GRP-057 ERRORS IN MEDICINES PREPARATION AND ADMINISTRATION IN VIETNAMESE HOSPITALS

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Background Errors in the medication use process are common. Little is known about preparation and administration errors in resource-restricted settings, including Vietnam.
Purpose To determine the frequency, type and severity of medicines preparation errors and administration errors in two Vietnamese hospitals and identify associated factors.
Materials and Methods This is a prospective study using an observation-based approach, carried out in two urban public hospitals. Four trained pharmacy students observed all drugs prepared and administered on six wards, 12 hours per day on 7 consecutive days. Severity of errors was judged by experts using a validated method. Multivariable logistic regression was performed to explore error-associated factors.
Results In total, 2122 out of 5635 preparations or administrations of medicines were erroneous. The error rate was 37.7% (95% confidence interval 36.4–38.9%). The most frequent errors involved administration technique, preparation technique, omission, and dose (53.1%, 32.6%, 5.0%, and 2.6%, respectively). Severity was judged to be moderate in 87.8% of the cases, followed by severe (8.8%), and minor errors (3.4%). Slightly lower medication error rates were observed during afternoon drug rounds than at other times of the day (32.1% vs. 39.7%, p = 0.00). Much higher error rates were observed for anti-infective drugs than for any other class of drugs (77.8% vs. 28.9%, p = 0.00). Medicines with complex preparation procedures were more likely to generate errors than simple ones (58.1% vs. 24.7%, p = 0.00), and the error rate of intravenous medicines was much higher than that of other medicines (73.2% vs. 12.4%, p = 0.00).
Conclusions This is one of the first large studies investigating medication errors in resource-restricted settings. In around a third of all medicines potentially clinically-relevant errors occurred, which is higher than in most other studies. Administration technique, preparation technique and omission errors were most commonly encountered. Drug round, drug class, complexity of preparation and administration route were error-related factors. Interventions focusing on intravenous medicines with complex preparation procedures are needed to improve patient safety.

No conflict of interest.

GRP-058 ESTABLISHMENT OF A PROGRAMME TO DETECT DRUG INTERACTIONS COMPLEMENTARY TO ELECTRONIC PRESCRIPTIONS

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Background Ours is a 110-bed regional hospital with electronic prescribing throughout. The electronic prescription programme offers allergy alert systems and the need for dosage adjustment in renal and hepatic impairment. However, no warning of potential drug interactions is included.
Purpose To establish a drug interaction screening system to complement the electronic prescribing programme.
Materials and Methods Prospective one-year study (Sept 2011–Sept 2012). Computerized drug interaction alerts can improve the safety, quality and efficiency of care processes and reduce the rate of medicines errors, but sending mass alerts can generate what is known as 'alert fatigue'. For this reason we selected those drugs categorised in Micromedex® 2.0 as contraindicated for simultaneous and significant interactions (the interaction can cause death and/or require medical intervention to minimise or avoid serious side effects); drugs classified as D in Lexi-Comp OnlineTM (consider modifying the treatment and X (avoid combination); those classified as clinically important by the Arizona CERT. The interaction was detected by crossing data in Access 2003 with the pharmacotherapeutic profile of patients obtained in the electronic prescribing programme (eOsabide) and a proprietary database which contains a total of 3,133 pairs of interactions.

The report was written in the patient's medical history (Osabide-Global) and acceptance was verified in 24–48 hours.
Results We detected a total of 1996 interactions and 25% of them were reported, 27% of which led to changes in medical treatment. The main cause of non-notification (36%) was that one drug was prescribed if needed.
Conclusions The project was very well accepted among medical professionals and has improved the quality of prescribing. The biggest drawback is the delay in detecting the interaction; it would be helpful if the system generated the warning at the time of prescription.

No conflict of interest.

GRP-059 ETHANOL CONTENT IN CHEMOTHERAPY

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Background Ethanol is used as an excipient to enhance the solubility of substances partially soluble in water. For this reason, gemcitabine and paclitaxel, when supplied as an injection concentrate instead of lyophilized powder for reconstitution, contain large amounts of ethanol.

The Spanish Pharmaceutical Association warns that quantities above 3 g/dose could affect the ability to drive and use machines and interfere with the effects of other drugs.

Chemotherapy Compounding Units pharmacists consider already diluted vials easier to handle and are more willing to use them than vials with lyophilized powder.
Purpose To calculate the average ethanol dose given to oncology patients on gemcitabine and paclitaxel treatment.
Materials and Methods 6-month retrospective study (March–September 2012) of all patients who had received gemcitabine or paclitaxel.

According to the summary of product characteristics, the ethanol content is:

- Gemcitabine (Actavis® 2,000 mg/50 ml): 9.875 mg ethanol/mg drug.
- Paclitaxel (Gp-pharm® 300 mg/50 ml): 65.83 mg ethanol/mg drug.

Total ethanol dose was then calculated for each patient depending on the chemotherapy dose administered, as shown on clinical records.
Results View table.
Conclusions Ethanol given to these patients may be compared to moderate alcohol consumption. This, together with direct infusion into the blood and the short infusion time, makes it more likely

that the ethanol will affect the patient and, thus, deserves attention.

Special caution should be taken with those patients at higher risk (alcoholism, liver disease, epilepsy). Special care should also focus on others drugs the patient may take that might interact with ethanol.

