

Infection Control Resource

Vol. 1, No. 1

Prevention Strategies for the IC Practitioners and Professional Nurses

OUR MISSION

Welcome to the inaugural issue of our quarterly publication. The *Infection Control Resource: Prevention Strategies for IC Practitioners and Professional Nurses* will cover practical, clinically relevant topics in the field of infection control. We hope the articles in this and future issues will not only be relevant to the infection-control practitioner but also address the information and training needs of the professional nurse. This focus on the needs of both the IC professional and the staff nurse is, we believe, not adequately provided by currently available publications. It is our aspiration to serve as a resource for both groups of professionals in their mutual goal of improving infection control for patients and healthcare workers.

Our premier issue focuses on the U.S. Needlestick Safety and Prevention Act, which became law on November 6, 2000. In 1999 the Detroit Medical Center (DMC) Infection Control Committee formed the Safer Sharps Subcommittee to evaluate and implement devices with engineered sharps-safety protection and to review safe work practices. The experiences of the DMC, as recounted by Elaine Flanagan, are illustrative of the process of preparing for compliance. Also in this issue, Gwen Beiningen discusses the critical role that the front-line healthcare worker plays in the implementation of this new law.

Each edition of the newsletter provides an opportunity to earn continuing education credits (CE). Please refer to page 7 for complete instructions.

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Implementing a sharps-injury prevention program

by Elaine Flanagan, RN, BSN, MSA, CIC;
Tammy Lundstrom, MD

The Needlestick Safety and Prevention Act became law in the U.S.A. on November 6, 2000 and authorized the Occupational Safety and Health Administration (OSHA) to require the use of sharps devices with engineered safety features. The revision was published in the *Federal Register* on January 18, 2000 with the effective date of April 18, 2001.¹ After April 18, states with state OSHA plans had six months to make their plans at least as effective as the federal OSHA's. If a state needle-safety law is more stringent than the federal law, the additional state requirements must be adhered to.

The use of devices with engineered sharps injury protection was already required by a November 1999 OSHA compliance directive regarding exposure to bloodborne pathogens.² The new provisions of the Needlestick Safety and Prevention Act add to that by including:

- exposure-control plans that reflect how employers implement new developments in sharps injury-prevention technology. These must be reviewed annually.
- engineering control definition to include devices with engineered sharps-injury protection as well as needless intravenous administration systems.
- input by front-line healthcare workers (non-managerial) into identification, evaluation, and selection of devices and other controls, with documentation in the exposure-control plan.

Continuing Education

CE

For Infection Control Professionals And Nurses

SEE PAGE 7

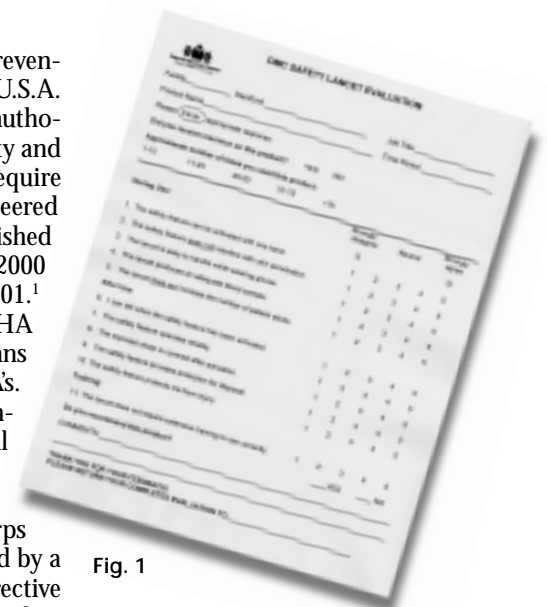


Fig. 1

- a sharps-injury log that includes injuries from contaminated sharps that penetrate the skin. It must contain the type and brand of device involved; location of incident, including the department or work area where the incident occurred; description of how the incident occurred; and body part affected. This log does not replace the general work-related injury logs and forms OSHA 200 and 201.¹

The federal OSHA does not require the use of all safety devices or specify any particular device. Those that are chosen must be (1) appropriate: based on reasonable judgment in individual cases, the device will not jeopardize patient or employee safety or be medically inadvisable; (2) commercially

Continued on page 5

Needlestick and other sharp-object injury prevention: Healthcare workers' roles

by Gwen Beiningen RN, MS, CIC

Life involves balancing safety and hazards. When individuals cross the street, risk of personal injury exists. Using caution, observing traffic, and crossing at appropriate places helps to lessen these risks of personal injury. As a modern society, we strive to minimize and prevent hazards whenever possible. Every occupation involves similar balances of practicing safety and minimizing hazards. In healthcare, acquisition of bloodborne pathogens, or a disease transmitted through exposure to blood and other potentially infectious materials, is a clear and present danger.

