

Case Study: Unit Dose at QEH Charlottetown

The following will describe recent implementation of a new packaging and distribution system for solid oral medications from the Pharmacy Department at the Queen Elizabeth Hospital.

In the past, multiple days supply of tablets and capsules would be sent to the nursing units. Doses of each medication were placed in a re-sealable plastic bag and labeled with a patient's name, location within the hospital, and the name of the medication. The new Unit Dose (UD) system of distribution, provides a 24-hour supply of medication to the nursing units, and each dose is individually labeled with the medication's name, lot number, and expiry. The medications for each patient are prepared in one strip of sealed plastic pouches. The supply for one individual is divided by empty bags on which are written the patient's name, location, and the administration time of that group of medications. For instance, at suppertime the nurse administering medications for a patient would remove from the 24-hour strip only a subsection containing the patient's name, location, the nominal administration time, and a series of tablets and capsules, each individually labeled. This section of the strip would then be verified by the nurse prior to administration to the patient.

The UD system has advantages over the previous system. The first is a reduction in wastage of medication. If a patient's tablets and capsules are no longer being used, they would have been discarded in the previous system. With UD, an unused tablet or capsule in its intact pouch is returned to pharmacy for future use. Also, the nursing unit receives a fresh supply of tablets and capsules every 24 hours, so any changes to medication orders are reflected in the next supply received.

A second advantage is the improvement in efficiency of distribution. With automated UD preparation of daily strips for each patient, there is more time for pharmacists to review new orders and to participate in clinical activities. Pharmacy technicians deliver to each unit in the hospital the 24 hour unit dose supply at a scheduled time. Times for delivery are staggered throughout the day, and pharmacy technicians are able to plan their work day around these times. The first part of the delivery is prepared from a report of all the current patients on a particular unit. It collects pertinent information from the computer profile of pharmacist-verified inpatient orders and sends this to the automated UD packager. Pharmacy technicians then accept the file and proceed with preparation of a strip for each patient. In addition to the strip of solid oral medications for each patient, technicians also run a report of items currently ordered which can't be processed in the automated UD packager, such as intravenous medications as well as certain tabs and capsules.

There is a time lag from entry of an order to its delivery in a batch. If a new medication is ordered early in the day for administration at bedtime, the first dose will be provided with that afternoon's batch delivery. If the first dose is scheduled for morning or noon, a

dose is prepared in the meantime until the report can be run and the UD batch delivered. It is prepared using sealed individual tabs and caps which are placed in a clear plastic bag labeled with the patient name, health number, and location on the outside. This interim dose procedure is also used to provide stat doses and to replace any spilled or dropped doses.

The pharmacy technicians delivering to the units are the face of pharmacy to the nurses. Their knowledge and valuation of the process allow them to be champions of the UD system, and so their involvement in the planning and implementation of this program has been key. The pharmacy technician supervisor has been part of all the process during implementation at our site.

The implementation challenges were many. The first challenge was the recent introduction of new software for all staff, which was being implemented around the same time. This Clinical Information System impacted Admitting/Discharge staff, Nurses, Physicians, Pharmacists, Diagnostic Imaging, and Lab staff. All were changing from a paper-based system to a hybrid of paper and electronic health record. This was difficult for nurses administering medications. Some felt too much was changing, and initially resisted a new system for drug distribution. For Pharmacy, the new electronic record was a welcome improvement. The software for medication orders was able to interface to an automated UD packager, which removed from technicians and pharmacists the task of manually preparing unit doses for our patients on a daily basis.

The implementation began in our rehabilitation unit. This population of patients was a small group and had relatively few changes to medication orders from day to day. More importantly, the staff from that unit had expressed an interest in the new drug distribution model. These early adopters were able to help fix any early problems and deficiencies in the delivery process during the initial phases of implementation. After this initial pilot phase, implementation continued by adding one or two units at a time.

The remaining units were able to schedule with pharmacy their go-live dates. Meetings were held with the nurse educator and nursing staff of the unit to educate staff and answer questions about the unit dose system. They could arrange to have their key personnel available for the first few days after the change. This involvement by nurses in planning and execution was an asset in their acceptance of this new system.

The scope of this change affected many areas. The hospital pharmacy serves 274 acute beds within the building, which is a provincial referral center for specialized services. Our department also supplies a nearby psychiatric hospital comprising 70 beds. In addition, the automated UD packager has been tasked with preparation of doses for all other hospitals on PEI, comprising an additional 212 beds in six sites. For some sites, there is a considerable delay from the initiation of a new order to its provision in the strip from the automated UD packager. Typically, these sites have their

doses prepared centrally at the end of the workday for delivery by noon of the following day. The remote sites must prepare interim doses to cover until the order is eligible at the end of the day for the following day's delivery. Those sites continue to provide for their inpatients any manually prepared items such as injectable products. During the weekend, the community hospitals with small numbers of inpatients do not have pharmacists to verify their orders. The automated UD packager provides a multi-day supply of medications to last until Monday, and the pharmacy staff at the site prepares any manual doses that are required for the same period.