Purpose To estimate the frequency of potential drug-drug interactions in prescriptions for hospitalised patients, and to identify the factors associated with these prescriptions.
Materials and Methods The work was in part sited in the Specialty Hospital in Rybnik (Poland) with the pharmacotherapy team. One of the tasks of the Team was to assess on the basis of documentation, the frequency of random combinations of drugs prescribed and the risk of adverse interactions. Analyses of prescriptions for medicines were made on randomly selected days. The analysis included 760 patients on the fourteen different wards of the hospital. Age, gender and administration of the drugs were noted. The potential D-DIs were identified and recorded.
Results Generally 59.42% of the patients received drugs identified as potentially causing D-DIs (52% of the patients were women, 48% were men). 59% of patients older than 65 years of age received a prescription including one potential D-DI. The average number of medicines taken by one patient was 3.29. The highest numbers of medicines were taken by a cardiology patient (8) and an internal patient (5). The greatest risk of occurrence of drug interactions was in patients in the cardiology department medical care facility (84.3%) and internal medicine department (69.9–80%). The lowest was observed in patients in the laryngological, ophthalmic and rehabilitation departments.

The potentially dangerous pairs of drugs most frequently prescribed were: furosemide-angiotensin converting enzyme inhibitors, non-steroidal anti-inflammatory drugs/angiotensin converting enzyme inhibitors, non-steroidal anti-inflammatory drugs/warfarin, spironolactone/potassium and proton pump inhibitors/simvastatin. Gender and the number of drugs received were factors associated with the potential D-DI.
Conclusions The high percentage of prescriptions with potential drug-drug interactions makes it necessary to adopt alerting strategies that include warning about any associated factors identified and to implement educational programmes. This action may improve the quality of prescribing and reduce the risks for hospitalised patients.

No conflict of interest.

PHC-003 ASSESSMENT OF THE IMPACT OF PHARMACOKINETICS MONITORING RECOMMENDATIONS

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Background In our general hospital, with 450 beds, the Pharmacy department (PD) has a pharmacokinetics area in which vancomycin and aminoglycosides are monitored in non-critical adult patients.

The monitoring starts when:

- There is a medical request (MR).
- Or a pharmaceutical proposal (PP) is made followed by medical acceptance (MA)

Purpose To determine and quantify the acceptance of monitoring recommendations made by the PD, to assess the recommendations and describe PP monitoring.
Materials and Methods Prospective and descriptive study. We collected patients treated with vancomycin or aminoglycosides over a 3-month period (March-June/2012), excluding those for whom there was an MR. Patients included in our study were divided into two categories: monitoring was recommended and not recommended.

Criteria for recommended monitoring: GFR < 60 ml/min, >5 days' treatment, geriatric, obese or concomitant nephrotoxic drugs.

Recommendation was made through the electronic prescription programme with the appropriate justification. If a positive answer was not obtained in two days, it was considered as 'not accepted'.

Patients requiring dose adjustments and the mean number of dose adjustments necessary to achieve appropriate plasma concentrations were also recorded.
Results View table.

Due to pharmaceutical intervention, 19.6% patients were monitored, the majority of them with vancomycin (13.3%).
Conclusions Pharmacy recommendation is an instrument to strengthen monitoring of certain drugs in some situations. Because gentamicin is used mainly in surgical prophylaxis, the number of patients who might need monitoring was low. Out of range initial concentrations with vancomycin and amikacin, might indicate an inappropriate dosage. The low number of adjustments per patient showed that the correct pharmacokinetic calculations had been made by the PD.

Abstract PHC-003 Table 1

Antibiotic	N*	PP	MA	Relevant recommendation	Nº adjustments/ patient
Vancomycin	112	53(47.3%)	32(60.4%)	19(60.8%)	1.5
Amikacin	25	10(40.0%)	7(70.0%)	3(42.9%)	1
Tobramycin	8	2(25.0%)	1(50.0%)	1(50.0%)	2
Gentamicin	95	18(18.9%)	7(38.9%)	1(14.3%)	1
TOTAL	240				

* Patients treated with the antibiotics in question minus patients for whom there was already an MR

No conflict of interest.

