screened within three point prevalence analyses at admission, during inpatient stay and at discharge, respectively. Medication is recorded and correlated to diagnoses and reason for admission. Patients are included in the study if they were admitted via the emergency department with at least five drugs prescribed on admission.

Results 660 patients were screened until 10/2012. 107 patients met the inclusion criteria, 63% of them were female, 64% (68/107) received at least one PIM at admission (48, 29 and 50 patients as defined by FORTA, PRISCUS and STOPP, respectively; multiple classifications possible), 82% (88/107) received PIM during inpatient stay (59 FORTA, 62 PRISCUS, 55 STOPP) and 57% (61/107) at discharge (40 FORTA, 27 PRISCUS, 48 STOPP). Zopiclone was the most often (29%) prescribed PIM during inpatient stay.

Conclusions Data of the interim analysis show that a high proportion of inpatients received PIM. Once the data acquisition is completed, further evaluation is needed to determine the consequences of PIM use, the correlation to reason for admission, which classification is best to detect PIM in hospitals and how the use of PIM at UKE can be minimised.

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No conflict of interest.

GRP-175 SMART INFUSION PUMPS IN CHEMOTHERAPY ADMINISTRATION

doi:10.1136/ejhpharm-2013-000276.175

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Background Medication errors, mainly those that occur with high-risk drugs, are associated with high morbidity and mortality. About 38% of these errors occur during the administration phase and only 2% are intercepted.

Purpose To evaluate the use of smart infusion pumps in the oncology area and to assess if this technology reduces intravenous drug administration errors in cancer patients.

Materials and Methods We analysed the information in Signature-Edition® volumetric infusion pumps for the period January–September 2012 in the oncology area. All infusion pumps were configured with GuardRails® safety software. The drug library was specifically set up by a clinical pharmacist with all the intravenous drugs usually prescribed to cancer patients.

We established maximum and minimum limits for each drug. If the nurse in charge of drug administration exceeded the defined limit, an alarm was displayed to alert her.

Results Over nine months 14,693 infusions were administrated to 4,628 patients. The safety system was used in 99.1% of infusions. 768 alarms were triggered, in 5.2% of infusions started.

Comprehensive analysis of the alarms showed that 289 (37.6%) were caused by a rate lower than the correct rate and 194 (25.2%) by infusions set at a higher than the established upper limit. 483 drugs had to be reprogrammed.

113 alarms were not associated with a real programming error.

Conclusions Implementation of smart infusion systems based on this safety software can prevent 5% of errors in intravenous drug administration and can help us to enhance the safety of high-risk medicines.

The alarms reported are not always associated with a real administration error. It is necessary to review the limits set for some drugs to improve system applicability.

No conflict of interest.

GRP-176 STUDY OF THE IMPORTANCE OF THE PHARMACEUTICAL CONTRIBUTION IN THE DETECTION OF NON CONFORMITY (NC) IN THE MEDICATION PROCESS IN CHEMOTHERAPY

doi:10.1136/ejhpharm-2013-000276.176

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Background Pharmacists are responsible for system quality and patient safety and make a valuable contribution to the medication process in chemotherapy.

Purpose An assessment and inventory of non-conformity (NC) took place in the chemotherapy preparation area of the hospital's anti-cancer unit (PCAU). The importance of the pharmacist in the medication process in chemotherapy was assessed.

Materials and Methods Two activities were studied for 18 weeks: the analysis of the physician's prescriptions (using Chimio® software) and the preparation of the treatment by the pharmacy assistant. An assessment grid was made for each of these activities. NC was flagged in the data whenever it was detected by the pharmacist (or the intern) in order for the anomalies to be corrected.

