



## **MOVING THE SHARPS SAFETY AGENDA FORWARD IN THE UNITED STATES: CONSENSUS STATEMENT AND CALL TO ACTION**

**Note:** This Consensus Statement and Call to Action was drafted by members of the steering committee\* for the conference “Tenth Anniversary of the Needlestick Safety and Prevention Act: Mapping Progress, Charting a Future Path,” held in Charlottesville, Virginia, from November 4-6, 2010, and sponsored by the International Healthcare Worker Safety Center at the University of Virginia. The conference was funded in part by a grant from the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention (1R13OH009924-01). These recommendations are based on the presentations, panels, and informal discussions that took place at the conference. The speakers and participants represented a broad range of stakeholders relevant to the issue of sharps safety, including clinicians, researchers, and healthcare administrators, as well as representatives from government agencies (in particular NIOSH/CDC and OSHA), professional associations, and the medical device industry. The conference also had global participation, with speakers from Asia, Europe and Africa, in addition to both North and South America. We are grateful for the contributions of all. [\*See Appendix for list of steering committee members.]

### **INTRODUCTION**

Over the past two decades, the United States (U.S.) has been a global leader in addressing risks to healthcare workers from occupational exposures to bloodborne pathogens, including hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV). Regulatory and legislative measures, such as the Bloodborne Pathogen Standard (BPS) promulgated by the Occupational Safety and Health Administration (OSHA) in 1991 and revised in 2001<sup>1</sup>, and the Needlestick Safety and Prevention Act (NSPA) of 2000<sup>2</sup>, have been effective in significantly reducing needlesticks and blood exposures, as well as the risk of infection from bloodborne viruses, among healthcare workers.<sup>3</sup> Areas covered by these regulations include sharps disposal practices, evaluation and selection of safety-engineered sharp devices and personal protective equipment, training, recordkeeping for needlestick injuries, HBV vaccination, and post-exposure follow-up. Medical device manufacturers, in the U.S. and other countries, have also played an important role in reducing sharps injury risks to U.S. healthcare workers by developing innovative safety-engineered technology in a broad range of product categories.

While substantial progress has been made, however, preventable sharps injuries and blood exposures continue to occur in U.S. healthcare settings. In 2001-2002,

following passage of the NSPA and subsequent revisions to the BPS, a significant decline in sharps injury rates occurred; since then, however, injury rates have leveled off—and in some settings, such as surgery, gone up.<sup>4</sup> In an increasingly complex and changing healthcare environment, we need a renewed commitment to achieve further progress.

Data from two large, multihospital sharps injury surveillance networks provide a picture of where we are today: the EPINet Sharps Injury Surveillance research group (EPINet-SIS) coordinated by the International Healthcare Worker Safety Center at the University of Virginia<sup>5</sup>, and the Massachusetts Sharps Injury Surveillance System (MSISS), maintained by the Massachusetts Department of Public Health (MDPH).<sup>6</sup> EPINet-SIS was established in 1993; most of the hospitals contributing data are part of a state-wide network in South Carolina coordinated by Palmetto Hospital Trust Services. As shown in the table below, in 2007 a total of 29 hospitals (1 each from Nebraska, Pennsylvania, and Virginia, the rest from South Carolina) contributed data, with an aggregate of 951 sharps injuries (SIs) reported and an average injury rate of 28 SIs per 100 occupied beds.<sup>7</sup>

In Massachusetts, all hospitals are required to report sharps injury data to the MDPH; this was mandated by a state law in 2001, and collection of data began in 2002. For 2008, 99 hospitals contributed data, with a total of 3,126 SIs reported and an average SI rate of 17.2 per 100 licensed beds.<sup>8</sup> For both EPINet-SIS and MSISS, rates varied according to teaching status and hospital size, with substantially higher rates typically seen for teaching hospitals and hospitals over 300 beds (with the two being closely correlated –i.e., teaching hospitals tend to be large hospitals).

**Table 1. Comparison of annual sharps injury rates for EPINet and MSISS**

<b>Annual sharps injury data from:</b>	<b>EPINet, 2007</b>		<b>MSISS, 2008</b>	
Average sharps injury rate	27.97 per 100 occupied beds		17.2 per 100 licensed beds*	
Rates by hospital status:	Teaching 33.49	Non-teaching 16.16	Size: <100 11.4	>300 25.2
No. of hospitals contributing data	29		99	
Total no. of injuries	951		3,126	

\* In Massachusetts number of licensed beds and occupancy rates are highly correlated; although EPINet and MSISS use different denominators for calculating injury rates, they are comparable.

