (ratio empiric:targeted of 9:1 at start) was mostly given for lower respiratory tract infections (27%), IAI (17%), prophylaxis (14%), soft tissue infections (9%) and systemic infections (8%). The median duration was 4 intravenous days [1; 23]. Fifty-three (20%) patients received high dose of which 37 (70%) were conform. Two hundred and seven patients (80%) received low dose of which 141 (68%) were conform. Therapy was further switched to oral treatment in 53% of the patients (n = 139; median of 4 extra days). Among culture-positive infections, 69 infections finally involved Enterobacterales. Of these 43 patients (42 %) had a high dose indication and 26 (17%) a low dose indication according to the local guideline.

Conclusion: Prescribers’ compliance with a new high dose AMC guideline (without clinical decision support) is not optimal yet. Also, refinement of the guideline is needed to better indicate patient with high Enterobacterales presumption.


Disclosure of Interest: None Declared
Effectiveness and safety of Ustekinumab in a long-term follow-up in patients with psoriatic arthritis treated in Rheumatology outpatient consultation

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Background and Objective: Ustekinumab (UST) is a fully human immunoglobulin G1κ monoclonal antibody against the common sub-unit p40 of interleukin-12 and interleukin-23. There are few safety and effectiveness analyses of UST in psoriatic arthritis (PsA) in long-term treated patients in external Rheumatology consultations.

To assess the effectiveness and safety of UST at months 6, 12, 24 and 36 in patients with PsA treated in real conditions in outpatient consultations.

Design: Descriptive, prospective, longitudinal, open study since September 2013. A database was elaborated collecting safety and effectiveness parameters of all patients who have been treated with subcutaneous UST, regardless of the dose in external Rheumatology consultations in a tertiary-level hospital. By reviewing the Rheumatology reports registered in the electronic medical report (Diraya®), demographic data and clinical factors (years of disease evolution, previous biological medicines (BM), previous and concomitant treatment with DMARDs, DAS28, PCR, Tender Joint Count (TJC), Swollen Joint Count (SJC), the Maastricht Ankylosing Spondylitis Enthesitis Score (MASES), presence of psoriasis and dactylitis at baseline and after 6, 12, 24 and 36 months of treatment were registered.

Results: During the period of study 69 patients were included, (56.17% female), with a median age of 47.5 years (IQR 37-55). Patients had a median disease duration of 3.45 years (IQR 1-9), 0 previous BM (IQR 0-1) and 1 previous DMARDs (IQR 0-2). 42.03% were on treatment with concomitant DMARDs (MTX:33.3%). At baseline, mean clinical outcomes were: RCP(mg/L): 5.96±8.99, TJC:5.15±4.72, SJC:2.08±2.30, MASES:0.54±0.89. DAS28:3.08±1.06. Presence of dactylitis: 23.19% and psoriasis: 68.12%. On month 6: 50 patients were able to be analyzed. The reasons for stopping UST were: allergic reactions (n=2), respiratory infection (n=1), death (n=1), ineffectiveness (n=2) and the rest for other reasons or had not yet completed the follow-up period. RCP(mg/L):6.11±8.17, TJC:4.27±6.41, SJC:1.44±2.48, MASES:0.39±0.97, DAS28:2.71, presence of dactylitis:2.33% and psoriasis:46%. On month 12: 42 patients were able to be analyzed, 5 treatments were stopped due to ineffectiveness. RCP(mg/L):4.99±5.53, TJC:1.42±2.35, SJC:0.45±1.47, MASES:0.21±0.72, DAS28:2.71±1.14, presence of dactylitis:2.38%. On month 24: 26 patients were able to be analyzed, there was no treatment stop. RCP(mg/L):6.49± TJC:0.45±1.47 SJC:0.45, MASES:0.21±0.59, psoriasis:7, nobody presented dactylitis. On month 36: 14 patients were able to be analyzed and 5 stopped treatment due to other causes, RCP(mg/L):2.76±3.30, TJC:2.75±3.30 SJC: 0.25±0.62, MASES:0.6±1.35, psoriasis:28.57%, nobody presented dactylitis.

Conclusion: In the period studied, UST showed a tendency to decrease the clinical variables evaluated. There were no serious adverse reactions.

In order to obtain more data about effectiveness and safety, it is necessary to extend the evaluation period as well as to collect the data of patients who had not yet completed the follow-up period.

Disclosure of Interest: None Declared
Background and Objective: Tofacitinib is an oral Janus kinase 1 and 3 selective inhibitor indicated in combination with methotrexate (MTX) for the treatment of moderate to severe active rheumatoid arthritis (RA) in adult patients who have responded inadequately to, or who are intolerant to one or more disease-modifying antirheumatic drugs (DMARDs). Pain and health status is frequently measured by a proven validity analog or visual scale. The patients are asked to indicate from 1 (minimum) to 100 (maximum) the overall assessment of their own health status (pVAS), also, the doctor evaluates the overall patient’s condition (dVAS). Lower scores indicates better status. The aim of this study are:
To assess the demographic and clinical characteristics of patients on tofacitinib treatment which undergoing follow-up in external medical consultations of Rheumatology.
To analyze the evolution of pVAS and dVAS at the beginning of treatment with tofacitinib 5mg bd and after 6 months of treatment.

**Design:** Retrospective observational study. All patients on tofacitinib therapy since July 2017 were included. By reviewing the rheumatology outpatient appointments reports registered in the electronic medical report (Diraya®), demographic data (age, sex) and clinical factors (years of disease evolution, previous biological medicines (BM), previous and concomitant treatment with DMARDs, CDAI, DAS28, RF, ACPA, PCR, VSG, pVAS and dVAS at baseline and after 6 month treatment) were registered. An Excell database was developed.
Results: 29 patients were included, 23 of them were female (79.31%), with a mean age 55.45±14.31 years. The patients had a mean of 11.07±7.35 years of disease duration, 3.17±2.04 previous BM and 1.66±0.9 previous DMARDs. Most of them, 23 (79.31%), were on treatment with concomitant Corticoids and 10 (34.48%) with concomitant DMARDs (MTX: 8 (80%) Other: 2 (20%). RF was positive in 19 cases, ACPA positive in 17 patients (58.62%). The mean of the clinical variables studied was: DAS18: 5.05 ±1.26, RCPmg/L: 1.88 ±2.78, pVAS: 65.77 ±18.91, dVAS: 59.23 ±17.54, CDAI: 24.26 (10,79).
20 patients continued on treatment after 6 months: pVAS = 43.5 ±29.25 , with a reduction of 22.27 points VAS. dVAS = 39 ±24.90 SD, with a reduction of 20.23 points VAS (p= 0.0332).
Conclusion: Tofacitinib was used in more than three previous TB lines, 34% with concomitant DMARDS and 79% with concomitant corticosteroids.
The reductions of pVAS and dVAS at 6 months of treatment were statistically significant. It is necessary to compare these results with other samples as well as a longer temporal monitoring.

**Disclosure of Interest:** None Declared
Comparison of the newest available criteria for dosing of non-vitamin K antagonist oral anticoagulants in older patients with atrial fibrillation.

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Background and Objective: It is difficult to balance efficacy and bleeding risk of anticoagulation therapy in older patients. The aim of the study was to investigate if the dosing of non-vitamin K antagonist oral anticoagulants (NOACs) for older patients according to the data on patients’ creatinine clearance followed the newest available recommendations.

Setting and Method: Retrospective study included 113 out of 600 patients ≥ 65-years old from teaching hospital Nitra during April – October 2018. Appropriate dose of NOACs was analysed with Beers criteria for potentially inappropriate medication use in older adults 2019 and the 2018 EHRA practical guide on the use of NOACs in patients with atrial fibrillation. Data on creatinine clearance was acquired from patients’ medical records.

Main outcome measures: Number of older patients with atrial fibrillation treated with appropriate doses of NOACs according to Beers criteria 2019 and EHRA 2018 guide using available data about creatinine clearance.

Results: NOACs had been prescribed to 113 (18.8%) patients with atrial fibrillation at hospital discharge. Most frequently prescribed NOAC was apixaban in 52 (46%) patients followed by rivaroxaban 31 (27.4%), dabigatran 26 (23%) and edoxaban 4 (3.6%). According to the Beers criteria 2019 the dose was correctly adjusted in 92 (81.4%) of patients. In 11 (9.7%) patients, the dose of NOACs was too high and 8 (7%) patients were underdosed. According to the EHRA guide optimal dose was found in 83 (73.4%) patients. The number of underdosed patients was two times higher in comparison with Beers criteria (14%). The number of overdosed patients was similar to Beers criteria. Dabigatran was prescribed to three patients (2.6%) despite the fact that it was contraindicated according to renal functions in both recommendations. Apixaban and dabigatran were the most frequently underdosed drugs.

Conclusion: The appropriate doses were more often prescribed according to the Beers criteria. EHRA practical guide is more exact and can be better used for individual patient in clinical practice. Both recommendations revealed that data about renal functions are not always used to prevent prescription of NOACs when contraindicated.

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Clinical Pharmacy Education, Organization and Methodology in the Czech Republic
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Background and Objective: To describe the education system, organization and methodology of clinical-pharmacy services in Czech Republic. To evaluate the outcomes of everyday clinical-pharmaceutical praxis according to new methodology developed by Czech Society of Clinical Pharmacy.

Design: The clinical pharmacy specialization in the Czech Republic is based both on a thorough postgraduate training focused on drug use in various fields of medicine which is guaranteed by actively working clinical pharmacists and on 5 years of clinical praxis. The position of a clinical pharmacist starts to be fully independent on pharmacy itself as new departments of clinical pharmacy arise. Clinical pharmacists work at departments with various medical orientations which give a background for further specialization.

The Czech Society for Clinical Pharmacy developed unique methodology guidelines for providing clinical-pharmaceutical services. These guidelines recommend pro-active screening of patient medical records and seeking potential drug related problems. Therefore it is possible to prevent harm before any drug related problems occur. Pharmacists closely collaborate with attending physicians, take part on regular ward rounds and may ask questions directly to patients. In the wards where a complex systemic medical review is provided pharmacists screen medical records of all admitted patients. There is also a possibility of direct counselling after a physician’s request which can be provided for the patients on the wards where a systemic clinical pharmacy care is not available and for the outpatient care. If the patient medication is classified according to predefined risk factors as medium or high risk, repeated pharmacist’s control is provided. In case of need a record for the patient’s general practitioner or another specialist is written in order to refer to a medical problem that could not be solved during hospitalization. The pharmacist may also educate the patients regarding their pharmacotherapy.

Results: In a pilot study in a 1000-bed hospital with four clinical pharmacists 17 % of all admitted patients were screened during one 6-month period. In these patients 41 % were evaluated as medium or high risk and 884 drug therapy recommendations were made.

Conclusion: It is clear that for providing a thorough clinical pharmacist patient care far less than an optimal number of clinical pharmacists are available in the Czech Republic. Nevertheless, with a well formulated methodology and education program the number of clinical pharmacists rises and clinical pharmacy becomes an integral part of the standard patient care.

Disclosure of Interest: None Declared
PT014
EFFECTIVENESS AND SAFETY OF DUPILUMAB IN THE TREATMENT OF MODERATE-TO-SEVERE ATOPIC DERMATITIS: A 64-WEEK FOLLOW-UP STUDY
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Background and Objective: Atopic dermatitis (AD) is a chronic inflammatory skin disease characterised by eczema and pruritus. In severe cases, sleep deprivation and systemic comorbidities may also be present. Therapeutic approach of AD remains controversial, as topical therapies have limited efficacy and systemic treatments involve potential side effects. Dupilumab, a fully human monoclonal antibody that blocks IL-4/IL-13 signalling, is the first biologic drug for the treatment of moderate-to-severe atopic dermatitis (MSAD) in patients with inadequate response to topical or systemic treatment. Our aim was to assess the effectiveness and safety of dupilumab in clinical practice after 64 weeks of follow-up.

