

Reviewed / Revised July, 2010

Purpose

The purposes of this plan are:

- to ensure that sharps are used and disposed of safely,
- to provide a framework for safety awareness and training of laboratory personnel,
- to establish procedures for the reporting and follow-up of sharps-related injuries and exposures,
- to establish a mechanism for periodic review of the effectiveness of this program.

Applicability

This plan is intended to serve as a “best practices” model for the OSU research, clinical and teaching community, and may be modified or appended according to the specific needs of each laboratory or unit. The plan is distributed as a guidance document for use in all research, clinical, or teaching activities where OSU employees or students will handle sharp instruments or objects, or “sharps.” The term “sharp” or “sharps” means any instrument or material used in research, teaching, or treatment that is capable of causing injury by penetrating the skin, and includes needles, IV tubing with needles attached, scalpel blades, razor blades, lancets, broken glass, glass tubes that could be broken during handling and syringes that have been removed from their original sterile containers. A sharps injury is defined as an injury where a sharp, which may or may not be potentially contaminated with blood or other infectious material, penetrates the skin.

Introduction

McCormick and Maki (1981) first described the characteristics of needlestick injuries among healthcare personnel. These authors recommended a series of prevention strategies, including educational programs, avoidance of recapping, and better needle disposal systems (1). In 1987, CDC's released recommendations for *universal precautions* which included guidance on sharps injury prevention, with a focus on careful handling and disposal of sharp devices (2). Several reports on needlestick prevention published between 1987 and 1991 focused on the design and placement of puncture-resistant sharps disposal containers and on the education of healthcare personnel regarding the dangers of recapping, bending, and breaking used needles (3-9). Most of these studies documented only limited success of specific intervention programs to prevent disposal-related injuries and injuries due to recapping (10, 5-8). Greater success in decreasing injuries was reported if the program included an emphasis on communication (4, 9).

Universal precautions, also known as standard precautions, is an important concept and an accepted prevention approach with demonstrated effectiveness in preventing blood exposures to skin and mucous membranes (11,12). However, universal precautions focus heavily on the use of barriers (i.e., personal protective equipment) and work-practice controls (e.g., care in handling and disposal of sharps). These by themselves could not be expected to have a significant impact on the prevention of sharps injuries. Although personal protective equipment (e.g., gloves, gowns) provide a barrier to shield skin and mucous membranes from contact with blood and other potentially infectious body fluids, most protective equipment is easily penetrated by needles, and many injuries continue to occur through these barriers.

Although strategies used to reduce the incidence of sharps injuries (e.g., rigid sharps disposal containers, avoidance of recapping) in the 1980s and 1990s remain important today, additional interventions are needed.

The CDC estimates that each year 385,000 needlesticks and other sharps-related injuries are sustained in the U.S.; an average of 1,000 sharps injuries per day (13). The true magnitude of the problem is difficult to assess because information has not been gathered on the frequency of injuries among healthcare personnel working in settings other than hospitals (e.g., long-term care, home healthcare, private offices). In addition, although CDC estimates are adjusted for it, the importance of underreporting must be acknowledged. Surveys of healthcare personnel indicate that 50% or more do not report their occupational percutaneous injuries (14-17).

Although many types of sharps injure healthcare personnel, data indicates that six devices are responsible for nearly eighty percent of all injuries. These are:

- Disposable syringes (32%)
- Suture needles (19%)
- Winged steel needles (12%)
- Scalpel blades (7%)
- Intravenous (IV) catheter stylets (6%)
- Phlebotomy needles (3%)

Overall, hollow-bore needles are responsible for 59% of all sharps injuries.

Syringe needles, scalpel blades and many other sharp devices are routinely used as part of clinical practice and research activities. In the past, occasional accidents have resulted in OSU staff sustaining injuries from contaminated sharps. The vast majorities of sharps injuries are avoidable, and occur when sharps are handled or disposed of in an unsafe manner. These injuries pose a significant risk to the physical and mental health of the staff member, cost the university time and resources, and have the potential to result in costly litigation. OSU research and clinical staff and students should follow this guidance in order to minimize the likelihood of sharps injuries occurring.

Oregon Regulations

Sharps disposal containers allowed by Oregon regulations are commercially available red, leak-proof, rigid, puncture-resistant containers and must have the universal biohazard symbol.

In the State of Oregon, state public health regulations require that the following items be discarded in sharps containers:

- 1) Syringes removed from their original wrappers, no matter what purpose they have been used for. Never throw used syringes into the regular trash or biohazard non-sharps solid waste receptacles.
- 2) Used microscope slides.
- 3) Used glass culture tubes that have not been decontaminated.
- 4) Used hollow-bore needles or needle – syringe units.
- 5) Lancets.
- 6) IV tubing with needles attached.
- 7) Scalpel blades or disposable scalpels.