Nurses (RNs/LPNs) sustained the largest share of injuries in both EPINet and MSISS data—34% and 38%, respectively. Sharps injuries occur most often in the surgical setting (EPINet: 36%; MSISS: 32%) and patient rooms (EPINet: 23%; MSISS: 22%). It is important to note that a large proportion of injuries are sustained by workers other than the original user of the device. In EPINet-SIS data from 2007, 30% of sharps injuries were sustained by such workers, including clinicians, housekeepers, laundry and waste management personnel, and even administrative staff.

Clearly, we still have much room for improvement. The data show that while the U.S. has been successful in significantly reducing sharps injury risk to healthcare workers in most hospital settings, challenges remain, particularly in surgical and non-hospital settings. Healthcare is increasingly being provided outside of hospitals, such as practitioners' offices and clinics, patient homes, rehabilitation centers, and long-term care facilities. This shift is expected to continue well into the future<sup>9</sup>; yet these are the very settings in which enforcement of the BPS has been weakest and implementation of safety-engineered devices, according to market data, has been lowest.

We believe that our healthcare workers represent a critical national resource, and that we should do everything we can to protect them from harm while they care for others. We also believe that healthcare worker safety is a crucial component of patient safety, and of the overall safety and quality of the healthcare environment.

## **RECOMMENDATIONS**

We have identified the following areas as key to making further progress in reducing the risk of sharps injuries to healthcare workers.

### ***I. IMPROVING SHARPS SAFETY IN SURGICAL SETTINGS***

A study published in 2010 showed that despite the revised BPS and advances in sharps safety technology, sharps injuries in surgical settings from 2001 to 2006 increased by 6.5%, while injuries in all other hospital settings decreased by 31.6%.<sup>4</sup> The study also indicated that the majority of injuries in the surgical setting are caused by suture needles and scalpel blades, with a significant proportion sustained during instrument passing and after use. Injuries to nurses and surgical technicians were most often caused by devices

originally used by others (i.e., surgeons). Blunt suture needles, which can prevent injuries during suturing of internal tissue and fascia—injuries which account for about a third of suture needle injuries overall—are currently vastly underutilized by U.S. surgeons, despite recommendations from the American College of Surgeons (ACS), the Association of periOperative Registered Nurses (AORN), and other surgical professional associations.

*We recommend that:*

- 1. Institutions adopt a site-specific sharps safety policy for the OR. Such a policy should mandate the availability, training, and use of specific sharps safety devices and implementation of risk mitigation strategies outlined by the ACS and AORN. When available and reasonable, users should be able to choose between several comparable and effective safety devices or personal protective equipment (scalpels, gloves, goggles, etc.) to suit their individual work practices, body sizes, and comfort. Sharps safety should not be an individual choice, since many injuries are sustained by workers other than the original users (and choosers) of devices.*
- 2. Surgeons, OR nurses and other surgical personnel work cooperatively to develop sharps safety standards and practices that are consistently implemented and followed in all surgical environments.*
- 3. Professional groups and manufacturers join forces to encourage the use of blunt suture needles for appropriate applications.*
- 4. OSHA place greater emphasis on BPS compliance in surgical settings by evaluating overall adoption of safety devices to eliminate or minimize exposure risks. For example, compliance officers should determine if a facility encourages the use of blunt suture needles when clinically appropriate.*

## **II. UNDERSTANDING AND REDUCING EXPOSURE RISKS IN NON-HOSPITAL SETTINGS**

Healthcare workers in non-hospital settings account for about 65% of the U.S. healthcare workforce.<sup>9</sup> While safety-engineered devices are in widespread use in most hospitals and clinical laboratories, market data show that their use in non-hospital settings (home healthcare, long-term care, practitioners' offices and clinics, etc.) has been much

less consistent. “Non-hospital” is a broad term that encompasses a wide range of care settings; this makes generalizations about risk somewhat tenuous. Valid and reliable sharps injury data from non-hospital settings is limited; a critical need exists for data that specifically target these different environments, each of which has a unique risk profile. Studies by two research groups, one examining exposure risks to home healthcare workers and the other risks to paramedics, have begun to fill in the overall picture, but more such setting-specific studies are needed.<sup>10-14</sup>

