

errors. Results were analysed by sub-groups using FDA Human Factors guidelines. A risk score was calculated for each syringe type and for each step based on the error occurrence and its severity according to the risk class: dosing error, microbial contamination and unexpected adverse event. This Health Hazard Risk Evaluation (HHRE) method has been published by BD.

Results With PFSs the handling error rate was lower and the HHRE score was better. Dosing error and microbial contamination occurred respectively in 12.7% and 43.1% of infusions with the conventional system but only in 4.8% and 0.2% with PFSs. 6% of conventional system infusions showed a risk of needle stick injury (one injury actually happened) versus 0% for PFS.

84% of HCWs would use the new PFS in their daily practise mainly to decrease the risk of contamination and administration errors, and to save time.

Conclusions Prefilled 50 ml infusions with a syringe pump help reduce patient risks (especially dose error and contamination) and HCW injuries. PFS is also preferred by HCWs.

No conflict of interest.

Technology (including: robots for production, incompatibilities, drug production and analytics, CRS)

TCH-001 A CASE REPORT OF A WOMAN HOSPITALISED FOR SEVERE LOSS OF WEIGHT AND PSYCHOTIC DECOMPENSATION AFTER TAKING A SLIMMING PREPARATION

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Background A French pharmacovigilance centre recorded the case of a 40-year-old woman hospitalised for severe loss of weight (16 kg in 3 months) associated with hypokalaemia, inflammatory syndrome and psychotic decompensation, after taking a slimming preparation. It was sold on the internet as an herbal medicine containing natural authorised substances.

Purpose The expertise of the French Health Agency (ANSM) was requested to find, identify and measure the active substances (ASs) contained in the product.

Materials and Methods At first, the analysis strategy was a general screening method to search for ASs in the product, performed with gas chromatography-mass spectrometry [GC-MS] and high performance liquid chromatography-mass spectrometry [HPLC-MS]. Then a specific method confirmed the identification and quantified the AS using ultra performance liquid chromatography-diode array detection [UPLC-DAD].

Results The slimming preparation was presented in capsules containing a fine, brown homogeneous powder. Gas Chromatography revealed two main ASs and the mass spectrometry analysis identified them as sibutramine and phenolphthalein. The result of HPLC/MS also revealed two main ASs on chromatogram with molecular masses of 279 g.mol⁻¹ and 318 g.mol⁻¹. The UPLC-DAD, using the method 'search for and quantification of 34 ASs in a slimming formulation', confirmed these preliminary results and also gave a quantity of 8 mg of sibutramine and 20 mg of phenolphthalein per capsule.

Conclusions Sibutramine is the AS in Sibutral (10 and 15 mg), an anti-obesity medicine, withdrawn from the market in January 2010 because of increased cardiovascular risk and an unfavourable benefit-risk assessment. Because of its carcinogenic potential

phenolphthalein (a laxative) has been forbidden in France since 1999. Sibutramine and phenolphthalein were probably responsible for the clinical symptomatology in this patient. These slimming products sold outside the pharmaceutical distribution network have not been approved by the authorities resulting in a health risk, including fatal outcomes.

No conflict of interest.

TCH-002 ANALYSIS OF DISPENSING LOGISTICS PROCESSES CARRIED OUT BY SEMIAUTOMATIC CAROUSEL SYSTEMS

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Background Hospital Pharmacy Services work hard at logistics to supply medicinal products to inpatients. This prompted the need to modernise the technical resources and logistical processes with a semiautomatic carousel system (SCS) for storing and dispensing.

Purpose To describe the logistics processes performed by our semi-automatic vertical and horizontal carousel systems (SVCS, SHCS) of the Kardex type.

Materials and Methods Descriptive observational study in a tertiary level hospital (1493 beds). Quantitative variable: 'medicines lines dispensing', defined according to the Product Catalogue and Invoicing Update from the SEFH-TECNO group (Spanish Society of Hospital Pharmacy-Evaluation Group of New Technologies). Study period: January-June 2012. Data Source: Pharmacy Service Internal Register computer application and Mercurio application version 2.12. The type of logistic process performed for dispensing is classified according to the type of order: stock in clinical unit, preparation of unidoses and replacement drugs for the Pyxis. The workload was calculated for each type of carousel according to the storage volume of each system (SVCS = 15.6 m³, SHCS = 111.4 m³).

Results The total number of lines dispensed during the study period was 1264751: 1235662 were prepared with SCS (97.7%). Depending on the type of order, more work corresponded to the preparation of unidoses with 1128343 lines (91.31%), followed by 83092 to prepare stock lines in clinical units (6.72%) and 24227 order lines for stocking the Pyxis (1.96%). Preparation of the unidoses was fully developed in the SVCS, while preparation of replacement stock for Pyxis and stock in clinical units were carried out in the SHCS. Depending on the type of carousel, the SVCS workload was 396.32 lines/m³/day, compared with 5.27 lines/m³/day for SHCS.

Conclusions Identifying and quantifying the processes undertaken by the SCS is a very useful tool that allows us to adjust the workloads of the pharmacy technicians.

No conflict of interest.

TCH-003 ASSESSMENT OF AUTOMATED DRUG DISPENSING SYSTEM PERFORMANCE INDICATORS

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Background Hospital Mateu Orfila has approximately 140 beds. Since 2007 it has operated an automated drug dispensing system (Pyxis) comprising nine units, five of them linked to the electronic prescribing system (EP).

Purpose To assess performance indicators of the automated drug dispensing system (ADS) that can be used to monitor the effectiveness of processes within the hospital quality system.