Approximately 600,000 to 800,000 sharp-object injuries occur annually among healthcare workers in the United States. This figure is low; about half of the injuries are estimated to go unreported to the employer. The Centers for Disease Control and Prevention (CDC) received reports of 56 documented cases and 136 possible cases of occupationally acquired HIV infections among healthcare workers in the United States between 1985 and December 1999. In 1997, 500 healthcare providers were estimated to have acquired hepatitis B. Although acquisition of hepatitis B declined sharply between 1985 and 1996, likely related to improved hepatitis B vaccination of healthcare providers, these numbers are not acceptable. Estimates of occupational hepatitis C transmission are difficult to quantify. However, studies indicate that the risk of infection averages about 1.8% per needlestick or sharp-object injury when the device is contaminated with the hepatitis C virus.¹

Medical science and technology have contributed greatly to improved patient outcomes. Advancements in surgical procedures, medical interventions, and pharmaceuticals have allowed faster diagnoses and improved treatments. However, for

every action there is an equal and opposite reaction. Invasive treatments and therapies often involve the use of a needle or other sharp object. These sharp objects are routine instruments of healthcare practice that can cause harm to healthcare providers, potentially transmitting bloodborne pathogens. In addition, the emotional impact of a sharp-object injury can be terrifying and long lasting, even when infection does not occur.

Preventing disease transmission

History reveals that ancient civilizations practiced healthcare using prevention as well as curative rituals. Archeological studies show that primitive societies wore amulets to protect themselves from evil influences and used magical talismans to bring good luck. When these protective measures were unsuccessful and illness struck, they sought cures from designated healers such as shamans or medicine men. These healers believed that they frightened evil spirits from the body or forced the body to endure such uncomfortable living conditions that the evil spirit would not want to remain.^{2,3}

Modern medicine continues this pattern of prevention first and curative strategies when prevention has not been successful. Preventing sharp-object injuries is the first line of defense in reducing occupational acquisition of bloodborne pathogens or illnesses. In response to increasing documentation of the hazards of sharp objects, the Occupational Safety and Health Administration (OSHA) published *Occupational Exposure to Bloodborne Pathogens: Final Rule* in 1991, initiating a cascade of other events.⁴ Manufacturers developed products with engineered safety features. California led the country by enacting the first needlestick legislation, which went into effect in 1998. OSHA followed suit by revising *Enforce-*

Focus on the Professional Nurse

Self-sheathing Safety Feature

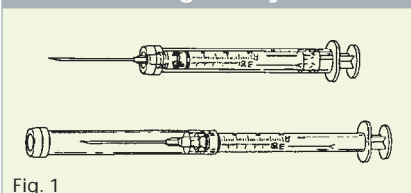


Fig. 1

ment Procedures for the Occupational Exposure to Bloodborne Pathogens in 1999.⁵

In April of this year, the federal Needlestick Safety and Prevention Act became effective.⁶ In order to understand this act, there are some terms you should be familiar with:

Engineering controls: controls or devices that isolate or remove bloodborne-pathogen hazards from the workplace. Some examples are sharps disposal containers and self-sheathing needles. Engineering controls can be divided into two categories: needleless systems and sharps with engineered sharps injury protection.

Needleless systems: devices that do not use needles for collecting or withdrawing body fluids after initial venous or arterial access is established, for administering medication or fluids, or for performing any other procedure that has the potential to cause occupational exposure to bloodborne pathogens through percutaneous injuries from contaminated sharps. Examples include intravenous (IV) medication systems, which administer medications or fluids through a catheter port using non-needle connections, and jet injection systems, which deliver liquid medication beneath the skin or through a muscle. These systems eliminate the risk of sharp-object injuries because the sharp needle is no longer necessary for accessing the IV catheter port or administering injected medications.

Sharps with engineered injury protection: nonneedle sharps or needle devices (used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids) with a built-in safety feature or mechanism that effectively reduces the risk of exposure. Examples of these are syringes with a sliding sheath that shields the attached needles after use — helpful in eliminating the need to recap (figure 1); needles that retract into a syringe (figure 2); shielded or retracting catheters; and intravenous solution-delivery systems that use a catheter port with a needle housed in a protective covering.⁵ These types of protection minimize the risk of injury while transporting or discarding the device by protecting the used needle.

Choosing safety devices

Front-line healthcare providers—those who use sharps devices most—are key individuals who must be involved in combating injuries. They should be proactive and contribute to sharp-object injury-prevention initiatives. Clear and effective communication, safe use of engineered sharps devices, and proper reporting of sharp-object injuries all play integral roles in injury-prevention programs throughout all healthcare settings.

