

## OSHA Compliance Issues

# A New Approach to Needlestick Injuries Among Health Care Workers

*Richard Fairfax, Column Editor*

Reported by Carolyn Porta and Elise Handelman

Reducing needlestick injuries has become an important topic of discussion for health care workers, politicians, employers, researchers, and government agencies. Demand for action has evoked strong responses from multiple players, and subsequently, greater public awareness. Specifically, the safety of health care workers has been emphasized; as a preventable occupational health hazard, needlestick injuries have been declared unacceptable. This article describes the scope of needlestick injuries among health care workers in the United States, Occupational Safety and Health Administration (OSHA) regulations applicable to these injuries, and strategies for prevention.

### Needlestick Injuries

Needlestick injuries among health care workers are a recognized occupational health hazard. Conservative estimates project 800,000 exposures occurring in the United States every year. There are approximately 4 million health care workers in the United States employed in a variety of settings including hospitals, clinics, nursing homes, home health agencies, and emergency response teams. While research about needlestick injuries has focused primarily on the hospital setting, health care workers in all types of settings are at risk for needlestick injuries.<sup>(1-4)</sup> Physicians, nurses, phlebotomists, medical students, housekeepers, and laundry personnel are unnecessarily exposed, in their workplace, to deadly infectious agents such

as the human immunodeficiency virus (HIV), Hepatitis B, and Hepatitis C. A variety of interventions to reduce needlestick injuries, including legislative and enforcement strategies, have addressed needlestick incidents, preventable occupational health hazards.

### OSHA Standards

In 1991, the Bloodborne Pathogen Standard (CFR 1910.1030) was published, becoming effective in 1992.<sup>(5)</sup> This standard addresses the risks incurred during any bloodborne pathogen exposure, including a needlestick injury. The standard requires certain engineering strategies, such as proper needle disposal containers. Other engineering controls such as the recently marketed “safer” needle/syringe designs, however, are not mandated in OSHA’s standard.

The standard also requires the development of an exposure control plan, which includes an effective and efficient response to needlestick injuries. Finally, the standard states that “engineering and work practice controls shall be used to eliminate or minimize employee exposure” [paragraph (d)(2)(I)]. Despite these requirements, needlestick injuries continue to occur at an alarming rate.<sup>(4,6)</sup>

### Prevention Strategies

There are important factors beyond the jurisdiction of OSHA enforcement that are integral to the success of needlestick injury prevention strategies. Comprehensive prevention programs, though not required by the standard, can assist employers in eliminating or minimizing employees’ exposure to pathogens via

needlestick injury. Such a program may include these elements:

- offering administrative support
- encouraging reporting of needlestick incidents
- assessing needlestick injury trends
- determining site-specific intervention strategies
- educating and training workers
- evaluating the effectiveness of the plan.

This programmatic approach has been strongly supported by OSHA and is becoming increasingly utilized to address multiple occupational health problems.<sup>(7)</sup>

Administrative support is vital to the success of preventive initiatives, whether based on education, engineering, or enforcement. Institutional administration awareness and acknowledgment of the extent of needlestick injuries will facilitate decision making and actions. Also, consistent communication from administration to employees can highlight changes in injury rates, as well as identify any problems associated with the selected prevention strategies. Effective communication between managers and employees will let employers know what is and is not working and allow employees to see the results of positive changes.

To understand the extent of the problem and to measure improvements, needlestick incidents must be documented. Underreporting is a recognized problem that continues to mask the true extent of needlesticks. Research indicates that underreporting rates range from 20–50 percent.<sup>(1,4,8)</sup> Understanding the scope of the problem requires recognizing the underreporting problem,

and identifying measures that will improve incident recognition. Strategies to promote reporting involve addressing employee concerns, such as fear of being fired, disciplined, or ignored; worry regarding disease transmission, work time lost because of follow-up and paperwork; and concerns about possible changes in staff or personal relationships when the incident is revealed. Logistically, an organization should strive to make the reporting process as easy as possible, and non-discriminating and supportive to the injured employee.

Assessment of injury trends, particularly at individual work sites, is important in identifying specific risk factors for employees. An ambulance service is likely to have different reasons for needlestick injuries than a blood donation center or a surgical unit of a hospital. Within an organization, such as a hospital, risk assessment can identify particular units, procedures, or employee groups at greater risk of injury. Generally, nurses incur the largest *number* of needlestick injuries, though the *rate* of injuries has been greater among other health professionals in some settings. For example, although a hospital may have the highest *number* of needlestick injuries among the nursing staff (because they are generally the greatest number of employees in that setting), the highest *rate* of injuries may be among the phlebotomists (who comprise fewer employees but have more frequent exposures).

Thorough risk assessment will facilitate selecting intervention strategies that address the specific risks of the health care organization (e.g., unit, department) or group of employees (e.g., lab technician, laundry personnel, surgeons). Involvement by the workers who will be affected by new strategies is essential for success. Their early input can identify specific risks, opinions regarding safety, and preferences for specific preventive strategies. These workers can identify problems in a clinical use setting that may be unanticipated by product designers or by those suggesting changed work practices. Successful prevention

programs have used employee feedback at every step in the process.

Whenever a new device or a new work practice is initiated, it is vital that workers be trained regarding its proper use, including information about exposure risks, prevention techniques, and what to do if an exposure occurs. For example, laundry workers may not perceive their risk and will need education to understand it. Potentially exposed workers also may need to learn what protocols are in place to reduce their risk. This training may need to be adjusted to meet the educational needs of the audience. For example, the training may need to be delivered on the actual clinical unit where the device or procedure will be used. Educational levels and language diversity can be addressed if anticipated before the training occurs.