Patients should be advised not to drive or use machines soon after the chemotherapy treatment has been given and to inform the staff of any ethanol-related effect.

When assessing new formulations, pharmacists should also consider the ethanol content apart from the convenience of dilution.

Abstract GRP-059 Table 1

Drug	Patients	Dose (mg)[1]	Administrations[2]	g Ethanol/dose
Gemcitabine	69	1553.8	6.4	15.34(6.91–22.71)
Paclitaxel	63	149.78	6.02	9.86(4.74–28.83)
TOTAL	132			

[1] Medium dose.
[2] Number of administrations/patient.
10 g of ethanol = 1 glass of wine or beer.

No conflict of interest.

GRP-060 EVALUATION OF A PHARMACEUTICAL CARE PROGRAM TO PATIENTS WITH IMPAIRED RENAL FUNCTION

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Background According to EPIRCE study results (Epidemiology of Chronic Kidney Disease in Spain), approximately 11% of the adult Spanish population suffers from some degree of Cronic Kidney Disease (CKD).

Purpose Evaluate a Pharmaceutical Care Program to hospitalised patients with impaired renal function and determine the degree of acceptance.

Materials and Methods Prospective intervention study of 9 months (January–September 2012) at a regional 110 beds hospital. Patients with creatinine clearance (CRCL) < 50 ml/min/1.73 m^2 and a prescribed medication where is needed a CKD adjustment were selected. CRCL was estimated using the Cockroft-Gault equation (60 kg for women and 70 kg for males).

The patients identification was performed using the electronic prescription programme (eOsabide) and the laboratory INFOMEGA application. The data collected in the study were: age, sex, serum creatinine, pharmacotherapy and clinical service profile. The crossing data has been made in Access 2003.

The dose adjustment report's was made in writing in the patient's medical record (Osabide global). At 24–48 hours, the acceptance was evaluated.

Results A total of 618 hospitalised patients were included in the study (16 had a CRCL < 10 ml/min, 342 a CRCL between 10 and 30 ml/min and 309 a CRCL between 30 and 50 ml/min).

899 (14%) of 6.248 prescriptions were considered non-adjusted and were informed (27 were advices and 113 not evaluated because patient's discharge).

Fifty one per cent of the interventions were accepted.

Antibiotics were 26% of the interventions, anticoagulants in 39%, benzodiazepines in 18%, antiemetics in 6% and digitalis in 5%.

Conclusions Pharmaceutical care plays an important role in the drug treatment of patients in renal failure.

The implementation of the project has been well received among clinicians.

No conflict of interest.

GRP-061 EVALUATION OF DOSE RECOVERY FROM TABLET MANIPULATION FOR ENTERAL TUBE ADMINISTRATION

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Background Liquid formulations of medicines are required for administration through enteral feeding tubes (EFTs). Due to the limited availability of liquid medicines, crushing or dispersing tablets is frequently undertaken by nurses, carers and patients using a variety of different methods. The most accurate method of tablet manipulation has not been determined.

Purpose To determine the best method of tablet manipulation through comparison of dose recovery.

Materials and Methods Naproxen was selected as the model drug as no liquid formulations are available. The tablet was prepared using one of 6 methods identified from a previous survey: Dispersion in a syringe, dispersion in a medicine pot, crushed and dispersed using a crushing syringe, crushed and dispersed using a crushing device, crushed and dispersed in a pestle and mortar or crushed using two spoons. The resulting dispersion was flushed via an 8Fr polyurethane EFT (Corpak) into a receiving flask; repeated 6 times for each method. Dose recovery was determined using HPLC. Excel and statistical software was used for data analysis.

Results Tablet dispersion in the barrel of a syringe produced the highest dose recovery. All other methods delivered a dose outside the BP acceptable range of 95–105%. Full results in table 1.

Conclusions Dispersal in the barrel of a syringe did not significantly affect dose recovery. This study demonstrates that methods currently in use may deliver an insufficient dose; further research is required using different medicines and the effect of dispersion particle size on tube blockage.

Abstract GRP-061 Table 1

Method	% dose recovered	SEM	p
Control	100%	0.9	
Dispersal in syringe	98.0%	0.5	0.1493 NS
Crushing syringe	94.5%	1.2	0.0178
Dispersal in medicine pot	90.5%	3.4	0.0982 NS
Pestle and mortar	90.1%	1.5	0.0037
Crushing device	90.1%	2.7	0.0433
Crushing between 2 spoons	88.8%	1.1	0.0003

No conflict of interest.

GRP-062 EVALUATION OF GENTAMICIN THERAPY FOR ELDERLY HOSPITALISED PATIENTS

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Background New guidelines for the use of aminoglycosides were published by French National Health Authority in March 2011 [1]. They recommended 3–5 mg/kg/d for 48–72 h. Before, aminoglycosides doses were reduced in line with the creatinine clearance, which is frequently reduced in elderly patients.

Purpose To determine whether aminoglycoside treatment conformed to the guidelines. If not, the risks are a reduction in antibiotic effectiveness and the development of bacterial resistance among a vulnerable population.

Materials and Methods Elderly patients hospitalised in an acute geriatric unit or in a follow-up and rehabilitative care ward were included in a retrospective study with 2 inclusion periods: 3 months