Clear and effective communication is essential to prevent sharp-object injuries. Although healthcare facilities must strive to provide a safe working environment, individuals who routinely handle sharp objects have the intuition and expertise to identify hazards. It is important that healthcare providers observe how sharp objects are handled and discarded. When you see a potential hazard, report this to the appropriate individual in your facility such as a safety officer, an infection-control practitioner, or the employee health department. If you are unsure whom to contact, a supervisor should be able to pass this information on to the appropriate person. It is everyone's responsibility to help your employer provide a safe working environment.

Numerous safety devices are already on the market, and many more will become available. Users of sharp objects are vital to the process of deciding which devices to purchase. They understand the everyday use and management of the devices and can provide insight into risk reduction, product comparisons, and likelihood of compliance.

Retractable Technology Safety Feature

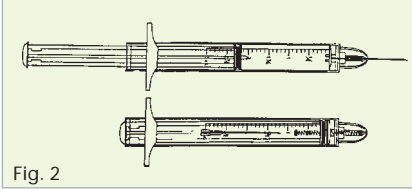


Fig. 2

Each safety device considered must be individually evaluated and accepted on its own merits.

Users of sharp objects *must* be asked to help evaluate engineered safety devices during pre-purchase discussions. Small groups may review safety products on the market and select those most applicable to the specific work setting. Some of these first reviewers will be front-line device users.

Although not all healthcare providers can be active participants in this decision-making process, your input can count. Information about safety devices you have seen in journals, at conventions or meetings, or used in other healthcare facilities can be relayed to decision-making groups. Give your information to the safety director, the occupational health department, the infection-control group, or the purchasing department. Your supervisor can also direct suggestions to appropriate personnel.

Before the final decision to purchase, users will be asked to trial the products. Users' experience and comments are crucial in determining the best choices for a given setting. Sometimes, several trials might be needed before the best product can be selected. Be patient, keep an open mind, and offer your comments truthfully and promptly.

Keep a positive approach. Change is inevitable, and all healthcare workers should expect modifications in sharp-object handling. Some people might resist making changes or learning new processes. Reinforce the message of care and concern for the safety of all healthcare workers and the desire to maintain a safe working environment. An open mind, patience, and acceptance are critical during this time.

Certain attributes are common to effective safety devices:⁵

- The device eliminates unnecessary needles.

- Use of the product requires use of the safety feature.
- The safety feature is an integral part of the device and not an accessory.
- The safety feature does not obstruct vision of the tip of the sharp.
- The product does not require more time to use than a similar, conventional device.
- The safety feature can be worked well by a wide variety of hand sizes.
- The product is easily handled by someone wearing gloves.
- The safety feature does not interfere with normal use of the product.
- The product can be used by both left- and right-handed personnel.
- The device provides a barrier between the user's hands and the needle.
- The safety feature requires the user's hands to remain behind the needle at all times.
- The product does not cause harm or discomfort to the patient.
- When the safety feature is activated, there is a clear and unmistakable sign (audible or visible).
- The safety feature operates reliably.
- The safety feature is in effect before disassembly and remains in effect after disposal.
- The device is simple, and the user does not need extensive training for correct operation.
- It is not easy to skip a crucial step in proper use of the device.

Be a leader. Volunteer to participate in evaluating safety devices. Encourage others to participate as well. If you are asked to help review safety devices, your voice will certainly be heard.

Safety features can be active or passive. A passive safety feature is integral to the device and is activated by simply using the



device—for example, the lancet that automatically releases and then retracts into the device when used. The lancet is then encased and protected within the device.

Active safety features require the user to deliberately engage the safety feature. An example of an active device is a resheathable needle and syringe; the user must manually slide the sheath over the needle. As soon as possible after use, the user must observe the safety feature to verify its successful activation. Remember that the safety feature protects not only the user but also individuals who might later come in contact with the device, such as co-workers, housekeeping staff, maintenance and waste-management workers.

Proper use

Once safety devices have been purchased, their proper use and handling helps to assure a safer environment for both the initial user and any other handlers. New employees should understand how current safety devices function and are disposed of, with training provided prior to first use. As new safety devices are purchased, all users of the products must be trained by either the facility or the manufacturer. Users are then accountable and responsible for the correct use of these devices.

Regardless of whether a device has a safety feature, immediately discard the used sharp object in the designated sharps container. When a sharps container is not nearby, bring along a portable container for easy access. Check the container opening to be sure that the sharp object has truly dropped into the box and is not protruding through the opening.

Sharps containers can have a variety of engineered safety features—for instance, containers with windows allow users to see the contents and to determine when the container should be discarded.

