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Toronto Hospital Reduces Sharps Injuries by 80%, Eliminates Blood Collection Injuries

A Case Study: Toronto East General Hospital Pioneers Healthcare Worker Safety

Laura Visser

Introduction

Needlestick and other sharps injuries are a key Canadian public health issue, affecting 70,000 (Alliance for Sharps Safety and Needlestick Prevention 2002) people per year and costing some $140 million <http://www.saferneedlesnow.ca/docs/ontario/bkgd_Mar10.pdf>. A safety program at Toronto East General Hospital – focusing on blood collection and patient injection – achieved an 80% reduction in injuries within one year (from 41 in 2003 to eight in 2004), with blood collection injuries eliminated entirely (Toronto East General Hospital 2005).

Sharps Injuries in Canada

Injuries from needlesticks and other sharps remain a major concern in Canadian healthcare, numbering around 70,000 per year, or an average of 192 per day. The Alliance for Sharps Safety and Needlestick Prevention in Canada estimates that 33,000 needlestick and medical sharps injuries occur in Ontario each year, with testing and treatment costing the Ontario Government over $66 million (Alliance for Sharps Safety and Needlestick Prevention 2002). Of the many infections that can be transmitted to healthcare workers and patients in this way, HIV, hepatitis C and hepatitis B are of greatest concern.

Canada has no federal sharps safety law, since occupational health and safety legislation falls under provincial jurisdiction. This contrasts with the United States, where the federal Needlestick Safety and Prevention Act passed in 2000 requires employers to "identify and make use of effective and safer medical devices … such as needleless devices, shielded needle devices and plastic capillary tubes" (Service Employees International Union 2005). Interestingly, needlestick injuries decreased by 51% in the first year after the US legislation was passed (Occupational Safety and Health Administration 2001).

British Columbia, Alberta and Manitoba have recently revised their regulations to include requirements for the use of safety-engineered devices to reduce sharps injuries and exposure to blood and body fluids; similar requirements will soon apply in Saskatchewan. In Ontario, a private member's bill (Bill 179, Safe Needles Save Lives) has been has been introduced that suggests that in any circumstance where a worker is required to use a medical sharp, the employer ensures that a safety-engineered sharp be provided and used <www.ontla.on.ca/documents/Bills/38_Parliament/Session1/b179.pdf). (This bill is strongly supported by SEIU, whose survey of 600 people in May 2005 found that 82% of Ontario residents support the mandatory use of safety syringes in the province's healthcare facilities – even if implementation means additional up-front costs (Service Employees International Union 2005).)

TEGH Initiative Targets 20% Reduction in Sharps Injuries

The success of US needlestick legislation – plus recent workplace safety initiatives by the Ontario Hospital Association

and Workplace Safety and Insurance Board – prompted Paula Harnum-Brown, Toronto East General Hospital's (TEGH) Manager of Occupational Health and Safety, to examine sharps-related injuries at that institution. A baseline analysis of injury rates showed that the areas of highest risk included blood collection, patient injection and IV insertion (all using hollow-bore blood-filled needles).

Since blood collection and patient injection posed the greatest risks, Harnum-Brown set a goal of reducing injuries in this area by 20% within a year, and of raising employee awareness of how to avoid needlesticks. To secure the senior management support essential to achieving this goal – for both funding and long-term cultural change – the proposal was presented to the TEGH senior management by the Joint Occupational Health and Safety Committee. Despite the fact that safety-engineered devices cost more than traditional ones, the following factors led the TEGH board to approve the proposal:

- A detailed audit of injury rates, showing the urgent need for best practices in health and safety.
- The fact that existing occupational health and safety laws require employers to provide a safe work environment and to protect workers from unnecessary injuries. This implies an obligation to use the safest medical devices available.

With senior management's backing, a plan was developed. TEGH staff tried products from three different manufacturers then completed post-trial evaluations to select preferred products. TEGH partnered with medical technology company BD, initially adopting the Vacutainer® Eclipse™ needle for blood collection and Eclipse™ needles and syringes for injection.

"The BD technology was evaluated as being clinically favourable since it required the least change of practice, provides a safe environment, has an easy-to-engage safety shield and is most comfortable for the patient," says Harnum-Brown. "Using the same technology in both blood collection and patient injection also simplified training and adoption."

