

Needlestick Injuries:

sharper response

There are more than 69,000 injuries a year from needlesticks and other sharps devices in Canada —

33,000 of these injuries are in Ontario alone. Punctures by contaminated needles can inject hazardous fluids into the body, spreading a host of infectious diseases including hepatitis B virus, hepatitis C virus, and human immunodeficiency virus (HIV) that causes acquired immune deficiency syndrome (AIDs).

Data collected by Ontario's Workplace Safety & Insurance Board between 1998 and 2005, showed nurses experience the highest number of punctures from needlesticks. Workers who suffer a needlestick or sharps injury endure stressful waits of up to a year before finding out if they have contracted a virus from their injury. They face additional stress caused by fear of imminent illness or death, and the fear of infecting family or friends. Workers at risk include health care workers, personal care workers, laboratory and specimen collection workers, law enforcement and correctional facility officers, custodians and laundry workers.

Most needlestick injuries are preventable through the use of safety-engineered needles. The Centers for Disease Control (CDC) in the U.S. estimates 62 to 88 per cent of sharps injuries can potentially be prevented by the use of safer medical devices. An amendment to the *Occupational Health and Safety Act* introduces Ontario *Regulation 474/07: Needle Safety*. This regulation, as of July 1, 2010, makes safety-engineered needles and needle-less systems mandatory in all Ontario workplaces providing health-related services. Health care unions, who have long lobbied for needle-less systems say the Regulation still does not go far enough — they would like a requirement for replacing all conventional medical sharps with their safety engineered counterparts.

What are the health hazards?

Injuries from contaminated needles and other sharps devices have been associated with transmission of more than 20 viral, fungal, microbial and bacterial illnesses and diseases. Of these, hepatitis B virus, hepatitis C virus and HIV/AIDS virus pose the greatest risk to workers infected through injury. Other examples include: diphtheria, malaria, herpes, gonorrhoea, syphilis, streptococcus, and tuberculosis.

Hepatitis B

Hepatitis B is an infectious liver disease caused by the hepatitis B virus (HBV). Blood is the major source of HBV exposure in the workplace, though HBV can be found in other tissues and bodily fluids. Infections occur only if the virus is able to enter the bloodstream. The incubation period between the initial contact with the virus and the onset of disease ranges from 45 to 180 days. According to the Canadian Centre for Occupational Health and Safety (CCOHS), 10 per cent of people who develop hepatitis B will become carriers of the disease, with their blood remaining infectious for months or even their lifetime.

There is no medical cure for hepatitis B. However, to combat HBV, the body produces anti-bodies which in many cases will destroy the virus and protect against future infections of hepatitis B. Early symptoms can include general discomfort, fatigue, loss of appetite, skin rash, nausea, vomiting or other flu-like symptoms and sometimes jaundice. It is possible though, to have the virus and not experience any symptoms at all. Often, those infected with HBV are unaware, as they do not become sick or they experience mild symptoms which are misdiagnosed. With or without symptoms, victims of Hepatitis B can develop chronic effects such as liver dysfunction, cirrhosis and liver cancer.

Fortunately, the hepatitis B vaccine is extremely effective in controlling this disease. According to the CDC the annual number of occupational infections has decreased by 95 per cent since the hepatitis B vaccine became available in 1982. As such the vaccine is required in Ontario by many at high risk of exposure to the virus including health care workers, medical students, police service workers and public school students.

Hepatitis C

Like Hepatitis B, Hepatitis C is an infectious liver disease, only it is caused by the family of hepatitis C viruses (HCV). HCV must enter the blood stream and reach the liver in order to cause a hepatitis C infection, and can only be spread through direct contact with the blood of an infected person. The incubation period between the initial contact with the virus and the onset of disease ranges from 14 to 180 days.

Symptoms of hepatitis C infection progress slowly, sometimes taking up to 10 years to manifest. Symptoms include itching, fever, nausea, vomiting, loss of

appetite, stomach pain, extreme fatigue and jaundice. Hepatitis C infection can lead to mild or severe liver damage, cirrhosis of the liver or liver cancer. There is no cure or vaccine available for HCV.

HIV/AIDS

Over a period of years, HIV weakens the body's immune system to the point where it can no longer fight infection. At this point HIV becomes AIDS. HIV enters the body primarily through the bloodstream.

In addition to emotional trauma while awaiting test results workers may suffer disabling physical side effects from post-exposure prophylaxis (PEP) medications. PEP is a course of preventative medications given after suspected HIV exposure in hopes of decreasing the likelihood of HIV infection. These are the same medications given to people with HIV/AIDS and are meant to block HIV replication. Side effects from these drugs can include: headache, nausea, vomiting, diarrhea, abdominal pain, fatigue, weakness, nasal symptoms, anemia, confusion, rash, fever, and elevated cholesterol and triglycerides.

Fortunately only three cases of positive occupationally transmitted HIV have been reported in Canada — one in a health care setting clearly linked to a needlestick injury, and two attributed to possible occupational transmission involving laboratory work.

How are workers exposed?

Health care workers who handle sharp devices and equipment such as hollow bore (also known as hypodermic) and suture needles, intravenous blood collection devices, blood-letting devices and scalpels are at greatest risk. Nursing staff, phlebotomists (staff who draw blood for testing) and especially new staff or students, sustain the highest percentage of reported needlestick injuries. In any workplace containing needles, janitors and housekeeping staff are also vulnerable.

Needlestick injuries can occur while disposing of needles, administering injections, drawing blood, recapping needles and handling trash or dirty linens. Needles jarred by a patient or needles pulled from the rubber stopper of a vacuum tube can also jab the hand in a rebound reflex.