Some sharps containers remain open until full, at which point they are secured shut. Sharp objects are simply dropped into the container, allowing the user to discard the object with one hand and with one step. Other containers have covered openings, requiring the user to manipulate a lever to open them. The cover is a safety feature that reduces the possibility of sharp objects protruding out of the opening.

Many sharps container designs enable sharp objects to lie stacked horizontally. When unsuitable items, such as gloves or cotton balls, are placed in the container, the horizontal stacking feature is eliminated, and the sharp object can protrude from the container. Users must understand the proper function and handling of sharps containers in a given setting.

Reporting

Although all possible prevention strategies might have been taken, injuries can still occur. Injured healthcare providers must immediately report the sharps-object injury to help improve the prevention program data up to date and to receive any necessary counseling or prophylaxis.

Employers record injuries as an essential part of the prevention program. This information is analyzed to help identify additional prevention strategies. The injured individual will be asked many questions to more effectively understand the injury, such as the type and brand of the device, safety feature use and/or failure, the specific circumstances surrounding the injury, and the methods or suggestions for how the incident could have been avoided. Complete and thorough understanding of the event will provide insight into prevention strategies.

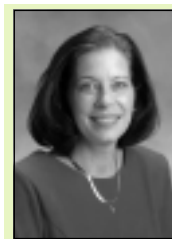
Another important reason for reporting sharp-object injuries is access to post-exposure counseling and possible prophylaxis. Counseling might include education for prevention of similar injuries, advice on avoiding infection transmission to others, and recommendation of medications to reduce the risk of infection after the

exposure. Healthcare providers who do not report sharp-object injuries and other body-substance exposures will not receive this information, and they risk transmitting infection to others.

U. S. regulatory agencies have recently promulgated stronger rules for sharp-object injury prevention among healthcare workers. A safe working environment is a primary concern. All healthcare workers play a vital role in sharp object injury prevention and are the cornerstone of any prevention program. Be a leader. Communicate information that will help to build a stronger sharp object injury-prevention program. Be a role model with impeccable sharp object handling technique. Learn how to use engineering controls and to dispose of sharp objects appropriately. Report sharp-object injuries immediately. Occupational transmission of blood-borne pathogens should become a phenomenon of the past!

References

1. Rosenstock L. Statement for the Record before the Subcommittee on Workforce Protections. Washington, DC: Committee on Education and the Workforce, U.S. House of Representatives; June 22, 2000.
2. Sellev, Ebel, ed. *A History of Nursing*. 3rd ed. St. Louis: CV Mosby Co; 1955:25–35.
3. Dock L. *A History of Nursing*. New York, NY: The Knickerbocker Press, G. P. Putnam's Sons; 1907:12–25.
4. Occupational exposure to bloodborne pathogens. *Federal Register*. December 6, 1991;56:235.
5. *Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens (CPL 2-2.44D)*: November 5, 1999.
6. Occupational exposure to bloodborne pathogens: needlesticks and other sharps injuries; final rule. *Federal Register*. 18 January, 2001;66[12].



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Implementing a sharps-injury prevention program — Continued from page 1

available in sufficient quantity to maintain the supply for use; and (3) effective: based on reasonable judgment, the device will decrease the chance of an exposure incident involving a contaminated sharp. Whenever a device with engineered safety features is available but not used for a particular procedure or in a particular setting, this should be well documented.

Sharps injuries

The Centers for Disease Control and Prevention (CDC) estimate that, adjusting for under-reporting, over 384,000 percutaneous injuries occur annually among healthcare workers in hospital settings and 590,200 in outpatient care.³ These injuries expose the healthcare worker to bloodborne pathogens such as human immunodeficiency virus (HIV), hepatitis B virus, and hepatitis C virus.⁴ The risk of acquiring these bloodborne viral diseases following a sharps exposure is 0.3%, 10–30%, and 1.8–3%, respectively.⁵ OSHA has required since 1991 that healthcare workers being hired who will be at risk of exposure to bloodborne pathogens be offered free hepatitis-B vaccination prior to clinical practice.¹

CDC's NaSH database (National Surveillance System for Hospital Healthcare Workers) and the EPINet database at the University of Virginia's International Healthcare Worker Safety Center have demonstrated that sharps injuries occur most frequently in patient rooms. Nurses report the most frequent exposure (49.7%) and physicians rank second at 12.6% (EPINet 1995). Hollow-bore needles were the cause in 68.5% of cases and are a higher-risk device due to the lumen, which contains a higher concentration of blood than non-lumen sharps.⁴ Injuries with the greatest risk for seroconversion are those that occur with a hollow-bore needle that has been in the vein or artery of a patient, is visibly contaminated with blood, and has been utilized in a patient with advanced HIV infection.