*We recommend that:*

5. *Health and Human Services agencies such as CDC/NIOSH and other government and non-governmental agencies and professional organizations support epidemiological research that evaluates risks to workers in a wide range of non-hospital settings.*
6. *OSHA promote regional emphasis programs that focus on enforcement of the BPS in non-hospital settings; further, that other relevant groups, such as accrediting and licensing bodies and healthcare and workers’ compensation insurers enhance compliance incentives for non-hospital employers.*
7. *Professional organizations and medical product distributors for non-hospital care settings collaborate to make sharps safety a priority and ensure that appropriate devices and educational and training materials are available which are targeted for workers in these settings.*

### ***III. INVOLVING FRONTLINE HEALTHCARE WORKERS IN THE SELECTION OF SAFETY DEVICES***

Anecdotal evidence suggests that frontline healthcare workers are not consistently involved in the selection of safety devices. However, the BPS requires that workers—those who will actually be using the devices—be included in annual device evaluations.<sup>15</sup> Also, hospitals may be inclined to base decisions about safety devices on cost, but cost alone cannot be the main criteria for selection. An OSHA Letter of Interpretation, issued in 2002, explicitly states that “selecting a safer device based solely on the lowest cost is not appropriate. Selection must be based on employee feedback and device effectiveness.”<sup>16</sup>

Employers should make input from workers a priority in selection criteria, and need to weigh the relative efficacy of different safety devices for particular applications. Which devices do workers prefer and why? Have improvements been made in device technology? At a time when the pressure to reduce healthcare costs is intense, it is important to keep these user-oriented questions at the forefront of device selection.

*We recommend that:*

8. *Organizations representing healthcare workers educate members about the legal obligation of employers to include frontline workers in the selection of safety devices. Members need to be encouraged to participate in this process.*
9. *Hospital and healthcare employers consistently involve frontline healthcare workers in the selection and evaluation of safety devices, as is their obligation under the Bloodborne Pathogens Standard. Employers also need to enlist frontline workers in regular and systematic assessment of the devices currently in use in their institution, to ensure such devices are appropriate and, in OSHA's words, "eliminate or minimize employee exposure" to the "lowest feasible extent."*
10. *NIOSH or another government agency consider funding research to assess whether and to what extent the requirement to include healthcare workers in the device selection process is being met in facilities across the country, and the ways in which this is being done. This research could provide the basis for developing a model program for frontline worker participation in device selection and evaluation.*

#### ***IV. ADDRESSING GAPS IN SAFETY DEVICES: THE NEED FOR CONTINUED INNOVATION***

Safety device technology has continued to evolve over the past decade; however, unmet needs remain for many clinical procedures and these gaps need to be addressed.<sup>17</sup> Care settings and device categories for which safety is lacking or choices are limited include nuclear medicine; dentistry and home care; longer-length needles used for bone marrow, bariatric, biopsy, spinal, epidural, and acupuncture procedures; needle extenders for cervical injections; ophthalmic blades; and arterial-line catheters.

Greater innovation and more variety are needed, especially for surgical safety devices given the high risk of exposure and relatively low adoption of safety devices in this setting. We also need to encourage continued development of non-needle-based solutions for the delivery of medications, which eliminate sharps injury risk altogether.

*We recommend that:*

- 11. Professional organizations partner with device manufacturers to assess and prioritize device needs for specific clinical applications, to monitor progress in closing existing gaps, and to identify future needs.*
- 12. Manufacturers partner with surgeons and surgeon groups to develop suture and scalpel safety designs that both reduce risk and are comfortable and intuitive for surgeons to use. Also, companies that provide pre-packaged surgical and procedure kits must ensure that devices included in these kits comply with the BPS.*

#### ***V. ENHANCING EDUCATION AND TRAINING***

EPINet data from the past two decades have consistently shown that sharps injury rates in teaching hospitals are significantly higher than those for non-teaching hospitals.<sup>18</sup> Although the reasons for this are multifactorial, it does suggest the need to reevaluate and expand training related to bloodborne pathogens and sharps injury prevention in medical and nursing schools throughout the U.S.

Additionally, data from both EPINet and MSISS show that safety devices are a significant source of sharps injuries (although at a much lower rate compared to non-safety devices). Again, the reasons for this can vary, but include not activating the safety mechanism because of insufficient training on how to use the devices. Making training accessible to all can be challenging, particularly when trying to reach shift workers or those in non-hospital settings. Innovative educational tools using a variety of media and settings, including hands-on device “labs” where users who feel the need for further practice beyond initial training can do so on models, are needed to address the wide range of settings in which healthcare is practiced and sharp devices are used.

