

The current Federal standard for addressing needlestick injuries among healthcare workers is the OSHA bloodborne pathogens standard [29 CFR 1910.1030; 56 Fed. Reg.^{††} 64004 (1991)], which has been in effect since 1992. The standard applies to all occupational exposures to blood or other potentially infectious materials. Notable elements of this standard require the following:

- A written exposure control plan designed to eliminate or minimize worker exposure to bloodborne pathogens
- Compliance with universal precautions (an infection control principle that treats all human blood and other potentially infectious materials as infectious)
- Engineering controls and work practices to eliminate or minimize worker exposure
- Personal protective equipment (if engineering controls and work practices do not eliminate occupational exposures)
- Prohibition of bending, recapping, or removing contaminated needles and other sharps unless such an act is required by a specific procedure or has no feasible alternative
- Prohibition of shearing or breaking contaminated needles (OSHA defines *contaminated* as the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface)
- Free hepatitis B vaccinations offered to workers with occupational exposure to bloodborne pathogens
- Worker training in appropriate engineering controls and work practices
- Post-exposure evaluation and follow-up, including post-exposure prophylaxis when appropriate

Selecting and Evaluating Needle Devices with Safety Features

An increasing number and variety of needle devices with safety features are now available, but many of these devices have had only limited use in the workplace. Thus, healthcare organizations and workers may find it difficult to select appropriate devices. Although these devices are designed to enhance the safety of healthcare workers, they should be evaluated to ensure that:

- The safety feature works effectively and reliably
- The device is acceptable to the healthcare worker
- The device doesn't adversely affect patient care.

As employers implement the use of needle devices with safety features, they can use several guidelines to select and evaluate these products. These guidelines are derived partly from publications and other resources offering plans, evaluation forms, and related information in this new area [Chiarello 1995; Fisher 1999; SEIU 1998; EPINet 1999; Pugliese and Salahuddin 1999]. While healthcare settings are implementing the use of needle devices with safety features, they should seek help from the appropriate professional organizations, trade groups, and manufacturers in obtaining information about devices and procedures suitable for specific settings (e.g., dental offices). The major elements of a process for selecting and evaluating needle devices with safety features are listed here briefly:

*Taken from www.osha.gov.

1. Form a multidisciplinary team that includes workers to (1) develop, implement, and evaluate a plan to reduce needlestick injuries in the institution and (2) evaluate needle devices with safety features.
2. Identify priorities based on assessments of how needlestick injuries are occurring, patterns of device use in the institution, and local and national data on injury and disease transmission trends. Give the highest priority to needle devices with safety features that will have the greatest impact on preventing occupational infection (e.g., hollow-bore needles used in veins and arteries).
3. When selecting a safer device, identify its intended scope of use in the healthcare facility and any special technique or design factors that will influence its safety, efficiency, and user acceptability. Seek published, Internet, or other sources of data on the safety and overall performance of the device.
4. Conduct a product evaluation, making sure that the participants represent the scope of eventual product users.

The following steps will contribute to a successful product evaluation:

- Train healthcare workers in the correct use of the new device.
 - Establish clear criteria and measures to evaluate the device with regard to both healthcare worker safety and patient care. (Safety feature evaluation forms are available from the references cited earlier.)
 - Conduct onsite follow up to obtain informal feedback, identify problems, and provide additional guidance.
5. Monitor the use of a new device after it is implemented to determine the need for additional training, solicit informal feedback on healthcare worker experience with the device (e.g., using a suggestion box), and identify possible adverse effects of the device on patient care.

Ongoing review of current devices and options will be necessary. As with any evolving technology, the process will be dynamic, and with experience, improved devices with safety features will emerge.

Recommendations for Employers

To protect healthcare workers from needlestick injuries, employers must provide a safe working environment that includes safer needle devices and effective safety programs. Many types of needle devices are associated with needlestick injuries, and these injuries can occur in many ways. Thus, a combination of prevention strategies must be considered. Employers should take the following steps to implement a program for reducing needlestick injuries and to involve workers in this effort.