Preparing for compliance

In response to the 1999 OSHA directive re bloodborne pathogens and to the pending OSHA needlestick legislation, the Detroit Medical Center (DMC) Infection Control Committee formed the Safer Sharps Subcommittee (SSC) in Novem-

ber 1999 to evaluate and implement devices with engineered sharps-safety protection and to review safe work practices. The experiences of the DMC are illustrative of the process of preparing for compliance.

The DMC is affiliated with Wayne State University and consists of seven hospitals, more than 100 ambulatory sites, and two long-term care facilities. These sites are represented at the DMC Infection Control Committee, which meets monthly. The Safer Sharps Subcommittee also meets monthly and is chaired by the DMC hospital epidemiologist. Membership is multi-disciplinary with a broad representation from all sites; it includes nursing and medical staff, with representatives from Anesthesia, Operating Room (OR), Intravenous Drug Therapy, Occupational Health, Education, Ambulatory, Laboratory, Purchasing, Safety, and Epidemiology. The membership includes front-line healthcare workers and management. The SSC identified several goals:

- Review all safety devices currently being used and the feasibility of instituting more advanced engineering controls to protect the healthcare worker.
- Review blood and body fluid exposures (BBFE) to determine the most frequent causes of exposure (e.g., device type, location, unsafe work practices) and BBFE rates, to be used in defining prevention priorities.
- Review the literature for current data on sharps injury statistics and FDA-approved devices.
- Create subteams with adequate representation from front-line healthcare workers to review devices available for specific tasks or procedures and make recommendations as to which devices to further evaluate.
- Coordinate product evaluations and develop evaluation tools.

- Monitor and coordinate training prior to device implementation.
- Develop educational materials on safer OR and non-OR work practices, educating all healthcare workers regarding BBFE reduction.
- Provide procurement officers with cost-benefit analyses of safer devices.
- Standardize data collection and reporting of BBFE.



Fig. 2*

- Update the exposure-control plan annually with a safer sharps plan.
- Track device-specific injury rates after implementation of safety devices so as to track injury reduction.

To evaluate safe work practices and select appropriate safer needle devices, the committee reviewed the available needlestick injury data, provided by Occupational Health Services, including the personnel involved, the devices used, and the circumstances and frequency of needlestick events. The committee did not limit itself only to sharps-device evaluation. One problematic injury type identified in 1999 was needlestick injuries occurring while disposing of a sharp. The DMC evaluated sharps-disposal containers, eventually supplying a new brand of container, which resulted in a 50% reduction in such injuries (figure 2.*). Key factors in choosing the product were its safety mechanism to prevent overfill, its tamper-proof design with a Seal of Acceptance™ from the Alliance of Children's Hospitals, and its design that minimized needle-tip flipback.

All containers for contaminated sharps must meet OSHA's bloodborne pathogens standard requirements.⁶ They must be sealable and puncture resistant, leakproof on sides and bottom, and labeled with a biohazard symbol. In evaluating sharps containers, it is important to remember that no single design meets all the needs for all healthcare settings. Evaluators should consider functionality, accessibility, visibility, and accommodation. These considerations are discussed in the CDC/NIOSH booklet on selecting and evaluating sharps-disposal containers.⁷

Reviewing current safety products

When the SSC began to meet, it determined what safety devices were currently in use at all DMC sites. Most had been using a needleless intravenous administration system. As standardization of product can lead to improvements in safety (through increased familiarity with use), a single product was elected for purchase for

Blood and body fluid exposure rates

The monthly blood and body-fluid exposures are reported by Occupational Health Services to each site's infection-control committee. This helps to reveal any trends in type of device involved and/or if the exposure is a practice issue. It is also useful for providing guidance whether a new safety device is effective in reducing the BBFE rate. Exposure rates are defined as employee blood and body-fluid exposures per 1,000 patient days. Control limits are

Evaluation and implementation

The SSC is divided into subteams for each device chosen for evaluation, with a coordinator designated to lead the team. Teams research the market for safety device availability, collect and review product availability, and report back monthly to the SSC. Available devices are then procured and the team narrows the field to three or four choices based on desirability of features as outlined in the NIOSH document.⁸ Interested front-line workers at various sites volunteer to participate, identifying areas for evaluation and designating the person in charge of the evaluation. Before the device is evaluated, its vendor and the DMC education department teach the volunteers about using the device. Their evaluations are tabulated and reported to Safer Sharps Committee, the Product Evaluation Committee and the DMC Infection Control Committee. †Two evaluations completed at the DMC were safety lancets and a safety butterfly. †Samples of the evaluation forms are shown in figures 1 and 3.

