ANA Backgrounder: Needlestick and Sharps Injuries

Background

The Centers for Disease Control and Prevention (CDC) estimates that each year 385,000 needlesticks and other sharps-related percutaneous injuries (NSI) are sustained by hospital-based healthcare personnel; an average of 1,000 sharps injuries per day. That estimate is not including other health care settings, such as emergency services, outpatient clinics, home-based care, and nursing homes. The Occupational Safety and Health Administration (OSHA) estimates that between 600,000 and 800,000 injuries occur annually in the United States from needles and other sharps (such as hypodermic needles, scalpels, suture needles, wires, trochanters, surgical pins, and saws).

Since there is no mandated database for NSIs, it is not possible to calculate accurate NSI prevalence. The current CDC estimate is based on a compilation of the voluntary reporting entities EPINet and the National Surveillance System for Healthcare Workers (NaSH). Compounding the difficulty in getting an accurate estimate of NSIs, is the fact that approximately half of all NSI go unreported by employees.

Bloodborne Pathogen Exposure

Risk for transmission of Hepatitis B virus (HBV), Hepatitis C virus (HCV), and Human Immunodeficiency virus (HIV) are of major concern following NSI involving a contaminated needle. The risk of transmissions varies by virus type, and the risk for HBV, HCV, and HIV are 6-30% (for those unvaccinated), 1.8%, and 0.3% respectively.

In 1991, OSHA passed the Bloodborne Pathogens (BBP) Standard in 1991, requiring employers to develop a written exposure control plan, implement universal precautions, provide personal protective equipment, use preventative engineering and work practices controls, and prohibit bending, recapping, and removing contaminated needles and sharps.

OSHA's Bloodborne Pathogen Standard (29 CFR 1910.1030) may be viewed directly at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10051

In 2000, the BBP Standard was amended to include the Needlestick Safety and Prevention Act which additionally required employers to use or provide safer devices and engineering controls, document NSI in a separate injury log—in addition to the OSHA 300 Log, and involve frontline employees in device evaluation and selection.

OSHA's Needlestick Prevention Act may be viewed directly: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=106_cong_public_laws&docid=f:publ430.106

Twenty-four states, Puerto Rico and the Virgin Islands have OSHA-approved State Plans and have adopted their own standards and enforcement policies which may mirror or have stricter enforcement policies regarding this topic. The National Institute of Occupational Safety and Health (NIOSH) provides an overview of State Needle Safety Legislation at: http://www.cdc.gov/niosh/topics/bbp/ndl-law.html.

Risk of Injury

All employees in health care settings handling needles or other sharps are at risk for NSI including nurses, physicians, nursing/patient care assistants, phlebotomists, housekeeping, laundry, surgical techs, residents, and public health workers.

NSI involving contaminated needles occur during device use, after device use but prior to disposal, and during disposal. Research demonstrates that the majority of NSI occurring during use and the time after device use but prior to disposal.

Many injuries can be attributed to improper work practices. Examples include injuries that occur: while sharps are being passed between different individuals, or transferred to a different location; due to recapping; during collisions between workers; and during decontamination or processing of used equipment. Personnel are also injured by the improper disposal of used sharps, such as when sharps are left in unusual locations including laundry, stuck in mattresses, left in pockets, and left on tables, trays, or other surfaces.

The design of needles and other sharps can impact the risk of injury. Specific devices that have an increased risk of NSI are: hollow-bore needles, devices that must be taken apart or manipulated by the health care worker, syringes that retain an exposed needle after use, and needles attached to tubing.

Injury Prevention

Fortunately NSI are preventable through sharps elimination, engineering controls (engineered safety devices), work practice controls, and establishment of a safety culture and climate, all of which are elements of a successful sharps injury prevention program. Considering the hierarchy of controls, the most effective way to safeguard against any occupational hazard is through hazard elimination or substitution.

There are several ways that needle and other sharp use can be eliminated or reduced. A prime example is the use of needle-free IV delivery systems that do not require needle access. According to the CDC, approximately 85% of US hospitals have eliminated unnecessary use of needles, and therefore reduced IV-related sharps injuries, through implementation of these devices.

Engineering controls, such as safety devices for sharps and needles, are another mechanism to prevent NSI. Generally, devices that are proactively engineered (i.e. the safety feature is built into the device, not added-onto a device already manufactured),

passively enabled, and are not able to be deactivated are most the effective in preventing NSI. Other desirable characteristics of safety devices include that the device is easy to use and practical and that the user can tell whether the safety feature has been activated.

Since the majority of safety devices are not passive and depend on the user to actively engage the safety mechanism, employee training and education is vital for injury prevention. Staff involvement in device selection is necessary to ensure that the most appropriate, user-friendly devices are purchased. Additionally, staff involvement in safety device selection will contribute to staff compliance with proper equipment, setting a climate for safety. Staff must also be educated and trained on safe work practices when handling sharps.