Results Regarding NC in prescriptions: 149 NC events were quantified in 3936 lines (3.79%):

- 54.4% had an impact on the patient's health; mistakes in the progression of the course of treatment (14.81%), in indication and/or diagnosis (13.58%), in the dose of anti-cancer chemotherapy (12.35%) or in the date of administration (11.11%).
- 45.6% had a financial impact (alternation and rounded dosages, 88.24%)

Regarding NC in preparation, 88 NC events were quantified in 3374 preparations (2.61%) – omissions of light-protective containers (23.86%), and of double checking (required in the chemotherapy medication process) (14.77%), or omission faults (13.64%).

All anomalies were noted and corrected.

Conclusions Although there is a validated quality assurance system, the intervention of a pharmacist (or intern) is important at key stages of the sequence to allow the detection of NC that is not highlighted by prescribers or preparers.

No conflict of interest.

GRP-177 THE USE OF BEVACIZUMAB IN METASTATIC BREAST CANCER

doi:10.1136/ejhpharm-2013-000276.177

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Background Many drugs are prescribed outside the terms of the marketing authorization (off-label), especially in oncology.

Purpose To describe the use of bevacizumab in metastatic breast cancer (MCB), evaluating its suitability after the extension of the indications in 2011 by the European Medicines Agency (EMA).

Materials and Methods Retrospective and descriptive monitoring study carried out between January and December of 2011 on the use of bevacizumab in MBC in a 446-bed tertiary care hospital. Demographic data, regimens, types of treatment, dose, number and frequency of cycles and indications were examined. During the study it was considered according to technical data that treatment regimens with bevacizumab combined with paclitaxel or capecitabine were among the best for metastatic illnesses.

Results The total number of patients with MBC in treatment during 2011 was 96, 40.6% (39 patients) of whom were being treated

with bevacizumab with an average age of 62 (ranging 45–79). 40 treatments were reviewed (one patient received two different bevacizumab regimens during the monitoring process), 42.5% of which followed the indications authorised by the EMA. The regimens that didn't fit to the technical data (57. 5%) were as follows: 46% bevacizumab in monotherapy 15 mg/kg/21 days, 54% bevacizumab associated with other cytostatics different from paclitaxel or capecitabine. Combinations with bevacizumab not indicated in the technical data were: 37% bevacizumab 15 mg/kg + liposomal doxorubicin 75 mg/m^2/21 days, 37% bevacizumab 15 mg/kg/21 days + vinorelbine 25 mg/m^2 days 1 and 8, 10% bevacizumab 15 mg/kg/21 days, 10% bevacizumab 10 mg/kg +irinotecan to 125 mg/m^2/15 days and 6% bevacizumab 15 mg/kg +docetaxel 100 mg/m^2/21 days.

Conclusions Despite the extension of the bevacizumab indications in 2011 by the European Medicines Agency (EMA) the off-label use of bevacizumab remains high, probably due to the clinical evidence with bevacizumab, which has evolved rapidly in recent years. In this sense, the importance of pharmacists' role should be stressed in evaluating the use of medicine in relation to the recent evidence of the MBC.

No conflict of interest.

GRP-178 SURFACE CONTAMINATION WITH ANTINEOPLASTIC DRUGS IN SEVEN FRENCH HOSPITAL PHARMACIES

doi:10.1136/ejhpharm-2013-000276.178

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Background Due to their carcinogenic, mutagenic and teratogenic properties, handling cytotoxic drugs presents a risk of occupational exposure for healthcare workers.

Purpose To evaluate and limit occupational risk, environmental monitoring was conducted in 7 French hospital pharmacies that prepare formulations of carboplatin, cisplatin and oxaliplatin. Platinum was used as the tracer (~20% of the production).

Materials and Methods From 2010 to 2012, 7 cytotoxic drug preparation units were investigated. Different types of surface were evaluated: the external surface of vials containing cytotoxic materials, workplace surfaces and the surfaces of antineoplastic drug preparations. Surfaces were sampled with a moistened swab. After pre-concentration by cloud point extraction, the quantity of elemental platinum was evaluated by graphite furnace atomic absorption spectrometry. The lower limit of detection corresponded to 2 ng of platinum per sample.