General Best Practices for all Sharps Use

- The use of sharps should be restricted to situations or procedures where there is no alternative.
- Each laboratory, animal facility, clinic, or other area where sharps are used must have the following available for use: disposable gloves, first aid kit, approved sharps disposal container.
- All persons using sharps must receive appropriate training from their supervisor in the safe use and disposal of sharps. The supervisor / principal investigator determines what constitutes “appropriate” training, but at a minimum it should include familiarity with this document.
- Disposable sharps should be used whenever possible. If reusable sharps must be used, they should be discarded into a hard-sided autoclavable container with a lid after use prior to washing and decontamination. Extreme care should be taken when transporting or manipulating sharps for washing and decontamination.
- All disposable sharps including hypodermic needles, suture needles, cannulae, scalpel blades, etc., must be discarded directly and immediately into a sharps disposal container, **at point of use**. This means that sharps containers must be readily accessible to the work area. Disposable sharps are intended for single-use, and should not be re-used. In certain circumstances, for example large animal research or clinical applications, re-use may be necessary; this should only be done with great care and using safe re-sheathing techniques – see below.

- Sharps containers must comply with federal and state regulations: leak-proof, puncture-resistant, and have the universal biohazard symbol in red or orange. Sharps containers must be of the appropriate size for its purpose.
- Needles should not be re-sheathed prior to disposal. Needles must not be bent or broken prior to use or disposal. In **exceptional** circumstances, if re-sheathing **CANNOT** be avoided, a re-sheathing/removing device, forceps, hemostat, or a one-handed technique must be used. Under no circumstances may a needle be re-sheathed using two hands.
- In general it is the responsibility of the person(s) using the sharp to dispose of it properly. Do not leave sharps for someone else to dispose of.
- Under normal circumstances, needles should not be removed from syringes after use. When needles and syringes have been used and may potentially be contaminated with blood or other infectious materials, the needle and syringe should be disposed of as one unit into a sharps container and not disconnected from each other. In rare circumstances when blood or other potentially infectious material needs to be transferred from a syringe into a specimen bottle or tube, extreme care must be taken when removing the needle from the syringe. Removal should only be done with the aid of forceps or hemostat, and not by hand. The used needle should be discarded directly and immediately into the sharps container.
- Follow the manufacturers' instructions when assembling sharps containers taking particular care to ensure that the lid is properly fastened into position prior to use. Always use sharps containers fully assembled with the lid on.
- Sharps containers must be readily available in any area where sharps are likely to be used. For procedures where sharps are used, a sharps container must be available so that the sharp can be discarded directly and immediately into the sharps container after use. The container should be no more than arm's length from the work area.
- Used sharps must never be carried by hand or on a tray, they must be disposed of directly and immediately into a sharps container.
- Sharps containers should never be placed at floor level. They should always be placed out of the reach of children and where unauthorized people cannot gain access to them when not in use.
- It is the responsibility of the person in charge of the area to carry out a risk assessment to determine the safest places for sharps containers to minimize the risk of injury.

- The sharps container must remain in its designated place except when it is being used by a worker and therefore is under supervision. Research personnel who need to transport sharps boxes should ensure they are transported safely.
- Never attempt to retrieve any items from a sharps container.
- Never attempt to press down on the sharps to make more room in the sharps container – or shake the box.
- Sharps must be put into the sharps container and not left protruding from the container or left on top or lying around outside of the container.
- Do not fill sharps containers above the manufacturer's marked line. Check the sharps container before use to ensure it is not overfilled.
- Do not place used sharps containers ready for disposal into autoclave bags or any other bags.
- Keep temporary closure in place when the sharps container is not in use.
- If sharps are used in the treatment of animals or in research involving animals, appropriate restraint devices and techniques should be employed to minimize the risk of injury to personnel that could occur if the animals move unexpectedly.

Precautions during a Procedure that Involves the Use of Sharps

- Maintain visual contact with the procedure site and location of the sharp device at all times.
- When handling an exposed sharp, be aware of other staff in the immediate environment and take steps to control the location of the sharp to avoid injury.
- If more than one person is involved in the procedure, never hand-pass exposed sharps from one person to another. Instead, use a pre-determined neutral zone or tray for placing and retrieving used sharps. Verbally announce when sharps are being placed in the neutral zone.
- If the procedure necessitates reusing a needle, scalpel, or other sharp multiple times, re-sheath the sharp instrument between steps using a one-handed technique or a fixed device that enables one-handed re-sheathing.
- If using an engineered sharps injury prevention device, activate the safety feature as the procedure is being completed, observing for audio or visual cues that the feature is locked in place.

Precautions during Clean-up following a Procedure where Sharps are used

- Visually inspect procedure trays, or other surfaces containing waste materials used during a procedure for the presence of sharps that may have been left inadvertently.
- Transport reusable sharps in a closed container that has been secured to prevent the spillage of contents.