Setting and Method: A prospective observational study was conducted in a tertiary teaching hospital. All patients starting treatment with dupilumab between November 2017 and April 2018 were included. An initial subcutaneous dose of dupilumab 600mg followed by 300mg every other week was administered. Sociodemographic and clinical data were collected. Main outcome measures: Disease severity was measured by SCORing Atopic Dermatitis (SCORAD) and Eczema Area and Severity Index (EASI). Quality of life was evaluated with Dermatology Life Quality Index (DLQI). Adverse effects were also collected. All the measures were performed at week 20. SCORAD and the occurrence of adverse effects were also assessed at weeks 40 and 64.

Results: Eleven patients with MSAD were included. Seven of them were male with a mean age of 35 years (18-49). Most patients were asthmatic (n=9) and/or allergic to food (n=8), pollen and dust mites (n=6) or animals (n=5). The most frequent previous therapies were cyclosporine (n=11), phototherapy (n=10), azathioprine (n=6) and mycophenolate (n=5). All patients included responded favourably to dupilumab. Prior to this treatment, all patients suffered from severe AD with high SCORAD and EASI: 62 (47-76) and 35 (21-66), respectively. At week 20, all patients presented moderate AD: SCORAD 23 (18-29); EASI 14 (3-30). At weeks 40 and 64, all patients presented moderate or mild AD. Their SCORAD levels were 12 (4-27) and 14 (2-26), respectively. Additionally, dupilumab impacted positively on quality of life. DLQI levels decreased from 16 (12-27) at the baseline to 8 (2-14) at week 20. Some mild exacerbations were observed in seven patients, attributable to stressful situations and climate changes. The most common AE were eye complications (n=10), headache (n=4), nightmares/insomnia (n=4), joint pain (n=2), skin peeling (n=2) and infections (n=2).

Conclusion: Dupilumab considerably improves signs and symptoms of MSAD after 64 weeks of follow-up. This biological drug also increases quality of life with an acceptable safety profile.

Disclosure of Interest: None Declared
Can SSRI make you bleed?
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Background and Objective: Antidepressants are one of the most commonly prescribed therapeutic drug classes. Selective serotonin reuptake inhibitors (SSRI) are frequently used as first-line antidepressants due to their efficacy, tolerability and safety. Reports of their antiplatelet effects emerged soon after commercialization, associated with the essential role played by serotonin in platelet function. In the clinical setting, a frequent and important issue is the management of medications that are known to increase bleeding, such as antiplatelet agents, non-steroidal anti-inflammatory drugs or anticoagulants, prior to an invasive procedure. In this paper we will evaluate if SSRI should be included in this discussion, presenting a case of a bleeding event probably related to the use of a SSRI and reviewing the literature regarding this subject.

Design: We describe a case of a 51-year-old woman who presented for an ultrasound-guided vacuum-assisted breast biopsy and developed unexpected bleeding that forced the cancelation of the procedure taking into account the risk of developing hematoma or severe rebleeding. When questioned about concomitant illnesses or medications, she mentioned that she was followed in Psychiatry for a major depressive disorder and that she was on Sertraline. To assist the radiology team regarding the cause of this event and the reschedule of the biopsy, a search of the scientific literature has been conducted to access a possible connection between this drug and the bleeding event, using PubMed, Google Scholar, MEDLINE and UpToDate, and the following keywords: SSRI, selective serotonin reuptake inhibitors, bleeding, hemorrhage, biopsy, surgery, invasive procedure.

Results: Bleeding complications related to SSRI use have been identified in several observational studies and include a wide range of events with different severity. The majority of information available is related to the management of SSRI therapy prior to surgery and the results differ regarding risk and type of surgery. In the context of less invasive procedures we found little information. In one study the frequency of bleeding complications after invasive dental procedures in patients taking SSRI was low to negligible and another study evaluated bleeding events in patients undergoing breast biopsies and concluded that SSRI were associated with elevated bleeding risk. The critical question is to evaluate the potential benefit of stopping SSRI therapy when compared to the risk of developing a discontinuation syndrome, symptom recrudescence or relapse of depression caused by the withdrawal of the drug.

Conclusion: Considering the scarce information available we suggest that clinicians be aware of the potential for bleeding associated with SSRI but not routinely discontinue them prior to invasive procedures and prior to the consultation of a psychiatrist. Further studies should be conducted to evaluate the necessity of stopping SSRI therapy and, if this is the case, how to manage the risk of discontinuation syndrome related to the suspension of these drugs.

Disclosure of Interest: None Declared
Patterns of use of ceftolozane-tazobactam in a tertiary hospital
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Background and Objective: Ceftolozane-tazobactam is a new cephalosporin authorized by the EMA in 2015 for the treatment of complicated intra-abdominal infections, acute pyelonephritis and urinary tract infections in adults. Some institutions restrict its use to severe infections by multi-drug resistant strains of Pseudomonas aeruginosa according to their antibiotic policy, especially when other nephrotoxic drugs might be avoided. The objective of this study was to describe the patterns of use of ceftolozane-tazobactam in a tertiary hospital in Spain.

Setting and Method: A retrospective observational study of all adult patients treated with ceftolozane-tazobactam in a tertiary hospital between April 2016 and July 2018. General sociodemographic data (age, weight) and clinical variables related to treatment were collected through clinical history review.

Main outcome measures: In order to characterize the use of ceftolozane-tazobactam we collected information on: setting, cause of admission, treatment (empiric/targeted), microbiology test results, infection location, additional therapy, infusion, initial posology, dosage adjustment and efficacy.

Results: Thirty-two patients were treated with ceftolozane-tazobactam. Mean age was 70.72 years (37-91) and 68.75% were men. Twenty-nine patients required hospitalization, nine of them needed intensive care and eight received or completed their treatment in a home hospitalization program. In the hospitalized patients, infection was the primary cause of the admission in 48.28% of the cases, of whom 45.45% had post-surgical infection. All treatments were initiated after P. aeruginosa was isolated, being sensitive only to amikacin and colistin in 29 cases. Main infection locations were skin and soft tissues (n=12), respiratory tract (n=7) and osteoarticular (n=5). Other locations included intraabdominal, bacteremia and urine tract infections. Combination therapy with colistin, meropenem or aminoglycosides was used in nine patients.

Initial dosing was 1g/8h or 2g/8h (expressed as grams of ceftolozane) for normal renal function patients (n=16). If needed (ClCr<50 ml/min) doses were adjusted. In 10 patients ceftolozane-tazobactam was administrated in extended or continuous infusions to optimize the PK/PD profile. Mean duration treatment was 21 days (2-77).

Clinical cure was observed in 75% of patients. In four patients surgery played a crucial role in infection eradication.

Conclusion: Ceftolozane-tazobactam was used in multidrug resistant P. aeruginosa infections when other options were discarded. Main infection location was skin and soft tissues. Initial dosing ranged from 1g to 2g three times daily and clinical cure was observed in most of the cases.

Disclosure of Interest: None Declared
EFFECTIVENESS AND SAFETY OF TOFACITINIB IN PATIENTS WITH RHEUMATOID ARTHRITIS IN CONDITIONS OF CLINICAL PRACTICE

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Background and Objective: Tofacitinib is a selective inhibitor of JAK, it inhibits mainly JAK1 and JAK3, indicated for treatments of active rheumatoid arthritis (RA) from moderated to severe in patients that have not responded to one or more disease modifiers antirheumatic drugs (DMARDs).

To evaluate the efficacy and safety of Tofacitinib in a cohort of patients with RA in conditions of clinical practice.

Design: An open, descriptive, longitudinal and prospective study, in which it were included 17 patients diagnosed with RA, in treatment with 5 mg of Tofacitinib every 12 hours according to the data sheet. A monitoring was done 6 months after having started the treatment; including in the analysis, all of the patients that completed the mentioned period. The following variables were found: age, sex, time of evolution of the disease, RF (Rheumatoid Factor) and ACPA (Anti-Cyclic Citrullinated Peptide Antibodies), tender joints count (TJC) and swollen joints count (SJC), CPR and ESR, and previous treatment with DMARDs and biological therapy (BT). The clinical responses were measured using the rates of remission and low activity according to Disease Activity Score 28 and Erythrocyte Sedimentation Rate (DAS28-ESR ≤ to 2.6 and 3.2 respectively) and the EULAR response criteria (decrease of DAS28 ≥ 0.6 and a DAS28 ≤ 5.1). Furthermore, the Adverse Events (AE) of all of the patients that have received at least one dose of the drug were compiled.

Results: Of the 17 patients of our cohort 13 (76.4%) were women, with an average age of 55.1 ± 14.7 and a duration of the disease of 9.29 ± 5.71 years. The majority were seropositive for RF and/or ACPA (82.3%). They had an average index of basal activity moderated/high according to DAS28 (5.18 ± 1.38) and they had received a media of 1.6 ± 0.84 DMARDs and 3.33 ± 1.45 BT previously. The rate of clinic remission and of low activity according to DAS28 after 6 months was of 29.4% and 47% respectively. The 47% of the patients fulfilled a good EULAR response and other 64.7% of them showed a moderated EULAR response. We obtained an average decrease of DAS28 with respect to basal (DELTA DAS28) of 1.43 ± 1.37. In regards to the Adverse Events, we had two cases of headache in which we had to stop using the drug, and a case of banal urinary infection that did not require the abandonment of the treatment. It is important to mention that in our cohort of patients we have not encountered any case of Herpes Zoster.

Conclusion: We consider that Tofacitinib is an effective treatment, with a good safety profile in patients with moderated/severe RA, presenting efficacy rates similar to other biological therapies.

Disclosure of Interest: None Declared
Background and Objective: Tenofovir Alafenamide (TAF) gets lower plasma concentrations than Tenofovir Disoproxil Fumarate (TDF) resulting in a reduction of renal and bone toxicity.

Setting and Method: Comparison of the efficacy and safety of Tenofovir Disoproxil Fumarate/Emtricitabine (TDF / FTC) vs. Tenofovir Alafenamide/Emtricitabine (TAF/FTC).

Main outcome measures: A retrospective descriptive study that included all patients treated with tenofovir disoproxil fumarate/Emtricitabine (TDF/FTC) and who were switched to Tenofovir alafenamide/Emtricitabine (TAF/FTC) between June 2017 and August 2018.

Demographic variables (age, sex), the treatment schemes used and analytical variables were collected before the change to TAF/FTC and 6 months after the treatment change (HIV RNA copies, urea, serum creatinine, glycemia, total cholesterol, LDL cholesterol, HLD cholesterol and triglycerides).

This data was collected from the computer application SIAS (medical records manager).

Results: 74 patients were included. 54 patients (74%) were men. The mean age was 51 years (30-78).

The most frequent TDF/FTC combinations were with efavirenz (EFV) (46%), darunavir/cobicistat (DRV/COBI) (20%), rilpivirine (RPV) (12%), dolutegravir (DTG) (9%), raltegravir (RAL) (4%), etravirine (ETR) (3%), nevirapine (NVP) (3%) and others (2%).

After the change of treatment to TAF/FTC, viral load remained negative in 91% of patients (vs. 94% with TDF/FTC).

The analytical variables before the change to TAF/FTC were as follows: blood glucose 104 ± 24 mg/dL, total cholesterol 174 ± 39 mg/dL, triglycerides 132 ± 102 mg/dL, urea 36 ± 10 mg/dL and creatinine 0.94 ± 0.17 mg/dL.

