

## Automation and IT in drug distribution

**Drug distribution is an essential part of the work of the hospital pharmacy and the process is determined by aspects of safety and efficiency.**



Ana Valladolid Walsh PharmD      JanCees van Niel PharmD

There has been a significant development in the automation and information technology utilised in the robotic systems for drug prescription, distribution, dispensing and administration. Ms Ana Valladolid Walsh (Complejo Hospitalario Universitario de Albacete, Spain) began by describing the automated systems which are centralised in the pharmacy and designed for filling of individual patient prescriptions and unit dose medication orders. Horizontal and vertical carousels have an automated computer controlled system which accurately manages and tracks the inventory and identifies expiring medications. These carousels have a very high storage capacity which enables the efficient management of space. The “Goods to Man” principle also eliminates unproductive, long search times. However, there is a high initial cost and each pharmacy should carry out its own cost-benefit analysis. Ms Valladolid Walsh explained that robots can also be used to automate storage, dispensing, returning, restocking and crediting of bar coded medication and they also operate 24 hours a day! Automated dispensing systems (ADS) can be used on nursing units and long-term care facilities.

However, different problems can arise from the implementation of ADS and

may affect the work of nurses. Therefore, it is very important to work with systems that offer good technical support and have 24 hour a day service. The pharmacy must also train nurses to use the ADS correctly and ensure enough systems are installed in order to cover the needs of patients and not block the work of nurses. Ms Valladolid Walsh emphasised that the use of any of these new technologies requires major changes in traditional pharmacy, nursing and medical work systems. The correct training and transition period, before full implementation, will determine the success of the project.

Mr JanCees van Niel (Isala Clinics, Zwolle, The Netherlands) then reminded the audience that the main point of automation was not just efficiency in the drug distribution process but medication safety. *The right product for the right patient at the right time through the right route and in the right dose.* He pointed out that to help attain this goal drugs must have a machine readable code, which is often printed on the package, but not on the blister/unit dose. Mr van Niel then guided the audience through the different types of automated dispensing machines and their advantages and disadvantages from the viewpoint of patient safety. It was clear that there are many issues, such as the frequency and type of wards to be delivered to, and options which the pharmacy should take into account. Each pharmacy when calculating the return on investment must also decide how realistic the numbers/costs are for their hospital. Mr van Niel then concluded by saying that in the case of patient safety we often talk about pills but mistakes also occur with IV drugs. These medication errors are less in number than with pills, but constitute a much higher percentage, with potentially much more dramatic consequences. Therefore, Mr van Niel said invest in smart pumps and stringent controls first and an enormous return in investment in the form of patient safety will be yours!

## The interface between humans and machines – managing the risk

**Risk is always present in hospital pharmacy. From cytotoxic handling to dosage errors, pharmacists need to avoid complacency to ensure safe care.**

### Need for improvement

Hospital pharmacist and quality manager Mr Dag Haugedal from Ullevål Hospital Pharmacy, Norway, opened this revealing seminar. Having recently surveyed safe handling during the reconstitution of cytotoxics, Mr Haugedal warned that pharmacists can never be complacent about safety.

His Internet-based survey asked Norwegian professionals (pharmacists and pharmacy technicians) how they handled risk, assessed risk and attempted to improve practices. Many of the answers were surprising.

For example, when questioned about the production of cytotoxics, 89% of respondents said they received training in theory and practice. Yet, 5% only received theory training, and a startling 6% said they had received no training before working in production!

When asking about the whereabouts of laboratory spill kits, 70% knew where it was stored. Worryingly, 10% were unaware of its location, and 18% said their laboratory had no spill kit.

The Norwegian stressed that managing risk is an ongoing task that requires frequent training. Best practices must be maintained and updated. Complacency quashed.

As a result of the work in this project, Mr Haugedal’s organisation have established best practices for the handling and reconstitution of cytotoxics that are in compliance with the latest knowledge.

### Opening doors, reducing risk

Following Mr Haugedal’s thought-provoking presentation came Mr Stuart