Creation of computer-assisted drug prescription in a paediatric hospital

The 8-year experience of the Children’s Hospital of Geneva

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The University Hospitals of Geneva (HUG) had an institutional project to implement a computerised physician order entry (CPOE) system to replace verbal and handwritten prescriptions as well as transcription, in order to decrease errors and related adverse drug events. Development of CPOE was first intended for adult patients.

A dedicated working group, PRESCO-PED, was created in 2006 for the development of the paediatric drug database. This group was in charge of evaluating the needs and building and maintaining a database of the most-prescribed drugs in paediatrics. PRESCO-PED included physicians representing most paediatric specialties, such as intensive care, neonatology, emergency, oncology, general paediatrics, surgery, orthopaedic surgery, anaesthesiology, infectious diseases and psychiatry, in cooperation with nurse representatives, pharmacists, and computer specialists.

The drug database had to be specific to paediatrics, structured, validated by experts, and easy to update. Several drug datasets were available in the institution, such as the injectable drug administration guide of the pharmacy, nurses’ protocols, and different published references. However, all were incomplete, not structured or not directly exploitable for the database. All the variables required per drug first had to be defined: brand name, international nonproprietary name (INN), unit dose, interval, maximal unit dose, maximal daily dose, route of administration, flow rate, formulation, specific dosage according to patient’s age, gestational age, body weight, body surface index, etc.

The most frequently used drugs, corresponding to 346 drug records, were each distributed to two experts in the group, chosen according to the specialty in which the drug was mainly used. After validation by both experts, a database was compiled and verified again by PRESCO-PED. The additional aim of this database was to allow the system to suggest standard prescriptions schemes and to trigger alerts, for example when maximal doses were exceeded.

The prescription of drugs in the database was then tested with mock patients by a subgroup of members of PRESCO-PED in addition to regular users, prior to implementation in a clinical setting.

In order to facilitate acceptance by the end-users, in addition to drug prescription, PRESCO-PED decided to work on order sets, which simplified and accelerated prescriptions by combining in a single interface multiple orders (patient monitoring, laboratory tests, radiology, drugs, feeding and IV fluids, among others) associated with a specific clinical setting. With the same quality standards, a paediatric enteral nutrition prescription interface was also created.

After 20 sessions of PRESCO-PED over a period of 10 months, all drugs and several order sets were available, with the database completed and ready for use. Drugs specific to paediatrics were easily differentiated from adult drugs in the prescription interface thanks to a characteristic pictogram.

CPOE with drug prescription was first implemented in January 2007 in the paediatric surgery department, after structured training of all healthcare workers, and on-site assistance by medical IT personnel and members of PRESCO-PED. Over two months it was progressively deployed throughout the entire Children’s Hospital.

Since the implementation of CPOE, PRESCO-PED remains active with monthly meetings, regularly updating the database, increasing the number of order sets, correcting errors, and improving the use of drug prescription.

We will review the challenges, the difficulties and successes of our programme and will put our plans in perspective for the future.

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