After the change to TAF/FTC the analytical variables were the following: glycemia 102 ± 23 mg/dL (p>0,05), total cholesterol 192 ± 41 mg/dL (p<0,05), triglycerides 141 ± 110 mg/dL (p>0,05), urea 35 ± 9 mg/dL (p>0,05) and creatinine 0.90 ± 0.18 mg/dL (p>0,05).

The total cholesterol levels during the treatment with TDF/FTC and TAF/FTC were 174 ± 39 mg/dL and 192 ± 41 mg/dL respectively, finding statistically significant differences (p<0,05).

Conclusion: Our patients have obtained a response to TAF/FTC similar to that shown in the pivotal trials, maintaining a similar proportion of patients with negative viral load. The results show a statistically significant increase in cholesterol levels after the change from TDF/FTC to TAF/FTC. However, no statistically significant differences are found in the levels of serum creatinine and serum urea.

Disclosure of Interest: None Declared
Analysis of the effectiveness, safety and predictors of good response of baricitinib in Rheumatoid Arthritis

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Background and Objective: Baricitinib is a reversible and selective inhibitor of JAK1 and JAK2 indicated for the treatment of Rheumatoid Arthritis (RA). It is administrated orally at doses of 4 or 2 mg once a day (QD).

The aims of this study are:
To evaluate the effectiveness and safety of baricitinib.
To analyze different predictors with a better response to treatment with baricitinib in patients diagnosed with RA in conditions of clinical practice.

Design: Descriptive, prospective study from October 2017 to March 2019. We analyzed the data of all patients with active RA who started treatment with baricitinib. Variables compiled: age, sex, time of evolution of the disease, previous treatment with DMARDs and/or Biological therapy (BT), TJC, SJC, VAS of the patient, VAS of the doctor, CRP and ESR. A follow-up was carried out after the first 6 months, evaluating the response to the treatment using the criteria of low activity and clinical remission according to the DAS28 indices (remission ≤2.6 and low activity ≤3.2), CDAI (remission ≤2.8 and low activity ≤10) and SDAI (remission ≤3.3 and low activity ≤11).

To assess the safety of the drug, adverse events was collected from all of the patients who had received at least one dose. We conducted a subgroup analysis to compare the efficacy of baricitinib in naïve patients vs. patients with previous BTs and compare the efficacy in monotherapy vs. patients in combined therapy with DMARDs.

Results: 22 patients were included, 92% were women. Average age: 60.80±11.99 years. Average duration of the disease: 10.95±6.53 years. Baricitinib was administered as a first line of treatment to 20% of the patients. Average number of previous BT.: 2.76±2.15. 93% of the patients were in treatment with combined therapy with DMARDs (mostly methotrexate). 92% of the patients were being treated with 4 mg QD and 8% 2 mg QD.

Analysis of remission and low activity rates: DAS28: 31.8% and 45.5%; CDAI: 27.3% and 59.1%; SDAI: 22.7% and 63.6% respectively. Analysis of subgroups: there is a tendency to a better response in those patients naïve to BT (n=6) in comparison with those who had previously received BT (n=16) with remission rates of 75% vs. 26.7% according to DAS28; although, the differences are not statistically significant. There are no differences between patients on monotherapy and those treated with concomitant DMARDs (36.4% vs. 37.5%).

3 patients discontinued the treatment after 6 months: 2 due to adverse effects (Gastrointestinal symptomatology), and 1 due to ineffectiveness (the latter had presented ineffectiveness to 5 previous BT and was in treatment with 2 concomitant DMARDs). Another adverse effect was respiratory infections of repetition however patient still continues with baricitinib 2 mg: .

Conclusion: Baricitinib is effective and safe. It presents a low incidence of adverse effects in our patients with active RA. In the subgroups analysis, there is a tendency to a better response in those patients naïve to BT compared to those with previous BT.

Disclosure of Interest: None Declared
PT020
EFFICACY AND SAFETY OF AZACITIDINE IN THE TREATMENT OF ACUTE MYELOBLASTIC LEUKEMIA
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Background and Objective: Myeloproliferative syndromes present a poor long-term prognosis, for this reason new drugs are needed to increase survival. Azacitidine is indicated in adult patients who are not candidates for hematopoietic stem cell transplantation with acute myeloblastic leukemia (AML). The objective is to evaluate the efficacy and safety of azacitidine in the treatment of AML.

Setting and Method: It is a retrospective observational study of patients who started treatment with azacitidine from November 2012 to August 2018 included. The data was obtained from the Farmis-Oncofar® oncology prescription program, and by reviewing clinical and analytical records in Diraya®.

Main outcome measures: The variables collected were: age (years), sex, number of cycles, average duration of treatment (months), neutrophils, platelets, hemoglobin, reduction or suspension of doses, adverse reactions, support therapy and exitus date. The dose of azacitidine was 75 mg / m2, in cycles of 7 days with daily doses + 21 days of rest. The efficacy criteria considered were the overall survival (OS) and the progression-free survival (PFS), obtained by the Kapla-Meier method and defined as the time from the initiation of the treatment to death or disease progression respectively.

Results: The study was done in 12 patients, seven women and five men. Two of these patients were excluded: the first one due to the lack of information about his clinical record, and the other for the denial to receive the treatment. The average age was 77.5 years. Azacitidine was the first line, with a median of 11 cycles. 6 patients progressed. The mean of the overall survival (OS) was 14.6 months and the mean of the free survival (PFS) was 11.9 months. The cycle was delayed in 8 patients, due to cytopenias, bronchitis and zoster infection. All patients needed filgrastim, and transfusions of red blood cells and platelets, moreover epoetin was administered in 5 of them. 3 patients needed to reduce the dose by half, one for repeat grade 4 neutropenia, other for renal failure and another weight loss.

Conclusion: The median OS obtained in our study is lower than that published in the pivotal study (AZA PH GL 2003 CL 001) (14.6 months vs. 24.4 months). It was not possible to compare PFS. Azacitidine shows a complex safety profile, 73% of patients required temporary interruption of treatment and 27% required dose reduction. The small sample size is a limitation to our study, which could justify the differences found with respect to the pivotal study.

Disclosure of Interest: None Declared
EFFICACY AND SAFETY OF OMALIZUMAB IN THE TREATMENT OF THE CHRONIC URTICARIA

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Background and Objective: Omalizumab is a humanized monoclonal antibody that binds to IgE and blocks its binding to the high affinity FcER receptor in basophils, preventing the allergic response. The objective is evaluate the efficacy and safety of omalizumab in the treatment of chronic urticaria.

Setting and Method: it is a retrospective observational study, in a regional hospital, about patients who started treatment with omalizumab from January 2010 to April 2018 included. The data was obtained from the PRISMA-APD® external patient care program, and by reviewing medical records in Diraya®. Induction doses of 300 mg / 28 days were used.

Main outcome measures: The subjective decrease in pruritus and skin lesions was used as efficacy criteria. The variables collected were: age (years), sex, date of initiation of treatment, posology of onset, induction duration, evolution after 6 months, previous treatments and adverse reactions.

Results: 8 patients were included in the study: 6 women and 2 men. The mean age at the start of treatment was 47 years. Previous therapies consisted of H1 antihistamines, leukotriene receptor antagonists and corticosteroids. At the study date, patients had a median of 22 months of treatment. Four patients spaced doses, 300/45 days; of them, two needed to return to induction dose due to the appearance of exacerbations and the other two were maintained at doses of 145 and 300 mg every 45 days, respectively. Except for two patients, the rest received concomitant medication with antihistamines and leukotriene receptor antagonists. During the treatment, one of the patients presented an episode of exacerbation that subsequently subsided without change of dose. There were slight adverse reactions of doubtful relation to the drug: headache and habanosas lesions. After 6 months of treatment, all patients reduced the skin lesions and itching sensation completely.

Conclusion: Omalizumab presented good efficacy in chronic urticaria, since it controlled the symptoms and signs of all patients, and an excellent safety profile, due to not having adverse reactions directly related to the drug. It greatly improved the quality of life. The low number of patients in our study, due to the low prevalence of the pathology, is a limiting factor, for this reason more extensives studies are necessary.

Disclosure of Interest: None Declared
PT022
EFFECTIVENESS AND SECURITY ASSOCIATED WITH MEPOLIZUMAB IN TREATMENT OF EOSINOPHILIC ASTHMA
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Background and Objective: Eosinophilic refractory asthma is a serious pneumological problem that needs new therapeutic options for its treatment. Mepolizumab is a humanized monoclonal antibody with high specificity and affinity for IL-5. It is authorized as an additional treatment in adults with severe refractory asthma. The objective is to assess the efficacy and safety of mepolizumab in the treatment of eosinophilic asthma refractory to corticosteroids.

Setting and Method: Retrospective observational study of patients who started the treatment with mepolizumab from May 2017 until September 2018 included. The data was obtained from the PRISMA-APD® external patient care program, and through the review of clinical and analytical records in Diraya®.

Main outcome measures: The variables collected were: age (years), sex, eosinophils in the blood at the beginning and after 3 months of treatment, doses received, previous treatment with omalizumab, adverse reactions, emergency episodes and treatment suspensions. All patients were given fixed doses of mepolizumab, 100 milligrams administered subcutaneously. As efficacy criteria, the decrease of eosinophils to normal values (20-400 eosinophils / microliter) and the number of exacerbations that required emergency episodes were considered. Safety was assessed by analysing adverse reactions.

Results: A total of 15 patients were included, 11 women and 4 men with an average age of 59 years. One of the subjects was excluded due to the short treatment time. The patients started treatment with a baseline mean 610 eosinophils / microliters. Previously, four had failed with omalizumab treatment. After three administrations none presented eosinophilia. During the treatment, four patients required medical attention in the emergency service due to respiratory infections, exacerbations or hypersensitivity reactions (edema in the eyelids and small punctate lesions in the arms), forcing the suspension of treatment in the last two cases.

Conclusion: All patients treated with mepolizumab decreased the number of eosinophils to normal values and only 7% suffered exacerbations. As stated in the data sheet of mepolizumab, the hypersensitivity reactions and respiratory infections registered in our study are classified as frequent. According to the general results obtained, we conclude that the drug has a good safety profile.

Disclosure of Interest: None Declared
PT023
Efficacy and Adequacy of Evolocumab in Hypercholesterolemia

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Background and Objective: Anti-PCSK9 human monoclonal antibodies are a novel group of drugs that lower plasma levels of LDL cholesterol. The objective is to assess the efficacy and adequacy to the criteria of use established by the subcommittee of anti-PCSK9 antibodies of the AGS Campo de Gibraltar.

Setting and Method: All requests to start treatment issued to the anti-PCSK9 antibodies subcommittee between January 2017 until September 2018 were included. The data were obtained from the outpatient dispensing software Dipex and by review of medical records (Diraya).

Main outcome measures: The criteria of use established by the subcommittee for the initiation of treatment were indication of homo or heterozygous familial hypercholesterolemia, as well as an established cardiovascular disease (ischemic heart disease, ischemic cerebrovascular disease or peripheral arterial disease), maximum doses of high-intensity statins along with 10mg of ezetimibe for at least 4 weeks and/or intolerance or insufficient response to statins. All included patients started treatment with evolocumab at doses of 140 mg every two weeks. Treatment was considered effective if the LDL reached was <70 mg/dL for very high CV risk or <100 mg/dL for high CV risk.

