

Use of Safety Devices and Sharps Injury Prevention

Statement

The risk of accidental needlestick injury is inherent in the practice of infusion therapy. Unnecessary needlestick injury is, however, a potentially preventable occurrence and strategic measures to prevent the unnecessary needlestick should be adopted. It is the position of the National Association of Vascular Access Networks that any available device that has been shown to reduce the incidence of needlestick injury should be adopted to protect the healthcare worker from job-related injuries caused by needles on syringes, intravenous delivery systems and related medical devices.

Review of the Literature

Protecting healthcare workers (HCW) from job-related needlestick and other sharp device injuries is of critical importance. It is estimated that 600,000 to 800,000 occupational needlestick injuries (NSI) occur annually and these events can lead to potentially serious or fatal infections by bloodborne pathogens (CDC 1999). Bloodborne pathogens are defined as “pathogenic microorganisms that are present in human blood and can cause disease in humans” (OSHA November 1999). Documented cases of hepatitis B, hepatitis C, and the human immunodeficiency virus (HIV) have been transmitted through occupational exposure and accidental needlesticks (Ippolito 1997). Exacerbating the issue of exposure is the fact that up to 50% of NSI may go unreported (Jagger 1996). It is likely that a small percentage of exposures (5%) may carry a risk of HIV transmission (Bell 1997). The risk of hepatitis C after NSI is 2.7% to 10%, and 50% to 80% of these infections result in chronic disease (Kelen 1992). NSI with large hollow bore, blood-filled devices used in veins and arteries have the potential for depositing a large volume of inoculum during accidental injury and carry the highest risk of infection.

National Trends

The first bloodborne pathogen standards were published by OSHA (29 CFR 1910.1030, 1992) as a result of the potential health risks associated with exposure to blood and other infectious materials that may contain bloodborne pathogens and can be directly related to causing bloodborne diseases. Many technologic

medical advances have been made in the past seven years in an effort to comply with the initial OSHA standard. Results of a survey of 400 healthcare workers (HCWs), facilities and manufacturers prompted OSHA to update and revise their directives to include emerging technology and new information on the control of bloodborne pathogens. The revised standards (CPL 2-2, 44D, 1999) do not mandate the use of specific safety devices, but clearly state that a health care facility’s Exposure Control Plan “must document consideration and implementation of appropriate commercially available and effective engineering controls designed to eliminate or minimize exposure.” These engineering controls are defined as “those that isolate or remove the bloodborne pathogens hazard from the workplace. Examples of these engineering controls include: needleless systems, shielded needle devices, blunt needles, and plastic capillary tubes.”

In addition, the National Institute for Occupational Safety and Health (NIOSH), a research arm of the CDC, followed up on OSHA’s directives by publishing a strongly worded “NIOSH Alert: Preventing Needlestick Injuries in Health Care Settings” (HHS Publication No. 2000-108). The NIOSH Alert urges hospitals to adopt strategic measures to protect healthcare workers from job-related injuries caused by needles in syringes, intravenous delivery systems, and related medical devices (November 23, 1999). NIOSH recommends that the use of needles be eliminated where possible. If safe and effective alternatives to needles are not available, devices with safety features such as shields and sheaths should be used.

The recent additions by both OSHA and the

CDC's NIOSH adds further momentum to "The Health Care Workers Needlestick Prevention Act", HR 1899, introduced on May 20, 1999, by Rep. Pete Stark (D-Calif.). While this was the first Needlestick Prevention Bill to be introduced into the federal legislature, state support for needle safety devices is escalating rapidly. Most states have either proposed or adopted legislation that supports both the OSHA and NIOSH recommendations.

International Trends

Although international trends toward safety in vascular access devices are not at the forefront, there have been some recent sweeping proposals to end the epidemic of unsafe injection practices in developing nations. UNICEF, the World Health Organization (WHO), and other international health agencies have begun a campaign to halt the spread of infectious disease by replacing standard disposable and sterilizable syringes with new self-disabling devices.

WHO has estimated that as many as 21 million people a year contract hepatitis, HIV, or other lethal viruses from unsafe injection practices. Lack of money, political issues, and poor medical standards for sterilization have placed these nations' citizens in jeopardy, many of whom are children receiving immunizations. WHO officials now estimate that 20-80% of all hepatitis B infections in China, India, and Romania are caused by reused syringes. The estimated \$535 million annual cost of treating the diseases

transmitted through syringe reuse is more than 3 times the cost of supplying self-disabling syringes to these developing countries (WHO).

As healthcare providers and manufacturers, a global perspective of the risk to providers and patients should be advocated and efforts established to support changes in practice in countries without current access to safety engineering technology.

Implications for Practice and Industry

Developing a comprehensive exposure control plan that provides healthcare workers with a culture of safety takes the combined efforts of medical manufacturers, healthcare workers, professional organizations, healthcare employers, unions, and government. The exposure control plan should address engineering and work practice controls to reduce or eliminate occupational exposure to bloodborne pathogens. A method to evaluate and implement existing sharps prevention technology should be included in this plan, with an annual review incorporated to reflect changes in technology.

Manufacturing has a responsibility to develop new technology and improve current technology to eliminate or reduce occupational exposure to bloodborne pathogens, utilizing input from healthcare workers on the front line. Clinical trials documenting the efficacy of these devices should be conducted and these results made available. It is imperative for manufac-

turers to expedite the development of safety technologies for all access procedures documented to carry a high risk to the healthcare worker. Education on proper use of safety devices is key to successful implementation.

Practitioners should make the commitment to stay informed of legislative trends, and proactively participate in changes to clinical practice, that are designed to protect and save their own lives. NSIs should always be reported through the proper departments of their employers.

Employers have a responsibility to provide safer needle devices to their staff, which should be subject to careful evaluation during actual clinical use in order to assure that these products function as intended. Allowing employee participation in the evaluation process is critical to acceptance of the impending changes. Education of staff on the rationale for the transition to safety devices is also critical to the success of the plan. In addition, non-safety products must be removed from stock in order to allow employees skill acquisition with new devices. Employers should conduct a cost-benefit analysis after implementation, monitoring NSI rate changes, product appropriateness specific to area of use, and overall transition satisfaction among staff. Problem areas should be addressed through educational means.

Occupational exposure to bloodborne pathogens for healthcare workers can be reduced through successful implementation of safer technology. ♥

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