PHC-004 BAYESIAN APPROACH IN THE DOSING OF VANCOMYCIN IN THE TREATMENT OF STAPHYLOCOCCAL INFECTIONS

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Background Vancomycin is primarily effective against Gram-positive cocci. However, as it can only penetrate the tissue superficially, it is uncertain if it is really able to achieve concentrations of therapeutic benefit at the site of infection. Suboptimal concentrations have been associated with lack of clinical response and increased resistance. There are no clear criteria on pharmacokinetic parameters associated with a good response, although the most conservative proposals consider an AUC/MIC > 400, in pathological conditions such as pneumonia and meningitis. Some authors have described the failure to achieve these values with the usual doses when the MIC > 2.
Purpose Our work evaluates the pharmacokinetic data of vancomycin in a group of 30 inpatients, and individual Bayesian estimates of the dose needed to overcome the described value of AUC/MIC > 400.
Materials and Methods We estimated the kinetic parameters of a population of 30 patients with a staphylococcal infection through a Bayesian model with application v.1.0 Abbotbase Pharmacokinetic Systems. From each patient we obtained the MIC, and the dose required to obtain an AUC/MIC > 400. We calculated the percentage of patients who reached target values for AUC/MIC with a standard dose of 1 g/12 h and those receiving an individualised dose according to the kinetic parameters obtained by Bayesian setting. Maximum doses of 4 grammes/day were considered.
Results Mean clearance (CI 95%) obtained through Bayesian estimation was 3.91 l/h (3.2–4.6). Median MIC value was 1 mcg/ml. According to these data, 57% of patients would reach therapeutic AUC values with conventional dose. However, if the dose is set individually 90% of patients would reach the target value, with a mean calculated dose of 2300 mg (CI95%: 1550–3000).

Conclusions Most patients with staphylococcal infections can be treated with vancomycin, which also contributes to cost reduction. A Bayesian approach shows better pharmacodynamic results than conventional dosing, with a 90% of patients successfully treated in a real setting.

No conflict of interest.

PHC-005 BLOOD LEVELS OF IMMUNOSUPPRESSANT DRUGS IN PATIENTS WITH CYSTIC FIBROSIS AFTER LUNG TRANSPLANTATION

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Background Patients with Cystic Fibrosis (CF) can absorb oral drugs differently, which could be translated into reduced blood levels of immunosuppressant drugs in transplant patients.
Purpose To evaluate the blood levels of immunosuppressant drugs in patients with CF after lung transplantation during the first months of oral treatment and their effect on the development of acute rejection (AR) and renal failure (RF).
Materials and Methods Retrospective observational study (study period: April 2008 to October 2012). Tacrolimus and mycophenolic acid blood levels of lung transplant patients were collected during the first three months of oral treatment. Blood levels were corrected by dose and body weight [(Concentration/(dose/weight)) (Concentration = ng/mL for tacrolimus and mcg/mL for mycophenolic acid; dose = mg/kg/24 h; weight = kg)]. The primary outcome was to compare immunosuppressant levels between patients with CF and other transplant patients (control group). The incidence of AR and RF (Chi-square test) and overall survival (Kaplan-Meier method) were calculated in both groups.
Results Sample size 49 patients (69.0% male, mean age = 45.2 (SD = 16.2) years), of which 27.0% were CF patients. Immunosuppressant blood levels were lower in the CF group compared with the control group [mean(SD)): Tacrolimus: month 1: 67.6(34.9) vs. 105.6(58.2)*; month 2: 64.9(36.5) vs. 140.2(106.3)*, month 3: 97.0(76.6) vs. 129.8(128.2); Mycophenolic acid: month 1: 0.05(0.03) vs. 0.09(0.14)*, month 2: 0.09(0.08) vs. 0.09(0.04) month 3: 0.20(0.17) vs. 0.16(0.14) (* $p < 0.05$, Wilcoxon-T test)]. The incidence of AR was higher in the CF group (53.8% vs. 47.2%, $p = 0.84$), while the incidence of RF was higher in the control group (27.8% vs. 23. 0%, $p = 0.74$). Overall survival after transplantation was higher in the CF group (51.1 vs. 39.1 months, $p = 0.08$).
Conclusions Patients with CF have lower immunosuppressant levels than the control group. However, there were no significant differences in the incidence of AR, the development of RF or in overall survival after transplantation between the two groups.