Results: A total of 24 applications were submitted to the subcommittee of anti-PCSK9 antibodies, of which 8 were approved (three of the patients were excluded because they had not yet started treatment), 14 were rejected and 2 were pending evaluation at the time of the study. All patients who started biological therapy were diagnosed with familial hypercholesterolemia and had a very high CV risk. Among the approved applications, 5 were in prior treatment with a rosvastatin/ezetimibe combination 20/10mg, 1 with atorvastatin/ezetimibe 80/10 mg and 2 treatment initiations were justified by statins intolerance. At baseline, patients had a mean plasma LDL level of 176 mg/dL. The mean evolocumab duration of treatment was 11 months. Of the 5 patients, 4 achieved efficacy target during treatment (<70 mg/dl), with a mean plasma LDL of 63 mg/dl.

Conclusion: 36% of evaluated applications were accepted, while 64% were rejected for not meeting the adequacy criteria. Poor adherence to prior treatment was the main cause of denial of treatment. In this study, 80% of patients who started treatment with evolocumab reached the established efficacy goal.

Disclosure of Interest: None Declared
Background and Objective: Dalbavancina is a glycopeptide that prevents the bacterial wall formation. It is active against multiresistant gram + and it is indicated for skin and soft tissue infections. The objective is to evaluate the efficacy of dalbavancin off label for the treatment of a subhepatic collection.

Design: It is a descriptive and retrospective observational study about the use of dalbavancin in a patient with an intra-abdominal abscess. The information was obtained from the PRISMA-APD® external patient care program, from the clinical and analytical history in Diraya®, and through direct communication with the responsible clinician. Efficacy and safety profile for approved indication in technical sheet was reviewed. The dose used was 1500 mg every 15 days.

Results: A 70-year-old man with post-surgical hematoma superinfected after cholecystectomy. From the wound they are isolated: Enterococcus faecium multiresistant, Escherichia coli and Klebsiella pneumoniae. The antibiogram showed that E. faecium was exclusive sensitivity to glycopeptides and oxazolidinones. Linezolid, ciprofloxacin and metronidazole were prescribed. Severe reduction of platelets (85 x 10⁹ / l) led to the suspension of linezolid. Replacement with intravenous vancomycin was evaluated, but due to the long hospital stay necessary for its administration until the patient was cured, the pharmacy and infectious services ruled out the option. It was decided to start treatment with Ciprofloxacin, Metronidazole and Dalvabancin (1500 mg every 15 days). After one month of treatment and due to the clinical improvement observed, it was decided that the third dose should be reduced to 500 mg. After this last dose, abdominal ultrasound showed no evidence of space-occupying lesions, for this reason all antibiotic therapy was withdrawn. During the course of treatment, no adverse reactions associated with dalbavancin were registered and the platelet number returned to its normal state.

Conclusion: The off label use of dalbavancin for the treatment of multiresistant Enterococcus faecium was effective and safe in our case. The pharmaceutical intervention allowed for improving the quality of life of the patient, due to its biweekly administration on an outpatient basis. In addition, avoiding hospital admission generated economic savings.

Disclosure of Interest: None Declared
Background and Objective: The most common type of dementia is the Alzheimer's Disease (AD) which is responsible 60-70% of dementia cases. Unknown cause of AD lead clinicians to symptomatic treatments. Most the patient who suffer due to AD is aged individuals. Advanced age brings many other diseases with itself. Due to different conditions patients are required to use multiple medications at the same time. One of the biggest challenge in treatment of AD patient is handling with polypharmacy. Polypharmacy may be an obligation for many but nonadherence, drug interactions, side effects could exist due to polypharmacy. Moreover, using multiple medicine may augment AD symptoms and cause deterioration cognitive functions. Therefore, we evaluated the association between polypharmacy and worsening of AD.

Setting and Method: A prospective, longitudinal study performed with 79 patients with AD at Bezmialem Vakif University Hospital. According to level of polypharmacy patients divided into 3 groups as minor (1-4 medicines), major (5-9 medicine) and hyper polypharmacy (10 or more). Differences of Mini-Mental State Examination (MMSE) of between 6 months has been compared in each group.

Main outcome measures: Evaluation of effects of polypharmacy on AD progression by MMSE scores.

Results: Our finding were similar to our prediction and literature. Minor polypharmacy groups showed 1 point decrease of MMSE score while major polypharmacy and hyper polypharmacy groups showed 1,2 and 2,05 points decrease in MMSE scores respectively.

Conclusion: Our result revealed that there is a connection between polypharmacy and deterioration of cognitive functions. However sometimes there are no other ways to treat patient but using multiple medicine, but with pharmacist intervention, non-rational use of medicine may be avoided and progression of AD decelerated. Clinical pharmacist should become an essential part of AD healthcare team.

Disclosure of Interest: None Declared
PT026
EFFICACY AND SAFETY ASSESSMENT OF MEPOLIZUMAB IN REGULAR CLINICAL PRACTICE: A 4 MONTHS FOLLOW-UP STUDY
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Background and Objective: New advances in the treatment of severe eosinophilic asthma (SEA) include anti-interleukin 5 monoclonal antibodies. Their use in regular clinical practice has been limited so far. The aim of this study was to evaluate the efficacy of mepolizumab in patients with SEA in regular clinical practice, considering exacerbations and other clinical parameters. The secondary objective was to study the safety profile of mepolizumab.

Setting and Method: Retrospective, observational, unicentric study, in regular clinical practice conditions. Adult patients with SEA treated with mepolizumab were included (May 2017-April 2019). The follow-up period was four months, when efficacy and safety were reassessed. Data were obtained by the review of electronic medical records. Paired-samples T tests were performed to evaluate the effectiveness of the drug during the study period. SPSS v25.

Main outcome measures: General demographic variables (sex, age, BMI, smoking), conditions related to asthma (allergy, rhinitis, rhinosinusitis, polyposis, NSAID intolerance) and other comorbidities were collected. The variables selected to assess effectiveness were exacerbations, FEV1, eosinophilia, ACT results and changes in pharmacotherapy (oral corticosteroids and inhaled drugs). To assess safety, adverse effects potentially related to mepolizumab were collected.

Results: A total of 21 patients treated with mepolizumab were included over the study period: 12 women, mean age of 56 years (28-81), mean BMI of 28 kg/m² (19-39). One patient was a current smoker. Regarding conditions associated with asthma we found: polyposis (n=15), rhinitis (n=11), NSAID intolerance (n=5), rhinosinusitis (n=3).

Mean number of exacerbations over the last 12 months was 3.0 (range: 0-6). Other baseline clinical results were: FEV1 (2.01 L; 0.79-3.40), eosinophilia (642 cells/μL;320-1896), ACT (14 points; 6-21). After the follow-up period all parameters improved: exacerbations (0.4; 0-2), FEV1 (2.44 L; 0.9-4.3), eosinophilia (102 cells/μL;0-670), and ACT (21;6-25) (p<0.001). Four out of the ten patients treated with oral prednisone at baseline were able to discontinue this treatment after the clinical improvement. In addition, five patients reduced their therapy with inhalers. Mepolizumab was discontinued in one patient due to lack of response.

Five patients presented adverse effects potentially related to mepolizumab: headache, sneezing/ocular itching, urticaria, hair fragility/ and hypersomnia. Treatment was discontinued only in the patient with urticaria.

Conclusion: Mepolizumab is an effective treatment for SEA, improving exacerbations, ventilatory parameters, symptoms and eosinophilia in most patients. The frequency of adverse effects is low, mild in most cases, so it can be considered a safe drug.

Disclosure of Interest: None Declared
PT027

Continuing alert for underdiagnoses of rare oxoproline accumulation: potentially fatal unexplained anion-gap metabolic acidosis caused by co-administration of acetaminophen (paracetamol) and flucloxacillin.

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Background and Objective: Based on reports, an alert for the adverse drug interaction between acetaminophen (paracetamol) and penicillins resulting in metabolic acidosis was issued by the Netherlands Pharmacovigilance Centre in 2015. However, underdiagnoses of oxoproline accumulation due to its rare nature appear to be still at risk.

Design: Case-report of a 79 year old female admitted to the hospital for wound complications after total hip replacement. Two weeks after surgery and hospital discharge, our patient suffered from persistent wound leakage combined with moderate pain. Past medical history included total knee replacement, cerebrovascular accidents, psychotic depression episodes and obesity. She was readmitted in order to perform surgical wound drainage. Culture identification tested positive for Staphylococcus Aureus. According to protocol, acetaminophen 4 gram/day IV and flucloxacillin 12 gram/day IV were started. After 14 days her clinical status deteriorated, showing shortness of breath, mental confusion, icterus and decompensated heart failure, altogether resulting in admission to the intensive care unit.

Results: Arterial blood gas analysis showed high albumin adjusted anion gap metabolic acidosis (19.0 mmol/l) of relatively unexpected nature, normal osmol gap and normal lactate with respiratory compensation. Acetylcysteine and sodium bicarbonate therapy were initiated for 2 days with minor effect. Blood level of oxoproline (pyroglutamic acid) appeared to be increased as high as 11.5 mmol/l indicating accumulation. Acetaminophen and flucloxacillin therapy were immediately discontinued substantially improving the metabolic acidosis. An additional urinary tract infection and aspiration pneumonia indicating the need for intubation were major complications causing our frail patient to pass away.

Conclusion: Pyroglutamic acidosis, also known as oxoprolinemia is a rare cause of anion gap acidosis. Several risk factors contribute to accumulation of oxoproline such as sepsis, malnutrition, older age, female sex and genetic oxoprolinase deficiency. An acquired oxoproline accumulation caused by therapeutic use of particular drugs (acetaminophen, vigabatrin, netilmicin, ciprofloxacin and flucloxacillin) is often underdiagnosed and certainly underreported. In addition to pre-existing risks, our patient suffered from long-term administration of acetaminophen, resulting in glutathione depletion and thus extra formation of oxoproline (gamma-glutamyl-cycle). Moreover, flucloxacillin inhibits the enzyme oxoprolinase, extra contributing to accumulation. Our case-report indicates that an alert for combined treatment of acetaminophen and flucloxacillin in vulnerable acidic patients is very important.

Disclosure of Interest: None Declared
Use of structured phytotherapy questionnaire by clinical pharmacy staff to identify potential herb-drug and herb-disease interactions during hospital stay.

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Background and Objective: Use of complementary therapy including phytotherapy has been increasing over the last 30 years, irrespective of socio-economic, cultural and educational status. About 20% of the western population use at least one unconventional pharmaceutical product on a frequent basis. About 80% of these are also 'patients' taking one or more conventional prescription drugs. Evidence on potentially harmful kinetic or dynamical herb-drug and herb-disease interaction is growing. However, less than 30% of patients are estimated to inform their doctor and pharmacist about concomitant herb use.

Design: We experienced 2 cases of herb-drug interactions. A 46-year old female, stable on digoxin suffered cardiac arrhythmia due to irregular intake of Aloe Barbadensis (incremental renal potassium excretion). A 50-year old male, stable on risperidone suddenly developed severe adverse effects due to high-dose Ginkgo Biloba (CYP3A4 inhibition). In neither of the cases clinicians were in advance aware of herb intake. In response, we developed a structured questionnaire used by pharmacy staff on hospital admission during patient medication reconciliation. Its objective: to prescribe, as well as all conventional drugs, all identified herbal drugs in the computerised prescription order entry (CPOE) system making their use known to all healthcare providers and allowing for control of dosing, drug-herb and drug-disease interactions.

