Guidelines for the Safe Handling of Sharps

Background

- While the use of Biological Safety Cabinets (BSCs), a 'no mouth-pipetting' policy, availability of safety-engineered sharps, along with more general awareness and better training have generally reduced the number of all LAIs reported in the literature, preventable sharps injuries are still being reported in research settings, including at the U of M.
- A large variety of safety-engineered devices are now available from vendors as they have been mandated by provincial legislation in the health care setting. These are available and recommended for use in the research lab and animal work setting.

What are sharps?
The City of Winnipeg Bio-medical Waste Sharps By-law gives the following definitions:

“Sharps” means needles, syringes, blades, laboratory glass, or other such objects capable of causing punctures or cuts.

“Biomedical Waste Sharps” means sharps that have been in contact with human or animal tissue, blood, secretions or excretions, generated by human or animal health care facilities, mortuaries, morgues, medical or veterinary research and teaching establishments, health care teaching establishments, other teaching establishments, clinical testing or research laboratories, and facilities involved in the production or testing of vaccines.

Examples of other research lab or animal work sharps can include:
- Needles, with and without the syringe, e.g. butterfly needles, vacutainer needles.
- Scalpel and razor blades
- Microscope slides and covers
- Glass capillary tubes, pasteur pipettes, pipetteman tips
- Sharp, pointy scissors, microtome knives
- Any broken glass or plastic lab-ware with sharp edges

What are the hazards?
- Needles and sharps expose you to the risk of punctures and cuts, which can additionally provide a portal for the entry of pathogens and chemicals. Some procedures with sharps can also generate sprays and aerosols.
- Biologically & chemically contaminated sharps provide an additional infection and health risk.
- Sharps can be a hazard to both the user and others who may come in contact with them after disposal in the lab, all the way along the route to final disposal in the landfill or with a waste contractor. Even non-biological contaminated sharps, if not disposed of properly, can be a cause of concern when a caretaker is poked by them and the hazard/source is unknown.

General Best Practices for all Sharps Use (see page 2 for more item-specific recommendations)
- Use caution when handling sharps to avoid auto-inoculation and the generation of aerosols during use and disposal.
- For work with biological agents: The use of needles, syringes, and other sharp objects to be strictly limited. (CBSG, Part 1, 4.6.9). The U of M Biological Safety Advisory Committee (BSAC) further recommends that every attempt should be made to use safety-engineered or disposable sharps and the use of regular sharps should be restricted to situations or procedures where there is no alternative. If regular needles/syringes, scalpel and razor blades, and pointy scissors are the only option for a particular procedure then a Safe Operating Procedure (SOP) must be available in the lab.
- Examples of safety-engineered sharps include: needles and scalpel blades which re-sheath the needle/ blade or automatically retract once used, needless systems, and disposable scalpels. Check these web-sites: CDC poster for illustrations; University of Virginia International Healthcare Worker Safety Center Health System web-site for safety-devices and vendors.
- Site-specific lab worker training should include instructions for the use of both regular sharps (as per the SOP) and the safety-engineered sharps. Practice your techniques, including those using safety-engineered features, without the hazardous agents before attempting it with your hazardous agents.
- Plastic ware should be substituted for glassware whenever possible. Blunt tipped scissors used instead of pointy ones.
- Do not pick up broken glass or other sharps (even if non-contaminated) with your hands or gloved hands; use mechanical means such as a brush and dustpan, tongs, forceps, scoops or in a desperate situation improvise with two piece of cardboard.
- All sharps, including safety-engineered sharps, must be properly disposed. Refer to the U of M Biohazardous Waste Chart and the detailed written instructions in the U of M Biosafety Guide (Section 8.6). Refer also to the information in the EHSO hazardous waste program for information on the disposal of chemically contaminated and non-contaminated sharps.
- Generation of sharps contaminated with more than one hazard (chemical and biological, or radioactive and biological) must be pre-approved by EHSO.

Report all sharps injuries immediately and file a Notice of Injury (Green Card) with your supervisor and send a copy to EHSO. If biological or chemical agents are involved in an injury, follow your lab’s Post Exposure Protocol (PEP) or the general U of M PEP. If medical aid is required, remember to take along the PSDS/MSDS or other pertinent information related to your agent.
Precautions for the Use of Needles and Syringes

- Bending, re-capping, or removing needles from syringes is to be avoided, and, when necessary, performed in accordance with an SOP. (CBSG, Part 1, 4.6.10)
- If there is no alternative to removing or re-capping a needle:
  a) 1st choice would be to use a safety-engineered needle system. Examples of a variety of devices can be found in this excellent US OSHA web-site (https://www.osha.gov/SLTC/etools/hospital/hazards/sharps/sharps.html). Scroll down to the section on Safety Design Devices for descriptions, pictures and animations to illustrate the different types. This NAPPSI website also has a list of Sharps-Safety Devices.
  b) 2nd choice would be to use a simple, inexpensive holder for the cap while removing or re-capping the needle. The illustrated item is available at medidose.com.
  c) Last choice for re-capping would be to use a one-handed, scoop technique. Videos demonstrations can be found at http://www.youtube.com/watch?v=AYUbBLcCeTg  http://www.youtube.com/watch?v=JLvnxmz5zl