*We recommend that:*

13. *CDC/NIOSH, OSHA, and/or other appropriate government agencies partner with medical, nursing, and allied health schools and accrediting bodies to develop standardized curricula on bloodborne pathogen exposure prevention and the selection and use of safety-engineered devices. Such training is an essential part of the education of all healthcare professionals (both at the beginning of and throughout their careers).*
14. *Healthcare employers provide instruction on an annual basis for all potentially exposed clinicians and other workers (including service workers and purchasing agents) on the appropriate use and disposal of safety devices that are available in their facility, as mandated by OSHA. Such training provides a forum for addressing questions and issues that arise as new devices are introduced.*
15. *Employers, professional educators, manufacturers and employee representatives collaborate to develop training strategies that can be widely applied when new devices are introduced, so that frontline healthcare workers know how to properly use and dispose of them.*

As a result of the leadership of our partners in the federal government and a variety of stakeholders, the U.S. has made tremendous progress in protecting healthcare workers from exposure to bloodborne pathogens. Other countries look to the BPS and NSPA as models for their efforts to address this critical component of occupational safety in healthcare facilities. While we celebrate the progress we have made, we must acknowledge the gaps that exist and redouble our efforts to ensure that all healthcare workers, regardless of the setting in which they practice or the procedures they perform, are offered the same level of protection from sharps injuries and exposures to bloodborne pathogens. □



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Paragraph (c)(1)(v) requires the employer to solicit input from non-managerial employees responsible for direct patient care in the identification, selection and evaluation of effective engineering and work practice controls and document the solicitation in the Exposure Control Plan. The employer must solicit employee input in a manner appropriate to the circumstances in the workplace. Methods for soliciting employee input may include joint labor-management safety committees; involvement in informal problem-solving groups; participation in safety meetings and audits, employee surveys, worksite inspections, or exposure incident investigations; using a suggestion box or other effective methods for obtaining written employee comments; and participation in the evaluation of devices through pilot testing. The opportunities for employee input shall be effectively communicated to employees. Input from employees covered by a collective bargaining agreement may also be requested through their bargaining agent. Employers are not required to request input from each and every exposed employee; however, the employees selected must represent the range of exposure situations encountered in the workplace (e.g., emergency department, pediatrics, nuclear medicine). The employer must document the process by which the input was requested and identify the employees or the positions of those employees who were involved. (*Enforcement Procedures for the Occupational Exposure to Bloodborne Pathogens - directive number CPL 02-02-069; November 27, 2001*)

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## **APPENDIX: Contributors**

The consensus statement was developed by the staff of the International Healthcare Worker Safety Center at the University of Virginia, in conjunction with the Steering Committee for the conference “Tenth Anniversary of the Needlestick Safety and Prevention Act: Mapping Progress, Charting a Future Path,” held in Charlottesville, Virginia, in November 2010. Steering committee members provided valuable guidance and feedback in the development of the statement. We particularly acknowledge the contributions of conference co-chair Elise Handelman.

### *Staff of the International Healthcare Worker Safety Center, University of Virginia*

- Janine Jagger, MPH, PhD - Director & Research Professor of Medicine
- Jane Perry, MA - Associate Director
- Elayne Kornblatt Phillips, PhD, MPH, BSN - Director of Research and Assistant Professor
- Ginger Parker, MBA - EPINet Program Coordinator

### *Steering Committee for the conference “10th Anniversary of the Needlestick Safety and Prevention Act: Mapping Progress, Charting a Future Path”*

Chair: Janine Jagger, MPH, PhD

Co-chair: Elise Handelman, BSN, MEd, RN-COHN

Members:

- Ramon Berguer, MD, FACS, Clinical Professor of Surgery, UC Davis
- Renuka Gadde, Vice President, Global Health, BD
- Ahmed E. Gomaa, MD, ScD, MSPH, Division of Surveillance Hazard Evaluation and Health Studies, National Institute for Occupational Safety and Health
- June Fisher, MD, Associate Clinical Professor of Medicine, UC San Francisco; Director, TDICT Project
- Amber Hogan Mitchell, MPH, Assistant Director, Occupational Health for Nurses Program, Southwest Center for Occupational and Environmental Health, University of Texas School of Public Health
- Gina Pugliese, RN, MS, Vice President, Premier Safety Institute
- Andrew Rose, Vice President, Global Marketing Safety Solutions, Smiths Medical
- Tom Sutton, Vice President of Vascular Access and IV Systems, B. Braun Medical
- Susan Wilburn, MPH, RN, Technical Officer, Occupational and Environmental Health, World Health Organization
- Dionne Williams, MPH, Senior Industrial Hygienist, Directorate of Enforcement Programs, Occupational Safety and Health Administration