Results: We established a standardised list of 10 potentially harmful herbs. These were most frequently used by hospitalised patients and included in the questionnaire: Hypericum (St John’s wort), Echinacea (coneflower), Allium (garlic), Ginkgo (maidenhair tree), Panax (ginseng), Camellia (green tea), Valeriana (valerian), Chamomilla (chamomile), Aloe Barbadensis (aloe) and Vaccinium (cranberry). Additionally, we identified a top-3 vulnerable patients based on disease severity and prescription drugs involved in herb-drug interactions: oncology, immunology (transplantation), hemostasiology (coagulation). Pharmacy staff prioritises these patients in terms of admission medication reconciliation using the structured phytotherapy questionnaire.

Conclusion: Implementation of an herbal medicine questionnaire during patient reconciliation and subsequently documenting phytotherapy in the CPOE may reduce the risk of potentially harmful herb-drug and herb-disease interactions. The standardised structure mitigates eventual omission or identification problems with respect to phytotherapy. It also reduces recall bias both from healthcare providers and patients and it may attenuate any embarrassment patients may experience in admitting to use complementary drugs. Research evidence on the potential harms of phytotherapy is often lacking or of low quality. Unfortunately, the quality of medicinal herb products is often non-standardised with varying concentration and purity. For this reason, international regulations with respect to research evidence, safety profiling and product production quality have become stricter. Better to be safe than sorry.

Disclosure of Interest: None Declared
Background and Objective: Cladribine is used for the treatment of adult patients with highly active relapsing remitting multiple sclerosis (RRMS) as defined by clinical or imaging features. Cladribine, through its active metabolite, exerts reversible selective depletion of lymphocytes, which are thought to underlie the autoimmune processes involved in MS pathophysiology. It was commercialized in Spain in June 2018. The aim of this abstract is to describe the preliminary effectiveness and safety cladribine results according to the experience of its use in clinical practice.

Setting and Method: It is a retrospective observational study. Data from all patients that received cladribine therapy in a tertiary level hospital from December 2018 to March 2019 were retrieved. All clinical reports were reviewed.

Main outcome measures: Demographic, clinical characteristics at baseline and outcomes analyzed were: sex, age, diagnosis, stage of the disease, disease duration from first onset, Expanded Disability Status Scale (EDSS) score, Previous therapy with any disease-modifying drug and effectiveness (lesion activity on brain MRI, clinical relapse). Lymphocytopenia was reported following the Common Terminology Criteria for Adverse Events (CTCAE).

Results: Seven patients received cladribine during the study period. The average age was 33 (25-55), 4 (57%) were women. All of them had previously received disease-modifying therapy (in fact, 5 -71.4% had previous fingolimod as second line therapy). The average disease duration from first onset was 9 years (2-14). The average EDSS score was 3.6 (2-6).

Regarding effectiveness and safety, 5 patients were evaluated. The other 2 patients had recently started therapy. It was observed lesion activity on brain MRI in 3 (60%) patients. Two suspected relapses were retrieved (50%). One patient had perception of “better agility while walking”. Lymphocytopenia was detected 4 patients (80%), 2 of them were Grade 3 and the other 2 Grade 1.

Conclusion: Longer follow up is needed. It seems that no rapid treatment benefit during the first 12 weeks is obtained in these medium to high pretreated RRMS patients. Cautious selection of patients is desired in order to get desirable effectiveness and safety results.

Disclosure of Interest: None Declared
Effectiveness and Safety of Regorafenib Used as Third or Fourth Line in Metastatic Colorectal Cancer in the Real World Setting

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Background and Objective: Regorafenib is a potent multikinase inhibitor indicated as monotherapy for the treatment of adult patients with metastatic colorectal cancer (mCRC) who have previously received treatment. These include oxaliplatin, irinotecan, fluoropyrimidine-based chemotherapy, an anti-VEGF therapy and an anti-EGFR therapy. Regorafenib is considered an alternative in patients for whom other treatments have failed, however it was found to have a modest benefit and significant toxicity according to the CORRECT trial. The main aim was to assess the efficacy and toxicity outcomes of regorafenib in our local clinic practice. Patients were considered eligible for this analysis if they had confirmed mCRC; received fluoropyrimidine, and anti-VEGF and anti-EGFR therapy.

Design: Retrospective observational study of regorafenib in patients with mCRC from December 2012 to March 2019. The primary endpoints were overall survival (OS) and progression-free survival (PFS). Furthermore, other variables were collected, such as age, sex, cancer type (colon or rectal), KRAS mutation, previous treatments, duration, dose reduction and any side effects registered.

Results: 38 patients were evaluated in our hospital, 32% were women and 68% men. The median age was 61.6 years old. 53% received regorafenib as third-line and 47% as fourth-line treatment. The median PFS was 2 months and the OS was 5.6 months, results are similar to the CORRECT trial (PFS 1.9 y OS 6.4 months). OS and PFS was 1.78 and 6 months respectively for patients with KRAS mutated tumors and 2.2 and 5.55 months for patients with KRAS wild type. 52.2% patients initiated treatment on a reduced dose and 26.3% of cases had a reduction in dose during treatment. Adverse events were reported in 94.7% of patients. The most commonly occurring treatment-related toxicities included asthenia (68.4%) hand-foot skin reactions (42.1%), diarrhoea (18.4%) and hypertension (23.4%). Thrombocytopenia and neutropenia were also reported in one patient.

Conclusion: We found in this study that regorafenib treatment showed similar OS and PFS to the pivotal clinical trial and both variables were similar between the KRAS mutated and the KRAS wild-type patients. However, adverse events are very common, showing that regorafenib is poorly tolerated. We found in this study that regorafenib treatment showed similar OS and PFS to the pivotal clinical trial and both variables were similar between the KRAS mutated and the KRAS wild-type patients. However, adverse events are very common, showing that regorafenib is poorly tolerated.

Disclosure of Interest: None Declared
Background and Objective: Niraparib is an antineoplastic which has demonstrated efficacy in randomized clinical trials as maintenance monotherapy used in recurrent ovarian cancer in patients successfully treated with a platinum-based chemotherapy. In this study we have tried to evaluate effectiveness and safety of niraparib in our patients who started with the early expanded access.

Setting and Method: We included patients from two hospitals of the south of Spain. We monitored these patients during their treatments in each visit to our outpatients consult.

Main outcome measures: We registered any adverse event (AE), initial dose and dose adjustments, months to progression, previous treatments, and some laboratory data.

Results: 10 patients were included for the expanded access since it started until April 2019. Their age was 57 (48-65). 6 patients started with a dose of 300 mg daily. 4 of them had to reduce the dose due to AE. 2 of them started and maintained with 200 mg and only 1 was on 100 mg.

Niraparib was used as maintenance therapy in 3 cases after a previous treatment line, 2 cases after a second line, 4 cases after a third line and only one case after a fourth line.

Until the date, 5 patients has progressed. The progression free survival (PFS) was 5.06 months. The other 5 patients continue treatment for a median of 5 months.

Nausea, insomnia and asthenia were the most common AE. 4 of 10 suffered nausea and insomnia and 5 felt asthenia. Haematological toxicity was also very common. There were 3 cases of Grade 3 anemia which lead to dose reduction. Thrombocytopenia was present in 3 patients but it was mild (Grade 1 and 2) and dose adjustment was not required. Grade 3 neutropenia was detected in 1 patient. This treatment was withheld for two weeks.

Finally, 1 patient had an episode of Grade 3 hypertension which lead to an acute kidney injury and required a dose reduction.

Conclusion: Niraparib was poorly tolerated with 300 mg dose but tolerance improved with dose reductions. More time and patients are needed to establish effectiveness of niraparib and its place in therapy.

Disclosure of Interest: None Declared
Background and Objective: In order to promote the safe use of medication, we identify patients with potential prescription problems (PPP), so that it is possible for general practitioners (GPs) to implement strategic actions that contribute to increasing patient safety. Our aim was to evaluate the efficacy to reduce PPP of a coordinated intervention program designed by the primary care pharmacy service.

Setting and Method: Population of study: GPs belonging to a Primary Healthcare District. Period of study: year 2017. The primary care pharmacy service distributed a list of patients with PPP among the GPs so that they could complete self-audits on patients’ current prescriptions with the help of a newsletter about the PPP subject to analysis.

The following problems were selected: duplicities; higher dose of antidiabetics than the maximum required; adaptation of combined antidiabetic therapies; concomitant use of non-steroidal anti-inflammatory drugs (NSAIDs) with oral anticoagulants or antiplatelet agents; concomitant use of angiotensin-converting enzyme inhibitor (ACEi) + angiotensin II receptor blocker (ARB); concomitant use of ACEi/ARB + aliskiren or ACEi/ARB + sacubitril/valsartan; whammy triple therapy (NSAID + diuretic + ACEi/ARB); prescription of citicoline for more than 3 months; use of fast-acting fentanyl without simultaneous treatment with another opioid.

Main outcome measures: Percentage of reduction in the number of PPP at the beginning and end of the intervention.

Results: The number of PPP notified to GPs before the intervention was 3824. After the self-audits, there was a reduction of 59.3%. Out of the total PPP (3824), the most frequent ones were the following: concomitant use of NSAIDs with oral anticoagulants or antiaggregants (21.9%), duplicities (17.9%), prescription of citicoline more than 3 months (17%), concomitant use of ACEi + ARB (12.8%) and triple therapy (10.6%). The greater reduction was found in the case of antiplatelet and anticoagulant duplicity (88.46%), use of fast acting fentanyl (84.61%) and duplicities (76.93%).

Conclusion: Given the reduction of PPP, we can conclude that this strategic program has proven to be very effective, with professionals becoming very receptive to this type of intervention. This type of interventions are very useful for professionals to get trained in the correct medical prescription to patients with PPP.

Disclosure of Interest: None Declared
BACKGROUND AND OBJECTIVE: Alopecia areata (AA) is an autoimmune disease characterized by hair loss mediated by CD8+ T cells. There are no reliably effective therapies for AA. Based on recent developments in the understanding of the pathomechanism of AA, JAK inhibitors appear to be a therapeutic option. In this case report, we want to show the clinical experience of a patient with AA treated with Tofacitinib.

DESIGN: Firstly, we have reviewed the clinical reports of this patient and we run a search of the previous treatments used to treat the AA as well as the effectiveness and duration of them. Then, we analyzed the evolution of this patient after the treatment with Tofacitinib.

RESULTS: A 41-year-old man diagnosed with moderate-severe psoriasis, which was controlled with subcutaneous methotrexate 15mg weekly, and universal AA (with 100% scalp, eyebrow and eyelash involvement), from which control was not achieved.

In order to solve this last pathology, the patient was treated with different lines of treatment including:

- Topic treatment based on dimethylformamide, dimetilacetamide, dexametasona 3%: which was discontinued after 7 months of treatment because of no response.
- Cyclosporin 200mg: which was administered for 3 months without response.
- Topical corticosteroid: administered for 6 months, discontinued because of no response.
- Minoxidil 5%: administered for 6 months, discontinued because of no response.
- Salazopyrin 2g a day: with which no improvement was achieved.
- Apremilast: primary treatment failure.

Therefore, it was decided to request Tofacitinib 5mg/12h to the Pharmacy Commission as a compassionate use. Four months of treatment and suspension of it were proposed if repopulation of at least 60-70% hair was not achieved.

Likewise, the patient initiated the treatment with Tofacitinib 5 mg/12h. The subcutaneous methotrexate dose was reduced to 10 mg weekly because of the effectiveness of Tofacitinib in psoriasis.

Two months later of starting Tofacitinib, a discreet hair growth in occipital area was obtained but without eyebrows growth. On the other hand, the patient suffered a herpes labialis and mild asthenia.

After five months of treatment's onset, the patient experienced a notorious hair growth in occipital area and full eyebrows growth.

