Engineering Out Needle Stick Injuries (Safety Devices)

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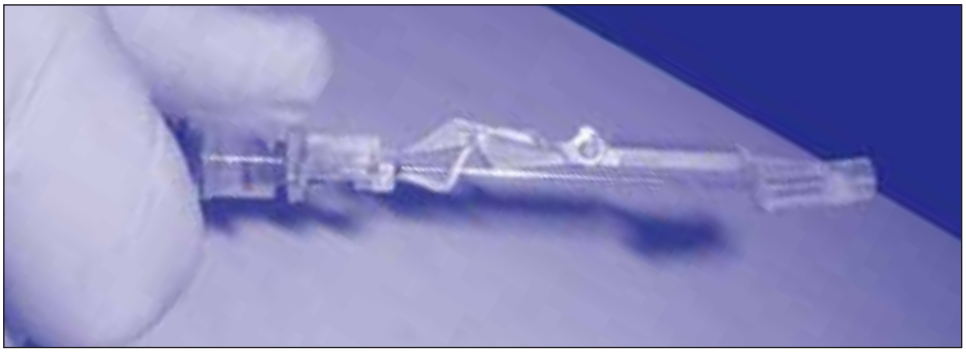
It's a well-known fact that health care workers are at risk of occupational exposure to a number of blood-borne pathogens that can cause serious or fatal infections. The top three blood-borne pathogens (BBPs) involved are human immunodeficiency virus (HIV), hepatitis B virus (HBV), and hepatitis C virus (HCV). In 2001, the Canadian Institute for Health Information reported that of 750,000 Canadian health care workers, an estimated 66,000 per year, or approximately 180 per day, experience needle stick injuries.

The Canadian Needle Stick Surveillance Network (CNSSN) was implemented in 2000 to monitor health care workers exposed to blood and body fluids and their seroconversion as a result of exposure. The surveillance program included a network of 12 volunteer hospitals that collaborated to develop a registry for reporting health care worker exposures. Percutaneous exposures were the highest exposures reported.

The CNSSN summarized the rates (per 100 FTEs) of exposure to BBPs by type of exposure and job title and found that of the 25,828 full-time equivalents, the overall frequency rate for 2,185 percutaneous exposures was 0.3 (0.2 for percutaneous and 0.1 for mucocutaneous). Nurses, medical doctors and laboratory technicians were the three professional groups that most frequently reported exposures (53.4%, 21.3%, 8.2%). Medical doctors reported both the highest percutaneous and mucocutaneous exposure rates.



Circumstances leading to percutaneous exposures (n = 2185), 12 hospitals, April 1, 2000 to March 31, 2002

Cause of injury	Percentage
While using the device	40.7
False move	32.0
Collision with patient	4.5
Defective Device	0.9
Other causes	3.3
After using the device	45.2
Before disposal	24.2
Recapping a needle	7.6
Disassembling a device/piece of equipment	5.6
Withdrawing a needle from rubber material	1.1
Sorting/cleaning/disinfecting/sterilizing device	5.9
Carrying device before disposal	4.0
Collection/Container	12.0
Discarding a device in a sharp container	9.1
Device left on or near a sharp container	1.1
Device protruding from a sharp container	1.5
Device piercing a sharp container	0.3
Inappropriate disposal	9.0
Device left in an inappropriate place	6.9
Device piercing through garbage container	2.1
Other	14.2
Restraining a patient	0.7
Passing an instrument from hand to hand	2.0
Other	7.3
Unknown/missing	4.2
Total	**100.0**

Workplace Safety and Insurance Board Claims (Ontario) from 1996 to 2003 in the Health Care Sector by Diagnosis.

Diagnosis	Health Care NLT Allowed	Health Care All Claims	Health Care LT Allowed	Health Care All Claims	Health Care Total Allowed	Health Care All Claims
Exposure to Chemical Agent					0	0
Exposure to Hepatitis A	0	2	1	1	1	3
Exposure to Hepatitis B	27	38	1	1	28	39
Exposure to Hepatitis C	22	25	1	1	23	26
Exposure to Hepatitis, Unspecified	23	44	2	3	25	47
Exposure to HIV	66	90	43	47	109	137
Exposure to Infectious Disease	5,940	7,851	276	311	6,216	8,162
Hepatitis C		1	3	4	3	5
Nonspecific Abnormal Lab Results	1	1	2	2	3	3
Facial Nerve Disorders				1	0	1
Cellulitis & Abscess			4	4	4	4
Total	**6,079**	**8,052**	**333**	**375**	**6,412**	**8,427**

NLT= No Lost Time LT= Lost Time Claim All Claims: All claims submitted.

Percutaneous exposures can be prevented with proper sharps handling, disposal, and engineering controls:

- Engineering controls (safety devices, sharps disposal containers)
- Administrative controls (timely and effective post-exposure protocol)
- Work-practice controls (immunization, routine practices).

Engineering Controls that prevent needle stick injuries

Needleless Systems

- Needleless connectors for IV delivery systems.

Safety Devices

- Protected-needle IV connectors.
- Needles that retract into a syringe or vacuum tube holder.
- Hinged or sliding shields attached to phlebotomy needles, winged-steel needles, and blood gas needles.
- Protective encasements to receive an IV stylet as it is withdrawn from the catheter.
- Sliding needle shields attached to disposable syringes and vacuum tube holders.
- Self-blunting phlebotomy and winged-steel needles.
- Retractable finger/heel-stick lancets.

A recent NIOSH/CDC Alert[4] recommends the following characteristics as guidelines for safety device design and selection

- The safety feature is an integral part of the device.
- The safety feature can be engaged with a single-handed technique.
- The clinician's hands remain behind the exposed sharp.
- The user can easily tell whether the safety feature is activated.
- The safety feature cannot be deactivated and remains protective through disposal.

Benefits of Safety Devices

- Reduction in worker exposure to infections and illness due to needle stick injuries.
- Decreased WSIB needle stick injury claims and costs.
- Decreased liability costs related to treating needle stick injuries and associated stress claims.
- Reduction in the costs of safety devices as more organizations begin using them.

Needle stick injuries can be reduced with a comprehensive program that includes the following elements

- Analyzing needle stick and other sharps-related injuries to identify hazards and injury trends.
- Establishing strategies for prevention by examining risk factors associated with needle stick injuries and successful intervention.
- Ensuring workers are properly trained in the safe use and disposal of needles.
- Annually reviewing those work practices that expose employees to needle stick injuries.
- Promoting needle stick injury prevention and safety awareness in the workplace.
- Establishing procedures and encouraging reporting of all needle stick and sharps-related injuries.
- Evaluating effectiveness of prevention efforts and providing feedback to employees.

Health care workers can protect themselves from needle stick injuries by

- Avoiding the use of traditional needles where safer alternatives are available.
- Assisting in the selection and evaluation of devices with safety features.
- Using the devices with safety features provided by the employer.
- Not recapping needles.
- Disposing of used needles promptly in appropriate sharps disposal containers.
- Reporting needle stick and other sharps-related injuries promptly and receiving a post-exposure prophylaxis assessment.
- Participating in training and following recommended infection control practices, including hepatitis B vaccination

This year the Ministry of Labour has identified needle stick injuries as a focus in health care facilities. Has your organization evaluated your program and considered safer methods in order to reduce needle stick injuries?

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Special thanks to Ms. Carol Luce, Medical and Occupational Disease Policy Branch of the Workplace Safety & Insurance Board, and Ms. Shaineez Pirani of the Workplace Safety & Insurance Board, who provided assistance in the development of this newsletter article.