Materials and Methods We defined four performance indicators and analysed data from 2011 using the Web Reporting software supplied with ADS, and compared them with the 2008 results. Data were collected from the five EP-linked units.

1. Non-prescribed dispensing (NPD): percentage of drugs dispensed with no prescription assigned. It reflects physicians' prescription mistakes, ward dispensing mistakes, or technical problems with EP and EP-ADS interface.
2. Assigned Patient (AP): NPD with assigned patient. This indicator informs us about proper use, mainly in non EP-linked ADS units.
3. Fictional Patient (FP): NPD assigned to the fictional patient every unit has. This indicator reports us about technical problems with the hospital patient census and with the EP. It can also inform us of misuse of the ADS.
4. Discrepancies (DR): stock discrepancies as a percentage of global ADS transactions. These are related to ward dispensing mistakes or pharmacy supply mistakes.

Results NPD: 12.4% (25,820/208,957 drugs dispensed), lower than the 2008 results by 2.1 percentage points.

AP: 7.8%, 2.3 percentage point reduction.

FP: 4.6%, 0.3 percentage point increase.

DR: 3.0% (6,250/259,791 transactions), 0.3 percentage point reduction.

Conclusions ADS performance indicators have shown effectiveness in monitoring the processes. Between 2008 and 2011 we have improved in NPD, AP and DR results, but we have to work with factors that increased FP. We have found differences between some ADS units so a need for additional training in some wards has been revealed.

No conflict of interest.

TCH-004 CENTRALIZATION AND TECHNOLOGY SUPPORT THE HOSPITAL PHARMACIST IN IMPROVING SAFETY, ACCURACY AND ECONOMY IN THE MANAGEMENT OF MONOCLONAL ANTIBODIES

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Background Antineoplastic drugs are considered 'high-risk drugs' due to the increased frequency of human technical errors in their preparation. It is essential for pharmacists to be responsible for setting up, centralising and managing cytotoxic drugs (CDs). To this end, the University of Anticancer Drugs of L'Aquila (Italy) acquired on June 2012 a Robotic System, APOTECACHemo, the first worldwide system for chemotherapy compounding in a controlled atmosphere.

Purpose To analyse the impact of centralising and automating CD preparation for all the Departments in the Hospital of L'Aquila, to avoid any possibility of human error and to optimise the use of the remainder of CDs.

Materials and Methods Three high cost monoclonal antibodies (bevacizumab, cetuximab and trastuzumab) were chosen for analysis in this study during the period June–September 2012. The criteria for product suitability were evaluated by analysing the APOTECACHemo database in which all stages of the production process are recorded (picture of the bottle used, weight, and dose accuracy). The cost analysis was evaluated by calculating the daily amounts left over of the three drugs that were previously discarded and are now fully re-used.

Results The average error was for 168 preparations of bevacizumab + 0.45% (DS = 1.85), for 67 preparations of cetuximab + 0.71% (DS = 1.13) and for 152 preparations of trastuzumab –0.57% (DS = 1.8).

In the period under review, 85.9 g of bevacizumab, 37.5 g of cetuximab and 43.8 g of trastuzumab were prepared using material that would previously have been discarded. This provided considerable saving for the three drugs (€29,893) which corresponds to approximately €90,000 per year.

Conclusions The centralised system and the use of APOTECACHemo is successful both in terms of patient and operator safety and cost benefit for the Hospital.

No conflict of interest.

TCH-005 DEVELOPING A SAFE SYSTEM TO PRESCRIBE, PREPARE AND ADMINISTER CYTOSTATIC DRUGS

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Background As the cytostatic medicines are a group of drugs with a narrow therapeutic index, it is necessary to develop new mechanisms to improve safety from prescription to administration in the hospital in order to avoid fatal errors.

Purpose To develop a system that ensures that the prescription process, production and administration of cytostatic drugs meet the criteria: right patient, medicine, dosage, route of administration and time.

Materials and Methods Along with the centralization of drugs preparation in the pharmacy service, a computer system has been designed for the management of the administration of cytostatic drugs consisting of: portable digital assistant (PDA) with barcode reader, label printer for barcoded medicines, patient-identifying wristband and dedicated software for verifying and recording administration.

Results Every chemotherapy prescription is sent to the cytotoxic admixture unit mixer where it is validated by a pharmacist checking the following items: name and number from the patient history, diagnosis, stage, line of treatment, drugs, dose and route of administration. The computer programme generates drug labels containing the bar code which identifies the preparation. Each patient has a label with the bar code of the history number. Before the administration of each cycle, the responsible nurse has to read the patient bar code with the PDA. The drug and the right order for that patient will appear on the screen of the device. Nurses should read the bar code of each drug to be administered and the system checks that it is the right medicine and order, alerting visually and acoustically if error occurs. The system records the nurse and time of each drug administration.

Conclusions The project was implemented due to the need for safety mechanisms in the management of high-risk medicines, as cancer treatments are group of drugs with a narrow therapeutic index.

The system checks the safety in five key areas: patient, medicine, dose, route of administration and time.

No conflict of interest.

TCH-006 DEVELOPMENT AND VALIDATION OF 3 METHODS – UV SPECTROPHOTOMETRY, FLOW INJECTION ANALYSIS AND LIQUID CHROMATOGRAPHY – FOR THE CONTROL OF NYSTATIN CAPSULES.

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Background As an alternative to amphotericin B used for selective digestive decontamination, physicians asked the Hospital Pharmacy for the preparation of nystatin capsules, 500,000 IU.