Needlestick and Sharps Injuries

What are needlestick injuries?

Needlestick injuries are wounds caused by needles that accidentally puncture the skin.

Needlestick injuries are a hazard for people who work with hypodermic syringes and other needle equipment. These injuries can occur at any time when people use, disassemble, or dispose of needles. When not disposed of properly, needles can hide in linen or garbage and injure other workers who encounter them unexpectedly.

What are sharps?

“Sharps” include needles, as well as items such as scalpels, lancets, razor blade, scissors, metal wire, retractors, clamps, pins, staples, cutters, and glass items. Essentially, any object that is able to cut the skin can be considered a “sharp”.

What are the hazards of needlestick and sharps injuries?

These injuries transmit infectious diseases, especially blood-borne viruses. Concern includes the Human Immunodeficiency Virus (HIV) which leads to AIDS (Acquired Immune Deficiency Syndrome), hepatitis B, and hepatitis C.

Incidental punctures by contaminated needles can inject hazardous fluids into the body through the skin. There is potential for injection of hazardous drugs, but contact with infectious fluids, especially blood, is by far the greatest concern. Even small amounts of infectious fluid can spread certain diseases effectively.

Sharps can create a cut in the skin which allows contact between blood, or fluids.

The risk of infection after exposure to infected blood varies by bloodborne pathogen.

The Ontario Hospital Association/Ontario Medical Association (2016) estimate that after an injury in workplace situations from a needle contaminated with hepatitis B virus, there is a 6 to 30% chance that an exposed person will be infected. In a similar situation with HIV, there is about a 0.3% chance of infection, and there is about a 1.8% chance of infection for hepatitis C.

Note also that because the hepatitis B virus may survive on environmental surfaces for more than a week, indirect exposure can occur via contaminated inanimate objects.

Injuries have transmitted many other diseases involving viruses, bacteria, fungi, and other microorganisms to health care workers, laboratory researchers, and veterinarian staff. The diseases include:

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

Many of these diseases were transmitted in rare, isolated events. They still demonstrate, however, that needlestick and sharps injuries can have serious consequences.

How do needlestick injuries occur?

Injuries can occur at every stage of their use, disassembly, or disposal.

A report from the Centers for Disease Control and Prevention (CDC) in the United States lists the following percentages for injury rates from a study with data collected from 1995 to 2007:

Injuries involving hollow-bore needles:

- During or after disposal: 22%
    - In transit to disposal.
    - Improper disposal.
    - During disposal.
- After use, before disposal: 19%
    - Activation of safety feature.
    - Recap needle.
    - During clean up.
- During use: 52%
    - Access IV line.
    - Transfer/process specimens.
    - Pass/transfer equipment.
    - Collision with sharp or worker.
    - Insertion or removal of needle.
    - Other.

Injuries involving solid sharps:

- During or after disposal: 3%
    - In transit to disposal.
    - During disposal.
- After use, before disposal: 15%
    - Sharp left in unusual location.
    - During clean up.
- During use of the item: 70%
    - Processing specimen.
    - Collision with sharp or worker.

    - Manipulate sharp in patient.
    - Handle, pass, transfer equipment or specimen.
    - Suture needle handling.
    - Other.

Equipment design, nature of the procedure, condition of work, staff experience, recapping, and disposal have all been mentioned as factors that influence these occurrences.

How can needlestick and sharps injuries be prevented?

Preventing injuries is the most effective way to protect workers. A comprehensive sharps injury prevention program would include:

- Recommended guidelines.
- Improved equipment design.
- Effective disposal systems.
- Employee training.
- Safe recapping procedures, where necessary.
- Surveillance programs.

Regulators reviews, publishes, and updates guidelines to protect staff from exposure to all infection causing agents in healthcare settings. The current guideline is titled “Routine Practices and Additional Precautions for Preventing the Transmission of Infection in Healthcare Settings”.

Preventing injuries from sharps and needlesticks is considered a part of the “routine practices” used by healthcare workers.

Workers who use sharps require education and training as part of a sharps injury prevention program. Workers should be educated in how to protect themselves during use, and to protect others who may encounter the device during or after procedures.

The use of safety-engineered devices such as protected needle devices, or needle-free systems with self-sealing ports and syringes is encouraged. Regulators states that use of such safety devices is required by some jurisdictions. Using these devices must take into consideration both the safety of the health care worker and the patient.

Regulators recommends that:

- Needles should not be recapped. Used items should be placed immediately in a designated puncture-resistant container that is easily accessible at the point-of-care.
- Healthcare workers should cover open skin areas or lesions on hands and arms with a dry dressing at all times. Hand hygiene is still essential, so consultation is necessary if the dressing interferes with this procedure.
- Eyes, nose, and mouth should be protected if splashes with blood or body fluids are anticipated.
- Immediately perform first aid if someone has been exposed to blood or body fluids. First aid should include:
    - Thoroughly rinsing the injury site with running water, and gently cleaning with soap and water if possible.
    - Flushing the eyes, nose, or mouth with running water if they have been exposed.
    - Broken skin should be rinsed thoroughly.
- Report the incident and exposure immediately to your employer.
- Follow instructions for further treatment and follow-up from medical professionals, where necessary.

Regulators also refers to the CDC “Workbook for designing, implementing and

evaluating a sharps injury prevention program" as an example of a program. This workbook uses a hierarchy of control approach, including:

Elimination – find ways to eliminate or reduce needle use during procedures, medication delivery, and specimen collection.

Engineering controls – remove or isolate the hazard by using sharps disposal containers or other devices that have an integrated injury prevention feature. Safety devices must be chosen with care as no one device or strategy will work in every situation.

Work-practice controls – Steps that can be taken to reduce injuries include using instruments to grasps needles or load/unload scalpels, avoiding hand-to-hand passage of sharps, separating sharps from other waste, not carry garbage or linen bags close to the body, etc.

Personal Protective Equipment (PPE) – PPE should be used as the last control approach, where appropriate.

In situations where recapping is considered necessary, develop safe approaches which workers can follow. Workers should never move an exposed needle tip towards an unprotected hand. Recap by laying the cap on a flat surface and scoop it onto the tip of a syringe held in one hand. Keep the free hand away from the sheath and well behind the exposed needle.

In addition, all workers at risk should be aware that there is a vaccine available for Hepatitis B.

How should sharps be disposed of?

An effective system for disposing of used needles and sharps is crucial to preventing injuries. Have disposal containers readily available.

Workers should place needles in wide-mouth, puncture-proof containers. Locate disposal containers specifically where needles and sharps are used to make safe disposal possible. Replace the containers before they are completely filled – sharps containers should be removed and replaced when they are three quarters full. Make sure they are sealed, collected, and disposed of in accordance with local regulations for biomedical waste.

All staff should report every incident in which they find needles or sharps left at the bedside or thrown into the regular garbage.

What steps are involved with a surveillance program?

Surveillance programs that provide in-depth analysis of accidents are an important tool for obtaining information. The goals of these programs should include:

- Determining the rate of injuries.
- Investigating the factors that cause the injuries.
- Ensuring that injured workers receive proper treatment.
- Identifying areas in which the prevention program needs improvement.
- Leading to practical strategies for dealing with the problem