No conflict of interest.

PHC-006 CONCOMICANT DRUGS AS A RISK FACTOR FOR THE APPEARANCE OF ADVERSE EVENTS

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Background The best polytherapy is associated with a major risk of adverse events (ADEs) and with an increase of both mortality and morbidity.
Purpose To evaluate the frequency of the appearance of ADEs in those patients undergoing polytherapy compared to the frequency of ADEs tied to monotherapy.
Materials and Methods Patients entering A.O 'Gaetano Rummo' of Benevento were monitored by a dedicated hospital pharmacist, over a period of twenty-four months, by collecting data concerning recorded ADEs and total value analysis (mono/polytherapy), the seriousness and the number of medications considered suspicious.
Results Out of 253 reports made, 140 (55.3%) involved patients undergoing polytherapy compared to 113 attributable to monotherapy. More precisely, 108 ADEs were considered 'serious' and 55.5% of these (60 cases) were due to the polytherapy. Out of 48 serious cases imputable to the use of one drug, just 1 has ended with the death of the patient (anaphylactic shock by ceftriaxone), 1 endangered the patient's life and for 16 of them it was remedied by prolonging hospitalisation. Out of 145 cases which were considered by the detector as 'not serious', 80 proved to have been associated with polytherapy while 60 were relative to 1 medicine.
Conclusions The multi-drug approach represents a significant factor which can cause the appearance of ADEs. To improve health care it is desirable that competent professional figures, such as the pharmacist, would more often employed in a departmental activity of pharmacovigilance in order to develop a prior information network on the risk of medicine interactions and the proper use of the medication.

No conflict of interest.

PHC-007 DEPLOYMENT OF BAR CODE MEDICINES ADMINISTRATION TO CONTROL THE ADMINISTRATION OF MEDICINES IN GERIATRIC UNITS

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Background Of the errors occurring in drug treatment, about 24% take place during the step of administration (Mission nationale d'expertise et d'audit hospitaliers (MeaH) 2008). Poon *et al*, showed in 2010 that the Bar Code Medicines Administration (BCMA) reduced drug administration errors by 41.4% and serious potential adverse drug events by 54.1%.

Drug prescribing, dispensing and administration have been computerised in the 13 geriatric units at the University Hospital (CHU) of Toulouse. Since January 2012, an additional device has been deployed in 8 wards: barcode readers have been installed to read barcodes on the drug packaging to make administration safer.
Purpose A quality indicator was developed in order to analyse the use of barcode readers in care units in real time, to directly reduce drug administration errors. This indicator is a management tool to ensure that the BCMA system does not deviate over time.
Materials and Methods The indicator was designed with the help of a computer specialist. The request is based on an Access file that extracts administration data from the Disporao prescription software. Two parameters are determined: the number of doses administered by BCMA and the number of administered doses that could be scanned; the ratio of these two elements reflects the use of barcode readers by nurses.
Results The training of 89 nurses was completed in June 2012. The indicator showed that nurses scan an average of 70% of unit doses. The objective is to scan more than 95% of unit doses. Investigations are underway to understand the reasons for incompleteness (temporary nursing staff not trained, incorrect prescriptions, faulty hardware, for example) and make corrective actions.