Safe Work Practices

Prior to starting a procedure involving sharps, ensure that all equipment necessary during the procedure are available and within arms reach. Adequate lighting should be available. Staff should locate the sharp disposal containers prior to starting procedure, or place one nearby. The patient's ability to cooperate should be assessed and additional help should be present if the patient will need to be physically stabilized. Cooperative patients should be instructed to avoid sudden movement. Sharps and needles should not be exposed until the moment they will be used and should remain pointed away from the user at all times.

During a procedure, maintain visual contact with sharps during use. It is important to remain cognizant of surrounding staff and control the location of sharps accordingly to avoid injury to self or others. Sharps should never be hand-passed, instead, a predetermined neutral zone or tray should be arranged to place and retrieve sharps. When placing or retrieving sharps from a neutral zone, an announcement should be made to alert other staff.

As soon as a procedure is completed, activate safety features of sharps, assessing for visual or auditory cues ensuring the safety feature has been fully activated and locked in place. All sharps should be accounted for. Double check trays, linens, and waste materials prior to handling for any missed sharps accidentally left behind. Reusable sharps should be transported in a secured closed container.

Prior to disposal of non-reusable sharps, visually inspect the container to ensure that there is enough room for the device to fit. During disposal, keep fingers away from the tip of the device, and avoid placing hands close to the entrance of the container. **Never** insert fingers into the container to facilitate disposal. For disposal of sharps with attached tubing (i.e. winged-steel or butterfly needle), there is a risk that the tubing can recoil and lead to injury. For this reason, it is important to maintain control of both the tubing and needle during disposal.

It is important to avoid overfilling of sharps containers. If, after disposing of a device, a sharp is protruding from the container opening, notify safety personnel or responsible staff to safely dispose of and replace the container. Safety personnel will use tongs or

forceps to safely remove the protruding sharp and place in an empty container. Sharps containers should be replaced **before** they become overfilled. If containers appear to be close to or over 2/3 full, notify the appropriate personnel to remove and replace the container. Additionally, if inappropriately disposed of sharps are discovered in the work environment, keep your hands behind the sharps at all times. If you are unable to safely handle the discovered sharp, use tongs or forceps to safely dispose of the device.

Injury Reporting

Health care facilities must track and document sharp injuries as required by OSHA. The sharps injury log must record (at minimum): the device type and brand (manufacturer) involved in the injury; the department or work area where the injury occurred; and an explanation of how the injury occurred. Staff must be encouraged to report not only sharp injuries but near-misses as well to better understand the injury mechanism and prevent further injuries.

Injury Management

If you experienced a needlestick or sharps injury or were exposed to the blood or other body fluid of a patient during the course of your work, immediately wash the affected area with soap and water and flush splashes to the nose, mouth, or skin with water for 15 minutes. Eyes should be irrigated with clean water, saline, or sterile irrigants for 15 minutes. **Immediately** report the incident to your supervisor and seek medical treatment. **Never** wait to report injuries.

There is a 24-hour hotline available to health care professionals regarding appropriate medical treatment for occupational exposure call the Clinicians' Post Exposure Prophylaxis Hotline (PEPline) at 1-888-448-4911.

Additional Resources:

CDC Workbook for Designing, Implementing, and Evaluating a Sharps Injury Prevention Program:
http://www.cdc.gov/sharpssafety/index.html

CDC Exposure to Blood. What Healthcare Personnel Need to Know:
http://www.cdc.gov/ncidod/dhqp/pdf/bbp/Exp_to_Blood.pdf

OSHA Bloodborne Pathogens Fact Sheet:
http://www.osha.gov/OshDoc/data_BloodborneFacts/bbfact01.pdf

NIOSH Safety and Health Topic: Bloodborne Infectious Diseases HIV/AIDS, Hepatitis B Virus, and Hepatitis C Virus:
http://www.cdc.gov/niosh/topics/bbp/

NIOSH Use of Blunt-Tip Suture Needles to Decrease Percutaneous Injuries to Surgical Personnel: Safety and Health Information Bulletin:
http://www.cdc.gov/niosh/docs/2008-101/pdfs/2008-101.pdf

MMWR Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HIV and Recommendations for Postexposure Prophylaxis:
http://www.cdc.gov/mmwr/PDF/rr/rr5409.pdf

MMWR Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis:
http://www.cdc.gov/mmwr/PDF/rr/rr5011.pdf

NIOSH Alert: Preventing Needlestick Injuries in Health Care Settings:
http://www.cdc.gov/niosh/pdfs/2000-108.pdf

NIOSH What Every Worker Should Know. How to Protect Yourself from Needlestick Injuries:
http://www.cdc.gov/niosh/docs/2000-135/pdfs/2000-135.pdf

General Office of Accountability (GAO) Report to Congress on Costs of Safer Needle Devices:
http://www.gao.gov/new.items/d0160r.pdf