Finally, an evaluation of outcomes will determine successes, as well as failures, of the prevention program. Throughout the process, steps should be taken to critique the selected strategies. If a safer needle device is purchased as part of a comprehensive strategy, then a mechanism should be in place to evaluate any associated changes in work patterns, efficiency, cost, and ultimately, needlestick injury incidents. Evaluation should be done in a manner that reduces the likelihood of confounders. Again, employee participation is important to produce meaningful evaluation. Employees who have been injured after prevention strategies have been implemented should be encouraged to report their incidents; lessons may be learned from their experiences. It is vital that prevention programs be critiqued according to their actual impact; if the impact is not what was intended or desired, organizations must be willing to reassess and adjust their prevention strategies.

## Conclusion

Needlestick injuries among health care workers in the United States continue to pose a serious occupational problem. Historically, prevention has focused

primarily on changing employee behaviors, such as avoiding needle recapping. Now, industries, politicians, administrations, and employees are recognizing the importance of multi-levelled strategies aimed at preventing bloodborne pathogen transmission from needlestick injuries. Comprehensive injury prevention and control strategies, including the use of newly redesigned "safer" needle devices, should be implemented. Strategies utilized should include collecting needlestick injury data, encouraging reporting of needlestick injuries, evaluating specific risk factors (i.e., workloads, time constraints, lack of disposal containers), ensuring administrative support, involving employees in considering strategies (e.g., education, engineering, and enforcement), and providing sufficient training and evaluation when a program is implemented. Health care organizations should be encouraged to assess their work sites, identify hazards, and implement a comprehensive prevention program to reduce needlestick injuries.

## Hepatitis C

### *What Is Hepatitis C?*

Hepatitis C virus (HCV) is a viral infection of the liver. It is transmitted primarily by exposures to blood, such as through blood transfusions or sharing of contaminated needles among injection drug users. Transmission can also occur following intranasal use of cocaine (broken blood vessels in the nasal passages potentiate transmission). Persons who received blood transfusions prior to 1992 are at increased risk for HCV because screening tests were less reliable then. Occupational exposure occurs as a result of accidental needlesticks or injuries from sharps (e.g., scalpels, broken glass) contaminated with blood.

### *What Can Be Done to Prevent HCV?*

There is no vaccine for HCV. Prevention consists of avoiding contact with blood through needlesticks, intravenous drug abuse, and intranasal cocaine use.

### *What Can I Do if I Am Exposed to HCV?*

Unfortunately, post-exposure therapies do not appear to be effective in preventing HCV. Prescription interferon drugs are effective in only 20–25 percent of those with chronic disease. Following exposure, baseline testing and six-month follow-up testing are used for early detection of transmission and to monitor for chronic disease. Approximately 85 percent of the persons with HCV infection become chronically infected. These persons are at increased risk for cirrhosis and primary hepatocellular carcinoma.<sup>(9)</sup>

### *How Is It Detected?*

HCV can be detected from blood tests that detect antibodies to HCV. The current tests sometimes initially produce false positive results that may require additional specialized tests for a definitive diagnosis.

### *How Common Is HCV?*

HCV cases reported in the United States have fluctuated dramatically in the last 5 years. The estimated risk of transmission of HCV following a contaminated needlestick or sharps injury is around 3 percent.

For additional information about HCV call the CDC information hotline at 404-332-4555.

### REFERENCES

- Centers for Disease Control and Prevention: Evaluation of Safety Devices for Preventing Percutaneous Injuries among Health-Care Workers during Phlebotomy Procedures—Minneapolis-St. Paul, New York City, and San Francisco, 1993–1995. *MMWR* 46(2):21–29 (1997).
- Henry, K.; Campbell, S.; Collier, P.; Williams, C.: Compliance with Universal Precautions and Needle Handling and Disposal Practices among Emergency Department Staff at Two Community Hospitals. *American Journal of Infection Control* 22(3):129–137 (1994).
- L'Ecuyer, P.; Schwab, E.; Iademarco, E.; Barr, N.; Aton, E.; Fraser, V.: Randomized Prospective Study of the Impact of Three Needleless Intravenous Systems on Needlestick Injury Rates. *Infection Control and Hospital Epidemiology* 17:803–808 (1996).
- International Health Care Worker Safety Center: Uniform Needlestick and Sharp-Object Injury Report 1996, 65 Hospitals. *Advances in Exposure Prevention* 3(2):15–16 (1997).
- U.S. Department of Labor, Occupational Safety and Health Administration: 29 CFR 1910.1030, Washington, DC (1991).
- MacPherson, J.: The Interlink Needleless Intravenous System Did Not Reduce the Number of Needlestick Injuries in Christchurch Hospital Operating Theaters. *New Zealand Medical Journal* 109(1031):387–388 (1996).
- Jeffress, Charles N.: Keynote Address at Frontline Healthcare Workers Safety Conference. Washington, DC, August 10, 1998.
- Lawrence, L.; Delclos, G.; Felknor, S.; Johnson, P.; Frankowski, R.; Cooper, S.; Davidson, A.: The Effectiveness of a Needleless Intravenous Connection System: An Assessment by Injury Rate and User Satisfaction. *Infection Control and Hospital Epidemiology* 18(3):175–182 (1997).
- Centers for Disease Control and Prevention: Recommendations for Follow-Up of Health-Care Workers after Occupational Exposure to Hepatitis C Virus. *MMWR* 46(26):603–606 (July 4, 1997).

---

**EDITORIAL NOTE:** Carolyn Porta and Elise Handelman are occupational nurses with the Occupational Safety and Health Administration, Directorate of Technical Support. The opinions, findings, and conclusions presented by the authors are not necessarily those of the Occupational Safety and Health Administration (OSHA). Any mention of materials or products does not imply an endorsement by OSHA.

---