Precautions during and after Disposal of Used Sharps

- Do not dispose of sharps with other general or biohazard waste in such a way that they are likely to cause injury; do not dispose of sharps in anything other than a sharps container.
- Visually inspect the sharps container for hazards caused by overfilling (i.e., sharps protruding out of the top of the container). If the sharps container is overfilled, obtain a new container and use forceps or tongs to remove protruding devices and place them in the new container.
- Make sure the sharps container being used is large enough to accommodate the entire device.
- Avoid bringing the hands close to the opening of a sharps container; never place hands or fingers into a container to facilitate disposal of a device.
- Keep the hands behind the sharp tip when disposing of the device.
- If disposing of a sharp with attached tubing, be aware that the tubing can recoil and lead to injury; maintain control of the tubing as well as the needle when disposing of the device.
- Visually inspect the outside of waste containers for evidence of protruding sharps before moving or handling the container. If found, notify EH&S at 230-0129 for assistance in removing the hazard.
- Lock the top flap of the used sharps container when ready for final disposal (i.e. when the manufacturers marked level is reached or at intervals as specified by local procedures) using the locking mechanism on the closure. Handle used sharps containers with care.
- Keep filled and closed sharps containers awaiting final disposal in a secure area.
- For information on disposal of full sharps containers, contact Environmental Health & Safety or visit the website at <http://oregonstate.edu/ehs/>

Precautions for Improperly Disposed Sharps

- If an improperly disposed sharp object is encountered in the work environment, handle the device carefully, keeping the hands behind the sharp point at all times.
- Use a mechanical device such as forceps or tongs to pick up the sharp if it cannot be performed safely by hand. If handling the sharp without the assistance of a mechanical device, wear gloves.

Precautions for Glass

- Broken glass poses an injury hazard; contaminated broken glass poses an additional exposure risk. Cuts sustained by broken glass provide a portal of entry for pathogens.
- Wherever possible when cultures, blood, or other infectious materials are used, plastic ware should be substituted for glassware.
- Never pick up broken glass by hand; use forceps, tongs, scoops, or other mechanical means.
- Discard uncontaminated broken glass in a cardboard glass container. When the container is full but not overflowing, secure the lid with strapping tape and discard into the normal waste stream.
- Contaminated glass (i.e., broken or unbroken culture tubes or broken flasks) must be discarded into a sharps container. *Never* place contaminated glass in cardboard glass containers.
- If it is not clear whether broken glass is contaminated or not, it should be treated as described above for contaminated broken glass.

Accident Prevention: Safety - Engineered Sharps

For procedures involving the use of sharps, the principal investigator or his/her designee shall evaluate safety engineered sharps to determine if such sharps can be substituted for traditional sharps. Many manufacturers will provide samples at no cost for evaluation purposes. A listing of companies marketing sharps engineered for safety can be found at: <http://www.healthsystem.virginia.edu/internet/epinet/safetydevice.cfm#1>

- Where substitution of safety-engineered sharps will not compromise the procedure, federal regulations requires that these devices be substituted for all work involving human source materials. Oregon State University biosafety policy requires that safety-engineered sharps be used for all work involving Risk Group – 2 or higher pathogens.

- If the procedures would be compromised by the use of safety-engineered sharps, then the principal investigator shall prepare and maintain on file a signed document explaining why safety engineered sharps were determined to be unacceptable. This document must be available for inspection upon request by university, state, or federal authorities.

Emergency Procedures for Sharps Injuries and Exposures

- In the event of an injury involving a sharp instrument or object, the following steps should be used:
 1. Encourage bleeding of the wound, but do not directly massage the break in the skin.
 2. Wash the wound thoroughly with hot water and soap, if available. If no hot water is available, use cold water.
 3. Treat the wound with antiseptic from a first aid kit.
 4. Report the accident to the principal investigator or supervisor.
 5. Seek medical attention as appropriate. A minor cut with uncontaminated sharps may not require medical attention; personnel should use their best judgment. ***If the accident involves potential exposure to infectious materials, then medical attention is required.*** Accidents where the contamination status of the offending sharp is unclear should be treated as an exposure to infectious material.
- For minor medical attention, students may go to the OSU Student Health Service during daytime hours. Faculty and staff should go to the Corvallis Clinic, and for injuries / exposures occurring after 8:00 PM or for serious injuries, go directly to the Samaritan Hospital Emergency Room.

Reporting Requirements

- All forms for this section are available on the EH&S Website: <http://oregonstate.edu/ehs/forms>
- All injuries or accidents or exposures, no matter how minor, must be reported to the principal investigator or supervisor. The principal investigator or supervisor must keep a written record of all sharps injuries, and complete a Sharps Injury Log report to be returned to Environmental Health & Safety.
- “Near miss” accidents / injuries should also be reported to the principal investigator or supervisor. This will facilitate the plan review.
- Complete an OSU Report of Accident / Illness form. If medical attention was

obtained for employees, complete a SAIF 801 form. Both of these forms should be forwarded to Human Resources department, Kerr Administration, within 48 hours of the accident.

- Possible exposures to infectious or potentially infectious materials must be promptly reported to the Biological Safety Officer, 541-737-4557.

Plan Review

The effectiveness of this sharps safety plan should be reviewed after each incident, accident, or exposure by the principal investigator or supervisor.

Changes in the plan should be made accordingly. Changes in the program should be forwarded to the Biological Safety Officer for informational purposes.

Appendices

Attach additional specific SOPs or other supporting documents as appropriate.

References

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