

CAUT Health and Safety Fact Sheet



Needlestick Injuries

ISSUE 13

Academic staff and students whose work involves needles or other “sharps” (e.g., scalpels, IV starters) are at risk of often serious needlestick injuries. Blood-borne pathogens, like HIV and hepatitis, account for the bulk of resulting infections.¹

Although needlestick injuries are assumed to be a concern primarily in the health care professions and related research, such injuries affect a much broader group of academic staff and students. The portability and versatility of these instruments has expanded their presence in the workplace. Among tasks that pose a risk are dispensing small amounts of chemicals, withdrawing liquid or gas samples from experimental equipment, aliquoting micro quantities for biophysics samples, injecting dye into plants and organisms, injecting solvents into small spaces, injecting glue to seal cracks.

A notable source of injury is caused by improper disposal: cleaning or maintenance staff, colleagues, or the public are often inadvertently stuck from sharps left lying around or improperly disposed. If sharps are used in daily work practices, then safe and responsible disposal methods must be implemented.

This fact sheet will identify needle hazards, safe working procedures and safer models of the injectible needle. Remember that although most needlestick injuries occur in health care personnel, the principles of safe use apply to anyone who chooses to use needles in the course of their work.

Needlestick injury rates

The National Institute of Occupational Safety and Health (NIOSH) estimates that 600,000 to 800,000 needlestick injuries occur each year in the United States.² In Canada, estimates are 69,000 stick injuries annually. New staff or those unfamiliar with using needles or other percutaneous equipment, have more needlestick injuries than experienced workers³.

Health Canada notes that 41% of injuries occur during use, while 45% occur post-use.

The Alliance for Sharps Safety and Needlestick Prevention has found that 80% of sharps injuries can be prevented with the use of safety engineered devices, worker training and worker practice controls. Taking these steps further reduced these injuries by 90%.⁴

Needles and Sharps

- Hypodermic (hollow-bore) needles
- Blood collection needles
- Suture needles
- Needles used in IV delivery systems
- Lancets used for skin prick blood samples
- Scalpels

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In the year 2003–2004, the Toronto East General Hospital reduced their injuries in blood collection and patient injection by 80% by using safe sharps.⁵

Hazards

Viruses, bacteria, fungi, et al

Needlestick injuries have transmitted the following diseases caused by viruses, bacteria, fungi, and other microorganisms to health care workers, laboratory researchers, and veterinarian staff. Examples:

- Blastomycosis
- Brucellosis
- Cryptococcosis
- Diphtheria
- Cutaneous gonorrhea
- Herpes
- Malaria
- Mycobacteriosis
- Mycoplasma caviae
- Rocky Mountain spotted fever
- Sporotrichosis
- Staphylococcus aureus
- Streptococcus pyogenes
- Syphilis
- Toxoplasmosis
- Tuberculosis

Although many of these diseases were transmitted in rare, isolated events, this shows that needlestick injuries can have serious consequences.

Hepatitis B (HBV), Hepatitis C (HVC), and HIV are the most commonly transmitted infections.

Practices That Increase Risk

The portability and versatility of the modern, disposable needle, makes it prone to misuse and overuse. Alternative methods

should be sought first, before using a needle or sharps.

These practices are unsafe or carry a high degree of risk:

- Recapping or needle/sharps separation from syringe or handle
- Transferring a body or other fluid between containers
- Not disposing used needles in puncture-resistant sharps containers
- Withdrawing a needle from a patient, animal or other source
- Rebound reflex when pulling a needle out of the rubber stopper of a vacuum tube
- Poor lighting

Prevention

Using safe and effective alternatives, including needleless (non-sharps) methods and ensuring that Joint Health and Safety Committees (JHSC) have input into the selection and evaluation of devices with safety features will reduce the risk of needlestick injuries.