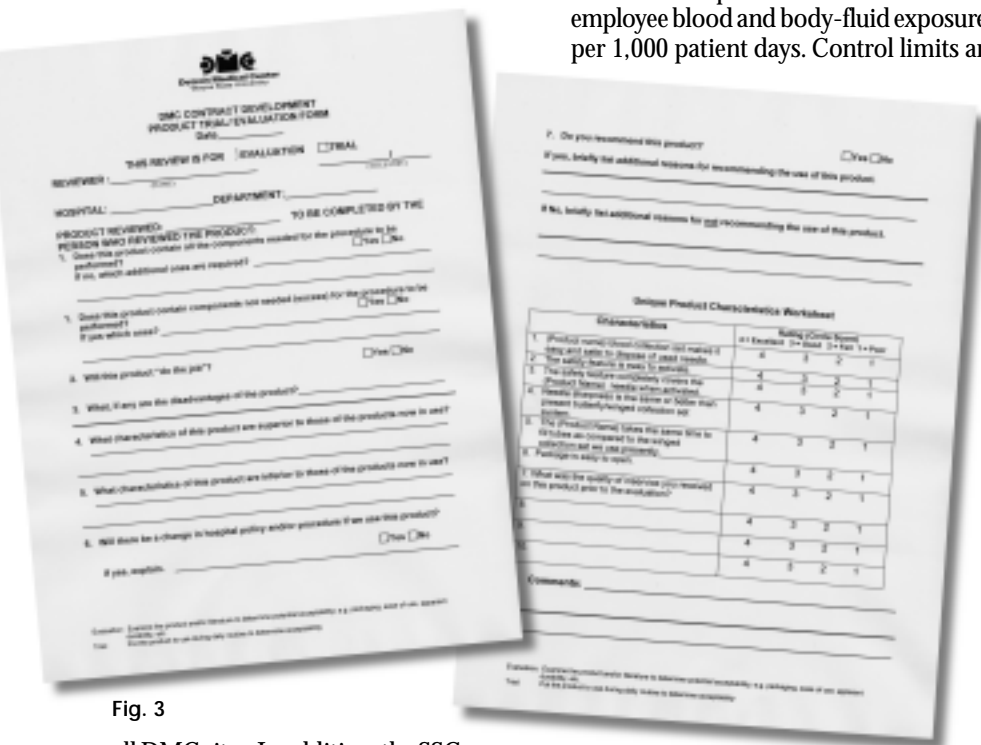


Fig. 3

all DMC sites. In addition, the SSC conducted unit-by-unit surveys of use of the product, providing additional training where necessary. Components of the needleless system were re-located to adjacent shelves in the Pyxis system to discourage use of needles. If a safety device had been utilized successfully at one site, its use was quickly expanded to the entire DMC until that device was up for review. In cooperation with Nursing, Pharmacy, the CPR committee, and Materials Management, Code Blue carts were supplied with needleless emergency medications where possible.

The process of improving employee safety is ongoing as new procedures or practices are introduced and device technology advances. The SSC also continues to educate first responders and to replace their stock with needleless IV tubing systems that are compatible with DMC equipment. Cost savings have been achieved through standardization as well as reduction in injuries.

used to monitor for increasing rates. The site-specific rates are combined into one DMC rate used by the DMC Infection Control Committee, by the SSC, and in reports to senior leadership.

Prioritization of devices

Committee members reported on the most frequently used high-risk devices at their sites. They also reviewed the literature for current information on the topic. High-risk items identified by US EPINet 1998 included hollow-bore blood filled sharps, phlebotomy needles, winged steel needles, IV catheters, capillary tubes, and syringes. Devices were ranked by injury rate and risk of viral transmission; they included lancets, angiocaths, phlebotomy devices, IM syringes, and re-sheathing vacuum type devices. A review of the DMC BBFE rate and type of device related to exposures indicated that the winged steel (butterfly) needle was the most frequent cause of exposure for the healthcare worker.

Before approved devices are introduced into the DMC system, all staff are trained by the vendor and the education department. The in-service is "hands on" with a return demonstration to assure the healthcare worker understands how to use the device safely. The non-safety device is removed from stock by Materials Management as the new safety device becomes available. Managers assist by performing inventory on their supply units to assure the products are replaced with the approved safety device. The old device is removed from stock as the new safety device becomes available

Monitoring

Use of safety devices is monitored continuously at various system levels through feedback to the committee and on-site reviews of BBFEs at the site-specific infection control committees. The BBFE report compiled by Occupational Health Services describes the incident in detail: type and brand of device used, description of procedure and employee statement of incident, location, and body part that was injured. Units are encouraged to use all safety devices available through inservices, posters, and projects on safe work practices. For instance, the education department offers "inservice in a Baggie" for the units to reinforce needleless transfer of blood from syringe

into collection tube or culture bottle.