Results A total of 518 samples analysed had various levels of contamination and we found a frequency of cytotoxic contamination of more than 37% of samples (>2 ng). Contamination was found on 38% of vials of cisplatin, carboplatin and oxaliplatin from different manufacturers (n = 111, max 66 ng), 56% of cytotoxic preparations (n = 18, max 78 ng) with 29% of packagings (n = 24, max 15 ng) and 56% of workplace surfaces (n = 365) contaminated. Surfaces inside isolators were the most contaminated area (59%, n=169) compared with storage areas (28%, n = 89), controlled areas (15%, n = 55), control laboratories (24%, n = 25) and other areas (4%, n = 27). However the highest level of contamination was found inside storage boxes of vials containing cytotoxics with more than 20,000 ng of Pt.

Conclusions Regarding environmental monitoring, two major sources of contamination were identified: the outer surface of vials of cytotoxic material and handling cytotoxic drugs inside the isolator. Other contamination spreads from those initial points of contamination. Thus, it seems necessary to use effective individual protective equipment but also to use efficient cleaning protocols to limit chemical contamination and thus, to prevent occupational exposure.

No conflict of interest.

GRP-179 SWITCH FROM CERA TO EPO ZETA IN PATIENTS WITH ANAEMIA AND CHRONIC KIDNEY DISEASE

doi:10.1136/ejhpharm-2013-000276.179

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Background As the result of a possible shortage of methoxy polyethylene glycol epoetin beta (CERA) within Italy, with the agreement of the EMA, AIFA (the Italian Medicines Agency) prepared a document inviting prescribers to switch patients who were undergoing treatment with different doses of CERA to any Erythropoiesis Stimulating Agent (ESA), for the treatment of anaemia associated with chronic kidney disease (CKD).

This recommendation emphasised the need to monitor haemoglobin levels (Hb) and safety and efficacy parameters.

Purpose To evaluate variations of efficacy (Hb levels) and safety (immunological reaction) of a new treatment, in patients with CKD after switching from CERA to epoetin zeta (EPO zeta), as per international and national guidelines.

To keep the same Hb level obtained before the shift.

To compare the cost differences of the two ESAs.

Materials and Methods A preliminary observational study (April–September 2012) was carried on CKD patients in haemodialysis care at the Department of Nephrology. The patients enrolled were treated with some of the doses of CERA indicated in the Recommendation for at least ten months. We evaluated ESA dosage, Hb level and dosage/kg.

Results The study included 12 patients (7 men and 5 women) with mean age 56.64 years (range 40–75). All patients were treated with EPO zeta (average initial dose 6500 IU/Kg/week); after monthly monitoring of Hb levels, the initial dose of EPO zeta was increased by 7.69% (average dose 7000 IU/Kg/week) and three months later, the median Hb level observed was 11.28 g/dl.

Statistical analysis showed no significant difference between CERA and EPO zeta in terms of Hb level (P = 0.408).

No adverse events due to treatment were recorded; no variation in iron supplementation

The use of EPO zeta resulted in savings of 250 euro per month/patient versus CERA treatment.

Conclusions After switching from CERA therapy, the use of EPO zeta appears effective and safe for CKD patient treatment. Data showed the need to increase the dose of EPO zeta to maintain a steady Hb level. Despite the increased consumption, the use of this biosimilar could contribute to containing pharmaceutical costs.

No conflict of interest.

GRP-180 TELAPREVIR AND BOCEPREVIR: SAFETY AND EFFICACY OF THE INITIAL TREATMENTS IN THE HOSPITAL

doi:10.1136/ejhpharm-2013-000276.180

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Background These novel treatments for hepatitis C have been recently approved in Spain. Several studies have confirmed their great efficiency in achieving good virological response.

Purpose To present the preliminary results of treatment with these drugs in a 600-bed hospital and find the adherence of patients to triple treatment: ribavirin, peginterferon and boceprevir or telaprevir.