1. Employers of healthcare workers should implement the use of improved engineering controls to reduce needlestick injuries:
 - **Eliminate the use of needle devices where safe and effective alternatives are available.** The most obvious example of unnecessary needle use is the use of exposed needles to access or connect parts of an IV delivery system. For nearly a decade, needleless IV delivery systems and

protected needles have been available to remove or isolate this hazard. Examine information about your own institution to identify other unnecessary needle use.

- **Implement the use of needle devices with safety features and evaluate their use to determine which are most effective and acceptable.** Many devices are now available with safety features that isolate an exposed needle after use. An evaluation approach and references are provided in this document.
2. Needlestick injury reduction can best be accomplished when the use of improved engineering controls is incorporated into a comprehensive program involving workers:
- **Analyze needlestick and other sharps-related injuries in your workplace to identify hazards and injury trends.** Data from injury reporting should be compiled and assessed to identify (1) where, how, with what devices, and when injuries are occurring and (2) the groups of healthcare workers being injured.
 - **Set priorities and prevention strategies by examining local and national information about risk factors for needlestick injuries and successful intervention efforts.** Procedures and devices that have contributed to disease transmission (e.g., devices used to access a vein or artery) should receive the highest priority for intervention. Look to local and national resources for information about the types of devices and work practices that have been successful in reducing injuries.
 - **Ensure that healthcare workers are properly trained in the safe use and disposal of needles.** Healthcare workers and students in the health professions should be trained to use needle devices properly and to maximize their personal protection throughout the handling of these devices. As safer devices are introduced, worker training is essential to ensure proper use [Ihrig et al. 1997].
 - **Modify work practices that pose a needlestick injury hazard to make them safer.** Hazards that can be eliminated by modifying work practices include injuries due to recapping, failing to dispose of a needle device properly, passing or transferring such a device, and transferring blood or body fluids from a device into a specimen container. Also, specimen collection can be coordinated to reduce the number of times needles are used on a patient, thereby reducing both worker risk and patient discomfort. In some cases, the use of devices with safety features will reduce or eliminate these risks. In all cases, involving healthcare workers will help identify and resolve safety issues. Employers should thus review current procedures for reporting and addressing hazards related to needles and other sharps.
 - **Promote safety awareness in the work environment.** Many needlestick injuries result from unexpected circumstances such as sudden movement by a patient or collision with a coworker or needle device. Healthcare workers should be trained to be constantly alert to the injury potential when an exposed needle or other sharp device is being used. A number of job-related factors influence the adoption of safety behaviors by healthcare workers [Dejoy et al. 1995; Murphy et al. 1996; Gershon et al. 1995]. These workers often place patient needs before their personal safety. They are less likely to perform a safety measure they perceive to interfere with patient care or to require added steps. Therefore, employers must address both the hazards that contribute to needlestick injuries and the institutional barriers and attitudes that affect safe work practices [Hanrahan and Reutter 1997].

- **Establish procedures for and encourage the reporting and timely follow up of all needlestick and other sharps-related injuries.** Reporting of needlestick injuries is essential to (1) ensure that all healthcare workers receive appropriate post-exposure medical management and (2) provide a record for assessing needlestick hazards in the work environment.
- **Evaluate the effectiveness of prevention efforts and provide feedback on performance.** Employers need to ensure that healthcare workers are adopting the recommended prevention strategies and that the changes they make have the desired effect. Thus, they should provide a forum to assess worker perceptions, evaluate compliance, and identify problems.

Recommendations for Workers

To protect them and their coworkers, healthcare workers should be aware of the hazards posed by needlestick injuries and should use safety devices and improved work practices as follows:

1. Avoid the use of needles where safe and effective alternatives are available.
2. Help your employer select and evaluate devices with safety features.
3. Use devices with safety features provided by your employer.
4. Avoid recapping needles.
5. Plan safe handling and disposal before beginning any procedure using needles.
6. Dispose of used needle devices promptly in appropriate sharps disposal containers.
7. Report all needlestick and other sharps-related injuries promptly to ensure that you receive appropriate follow up care.
8. Tell your employer about hazards from needles that you observe in your work environment.
9. Participate in bloodborne pathogen training and follow recommended infection prevention practices, including hepatitis B vaccination.