It is important to review safe work practices, especially when no safety device technology exists for a particular procedure. Patient movement, crowded work areas, lack of familiarity with procedure or equipment, and passing sharps to another HCW are all hazards for BBFEs.

Cost analysis

Safety devices can reduce BBFEs and expenses for the hospital. Cost analyses are performed as safety devices are implemented. One sharps injury can cost from \$500 to \$2,500⁹ whereas the cost of sharps with safety devices compares with that of conventional needles. If a safety device is 1.5–2.0 times more costly than a conventional device in moderate- and high-risk exposure situations, or if it is 2.0 times more costly for high-risk exposures, then the cost of the safety device is offset by the cost of post-exposure prophylaxis and followup. The safety device is *not* cost effective if it is 3.5 times more expensive than exposure.⁹ Hospitals promoting safety devices might also reduce liability for injured healthcare workers by reducing the risk of needlesticks.

Information sources

Healthcare institutions preparing for the new legislation can find many sources of information and assistance on the Internet. References 8 and 10 are useful resources for those implementing sharps-injury programs. Samples of data-collecting forms that meet the criteria for recording blood and body-fluid exposures can be obtained from the EPINet Web site.¹¹

References

1. OSHA. Occupational exposure to bloodborne pathogens: needlesticks and other sharps injuries: final rule (OSHA 29 CFR Part 1910) *Federal Register* January 2001; 66:5318–5325.
2. OSHA (1999b). OSHA Directives 2-2.44D. Enforcement procedures for the occupational exposure to bloodborne pathogens. Washington, DC: U.S. Department of Labor, Occupational Safety and Health Administration. Date assessed: November 11, 1999. www.osha-slc.gov/OshDoc/Directive_data/CCPL_2-2_44D.html
3. CDC: Panlilio AL, Cardo DM, Campbell S, et al. Estimates of annual number of percutaneous injuries in US healthcare workers. Presented at 3rd Decennial Conference on Nosocomial Infections, Atlanta; March 2000.
4. Ippolito G, Puro V, Petrosillo N, Pugliese G, Wispelwey B, Tereskerz PM, et al. Prevention, management, and chemoprophylaxis of occupational exposure to HIV. Charlottesville, VA: Advances in Exposure Prevention, International Health Care Worker Safety Center, 1997.
5. CDC "Recommendations for preventing transmission of human immunodeficiency virus and hepati-

6. OSHA. Occupational exposure to bloodborne pathogens; final rule (OSHA 29 CFR 1910.1030). *Federal Register* 1991; 56:64175–64182.
7. Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. Selecting, evaluating and using sharps disposal containers. Atlanta, GA January 1998.
8. NIOSH. Preventing needlestick injuries in healthcare settings. *NIOSH Alert*, November 1999. DHHS (NIOSH) Publication No. 2000-108. (www.cdc.gov/niOSH)
9. United States General Accounting Office. Occupational safety: selected cost and benefit implications of needlestick prevention devices for hospitals. (GA)-01-60R, November 17, 2000.
10. Pugliese G, Salahuddin M, eds. 1999. Sharps injury prevention program; a step-by-step guide. Chicago, IL: American Hospital Association.
11. University of Virginia International Healthcare Worker Safety Center. EPINet data collection form for needlestick and sharp object injuries. (www.med.virginia.edu/epinet) Date assessed: November 11, 1999.

* SharpsStar® (Kendall, Mansfield, MA)

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The Association for Professionals in Infection Control and Epidemiology, Inc. (APIC) is accredited as an approver of continuing education in nursing by the American Nurses Credentialing Center's Commission on Accreditation (ANCC).

Upon completion of this program the participant will be able to:

1. List four (4) new requirements of the revised OSHA Bloodborne Pathogen Rule.
2. Identify high risk sharps devices for exposure to bloodborne pathogens.
3. Understand the evaluation process for implementation of devices with engineered sharp injury protection and the prioritization of high-risk devices for trial.
4. Identify three roles healthcare workers play in sharp object injury prevention programs.
5. Describe five (5) safety device features.
6. List three (3) healthcare worker activities designed for proper use and handling of safety devices.

To receive a continuing education credit, simply do the following:

1. Read **both** articles.
2. Complete the post test for both articles. (You may make copies of the answer form).
3. Complete the participant evaluation.
4. Mail or fax the complete answer and evaluation forms to address below.
5. To earn 1.0 contact hours of continuing education, you must achieve a score of 70% or more. If you do not pass the test you may take it over one more time.
6. Your results will be sent within four weeks after form is received.
7. **The fee has been waived through an educational grant from Kendall, a business unit of Tyco Healthcare.**
8. Answer forms must be postmarked by August 17, 2006

Mark your answers clearly with an "X" in the box next to the correct answer.