CONCLUSION: Tofacitinib is an appropriate alternative to refractory AA. However, the adverse effects associated with the immunosuppression derived from the mechanism of action of Tofacitinib must be considered before starting this treatment.

DISCLOSURE OF INTEREST: None Declared
Intervention to improve the adequacy of the use of statins in elderly patients

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Background and Objective: The use of statins in secondary prevention (SP) in elderly patients has showed evidence of lowering both mortality and cardiovascular events. However, the prescription of statins in primary prevention (PP) is not systematically recommended. In these patients adverse effects and drug interactions become more relevant due to a high rate of polymedication and comorbidities such as reduced kidney and liver impairment, even making the benefit/risk balance unfavorable. The aim of this study is to evaluate the efficacy of an intervention (written and spoken education) to improve the prescription adequacy of statins in PP in elderly patients in a primary health-care centre.

Setting and Method: A quasi-experimental, before-after study without control group was designed. The study population were patients aged 80 or older taking statins in PP in February 2018.

Intervention in the Pharmacy Service: 1. Selection of patients with statin treatment in PP. 2. Drafting of a brochure with pharmacotherapeutic information.

Intervention in Primary Care Centre: 1. Instructional clinical session. 2. Presentation of written material (brochure). 3. Medical audit, assessing the benefit-risk ratio of the use of statins in each patient using a questionnaire.

Statistical data analysis: descriptive analysis and logistic regression.

Main outcome measures: Dependant variables: percentage of patients who discontinued statin treatment and percentage of patients with any hypolipemiant-related intervention.

Results: We identified 56 patients aged 80 or older taking statins in PP (78.6% female). Mean age: 84 years. 16 physicians participated in the study (62.5% male), of which 37.5% are tutors in charge of specialist residents. The treatment was discontinued in 40.7% patients. 25.37% patients were monitored for adverse effects and 17.91% were tracked for fat levels. In the electronic clinical history all physicians noted having given patients advice on improving their lifestyle. Concerning drug interactions, 19.6% were receiving drugs that could potentially interact with statins. Possible adverse effects were registered in 37.5% patients.

No significant differences were found between discontinued treatments and patient-related variables.

Conclusion: A coordinated intervention between the pharmacy service and a primary health-care centre, to improve the adequacy of the prescription of statins in elderly patients in primary prevention, was effective. Age is a factor to consider in constantly reassessing benefit-risk ratio of these drugs.

Disclosure of Interest: None Declared
PT035
ANALYSIS OF THE INTERVENTIONS IN A PARENTERAL NUTRITION OF HIGH PROTEIN AND CALORIC CONTENT
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Background and Objective: Due to the shortage of a parenteral nutrition(PN) of 20 g of nitrogen(20gN), 313 g glucose, 94 g lipids in 2463 ml, we review all the prescriptions of this type of NP for high caloric-protein requirements. The objective of this study was to review whether the 20gN PNs prescribed in the hospital were indicated and to intervene if they were not.

Setting and Method: A quasi-experimental study of a group of patients that started 20gN PN from November 27, 2018 to April 25, 2019 was performed. Data were obtained from the Digital Clinical Record and the prescription module APD-ATHOS-Prisma®.

Main outcome measures: The following variables were collected: age, sex, clinical service of admission, Body Mass Index(BMI), sedation, previous nutritional support, degree of stress, concomitant enteral nutrition(EN), interventions performed and degree of acceptance of them.

Results: Twenty-four patients were included, being seventeen men (17/24;70.8%). The mean±SD of age was 62.1±16.6 years. The mean±SD of the BMI was 27.03±5.21kg/m² (normal weight: 6/16;37.5%, overweight I and II: 3/16;18.75%, obesity grade I and II: 2/16;12.5%). When the 20gN PN was initiated, patients were admitted to the following services: anesthesia (2/24;8.3%), general surgery (7/24; 29.1%), internal medicine (1/24; 4.1%), intensive care unit(ICU) (14/24; 58.3%). Among the 16 patients admitted to ICU/anesthesia, five were sedated (5/24;20.8%). Sixteen patients (16/24;66.6%) had nutritional support prior the prescription of the 20gN PN, thirteen patients (13/24;54.1%) had oral diet/EN and three PN (3/24; 12.5%). Five patients had concomitant EN with 20gN PN (all critical patients). Eight patients (8/24;33.3%) presented mild-moderate stress and sixteen patients (16/24,66.6%) had very severe stress. Interventions were performed in thirteen patients (13/24,54.1%). All the interventions made were accepted. In eleven patients (11/13,84.6%) were made changes to a PN that better adjusted to the nutritional requirements. In the remaining two patients (2/13,15.3%), the 20gN PN was changed to EN/diet. No intervention was performed in eleven cases (11/24;45.8%), because they were indicated. In four cases (4/11,36.3%) the PN was prescribed as 20gN/24 hours and the rest as complementary to EN/diet.

Conclusion: The interventions were carried out in patients in whom their initial nutritional assessment was made incorrectly and in most cases the requirements were overestimated. Given the degree of acceptance of the interventions, it would be useful to continue reviewing the prescriptions to improve the nutritional status of our patients.

Disclosure of Interest: None Declared
Background and Objective: Ocrelizumab is a novel drug commercialized for the treatment of multiple sclerosis (MS). The main objective of this work is to describe the efficacy and safety of ocrelizumab in patients with MS.

Design: A retrospective observational study was performed. Patients who had received treatment with ocrelizumab since its use as expanded access until March 30, 2019 were included. The following variables were collected: age, sex, type of MS, Expanded Disability Status Scale (EDSS), concomitant treatment, timed 25-foot walk test (T25FW) before and 3 months after starting treatment and number of cycles received. Effectiveness was defined as response if an improvement of ≥20% of the initial T25FW value was obtained after 3 months treatment and from a clinical point of view according to the neurologist criteria. Safety was assessed depending on the appearance of adverse reactions (AR) and those reactions related to perfusion (RRP): potentially fatal, severe and mild to moderate. Data were obtained from the Digital Clinical Record and the prescription module APD-ATHOS-Prisma®.

Results: Twelve patients were included, fifty percent of them were women (6/12; 50%), with an average age of 46.5 years (38.4-54.5). The mean degree of disability (EDSS) was 5.95 (5.5-7). Only one patient had EDSS=7. All patients had a diagnosis of progressive primary MS except one patient with a diagnosis of secondary progressive MS. Seven patients (7/12; 58.3%) had fampridine as a concomitant treatment. Patients received an average of 2.1 cycles (2-3). From a clinical point of view, 3 months after receiving ocrelizumab, three patients were worse, three patients better and one with similar clinical status. To date, we have T25FW data in three patients. These three patients had no response (T25FW before and after ocrelizumab treatment: 10.6s vs 17.7s; 10.7s vs 12.3s and 18.2s vs 18.2s). Those three patients with T25FW values were those who presented a clinical worsening. Nine patients (9/12; 75%) did not present RRP. Three patients (3/12; 25%) presented mild to moderate RRP (urticaria, skin reaction and erythema on the chin and abdomen). No patients presented another type of AR to ocrelizumab.

Conclusion: Data currently available for ocrelizumab are scarce in terms of effectiveness and difficult to interpret. However, the safety profile has been good in our experience with few AR and being these of a mild nature.

Disclosure of Interest: None Declared
VEGFA 2578 C>A GENE POLYMORPHISM AND BREAST CANCER RISK AND PROGNOSIS
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Background and Objective: Breast cancer (BC) is the most common cause of cancer-related death in women worldwide. The VEGFA 2578 C>A (rs699947) has been associated with risk of BC and clinical outcomes. The purpose of this study was to evaluate the association between this gene polymorphism and BC risk and prognosis.

Design: A retrospective case-control study was conducted for the investigation of BC risk, and a cohort study for the sub-study of clinical outcomes in BC, including 84 BC cases and 119 controls of Spanish origin. VEGFA 2578 C>A (rs699947) gene polymorphism was analysed by TaqMan®.

Results: The genotypic logistic regression model adjusted by aged revealed no association with the polymorphisms and BC risk, although the C-allele of VEGFA 2578 C>A showed a trend to higher BC risk in the allelic and recessive models (p=0.055 and 0.054, respectively). There was no influence of this gene polymorphism on overall survival (OS). The univariate Cox model showed that carriers of the A-allele for VEGFA 2578 C>A tended to have longer OS compared to CC patients (CC vs A-allele Hazard ratio (HR): 2.08; CI95%=0.96-4.49; p =0.0587). There was no association between the gene polymorphism analysed and progression-free survival (PFS).

Conclusion: No influence of VEGFA 2578 C>A (rs699947) gene polymorphisms on risk of developing BC was found in our study. There was no association between the polymorphism studied and PFS and OS.

Disclosure of Interest: None Declared
PT038
Analysis of our first etelcalcetide prescriptions for secondary hyperparathyroidism in chronic haemodialysis patients
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Background and Objective: Etelcalcetide is the first intravenous calcimimetic agent used to reduce the levels of parathyroid hormone (PTH) in adults who have long-term kidney disease (secondary hyperparathyroidism) and who undergo haemodialysis. Cinacalcet is the only treatment option these patients have had until etelcalcetide’s launch to market. They both are effective in controlling PTH levels, reducing high concentrations (>500pg/mL) that can cause osteopenia, bone pain, fractures, and heart and circulation problems. Our study was aimed to analyse the conditions under which the first prescriptions have been made in our tertiary-level hospital and evaluate preliminary effectiveness data in our cohort.

Design: Retrospective observational study including every etelcalcetide prescription made in our hospital (first one in June 2018). The prescription protocol includes three conditions: PTH level >500pg/mL, cinacalcet intolerance or drug interactions (due to CYP450 metabolism) with cinacalcet. The variables collected from medical records were: demographics; time on renal replacement therapy (RRT); prior cinacalcet therapy; reasons for prescribing etelcalcetide; time on etelcalcetide therapy and serum PTH, ionized calcium and phosphate levels prior to therapy and last levels records.

Results: Six patients were recluted with a median age of 59 years (IQR= 56–67), all of them suffering from chronic renal disease stage 5D. Five (83.3%) were male; only one (16.7%) was diabetic. Median time on RRT was 3.33 years (IQR= 1.98–6.67) and median time on etelcalcetide therapy was two months. Nowadays four patients (66.7%) continue treatment. Five patients (83.3%) received prior cinacalcet treatment. Reasons for prescribing etelcalcetide were: lack of adherence to cinacalcet (n=3) and poor metabolic control (n=3) that led to PTH level >500pg/mL. Median PTH, serum ionized calcium and serum phosphate levels prior to etelcalcetide were: 846pg/mL (IQR= 749–1155), 8.74mg/dL (IQR= 8.3–9.3) and 5.95mg/dL (IQR= 5.7–6.4), respectively. Median last PTH, serum ionized calcium and serum phosphate levels records were: 893.25pg/mL (IQR= 837.8–1014.4), 8.35mg/dL (IQR= 7.8–8.7) and 5.15mg/dL (IQR= 4.8–6.0), respectively. No patient had reached PTH levels <500pg/mL.

Conclusion: Etelcalcetide has been used appropriately following the approved protocol of our hospital. However, although it ensures treatment adherence, it does not seem to reduce PTH levels rapidly. A larger follow-up period may be necessary to get more consistent results.

Disclosure of Interest: None Declared
Background and Objective: Thyroid carcinoma is the most frequent endocrinological cancer but it only represents the 1% of all cancers. Lenvatinib is an oral multitargeted tyrosine kinase inhibitor used on its own to treat differentiated thyroid carcinoma when the cancer has progressed or spread, and does not respond to treatment with radioactive iodine. In our country it is recommended for patients who have progressed to a prior treatment line with a VEGF/VEGFR inhibitor. The study was aimed to analyse the usage and tolerability of lenvatinib in our cohort of patients.