Education: A Vital Element

Harnum-Brown notes that TEGH's success was also dependent upon the detailed safety education for staff, including clear demonstration that the new technology would not be more complex or time-consuming to use than traditional devices.

"We have nurses who have been drawing blood and injecting patients for years," says Heather McDougall, TEGH Triage Clinic Nurse. "While they understand the hazards of a needlestick, it can be challenging to change technique. These procedures need to be routine, because they are often carried out in busy environments filled with distractions, for example, in the emergency room. Once our nurses saw that working with safety-engineered needles was fast and easy – and, most importantly, did not interfere with the quality of patient care – they were convinced."

"BD-Canada helped TEGH successfully achieve a significant reduction in needlestick injuries by providing education, training and support to staff throughout the implementation process," states Harnum-Brown. "This was a huge benefit."

Phased implementation and reinforcing training were essential to get the change working. The Eclipse™ blood collection needle was instituted first, following a two-week training period for phlebotomy teams and staff in the emergency room and intensive care units. This covered all shifts.

The Eclipse™ safety hypodermic product was then introduced on a hospital-wide basis, with BD again providing training for all users in all shifts over two weeks, and then scheduling follow-up training for all units after the initial implementation. The company's goal for all conversions at TEGH was to provide training to a minimum of 80% of the hospital staff.

To reinforce training, the TEGH Occupational Health and Safety committee and the company developed a series of educational and reference materials – including posters, brochures and training videos – that are now part of the hospital's staff orientation. BD could draw on a wealth of experience supporting US hospitals, which went through conversion in previous years.

Program Targets Exceeded Fourfold

Since the safety program was started at TEGH, sharps injuries have declined by 80%, easily surpassing the original first year goal of a 20% reduction in injuries. There were 41 reported injuries in 2003, decreasing to eight in 2004. This included the complete elimination of injuries during blood collection procedures for that year (Toronto East General Hospital 2005).

"TEGH is proud of the injury reductions it has achieved as the first hospital in Ontario to fully implement all available safety-engineered needle options," states Rob Devitt, the hospital's President and CEO.

Panel: TEGH Safety Program, 2003–04

Goal: 20% sharps injury reduction in first year

Challenges tackled:

Additional costs of safety-engineered devices:
- Far outweighed by the benefits of reduced injuries

Convincing staff that new technology would be easy to adopt:
- Achieved with hands-on training, education and in-service

Key success factors:
- Staff commitment
- Sophisticated educational programs
- Proactive support from senior management

Program achievements:
- 80% sharps injury reduction (from 41 in 2003 to eight in 2004)
- Elimination of blood collection injuries

Lessons for other change programs

Plan right – first things first
TEGH examined the area of highest proportion of needlestick injuries – blood procurement – and tackled that first. Once success was recognized, it was easier to start safety programs in other areas.

Training, training
One-time education is not enough. Reinforcement and support, in classes and in the clinic, help move the change forward and encourage internal champions.

Partners help
BD was able to use its US experience to support the educational program and bring a high level of credibility to its intensive involvement.

Be patient with results
Benefits, in terms of lower injuries, did not happen overnight. TEGH could spot those parts of the hospital that were slower to switch over and could target further training. This was a necessary step to achieve significant and sustained reduction in needlestick injuries.

Monitor
No change program ever works without evaluation. The Occupational Health & Safety committee continues to investigate any new sharps injuries. Post-injury root cause analysis offers opportunities for continuous improvement, and continues to demonstrate management support for the program.

Encouraged by this success, TEGH has now extended the program to include a needleless IV system, along with IV catheters and more portable sharps disposal containers. It is also now investigating the introduction of safety-engineered scalpels and blades to address sharps injuries in the operating room. The brand selected was the BD Insyte™ Autoguard™.

"TEGH remains committed to minimizing the human and economic costs of needlesticks and other sharps injuries, and aims to be the first hospital in Ontario to convert completely to safety-engineered devices," concludes Mr. Devitt. "Above all, we care passionately about protecting the health and safety of our patients and staff."

References

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About the Author

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