

As part of our ongoing support of Pharmacy, Pharmaceutical Partners of Canada Inc. is proud to bring you a special feature article on the Medication Safety Initiative at Hamilton Health Sciences.



Technology is enhancing patient safety at Hamilton Health Sciences.

Taking a stroll through the vast Hamilton Health Sciences you can't help but be struck by the enormity and complexity of this modern hospital. It is a high tech hive of activity, a well-oiled machine of people working in close harmony with technology. Yet, frequently, human beings are the part of the equation that causes the system to fail its patients; human error is often responsible for catastrophic mistakes in medication dispensing.

That's why Hamilton Health Sciences embarked on its Medication Safety Initiative, a three-stage project designed to implement automated drug dispensing, for safer drug storage and retrieval, better tracking, and less human error. A highly motivated team of medical professionals took on the daunting task of putting these major technological changes into service at all seven HHS sites at once.

The first job was to bring the multi site organization sites together under a common system of medication distribution. In 2005, when the Medication Safety Initiative was begun, there were different systems at various locations – 24-hour full unit dosing at the McMaster site, and the traditional 48-hour or 72-hour dosing at the Henderson and General sites. All HHS facilities now use the 24-hour dosing system; this is safer because, as medication orders change, meds that are no longer ordered for a patient are taken out of circulation. In critical care departments for example, where drugs are changed frequently, it can be unsafe to have a four-day supply of drugs sitting unused in the patient area.

This coordination to 24-hour full unit dosing at all HHS sites laid the groundwork for the arrival of brand new drug distribution technology.

Greater patient safety through automation.

The heart of the new system is the AcuDose automated dispensing cabinet. These electronically monitored and password protected cabinets allow precise tracking of drug use – which medications are accessed for each patient, how much is used, when, and by what nurse. They are free-standing and ergonomically designed, in each nursing area, although the emergency department has three units for various levels of care.

Each AcuDose cabinet has its own PC brain and houses all urgent stock, which can be accessed via a touch screen that displays the medication profile of every patient on the ward. High Alert drugs, such as narcotics, are kept in a secure drawer, and only that drawer will open when a staff member requires access. The cabinet makes a precise record of what was removed, by whom, and for what patient, doing away with the need for manual narcotic counts at the end of each nursing shift. This is an important safety aspect of the system – each nurse is accountable for the meds they remove and use. It also dramatically decreases the potential for narcotic and controlled drug diversion through the use of secured pockets within drawers – the contents of which require additional inventory counts every time they are unlocked.

For stocking purposes, the cabinets are linked electronically to the hospital information system, which is tied into the MediTech system, and lists are generated to identify what needs to be restocked in each cabinet. Critical care is restocked on a daily basis, while other areas are replenished approximately twice a week.

The technology is so user friendly that it takes just 15 to 20 minutes of training to use it. Essentially, anyone who can use a bank machine can quickly get up and running with the system.

A change of this magnitude takes teamwork.

The team leaders and driving personalities behind this far-reaching venture are Pharmacist Kim Botsford, Pharmacy Automation Systems Manager for Hamilton Health Sciences; and Diane Chandler, a Pharmacy Technician and the project's Medication Safety Initiative Informatics Coordinator. Kim and Diane knew that it was essential to have all medical personnel at HHS fully committed to the project.

“Getting buy-in from everyone was the biggest challenge we faced,” says Diane Chandler. “It really brought home how important it is to have a well integrated team with everyone on board. There was a feeling among the nurses that we were going to take away their access to medications, and it took a lot of discussion about how the new system was going to impact their workflow. The last thing we wanted was to delay the delivery of care to accomplish the security and safety factors. A big selling point was being able to tell the nurses that they didn't have to do narcotic counts anymore. Just the fact that at the end of the shift they'd actually get to go home on time was a big win factor in getting the door open.”

The surprising facts about who has access to AcuDose cabinets.

Respiratory Technicians and Pharmacy personnel are the only ones who have access to the AcuDose cabinets – doctors don't. This was a collaborative decision: doctors, who are known for being proactive, may walk into a medication room, pre-draw meds to speed patient care and be the only person involved in the planning and preparation of that drug. The problem is that there is no one else along the way to catch a possible error. If doctors don't have access to the meds that can't happen.

At first, a few doctors took exception to being locked out, until they understood how important it is to have one other health professional – another set of eyes – involved. Making it clear that this is in the patients' best interest really helped to get the physicians on board.

A three-stage process for greater medication safety.

This upgrade in medication handling is actually a three-stage process that will be accomplished over a period of several years. The first stage was having the AcuDose cabinets installed and running. The second stage will be implementing barcode verification at bedside – scanning the patient's ID as well as the drug. The last stage will be Computerized Physician Order Entry (CPOE) where the doctor is putting the order into the system. There will be decision-support tools built into the software so that the physician will receive additional information about allergies etc. These three stages are being



The AcuDose automated dispensing cabinet

implemented on a very aggressive timetable for such a massive technology and cultural change. Kim Botsford and Diane Chandler are hoping to implement the bar coding initiative in 2010, and the CPOE stage in the next two to three years.

The challenge of upgrading multiple sites at once.

One of the challenges the team faced was implementing these major changes across all seven Hamilton Health Sciences sites at the same time. But Kim Botsford says the transition team felt it was necessary.

“One of the key benefits of having the same technology across the entire system is that many patients spend a lot of time in the hospital, and may be moved from one site to another – cancer patients for example. Now, all our sites will be speaking the same language making it easier for us to care for these patients. Standardization is a vital part of the process,” she says.

Although the size of the job was enormous, it was also felt that it would be easier to deal with all the technological and personnel issues once, rather than seven times.

Reaction has been positive.

No one knew quite what to expect when the system went live at all sites between March and September of 2008, but the transition was accomplished without any significant problems.

“We knew there might be a lot of negative comments, but it was actually very quiet,” says Kim. “No news is good news; there was no patient risk, and no instances where someone couldn’t get a cabinet open when they needed to. Everything went very smoothly.”

Diane Chandler confirms that hospital personnel were very accepting of the new system.

“We did a post implementation survey, and 67% of our nursing staff agreed that this was a worthwhile initiative. Nurses said ‘I didn’t want it at first, but now I see that it improves safety and saves time – I see the value in it.’

There’s no doubt that doing their homework up front – talking to other hospitals that had made comparable upgrades -- helped to create a more seamless process.

“We visited sites that were already using similar technology and asked about their experiences, what worked and what didn’t, what were the challenges they encountered, and what were the similarities and differences between the sites,” says Diane. “As we moved through our own issues we had their experiences to go on. It’s a lot easier to change a hubcap than to reinvent the wheel, so it was very useful for us to learn from the experiences of others.”

The effects of the new technology on patient safety have been dramatic: the decline in medication errors is at least 20% at each site, and as high as 32% at one site. Kim and Diane are hoping that those numbers will go even higher once the other two stages of the transition – bar coding and CPOE – are in place.

Good advice from the trenches.

Kim Botsford and Diane Chandler have some sound advice for other organizations that want to embark on a project like this.

“Have a plan,” says Diane. “Be positive, get buy-in, get your dollars. Everyone on the team needs to be accountable for their job. Here, a whole team of people had the same goal and were accountable for what they were doing.”

Kim adds, “We were very lucky to have administrators who understood the value of this technology in patient safety, and were willing to buy in. We can’t say enough about the support we got from our Executive Team. They made it a priority, and they made it one of our corporate initiatives. We wouldn’t have gotten here without that.”

“One of the songs we had at the launch was *Change*,” says Diane. “People don’t usually like change, but this was *good* change. It was hard work, but with a happy ending.”



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