New guide to safer sharps for the OR

A quarterly column on technology trends for surgical services from ECRI.

Many health care workers—from physicians and nurses to housekeeping personnel and waste handlers—are at risk of accidental injuries from needles and other potentially contaminated sharps, with potential for exposure to bloodborne pathogens.

Sharps and needlestick safety has received a lot of attention, especially since Congress passed the Needlestick Safety and Prevention Act in 2000 requiring hospitals to implement protective devices. Many facilities have successfully implemented injury prevention devices, such as protective blood collection needles and needleless intravenous connectors.

Though needlestick injuries generally receive the most attention, dangerous injuries also can be caused by other sharps, such as sutures, scalpels, and glass capillary tubes. In fact, a detailed analysis from the International Healthcare Worker Safety Center’s EPINet data from 2000 and 2001 led Perry et al to conclude that “scalpel blades are more likely than needles to cause deep or otherwise severe injuries.” Thus, facilities need to take steps to protect workers from injuries caused by these types of devices as well.

Comparative evaluations

ECRI has evaluated five protected scalpels and three blunt suture needles in the second edition of the **Sharps Safety and Needlestick Prevention** guide, published in December 2003. The guide has comparative evaluations and ratings of 91 protective devices. The evaluations are designed to assist in determining whether—and to what degree—a product can protect health care workers from injury without compromising the patient’s safety or comfort. In addition, we provide guidance for ensuring safe use of these devices once selection decisions have been made.

The guide has device-specific assessment forms for documenting employee involvement in evaluation and selection of protective devices, a requirement of the Needlestick Safety and Prevention Act. Copies of the scalpel and blunt needle assessment forms are on the OR Manager web site at www.ormanager.com. Look under OR Manager Tool Box.

Protective scalpels

Protective scalpels resemble traditional reusable and disposable scalpels but have a mechanism that allows the user either to retract the blade into the handle or to cover the blade with a protective sheath before and after use.

When we first evaluated protective scalpels, all of the protective devices were disposable. Recently, reusable protective scalpels have been introduced by at least two suppliers.

Like conventional disposable scalpels, protective disposable scalpels have plastic handles and are completely disposable. They also weigh considerably less than reusable scalpels.

Protective reusable scalpels, like their conventional counterparts, have a metal handle that holds the blade.

Our user survey found that the weight difference caused some surgeons to resist use of protective disposable scalpels, but the availability of reusable protective scalpels should help to overcome this objection. Surgeons who already use disposable scalpels with plastic handles should notice little difference in the weight of the conventional and protective disposable models.
With both reusable and disposable models, injuries can occur:

- when a scalpel is passed between staff members (e.g., from a nurse to a surgeon)
- between uses (i.e., when the scalpel is on the tray, it may fall, or the nurse may be injured while reaching for another instrument on the tray)
- during use
- after use
- during disposal.

With reusable models, injuries can also occur when the blade is mounted on the handle or is removed from the handle or during disposal of the scalpel blade. Although these protective devices can help prevent some injuries—specifically those before use, during transfers, between uses, after use, and during disposal—they can’t help prevent injuries during use. In addition, to be protected, users must manually activate the safety mechanism to be protected.

**Blunt suture needles**

According to the latest EPINet data for 1993 to 2001 reported by Perry et al, suture needles are the leading cause of sharps injuries in the operating room, accounting for 41% of the injuries reported. These injuries can occur before and during suture needle use.

Before use, injuries are most likely when the suture needle is mounted in the needle holder or is repositioned in the needle holder, when the needle holder is parked with the needle up, and when the suture is passed hand to hand.

During use, needlestick injuries are most likely to result from actions such as using the fingers as a backstop or to guide the needle, sewing toward the fingers, and tying the suture with the needle attached, notes author Mark Davis, MD. Injuries can also occur to other staff members’ hands in the area where the suturing is taking place. And injuries can occur while disposing of the needle or even after disposal.

Protective products available to replace conventional suture needles are curved suture needles with a tip that is blunter than the tip of a conventional tapered needle. Although the blunt tip can still penetrate tissue for suturing, the blunted needle does not penetrate the skin as easily. Thus, it is less likely that accidental contact with the needle tip will result in a needlestick injury.

The products in this group are used in the same manner and for most of the same applications as conventional suture needles. Blunt suture needles can’t be used for skin-closure applications, however, because they can’t sufficiently cut or pierce skin.

Because the function of any suture needle is to pierce tissue, devices used for this application, including blunt needles, present some risk of injuries. A number of studies of blunt suture-needle use during wound closure have found, however, that these products reduce the risk of needlestick injuries.

One drawback cited in several studies is that blunt suture needles are slightly more difficult to use than sharp needles, because blunt needles require slightly more force to penetrate tissue. But surgeons remarked that the use of blunt suture needles does not compromise their surgical technique. One such study is a 1997 report from the Centers for Disease Control and Prevention.

Users of blunt suture needles and protective scalpels should recognize that, although the products can help prevent some injuries during use, they can’t completely eliminate the risk of injuries. For this reason, we stress the importance of safe habits in addition to using a protective product. For example:

- Personnel should remain clear of the suture area while a surgeon is suturing.
- Personnel should remain clear of the incision area while a surgeon is cutting.
- The literature suggests that double-gloving may help reduce the risk of injuries.
- Passing suture needles and scalpels using a safe-pass zone can help to reduce injuries.

A safe-pass zone is a dedicated area in the sterile field where surgical instruments are placed to allow safe exchange between health care workers. For example, a nurse places a suture needle in this area, and the surgeon picks up the needle from this area.
area, and vice versa. In this way, instruments are never directly passed between individuals, reducing the likelihood that the individual receiving a sharp instrument would inadvertently be injured during the exchange.

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Sharps Safety and Needlestick Prevention, 2nd edition, is available from ECRI at www.ecri.org or by calling 610/825-6000. The price is $195 for ECRI members and $295 for nonmembers.

ECRI, a nonprofit organization sometimes called the Consumer Reports of health care, is known for its objective approach to medical device evaluation. www.ecri.org

References
