retrospectively. Once dispensed, TTOs are logged 'off' and sent by pneumatic chute system direct to the ward. This log and the hospital electronic prescribing system store relevant data including the time a TTO is written, dispensed and the patient discharged.

Results A total of 65 TTOs were dispensed in the pharmacy. (Others are prepared in a satellite unit, not included in this study). Only 18% were prescribed more than 24 hours before discharge. Writing of TTOs clustered around 11am–4pm whereas patient discharges were around 12–1pm and 2–6pm. Nearly 90% of TTOs were ready within 2 hours of the prescription being written. The average time from writing a TTO to the patient's discharge was 2.5 hours. The average dispensing time per patient was 1.2 hours. The Pharmacy element accounted for less than half the time patients were waiting for TTOs.

Conclusions The perception that dispensing of TTOs is responsible for significant delays in patient discharge is unfounded. There is a lag time between TTOs being ready and the patient going home which merits further investigation. The clustering of TTO writing infers that very few are written until the morning ward rounds are finished. Options are being explored to encourage earlier writing times such as including TTO-transcribing pharmacists on consultants' rounds.

No conflict of interest.

DSL-008 DRUG SHORTAGES IN THE NETHERLANDS: MONITORED BY FARMANCO

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Background Internationally, drug shortages cause increasing concern. For patients it may impose a significant effect on their safe use of medicines. For pharmacists it is time-consuming to get trustworthy information.

Purpose With a central approach on the investigation of drug shortages, pharmacists get reliable and up-to-date information. Besides, solutions can be suggested. If there is a shortage of a necessary drug, proper action can be taken by all pharmacies.

With the data, trends in drug shortages can be signalled.

Materials and Methods In 2004 the Royal Dutch Pharmacists Association (KNMP) launched the website Farmanco: www.farmanco.knmp.nl. It provides pharmacists with up-to-date information on drug shortages in The Netherlands. Drug shortages are reported early and proper action can be taken. It provides information about the cause and duration of the shortage and a possible solution such as substitution or a pharmaceutical alternative.

Farmanco data from 2004 till 2011 were analysed to get an overview of the scale of the problem and more insight into the causes and solutions.

Results Through the years, the Farmanco website has become relevant to all concerned parties for up-to-date information. Visits to the website have increased to about 600 visitors on a weekday.

From 2004 till 2011 the Farmanco website published information on more than 1400 products.

Drug shortages have increased in frequency from 91 reported shortages in 2004 up to 242 in 2011.

The duration of a shortage has increased from 139 days (2004) to 254 days (2010).

Temporarily shortages are mainly caused by production problems (52%), whereas permanent shortages usually have an economic reason (69%).

The solutions have mainly been substitution (62%), a pharmaceutical alternative (25%) or pharmaceutical compounding (2%). In 1% of the cases a solution was impossible.

Conclusions Farmanco gives pharmacists up-to-date information on drug shortages in The Netherlands.

Finally, trends in drug shortages can be signalled.

No conflict of interest.

DSL-009 DRUG SHORTAGES: THE CHALLENGE OF IMPORTING

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Background Drug shortage has been reported since several years but has recently reached critical levels. Shortage occurs not only in Europe but worldwide, in all healthcare practise settings and affects potentially all drug classes, raw materials and medical devices. This combination of factors leads undoubtedly to medication overpricing and higher costs to the healthcare system, suboptimal clinical care, more medication errors and adverse events and the loss of patients' lives. Rational and effective procurement of medicines in foreign countries can be a challenge for hospital pharmacists.

Purpose The objective is to present a framework on medicines importation, with a special focus on European countries.

Materials and Methods Web search on governmental healthcare institutions (i.e. medicines' agencies), wholesalers, manufactures and other legal suppliers. This work was designed considering the Portuguese drug shortage.

Results A standard operation methodology was designed for searching for new suppliers for special medicines, not marketed or sold out. Search methodology on medicines' agencies is presented. A short framework for suppliers was filled considering regulatory issues, current good manufacturing practises, place in the drug supply chain, logistics, packaging, pricing, taxes, expedition costs and payment conditions. Web links to suppliers' websites are included.

Conclusions Importation of medicines at the hospital level is more often part of the daily tasks of pharmacists. When treating critical health conditions, shortages in essential medicines can cause disruptions in patients' safety and quality of pharmacological treatment.

No conflict of interest.

DSL-010 ECONOMIC IMPACT OF AUTOMATED DRUG DISPENSING SYSTEMS IMPLEMENTATION

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Background The distribution, management and control of drug stocks in clinical units is a responsibility of the pharmacy department, but this control is difficult to perform manually, resulting in a loss of important information about drug use.

Purpose To analyse the economic impact of automated drug dispensing systems (ADSs) implemented in the Intensive Care Unit (ICU) and the emergency department (ED).

Materials and Methods A total of 5 Omnicell cabinets were installed in August 2008: 3 in ICU and 2 in ED. The average cost of implementation for each one was about 60,000 euros. Nevertheless, the Hospital did not have to invest in them since they were donated by a national foundation.

The ICU is comprised of a total of 42 dedicated critical care beds located in 3 different modules, and ED has 2 modules with a total of 22 beds and 9 chairs.

The ADSs are connected to hospital admission software and to the pharmacy management software.