Design: A retrospective descriptive observational study was conducted. We included all patients since first prescription (April 2017) in our tertiary hospital. We assessed demographic characteristics, ECOG performance status, cancer subtype, duration of treatment with lenvatinib, initial/modified doses, prior therapies and adverse events. The information was collected from the medical electronic records.

Results: Six patients were included in our study; 50% men and median age of 50.5 years. 50% of cases were metastatic follicular and 50% metastatic papillary thyroid cancers. ECOG performance status was 0 in all of them. They all had previously received radioactive iodine and other prior therapies observed were: sorafenib (n=5), pazopanib (n=1) and vandetanib (n=1). Only one patient started lenvatinib as first VEGF/VEGFR line. 50% of patients received the approved initial dose of 24mg QD and the other 50% received 20mg QD. Median treatment duration was 11 months (IQR=3.4-17.8) and median days of interruption of lenvatinib was 27 (IQR=5.5-49.2) due to toxicity issues: digestive (n=6; diarrhea in 50%), cutaneous (n=4), hypertension (n=3), weight loss (n=3) and haematological (n=2).

Conclusion: Lenvatinib seems to be a treatment option for patients that have progressed to a prior VEGF/VEGFR therapy regardless its security profile. Nevertheless, the type of adverse events observed may decrease the quality of life and daily well-being of patients. Our data show that verifying initial dose prescriptions and subsequent reductions according to usage recommendations may be a relevant future target.

Disclosure of Interest: None Declared
**The appropriateness of empirical therapy in patients with bloodstream infections**

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**Background and Objective:** Early administration of empirically effective antibiotic therapy has been shown to decrease mortality in patients with community-acquired or nosocomial bloodstream infections. The aim of this study was to analyze the empirical antibiotic therapy and accuracy of these prescriptions for appropriate coverage of isolated microorganisms in patients with bacteremia.

**Setting and Method:** We performed a single-center retrospective study as part of daily ASP team routine to assess the handling of diagnosed bacteremia. The analyzed cohort consisted in cases of bacteremia detected during three months (From January 1st to March 31 of 2018). Data were obtained from patients’ electronic medical records and included patients’ demographics, microbiological data, antimicrobial therapy; bacteremia acquisition (community-acquired, CAB or nosocomial, NB) and foci. ID-specialist interventions and acceptance rates were analyzed. The therapy was defined as adequate when empirically chosen antibiotic was prescribed within 24 hours after hemoculture extraction and active against isolated microorganisms.

**Main outcome measures:** The primary outcome was all-cause in-hospital mortality.

**Results:** 178 cases of bacteremia were included in the cohort. 58.4% were male, the median age was 68.8 (IQR 56.8-77.8). 111/178 (62.4%) were community-acquired; of these, 32.4% received outpatient treatment. Origin of bacteremia was mainly urinary (39.3%), abdominal (20.2%) and respiratory (18.5%) foci. In terms of accuracy of the prescriptions of empirical antimicrobial treatment 121/178 (68%) were adequate; 85/121 (70.2%) for community-acquired (CAB) and 36/121 (29.8%) for nosocomial bacteremia (NB). Time of delay for adequate treatment was 24 (IQR 24-48) hours. Time to microorganism detection was 48 (IQR 48-72) hours. The most prescribed antibiotic for CAB was Ceftriaxone (29.7%) and Amoxicillin-Clavulanate (17.1%) and for NB Piperacillin-tazobactam (22.4%) and Meropenem (17.9%). Preferred regimen was monotherapy, 78.4% and 89.6% respectively. The frequency of isolated microorganisms was 51.1% Enterobacteriaceae, 36.0% Gram-positives, 6.7% non-fermenting Gram-negative bacteria, 3.4% fungi and 2.8% others. In almost half of the cases (85/178, 47.8%) ID-specialist interventions were performed, 78.6% being accepted. 30/85 (35.3%) of the interventions were performed after inadequate prescription and 55/85 (64.7%) were performed for de-escalation therapy after adequate prescription. Most of them were performed for cases of NB (59.7%). Overall crude in-hospital mortality was 21.9%, of these 38.5% had inadequate empirical antimicrobial treatment (p = 0.329).

**Conclusion:** Inadequate prescription rate of empirical treatment remains high. A better situation is observed in cases of community-acquired bacteremia. ID interventions had a positive impact on antibiotic prescriptions. It is therefore necessary to include more cases in the cohort for obtaining conclusive findings.

**Disclosure of Interest:** None Declared
Effectiveness and cost of gefitinib in advanced/metastatic non-small cell lung cancer
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Background and Objective: Gefitinib is one of the drugs used in patients diagnosed with non-small cell lung cancer (NSCLC) with activating EGFR mutation, with an elevated economic cost.

Purpose:
To analyse the effectiveness and cost of gefitinib in advanced/metastatic NSCLC.

Setting and Method: A retrospective descriptive study covering the period from January 2013 to June 2018 of advanced/metastatic non-small cell lung cancer patients starting treatment with gefitinib between January 2013 and January 2017 was performed.

Main outcome measures: Parameters collected were: age, sex, smoking history, previous chemotherapy, EGFR status, progression-free survival (PFS) and economic spending.

Data were collected from the Electronic Prescription Software Prisma® and the program of electronic patient records Diraya® and afterwards, organized in an Excel® base design for this study

Results: A total of 23 patients with a median age of 68 years, 69,9% women, 65,2% chemotherapy-naive and 34,8% chemotherapy-treated were included. 50% were non-smokers and 38,9% were ex-smokers. Regarding the tumour, 73,9% presented adenocarcinoma, 17,4% large-cells and 8,7% epidermoid. 90% presented metastasis. Regarding the EFGR mutation; 52,2% presented mutation, 8,7% did not present mutation and in 39,1% the status was unknown.

The mean PFS was 8,1 months with a 39,1% of 1-year progression-free survival. However, no difference was found between the group of chemotherapy-naive patients (8 months PFS) and chemotherapy-treated patients (7,2 months of PFS) (p>0,05) or the patient with adenocarcinoma (10,4 PFS) and no-adenocarcinoma (7,1 PFS) (p>0,05).

The cost of treatment/patient was 24.662€ and the total expenditure was 567.224€ (0,4% of the total pharmacy service budget).

Conclusion: The data of 8,1 months of PFS were different from the published in the Gefitinib pivotal trials. IPASS (chemotherapy-naive) and INTEREST (pre-treated) showed data of 5,7 and 2,2 months of PFS. However, it is similar to the population EFGR positive of these trials, which was 9,5 and 7 months of PFS. This could be due on account of the low

Disclosure of Interest: None Declared
Real life experience with ceftolozane-tazobactam in tertiary hospital
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Background and Objective: There is a worldwide increase in the number of multidrug-resistant (MDR) gram-negative bacteria, with ESBL-producing Enterobacteriaceae and MDR Pseudomonas aeruginosa among the main threats in clinical practice. Ceftolozane/tazobactam (C/T) is a novel broad-spectrum cephalosporin with potent antipseudomonal activity combined with an established β-lactamase inhibitor, approved for the treatment of complicated intra-abdominal and urinary tract infections. The aim of this study was to describe the clinical use and outcomes associated with C/T.

Setting and Method: A retrospective observational study was performed in a tertiary university hospital with 1000 beds. C/T was included in the clinical guideline under the following conditions: documented infection by Pseudomonas aeruginosa carbapenem-resistant (no carbapenemase producing); as rescue therapy in patients who presented toxicity with colistin, aminoglycosides or tigecycline; as empirical treatment in patients colonized by P. aeruginosa MDR or recently infected by this pathogen.

Main outcome measures: The main outcomes were rate of cure and all-cause in-hospital mortality.

Results: A total of 38 patients were included. 25(65.8%) were male. Median age was 63(IQR, 53.5-72.25). Most of the patients were admitted in Intensive Care Unit (28.9%), General Surgery(21.1%), Internal Medicine-Infectious Disease Unit (15.8%) and Onco-hematology department(15.8%). The most frequent source of infection was respiratory (39.5%), abdominal (15.8%) and urinary(15.8%). 31.6% presented bacteremia. The median hospital stay was 61.5(IQR, 32-96) days.21(55.3%) were prescribed as target therapy and 17(44.7%) as empirical. In 21.1% C/T prescription was unjustified. The most common pathogen was P. aeruginosa carbapenem-resistant (44.7%), ESBL-producing Enterobacteriaceae (15.8%) and P. aeruginosa susceptible to others antimicrobials(10.5%). In 97.3% of cases C/T was prescribed as rescue therapy after conventional antibiotic regimen.57.9% was used in combination therapy with tigecycline (40.9%) or aminoglycosides (31.8%) or quinolones (13.6%). The median of the duration was 7 days (IQR, 6.75-11). The C/T therapy was finalized because of cure(44.7%), change to other antibiotic(21.1%) and all-cause mortality (34.2%)

Conclusion: In this study C/T was used in patients with serious infections as rescue therapy, primarily with respiratory source due to P. aeruginosa MDR. Almost half of patients were cured. This data provides important insight on how C/T is used in clinical practice.

Disclosure of Interest: None Declared
Rationality of thrombo-prophylaxis therapy in hospitalized patients and perspectives of health care providers in North Cyprus

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Background and Objective: Despite the presence of effective strategies for prevention of deep vein thrombosis, yet a considerable proportion of patients at risk for thromboembolism do not receive prophylaxis during hospitalization while others receive it irrationally though not candidates according to evidence based recommendations. The aim of this study is to evaluate trends of prescribing deep venous thrombosis prophylaxis in general ward patients and to determine the knowledge and practices of DVT risks and prophylaxis among nurses and doctors of tertiary hospitals.

Setting and Method: An observational prospective study was carried out for 3 months, in which 180 patients from multiple clinics during hospitalization were enrolled to investigate their risk for deep venous thrombosis and observe rational use of deep venous thrombosis prophylaxis for inpatients using caprini check list. The relevant information was recorded with respect to patient's demographic data, disease incidence and risk factors. A descriptive cross sectional study was also carried out using questionare in two public hospitals to measure knowledge and practices of nurses and physicians on deep vein thrombosis risks and prophylaxis.

Main outcome measures: Prevelence of irrationality and healthcare providers responses to DVT risk factor questionare.

Results: Of the 180 patients enrolled, 86% were identified as irrationally managed cases during their hospitalization. Of the 180 patients assessed, 79.4% of patients were identified as having high level of risk, 13.3% patients were identified as having moderate level of risk, and only 5.6% and 1.7% with low and very low level of risk respectively. The study showed that more than half of the nurses (73.3%) had not received DVT education and have reported need for DVT education. Furthermore, more than 50% of physician and nurses have low level of knowledge on DVT risk and prophylaxis.

Conclusion: There is a great extent of irrationality in thromboprophylaxis therapy of hospitalized patients and an interventional program both educational and incoorperation of a daily individual assessment of DVT risk factors is needed with an enclosed prophylaxis policy.

Key words: Thrombosis, prophylaxis, thromboprophylaxis, caprini's checklist, DVT risk

Disclosure of Interest: None Declared
Background and Objective: Medication errors are an important source of morbidity and mortality in all health systems. One of the most effective strategies for the prevention of medication errors is the creation of a culture of patient safety. In the last years, social networks have become a useful tool for the healthcare community. The main aim was to create a digital communication strategy for broadcasting information related to medication errors and safety.