Surveillance

Surveillance programs that provide in-depth analysis of needlestick accidents are an important tool for:

- Determining the rate of needlestick injuries
- Investigating the factors that cause the injuries
- Identifying alternative work practice methods
- Ensuring that injured workers receive proper treatment
- Identifying areas in which the prevention program needs improvement
- Providing practical strategies for dealing with the problem

NIOSH's Workbook for Designing, Implementing and Evaluating a

Sharps Injury Program and Health Canada's Infection Control Guidelines, both offer practical working guides on how to set up and implement an appropriate surveillance program for your work site. The work site JHSC should use a surveillance program as a starting point for sharps safety in the workplace. It will track past and potential future injuries, which will assist in identifying better methods for prevention and treatment, improved equipment, and help with Workers' Compensation Claims.

“Engineering Controls decrease or eliminate the hazard, whereas the use of Personal Protective Equipment only provides a barrier...”

Health Canada, CCDR Infection Control Guidelines

Engineering Controls

Engineering Controls are the best means of prevention. As a proactive approach to hazard control, they virtually eliminate the hazard. Alternative methods of non-needle, non-sharps work production, or the use of safety-engineered systems would constitute appropriate measures for hazard control.

NIOSH lists these characteristics as being integral for safety control:

- the safety feature is an integral part of the device
- the safety feature can be engaged with a single-handed technique
- the clinician's [user'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

Workplace Protocol

- Use the devices with safety features provided by the employer.
- Never re-cap needles.
- Plan for safe handling and disposal of needles before using them.
- Promptly dispose of used needles in approved sharps disposal containers. Ensure they are conveniently located. Do not overfill.
- Report all needlestick and sharps-related injuries promptly.
- Always report needlestick injuries to the employer and the JHSC.
- Participate in education and training related to infection prevention.
- Get a Hepatitis B vaccination. If you use needles for purposes other than health care teaching or research, ensure you have a current Tetanus vaccination.

Waste Disposal

Health Canada produced a study, titled the Canadian Needle Stick Surveillance Network (CSSN) Survey, and noted in their statistics, published in 2001 (Appendix III), that in health care facilities, a combined number of health care and non-health care workers – physicians, dentists, nurses, technicians, students, housekeeping, laundry and even parking attendants – produced 1,214 injuries among 33,833.90 FTE (Full-time Equivalent) staff in the previous year. They further noted that “Forty-Five percent of percutaneous injuries may have been prevented by proper handling and disposal of used needles.”

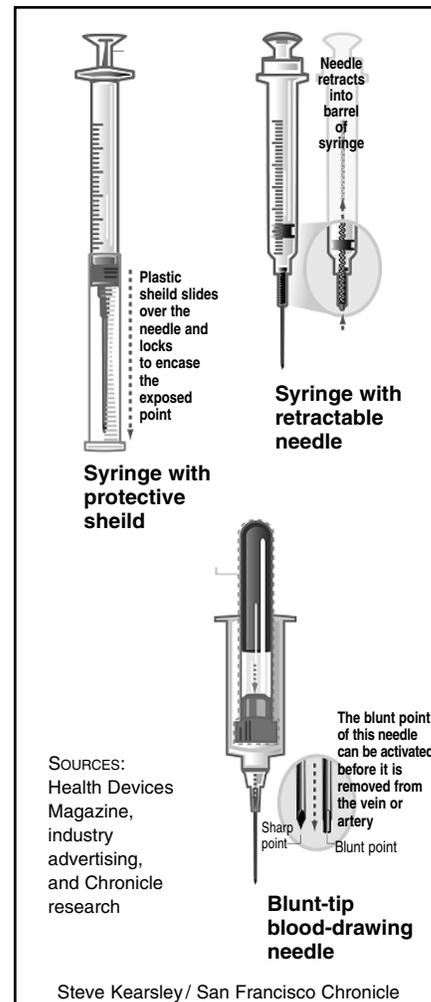
Syringes, needles and cartridges should be placed in a suitable sharps container which, when full, should be sealed and placed into a clinical waste bag for storage prior to removal and disposal by incineration. Be vigilant and responsible in disposal methods of percutaneous implements as cleaning or other staff, or the general public, may be inadvertently exposed to a serious injury.

Conventional Syringes vs Safer Alternatives

The first method of choice should be the use of a “needleless system” – a non-needle, non-sharps method. This would include such things as giving medications by alternate routes and choosing other methods for work production which do not include the unnecessary use of a needle or sharps.