Recapping

Recapping can account for 25 to 30 per cent of all needlestick injuries. Guidelines from Canada's Laboratory Centre for Disease Control (LCDC) and several other agencies recommend

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workers do not recap (or bend or cut) needles but dispose of them directly into approved, puncture-proof containers. Needlestick injuries can occur if the needle misses the cap, pierces the cap, or if a cap slides off unexpectedly.

Disposal

Up to 30 per cent of needlestick injuries of nursing and laboratory staff occur when workers attempt to dispose of needles using sharps containers. Incidents occur while workers carry the needle to the disposal container, while placing the needle into an overfilled container, or while emptying containers instead of sealing containers for disposal. Improper disposal or failure to dispose of needles also causes hazards for workers who may be collecting trash, laundry or performing general cleaning activities.

Types of equipment

Hollow-bore needles used for giving injections or drawing blood are the causes of injury in most cases. This type of needle is the device most often associated with the transmission of blood borne pathogen infections. The blood remaining inside the bore of the needle after use contains a larger volume of virus than the relatively small amount of blood remaining outside of a solid core needle such as those used for sutures.

Conditions of work

Work conditions that might contribute to an increase in the number of needlestick injuries include staff reductions, difficult patient care situations, and working at night with reduced lighting.

What is the law?

Ontario *Regulation 474/07: Needle Safety* made under the *Occupational Health and Safety Act* first came into limited effect on September 1, 2008. At the time, the Regulation mandated the use of safety-engineered needles and needle-less systems in all Ontario hospitals, eight licensed private hospitals and institutions defined under the Mental Health Act. In April 2009, amendments to the Regulation took effect extending coverage to long-term care facilities, psychiatric facilities, laboratories and specimen collection centres. As of July 1, 2010 the Ontario Government extended the regulation to include doctors' and dentists' offices, community health care centres, family health teams and independent health facilities. Also now covered are workers who provide health care services such as home care services, ambulance services, public health programs, health services to students in schools, and health care/first aid services to workers or individuals in industrial and other workplaces.

Thus now all Ontario workplaces providing health-related services are covered with but a few exceptions. The Regulation requires safety-engineered needles and needle-less devices to replace conventional hollow-bore needles; unless the employer is unable, despite "reasonable efforts" to obtain such needles, or if the worker believes safety-engineered needles will pose a greater risk to themselves or another worker in any given circumstance. In the latter instance, the employer must

develop, establish and provide training for workers to assist them in applying this exception.

With the new regulation Ontario now joins Manitoba, Nova Scotia, British Columbia and Saskatchewan who all have enacted needle safety laws covering a wide assortment of workplaces.

In situations and workplaces not covered by the regulation, the general duty clause under the *Occupational Health and Safety Act* applies. Section 25(2)(h) of the *Act* requires employers to take every precaution reasonable in the circumstances to protect workers from hazards in the workplace. In this case, workplace hazards include blood-borne pathogens.

Protection from sharps relating to housekeeping and waste is also still mandated by the *Regulation for Health Care and Residential Facilities*.

For instance, needles, scalpels and other sharps being discarded as waste materials shall be placed in puncture-resistant containers [section 113(1)(2)]. Also, the employer shall ensure that a worker who generates, collects, transports, handles or treats contaminated or potentially contaminated waste materials is trained in appropriate measures and procedures developed in consultation with the joint health and safety committee [section 116 (2)(3)].

What are safety-engineered needles?

Safety-engineered needles are needles with a built-in safety feature or mechanism which eliminates or minimizes the risk of a needle-stick injury. Examples include needles that retract into the syringe or vacuum tube holder, hinged or sliding shields attached to the needle, or blunt tip needles. Aside from safety-engineered needles, needle-less systems can be used to collect bodily fluids or to administer medication and fluids. Examples include needle-less connectors for IV delivery systems. As well, use of conventional suture needles can sometimes be replaced by other methods such as blunt suture needles, staples, surgical adhesive, or cautery.

How else can needlestick injuries be prevented?

Preventing the risk of needlestick injuries by eliminating the hazard through engineering controls as mentioned above, is the most effective way to protect workers from the infectious diseases transmitted by needlestick injuries. However, the use of safety-engineered needles should be supported with other prevention measures such as: administrative controls, proper work practices and personal protective equipment.

Administrative controls

The most effective administrative controls include a needlestick injury prevention program. A comprehensive needlestick injury prevention program should be developed in consultation with the joint health and safety committee or health and safety representative and should include:

- Worker training and education;
- Clear policies and procedures;
- Recommended guidelines;
- Maintenance of a sharps injury log;
- Effective disposal systems (placed on the walls near the patient);
- Surveillance programs; and
- Improved equipment design.

Work practices

Another method of controlling blood borne infections of health care and other workers is through immunization (for hepatitis B), and the use of universal precautions (all needles should be considered potentially infectious and handled accordingly).

Personal protective equipment (PPE)

Health Canada reports gloves (e.g. paper/tissue, latex) if used routinely, may act as a barrier reducing injuries from needlesticks and sharps.

NOTE: The Workers Health & Safety Centre offers several training programs for workers in the health care sector, including training in infectious diseases prevention and control. For more information contact a Workers Health & Safety Centre near you.

Link to Ontario *Regulation 474/07: Needle Safety*. www.e-laws.gov.on.ca/html/reg/english/elaws_regs_070474_e.htm.

Link to resources published by a coalition of unions representing Ontario health care workers and highlighting efforts still needed to help ensure needles/medical sharp safety. www.opseu.org/hands/needle-safety-regulation-2010.htm.



RESOURCE LINES

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cope:343