- Aerosol and spray/droplet producing procedures with Risk Group 2 biological agents must be done in a BSC.
  o Sprays or aerosols may be generated while using needles when:
    a) a needle disengages from a syringe while using infectious or chemically hazardous material
    b) forcing material through a needle, especially small bore needles
    c) removing a needle from a serum vial pressurized by injecting more air than the volume withdrawn.
  o Use a needle-locking type of syringe to prevent separation of needle and syringe, or use a disposable type where the needle is an integral part of the syringe unit. This includes using these for injections, filtration, liquid transfer, and column loading. This will also prevent the loss of valuable sample.
  o Always wear safety glasses/goggles or consider wearing a face shield when injecting or working with infectious or chemically hazardous material.
  o Improper disposal in over-filled sharps containers is also a major hazard. After use, needles and syringes must only be deposited into an approved sharps container (see description below). The entire syringe and needle assembly must be disposed into a sharps container of a size to easily contain the whole item.

Precautions for the Use of Scalpels

- Regular scalpels require you to place your fingers next to the blade and apply force to snap off the blade. Disposable scalpels with fixed blades or re-usable scalpels with a re-tractable shield are the safest and best option.
- Do not use scalpel blades (or razor blades) without the handle/holder.
- Do not ‘saw’ with a scalpel or put excessive force on it. These actions can cause the blade to snap creating an aerosol and flying debris hazard as well as a sharps exposure hazard. Use knives for tasks that require greater cutting action.

Precautions for Animal Work

- For work with Risk Group 2 biological agents and animals
  a) Proper methods for restraint are to be used to minimize scratches, bites, kicks, crushing injuries, and accidental self-inoculation. (from the CBSG Part I, 4.7.1). Instruction on this is available through the U of M Animal Wet Lab Training.
  b) Animals to be disinfected and/or cleaned at site of injection or exposure following inoculation or aerosol challenge with the infectious material or toxins where possible based on work. (from the CBSG Part I, 4.7.8)
- Always follow the approved SOP on your PI’s Animal Care Protocol. Changes can only be made in consultation with the PI and the EHSO.

Precautions for Disposal of Sharps and the Use of Sharps Containers

- Refer to the U of M Biohazardous Waste Chart and the detailed written instructions in the U of M Biosafety Guide (Section 8.6). The Generic Biosafety training presentation, slide # 73-74 has details and illustrations which are appended on page 3.
- Sharps must be disposed promptly after use. Sharps containers should be available at the disposal site; sharps should not need to be transported to the disposal container. Never attempt to retrieve an item from the sharps container.
- Sharps containers must not be filled to more than ¾ of their total volume and contents must be securely sealed with a tightly fitting lid when ¾ full. Surface disinfect the container before transporting it outside of the containment zone.
- Note: An approved sharps container must be: leak-proof, non-breakable, rigid, puncture-resistant, autoclavable or chemically resistant as required, adequately contain the sharp items and labelled with the appropriate warning logo. A non-removable lid that does not allow access to the disposed material is preferred. These containers are not to be reused. If they contain biohazardous material they must be autoclaved before disposal through the EHSO hazardous waste program. Consult EHSO if you have questions.
Containment Operational Practices: Waste Disposal

Sharps that must be disposed in an “approved” sharps container include the following:

1) Needle & syringes, scalpel or razor blades. See note D.

2) Biomedical Waste Sharps - items which could potentially puncture the skin and are contaminated with human/animal tissue, fluids or blood. (City of Winnipeg - Biomedical Waste Sharps By-Law)

An “approved” sharps container is:
- rigid, puncture-resistant, leakproof
- has a secureable lid
- appropriately labeled with chemical waste tag
- autoclaved if biologically contaminated
- discarded through the EHSO

DO NOT:
- remove needles from syringe or recap
- bend needles
- overfill containers – that is, NOT MORE THAN ¾ FULL

DO NOT autoclave chemically or radioactively contaminated needles/syringes, razor/scalpel blades. These are placed in separate containers, labeled appropriately, and disposed through EHSO.

Containment Operational Practices: Waste Disposal

Other Potentially Biohazardous Sharps Waste

For other potential sharps contaminated with microbiological substances:
- collect these in rigid, puncture-resistant, autoclavable containers.
- Containers can be reusable.
- Label the container with the Biohazard sign.
- Autoclave and dispose as regular glassware waste.

Examples of Other Potential Sharps (THIS DOES NOT INCLUDE: blades, scissors, needles & syringes, or any sharps contaminated with human or animal fluid)

Containers should be:
- Rigid
- Puncture-resistant
- Autoclavable
- Can be Reusable

Autoclave minimum 1hr @ 121°C

Discard as regular glassware waste
Broken Glass