Medication costs in ICU and ED were examined, comparing one year prior to installation with the years after implantation of the ADS. These data were obtained from the management software of the pharmacy department.

Results Drugs dispensed by ADSs represent 60% and 71.6% respectively of total medicines consumed in ICU and ED.

Four years after implantation:

- The quantity of drugs dispensed and drug stock has decreased in both units.
- The pharmacy department knows the type and amount of medicines to be found in each unit and in real time.
- The information it provides has helped to improve patient safety in relation to a better quality of prescription.

Since the implementation of ADSs, consumption has decreased compared to 2007:

Reduction in consumption in the Intensive Care Unit from 2007 to:			
2008	2009	2010	2011
–12.52%	–16.86%	–20.25%	–40.65%
Consume reduction in the emergency department from 2007 to:			
2008	2009	2010	2011
–1.49%	–14.94%	–29.18%	–40.79%

Conclusions The implementation of ADS has meant an estimated saving of 938,330€.

The ADSs have increased drug control by the pharmacy department, have achieved a better rationalisation of resources and have improved efficiency in drugs use.

No conflict of interest.

DSL-011 EFFICACY AND SAFETY OF EPOETIN ZETA IN DIALYSIS PATIENTS

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Background Anaemia in chronic kidney disease (CKD) remains one of the predictable and modifiable non-traditional cardiovascular risk factors. Epoetin zeta, which is a biosimilar product, is used in the treatment of anaemia associated with chronic kidney disease.
Purpose This study was performed to evaluate the efficacy and safety of the biosimilar product epoetin zeta to maintain stable haemoglobin levels in dialysis patients.
Materials and Methods This study was conducted in 2 dialysis centres with 33 patients. Before the study 30 of the 33 patients were on various erythropoiesis-stimulating agents (ESA). After a run-in period of 2 months, all patients were switched to epoetin zeta and were followed for 6 months. The initial weekly doses as well as the frequency of use per week were kept constant (1–3 times/week). During the follow-up, haemoglobin levels, iron status, dialysis efficiency, body weight and adverse events were monitored at least once a month.
Results 33 patients were treated with biosimilar Epoetin zeta (27 men and 6 women); average age 59.1 (28–76) years; the frequency of used was 1–3 doses/week subcutaneously, over a period of 6 months. Dosing was to be adjusted to keep the Hb levels within 10.5–12 g/dl. Anaemia management and iron supplementation were at the discretion of the investigator and was to be in compliance with the current label. Throughout this study epoetin zeta was within the target range for Hb levels (10.5–11.5 g/dl ± 0.5 g/dl). The main AEs (adverse events) were in 1 patient hypotension (3%), in 1 patient in-dialyzer clotting (3%) and SAE (serious adverse event) was in 1 patient thrombosis of arteriovenous fistula (AVF) (3%). No anti-epoetin antibodies and no clinical signs of pure red cell aplasia (PRCA) were observed in any patients on the study.
Conclusions Treatment of anaemia with Epoetin zeta was shown to be effective and safe. The mean Epoetin zeta doses remained stable in patients switched from all pre-study ESAs. The observed adverse events profile was in line with expectations for the study population.

No conflict of interest.

DSL-012 EVALUATING THE STANDARDS OF HOSPITAL PHARMACIES IN THERAPEUTIC CENTRES AFFILIATED WITH OF KERMANSHAH UNIVERSITY OF MEDICAL SCIENCES, IRAN

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Background Nowadays pharmaceutical care departments located in hospitals are amongst the important pillars of the healthcare system.
Purpose To evaluate the quality of hospital pharmacies affiliated to the Kermanshah University of Medical Sciences.
Materials and Methods In this cross-sectional study a validated questionnaire was used which enquired about all the necessary and standard requirements of an ideal hospital pharmacy. The questionnaire was filled in by the one of the researchers in all seventeen hospital pharmacies located in the teaching and non-teaching hospitals affiliated to the Kermanshah University of Medical Sciences. Data analysis was done using SPSS (version 17).
Results The results shows that in the hospitals observed, 24% of pharmacy environments, 25% of pharmacy store and storage conditions, 49% of storage procedures, 25% of drugs ordering and supplies, 73% of supplies reception (proper procedures followed for receiving supplies), 35% of supplies reception (prompt action taken if deterioration of drugs received is suspected), 23.35% of drugs supplied to patients and finally 0% of stock cards used for inventory control met these standards in full. Several instances of incorrect processes of ordering, receiving, storing and delivering medicines to the patient were detected that have led to wasted money in hospitals and considerable decrease in the quality of medical services.
Conclusions Non-standard space allocation, incorrect ordering, receiving, storing processes and delivery of medicines to the patient were revealed by the questionnaire. These issues may reduce the efficiency and safety of pharmaceutical services and drug administration in hospitals.

No conflict of interest.

DSL-013 EVALUATION OF THE LIMITS OF AUTOMATION AND IMPACT ON DRUG MANAGEMENT AT MOHAMMED V MILITARY TEACHING HOSPITAL PHARMACY, RABAT, MOROCCO

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Background Nowadays, hospitals tend to automate medicines management to increase quality, efficiency and safety of drug dispensing. At Mohammed V Military Teaching Hospital (MVMTH), a centralised Automated Drug Dispensing System (ADDS) was installed at the duty pharmacy. We expect this experience will be decentralised to all hospital services.