Name & Credentials _____
Position/Title _____
Address _____
City _____ State ____ Zip _____
Phone _____
Fax _____
License# _____
SS# _____

Mail to:

Saxe Healthcare Communications
PO Box 1282, Burlington, VT 05402
Fax: 802.872.7558

1. Healthcare workers have responsibilities in healthcare sharp-object prevention programs.
 - a. true
 - b. false
2. All of the following are sharps with engineered sharps-injury prevention except:
 - a. syringe with sliding sheath that shields the attached needle after use
 - b. needles that retract into a syringe after use
 - c. retracting catheters
 - d. non-blunted suture needles
3. A sharp-object hazard includes:
 - a. needles/syringes in trash containers
 - b. use of a sharp needle on a piggyback IV line that can accept needleless devices
 - c. a co-worker not activating the safety feature
 - d. all of the above
4. The healthcare worker's role in purchase decisions for engineered safety devices can include:
 - a. cleaning up a body-fluid spill when it is observed
 - b. participating in pre-selection of engineered safety devices
 - c. completing questionnaires when the facility tests new engineered safety devices
 - d. B and C
5. Which feature is NOT recommended for an ideal safety device:
 - a. The safety feature requires the worker to slow down and pay attention to the job duty.
 - b. The safety feature can be activated with one hand.
 - c. The product is easy to handle while you are wearing gloves.
 - d. The safety feature is an integral part of the device, not an accessory.
6. Proper handling of sharp objects requires the worker to:
 - a. learn how to activate the safety feature.
 - b. dispose of the object in the designated sharps box.
 - c. recap the device immediately after use.
 - d. A and B
7. Passive safety features have which qualities:
 - a. They do not self-activate.
 - b. They are integral to the device and are activated as a part of device use.
 - c. They require the user to pass the device to another worker.
 - d. They require the user to activate the safety device.
8. Reporting sharp-object injuries will accomplish which of the following:
 - a. The injury will provide information for prevention of future similar injuries.
 - b. The injured worker can be provided education to prevent transmission of a bloodborne-illness to other persons.
 - c. The circumstances surrounding the injury will be ignored.
 - d. A and B
9. The revised OSHA Bloodborne Pathogen Rule requires that:
 - a. All safety devices be used by healthcare institutions immediately.
 - b. Specific safety devices are required for use.
 - c. Institutions must re-define the engineering control definition to include devices with engineered sharps injury protection and needleless systems.
 - d. A sharps injury log replaces general work-related injury logs and OSHA forms
10. If a state needle safety law has requirements above those of the federal law requirements, the additional state requirements must be followed.
 - a. true
 - b. false
11. The viral bloodborne disease most likely to be transmitted by a needlestick is:
 - a. HIV
 - b. hepatitis B virus
 - c. hepatitis C virus
 - d. TB
12. OSHA requires that the hepatitis B vaccine be offered free to the healthcare worker:
 - a. true
 - b. false
13. It is now required to have frontline healthcare workers participate in evaluation and implementation of sharps devices
 - a. true
 - b. false
14. Devices that are high-risk for exposure:
 - a. non-lumen sharps
 - b. hollow-bore blood filled needles
 - c. none of the above
 - d. all of the above
15. The new sharps injury log must record:
 - a. type and brand of device
 - b. location of incident
 - c. how the incident occurred
 - d. all of the above

Mark your answers with an X in the box next to the correct answer

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2	A B C D	5	A B C D	8	A B C D	11	A B C D	14	A B C D	A B C D
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Participant's Evaluation

1. What is the highest degree you have earned (circle one)?

1. Diploma 2. Associate 3. Bachelor's 4. Master's 5. Doctorate

2. Indicate to what degree you met the objectives of this program:
Using 1= Strongly agree to 6= Strongly disagree rating scale, please circle the number that best reflects the extent of your agreement to each statement:

	Strongly Agree			Strongly Disagree		
a) List four (4) new requirements of the revised OSHA Bloodborne Pathogen Rule.	1	2	3	4	5	6
b) Identify high risk sharps devices for exposure to bloodborne pathogens.	1	2	3	4	5	6
c) Understand the evaluation process for implementation of devices with engineered sharps injury protection and the prioritization of high-risk devices for trial.	1	2	3	4	5	6
d) Identify three roles healthcare workers play in sharp object injury prevention programs.	1	2	3	4	5	6
e) Describe five (5) safety device features.	1	2	3	4	5	6
f) List three (3) healthcare worker activities designed for proper use and handling of safety devices.	1	2	3	4	5	6

3. How long did it take you to complete this home-study program? _____

4. Have you used home-study in the past? Yes No

5. How many home-study courses do you typically use per year? _____

6. What other areas would you like to cover through home study? _____

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