improves the safety of intrathecal injections and leads other countries in the same way. However more advanced scientific studies of these connectors should be published. The main line of thought should be the standardisation of these connectors. Lack of standardisation is generating some hazards and supervised implementation of these medical devices is required.

No conflict of interest.

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Background The Health Information and Quality Authority (HIQA) in Ireland are currently promoting and guiding the development of key performance indicators and minimum data sets to monitor health care quality. A third of Irish hospital pharmacies surveyed in 2006 believed that performance indicators were the most effective quality assessment tool. Despite this, performance indicators for clinical pharmacy services in Ireland have not been published.

Purpose To obtain consensus on whether performance indicators identified from the literature provide a valid and feasible method of measuring the quality of the Mater Misericordiae University Hospital (MMUH) clinical pharmacy service and whether they could be introduced as a regular quality measurement.

Materials and Methods Review the literature relating to the use of performance indicators in a clinical pharmacy setting and identify performance indicators which have been piloted or used in other institutions.

Achieve consensus of a multidisciplinary panel, using a Delphi method of the most valid and feasible performance indicators for the MMUH clinical pharmacy service

Implement one of the selected performance indicators

Make recommendations on the further use of performance indicators

Results Performance indictors relating to hospital pharmacy are available (n = 240) in the literature.

The Delphi method achieved consensus and rated the following three performance indicators as both valid and feasible:

Percentage of reserve antimicrobials checked by a clinical pharmacy for approval by microbiology or infectious diseases

Percentage of patients discharged on warfarin who receive warfarin counselling by a clinical pharmacist

Percentage of medication orders for intermittent therapy that have been reviewed by a clinical pharmacist for safe prescribing.

The indicator chosen for measurement was the percentage of medication orders for intermittent therapy that were reviewed by a clinical pharmacist for safe prescribing. A 79% compliance with this performance indicator was achieved by the clinical pharmacy service.

Conclusions A multidisciplinary panel achieved consensus that three of the performance indicators identified from the literature provide valid and feasible methods of measuring the quality of the clinical pharmacy service of the MMUH. One of these was successfully implemented and consideration will be given to implementing further performance indicators

No conflict of interest.

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Background Retrospective study based on the clinical history and the Naranjo causality algorithm.

Purpose To describe a case of severe anaemia in a HIV-positive patient receiving zidovudine and lamotrigine

Materials and Methods A 54-year old male HIV patient on antiretroviral therapy since 2002 (zidovudine 300 mg/12 h, lamivudine 150 mg/12 h and abacavir 300 mg/12 h), with partial epileptic seizures treated with lamotrigine (100 mg/12 h) since May 2011 who in 2007 developed low haemoglobin and haematocrit levels. A diagnosis of macrocytic anaemia was made and the patient was followed up every six months without treatment. In July 2011, at the Drug Care Unit, very low levels of haemoglobin (RBCs 1.17 M/mcL, haemoglobin 5 g/dL, haematocrit 15% and MCV 128 fL), asthenia, weight loss, and dyspnoea upon exertion were detected. These findings were reported to the treating doctor and the patient was admitted, with temporary discontinuation of antiretroviral and antiepileptic treatment. While in hospital, the patient required three consecutive erythrocyte concentrate transfusions.

Results At 8 weeks post-transfusion and discontinuation of antiretroviral and antiepileptic therapy, the patient's blood levels returned to normal. Antiretroviral and antiepileptic therapy was reinitiated with different drugs.

The causality relationship between severe macrocytic anaemia and zidovudine was shown to be 'probable' using the Naranjo Algorithm. Zidovudine causes macrocytic anaemia described in the data sheet as 'frequent' (1%). According to the lamotrigine data sheet, haematological alterations are rare (<0.01%). In this case, the macrocytic anaemia that was probably caused by zidovudine might have been made worse by a drug that rarely presents haematological toxicity.

Conclusions Macrocytic anaemia is a common serious adverse reaction to zidovudine. This drug can also cause accumulated toxicity when administrated with drugs that may also cause haematological alterations. Patients receiving these drugs require close monitoring and coordination between physician and pharmacist.

No conflict of interest.

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Background Certain drugs are classified as potentially inappropriate medication (PIM) for the elderly because they bear an increased risk of adverse drug events resulting in major safety concerns. Several classifications have been published to identify and avoid PIM. For this study FORTA [1] (fit for the aged), PRISCUS [2] (Latin: time-honoured) and STOPP [3] (Screening Tool of Older Persons' potentially inappropriate Prescriptions) criteria have been chosen as the most relevant ones.

Purpose The aims are to determine which PIM are taken by elderly patients at University Medical Center Hamburg-Eppendorf (UKE) and how the prevalence of PIM changes from admission to discharge.

Materials and Methods Based on the criteria provided by FORTA, PRISCUS and STOPP, medication of patients >65 years is

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.

References

1. M. Wehling, H. Burkhardt: Arzneitherapie für Ältere, Springer, 2. Auflage, 2011
2. *Dtsch Arztebl Int*, 2010;107(31–32):543–51
3. *Int J Clin Pharmacol Ther*, 2008 Feb;46(2):72–83

No conflict of interest.

GRP-175 SMART INFUSION PUMPS IN CHEMOTHERAPY ADMINISTRATION

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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

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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

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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