If no alternative method can be found other than using a percutaneous instrument, then needles and other sharps implements should either be retractable, encased in a protective shield or fitted with a guard which snaps over the needle/sharps after use.

If you must use a syringe, then it should not leak past the barrel. Luer-Lock syringes are safest. Training and practice are essential to avoid accidental injury. Adjustment of content volumes should be done with the needle in a disinfectant-soaked swab. Swabs should also enclose the needle shaft and cap of any bottle from which a fluid is to be extracted.



Three examples of syringes with safety features. (These drawings are presented for educational purposes and do not imply endorsement of a particular product.)

Legislation

In 2001, the United States passed the “Needlestick Safety and Prevention Act”.⁶ This Act specifically states “An employer, who is required to establish an Exposure Control Plan shall solicit input from non-managerial employees...who are potentially exposed to injuries from contaminated sharps in the identification, evaluation, and selection of effective engineering and work practice controls...”. Section 3 of the Act identifies engineering

controls which include “Needleless Systems” as being a required alternative. California had previously mandated the use of safety-engineered sharps devices in 1997.⁷

In Canada, Manitoba⁸ and Saskatchewan⁹ have passed legislation (took effect July 1, 2006) requiring the use of sharps alternatives.

Worker Initiatives

Service Employees International Union (SEIU) has taken the lead internationally in lobbying for safe sharps alternatives legislation, and was the catalyst for the new legislation in Manitoba and Saskatchewan. In Ontario, SEIU, OPSEU (Ontario Public Service Employees Union) and ONA (Ontario Nurses Association) have formed a working coalition on this issue and have supported a private member’s bill on this issue. Ontario, Nova Scotia and British Columbia have pending legislation.

Injury Protocol

- Never put compression on a needlestick injury – let it bleed freely. Wash the wound with soap and water
- Report immediately to employee health and your family physician and/or Emergency Room
- Get post-exposure prophylaxis within two hours of the exposure (if appropriate)
- Get follow-up testing and counseling
- File a WCB report
- Notify your Joint Health & Safety Committee

REFERENCES

Alliance for Sharps Safety and Needlestick Prevention

CAW, Health and Safety Manual for Health Care Workers
www.caw.ca

CDC (Atlanta), National Immunization Program
www.cdc.gov

CCOHS, OSH Answers – Needlestick Injuries
www.cchos.ca/oshanswers/diseases/needlestick_injuries.html

Health Canada, CCDR Infection Control Guidelines – Prevention of Occupational Infections in Health Care
www.phac-aspc.gc.ca/publicat/ccdr-rmtc/02pdf/28s1e.pdf

IPIPS (International Sharps Injury Prevention Society)
www.isips.org

NIOSH, Workbook for Designing, Implementing and Evaluating a Sharps Injury Prevention Program
www.cdc.gov/niosh

OOHNA (Ontario Occupational Health Nurses Association)
www.oohna.on.ca

SEIU Needlestick/Sharps Safety and Prevention Campaign
www.seiu.ca

Workers Health and Safety Centre, Resource Lines – Needlestick Injuries: Recapping the Problem
www.whsc.on.ca

WorkSafe BC
www2.worksafebc.com

Endnotes

1 Health Canada, CCDR Infection Control Guidelines, prevention and Control of Occupational Infections in Health Care, March 2002

2 NIOSH Alert – Preventing Needlestick Injuries in Health Care Settings

3 CCOHS, OSH Answers – Needlestick Injuries

4 Alliance for Sharps Safety and Needlestick Prevention, Position Paper – Improving Canadian Health Care Worker Safety: The Case for Mandatory Implementation of Safety-Engineered Sharps Devices and Exposure Control Plans, November 13, 2002

5 Ontario Occupational Health Nurses Association Journal, Winter 2005

6 Needlestick Safety and Prevention Act, Public Law 106-430, 106th Congress, USA

7 Joint SEIU/ONA/OPSEU News Release, November 15, 2005

8 The Workplace Safety and Health Amendment Act (Needles in Medical Workplaces), S.M. 2005. c. 15, Bill 23

9 The Occupational Health and Safety Act, 1993, Saskatchewan – Section 44 Regulations and Section 85 Written Exposure Control Plan

Diagram reproduced from:

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