Design: On 2013 a website, including a blog, were created to post and spread information related to medication errors and look alike as well as sound alike (LASA) drugs. The website has also other sections with useful resources such as: photo gallery with examples of LASA drugs, infographics, educational information, biography of the authors and a space where readers can share content with the authors.

In a second phase, a Twitter and Facebook profiles were created to spread information posted in the website and also to share original content. Twitter allows sharing information quickly and concisely and also is used by different groups of healthcare providers that give us a wide spread. On the other hand, Facebook allows us to reach to a different audience, especially patients. A original hashtag was used to centralize users inputs and communication between followers.

In addition, signatures were collected to elaborate a consensus document to avoid isoaparience in the drug packaging through the platform change.org.

Results: Currently, the project has more than 20,000 followers on Facebook and 11,000 on Twitter. The website receives more than 3,000 monthly visits. After five years of activity, our project has produced more than 100 post blogs, 500 facebook publications and 4,000 tweets. All content has been watched millions of times. Because of the multiple warnings carried out about LASA drugs, some pharmaceutical companies have considered to change packaging of their drugs. We have achieved more than 70,000 signatures on change.org website requesting Spanish healthcare authorities to develop guidelines for the proper packaging and labeling of drugs. As a result of this initiative, Spanish press became interested in this problem and our project, and the drug packaging problem was mentioned in multiple mass media.

Conclusion: Social networks like facebook and twitter are powerful tools to prevent medication errors and share information on this topic efficiently and massively.

Disclosure of Interest: None Declared
Background and Objective: Vitamin K antagonists (VKA) are part of oral anticoagulants which are drugs with narrow therapeutic margins. Health professionals must therefore have a deep knowledge of the rules of good practice of VKA in order to better manage them and avoid drug iatrogenic. This study aims to evaluate the knowledge of health professionals in the public and private sector on vitamin K antagonists.

Design: This is a cross-sectional descriptive survey conducted among healthcare professionals over a period of 5 months. The study is conducted at the level of public hospital structures and at the level of the private health sector. Data is entered and analyzed using SPSS software version 20.0

Results: 483 questionnaires were completed including 186 (38.5%) at the private sector and 297 (61.5%) at the public sector. The most represented category is the medical setting (61%). The average of the correct answers is 55.9% with 53.4% for professionals in the private sector and 57.3% for professionals in the public sector. Specialists in cardiology have the best average with 67.2% followed by medical specialists in pneumology with 66.7%. Paramedical staff with an average of 44.1% are at the bottom of the rankings. The questionnaire is divided into 5 themes. For these five themes, the averages of correct answers at the public sector are better than those of the liberal sector. At the level of the two sectors, the topic of treatment monitoring has the best rate of correct answers and the theme of day-to-day management has the lowest rate. Specialist doctors obtained the highest average for the five questionnaire topics with 69.4%, 67.4%, 84%, 78% and 46.8% respectively.

Conclusion: The level of knowledge about VKAs is insufficient. Efforts must be made in the knowledge and prescription of these drugs for better treatment management both in terms of initial medical education and continuing.

Disclosure of Interest: None Declared
PH004
Innovative technologies: valid support in controlling adherence to drug therapy
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Background and Objective: Poor adherence to treatment is a worldwide problem. It is estimated that 30% to 50% of patients with chronic illness do not take medications as prescribed. This poor adherence to therapy leads to increased morbidity and mortality as well as costs for the national health system.

Objective: This study aimed to evaluate adherence to antihypertensive therapies in adult patients.

Setting and Method: The study was carried out by analyzing the data in Health-DB Database. Data refer to patients treated in the Calabria Region (Italy). Study time period was 01/01/2012-30/06/2014. The study period was divided into 5 consecutive semesters, in order to compare the adherence rates in the different periods.

Adherence was estimated by calculating the proportion of days covered by drugs dispensed during a period of 365 days. Adherence was defined as a proportion of days covered of more than 80%.

Main outcome measures: The rate of adherence to treatments is increased in the four semesters by about +23.38%.

Results: In the first half of 2012, adherence to treatment with antihypertensive drugs was 59%. In particular, data analysis relating to the first half of 2012-2013 and 2014 shows a substantial variation in adherence (Δ 2013-2012=3,22%; Δ 2014-2012=8,217%). The greatest change was recorded between the first and second half of 2013 (Δ = 10.5%). In the first half of 2014, the calculated adherence rate was 72.8%.

Conclusion: Analysis of administrative databases and innovative technologies is a valid tool to support health care decision-making processes and generate real evidence from clinical practice data. The sharing of information between the various public health stakeholders in the Calabria Region has made it possible to obtain valid results in terms of adherence to chronic therapy by patients. The greater adherence to the therapy found towards antihypertensive drugs compared to the data reported in the 2013 OsMed Report (Calabria Region-OsMed Report = + 17.7%) denotes how a correct management makes possible both a greater prescriptive appropriateness and greater sustainability economic treatment.

Disclosure of Interest: None Declared
Background and Objective: Menopause is a natural important transition in women’s life. Very few studies examined the level of awareness towards menopause among females at reproductive age. This study evaluated the awareness and knowledge about menopause and hormonal replacement therapy (HRT) among females at reproductive age in Jordan.

Setting and Method: A cross-sectional study conducted among females in reproductive age (n=450) attending inpatient departments and outpatient clinics at hospitals located at north of Jordan. Structured interview-based questionnaire was used to collect necessary data about knowledge and perception of women toward menopause and HRT. Linear regression was used to examine the association of several factors with degree of menopausal knowledge.

Main outcome measures: Knowledge of menopause and HRT.

Results: More than 50% of females were knowledgeable about the concept, onset, cause, symptoms and consequences of menopause. Although they were less likely to know about heart diseases (51.8%) as complications of menopause compared to others. Family income was a significant predictor of knowledge about menopause (p<0.05). The majority of females did not know some roles, benefits and risks of HRT. Additionally, family members and friends were the primary sources of information for most of females in reproductive age.

Conclusion: The findings suggest that Jordanian females are knowledgeable about various aspects of menopause. Nevertheless, there is still a need to develop educational programs and implement proper counseling in order to improve females' awareness about menopause particularly its health implications and treatment options.

Disclosure of Interest: None Declared
Ethical Issues in Consenting Older Adults: Academic Researchers and Community Perspectives
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Background and Objective: Obtaining informed consents from older adults is surrounded by many ethical and practical challenges. This study aimed to evaluate ethical issues and strategies in consenting older adults in Jordan as perceived by both academic researchers as well as older adults.

Setting and Method: Academic researchers in the Jordanian medical schools were interviewed and asked to complete the study survey if had ever conducted clinical research with older adult population. The study survey included items eliciting demographics and professional characteristics and perceptions regarding the consenting process in older adults. The survey was then modified to assess the consent related ethical issues as viewed by a sample older adults after explaining the concept of the consenting process to them (hypothetical scenario). Average weighted scores were calculated based on percentages of responders who agree/disagree with each item statement. The study was conducted between July 1 2017 and November 30 2017.

Main outcome measures: Main outcome measure included perceptions regarding designing consent forms, the consenting process in older adults, consent-related skills in elderly, and strategies to improve the consenting process in older adults.

Results: A total of 250 academic researchers and 233 older adults have participated in the study. Researchers reported that signing the written forms and the age related physical impairments were the most challenging in consenting older adults (average scores were 4.17 and 3.69 out of 5, respectively). In agreement with researchers views, older adults also perceived signing the written forms and age related physical changes as the most challenging in the consenting process. Lack of consistency and repeating questions were the most frequently encountered by researchers in this population. Ensuring privacy, providing extra time and efforts patiently, treating older adults as autonomous individuals and respecting their cultural believes were the most helpful strategies as seen by both academic researchers and older adults.

Conclusion: Obtaining informed consents from older adults is a challenging process. Researchers should be aware of the special needs and strategies to achieve realistic and ethical informed consents from older adults.

Disclosure of Interest: None Declared
Background and Objective: The aim of this study is to evaluate pharmacy students’ e-health literacy and the mobile health application utilization.

Setting and Method: This electronic cross-sectional study was conducted in a faculty of pharmacy located in Istanbul, Turkey between February and April 2019. Pharmacy students with grade third, fourth and fifth were included. The questionnaire was applied by using LimeSurvey.

Main outcome measures: A structured questionnaire was developed according to studies in the literature to evaluate knowledge and attitude of pharmacy students towards mobile health application. Turkish version of the eHealth Literacy Scale (eHEALS) was also used.

Results: The response rate was 88.1%. The mean of age was calculated as 23.6±2.5 in all completed questionnaire (n=260). Of them, 75.7% were female. The mean eHEALS score was measured as 30.1±5.5. The Cronbach’s alpha was measured as 0.906 for eHEALS. According to eHEALS score, male pharmacy students had statistically higher scores when compared with female pharmacy students (p<0.05) and fifth-grade pharmacy students had statistically higher scores when compared with the third-grade pharmacy students (p<0.001). Of them, 55.0% used an application to change their personal health behaviour. Among these pharmacy students, mobile health application users had statistically greater eHeals score when compared with non-users (p<0.05). Of them, 83.1% stated that these applications increased their quality of life. Participants indicated that the use of mobile healthcare applications in areas such as smoking cessation (67.69%, n = 176), physical activity (70.77%, n = 184) and weight management (76.92%, n = 200) were useful. The most common mobile applications that used by participants were Medscape (73.85%, n=192), Lexicomp (29.23%, n=76) Uptodate (28.08%, n=73).

Conclusion: Pharmacists should be aware of the ways in which they can assess information resources to provide better health care and recommend to their patients. Pharmacy students’ attitude and knowledge towards mobile health application will be increased with improving their e-health literacy levels.

Disclosure of Interest: None Declared
Anticholinergic drug burden: a systematic review of scales and their impact on clinical outcomes

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Background and Objective: Anticholinergic drug burden (ADB) is high in the elderly and increases with hospitalization. A practical way of assessing ADB is the application of an anticholinergic burden scale (ABS) usually ranking a specific drug into 4 levels, ranging from no (=0) to high (=3) anticholinergic activity. However, it is unclear how many of these scales exist, how they differ in quality and whether they are associated with clinical outcomes. Therefore, the aims of this review were threefold: (1) to identify all existing ABS (2) to compare the scales systematically by using adapted tools and (3) to evaluate their associations with clinical outcomes in patients.

Setting and Method: We conducted a literature search in MEDLINE without date limitation to identify reports on all existing ABS. In addition, a citation analysis was performed using Web of Science to track validation studies using the included scales relating it to clinical outcomes. Both searches were supplemented by manual searching of reference lists of the selected studies. Quality of the ABS was assessed using an adapted AGREE II tool, the quality of all validation studies through the NOS (Newcastle-Ottawa Scale). At least two independent researchers performed screening and quality assessment.

Main outcome measures: Number and quality of existing ABS, and their impact on clinical outcomes.

Results: Out of 545 screened records for ABS and 1222 for validation studies, 15 ABS and 97 validations studies were identified. For the development of ABS various methods were used, from experts opinion to serum anticholinergic activity and blood-brain-barrier permeability. Moreover, categorization of drugs into ADB levels was reported in many unexplained variations. The number of validation studies per scale ranged from 0 to 38. 18 studies compared two or more scales showing a superior performance of the ARS scale. Study designs of the validation studies were mainly cohort and case-control studies with widely spread quality. Cognitive and functional impairment, mortality or dementia were the most often studied outcomes with inconclusive results.

Conclusion: Quality of scales as well as of their validation studies varies substantially. Several scales lack validation in clinical settings. Therefore, we need more and better studies comparing different scales to understand the association with clinically relevant outcomes.

Disclosure of Interest: None Declared