



Sharps Injuries among Hospital Workers in Massachusetts

Massachusetts Sharps Injury Surveillance System

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Background

Healthcare worker exposures to bloodborne pathogens as a result of injuries caused by contaminated needles and sharp devices, also known as percutaneous injuries, are a significant public health concern. Estimates by the U.S. Centers for Disease Control and Prevention (CDC) put the number of sharps injuries (SIs) in healthcare at approximately 1,000 percutaneous injuries occurring in U.S. hospitals per day (Panlilio et al., 2004).

Prior to 2001, little was known about the extent and distribution of SIs among healthcare workers in Massachusetts. After passage of An Act Relative to Needlestick Injury Prevention in 2000, the Massachusetts Department of Public Health (MDPH) promulgated regulations regarding sharps injury surveillance and prevention (105 CMR 130.1001 *et seq*) in 2001, mirroring the newly revised federal Occupational Safety and Health Administration (OSHA) Bloodborne Pathogen Standard. These regulations have the added requirement that all acute and non-acute care hospitals licensed by MDPH submit an Annual Summary of Sharps Injuries to MDPH each year. This led to the establishment of the Massachusetts Sharps Injury Surveillance System. The surveillance system publishes findings about occupations at risk as well as devices, procedures and departments associated with SIs. It also serves as a vehicle for hospitals and healthcare workers in Massachusetts to share information about challenges and successful prevention strategies.

Methods

All healthcare workers in MDPH licensed hospitals are included in the population under surveillance. This includes hospital employees, non-employee practitioners, employees of other agencies working in the hospital, those providing patient care services without compensation, such as students, and anyone else working within the facility, regardless of their source of compensation. A reportable exposure incident is defined as any percutaneous injury from a sharp that is contaminated or potentially contaminated with blood or other potentially infectious materials which occurs during the course of a hospital worker's job duties.

For 2002 and each subsequent year, annual reports of the findings have been published. Findings are presented for all hospitals combined as well as by hospital size categories (defined by the number of licensed beds) and by teaching status. Frequencies (counts and percents) of SIs are presented in aggregate; rates using the number of licensed beds as the denominator are presented by hospital size. The most recent report, "Sharps Injuries among Massachusetts Hospital Workers, 2012: Findings from the Massachusetts Sharps Injury Surveillance System," is available at <http://www.mass.gov/eohhs/docs/dph/occupational-health/injuries/injuries-hospital-2012.pdf>. In addition, special topic reports, with prevention recommendations for select hospital departments or occupations, have also been published and can be found on the Occupational Health Surveillance Program web site (www.mass.gov/dph/ohsp).

Data Highlights

All hospitals licensed by MDPH (~99) have submitted data each year as required. A total of 34,358 SIs were reported to MDPH between January 1, 2002 and December 31, 2012 (an average of 3,124 injuries per year). The statewide rates of SIs among hospital workers are shown in Table 1. The rate declined significantly by 14.7% from 2002 to 2012 (data not shown).

Overall descriptive findings for the first eight surveillance periods are presented in Table 2. For detailed findings for each year, see the Annual Reports posted on the MDPH website (www.mass.gov/dph/ohsp).

Table 1. MDPH Sharps Injuries per 100 Licensed Beds by Hospital Size, 2002-2012

All hospitals	17.6
Small (<100 beds)	14.4
Medium (101-300 beds)	12.6
Larger (>300 beds)	25.3

Sharps injuries in acute care hospitals account for 97% of all sharps injuries reported to the Massachusetts Sharps Injury Surveillance System. Analysis of SI among employees of acute care hospitals showed that sharps injuries per 100 beds declined significantly by 17.8% from 2002 to 2012. A similar decline was observed when using FTEs as the denominator.

Table 2. MDPH Annual Summary of Sharps Injuries, 2002-2012, N=34,358

Occupation	N	%*	Procedure Involved	N	%*
Nurse	12,921	38	Injection	8,177	24
Physician	12,059	35	Suturing	7,594	22
Technician	6,305	18	Blood procedures	5,573	16
Support Services	1,399	4	Line procedures	3,333	9
Other occupations	1,598	5	Other procedures	7,584	22
Unknown	76	<1	Unknown	2,097	6
Department			When Injury Occurred		
Operating and Procedure rooms	14,920	43	During use of the item	15,165	44
Inpatient Units	7,367	21	After use and before disposal	12,295	36
Emergency Department	3,096	9	During or after disposal of the item	4,029	12
Intensive Care Units	2,899	8	Before use of the item	347	1
Other areas	5,905	17	Unknown	2,522	7
Unknown	171	1			
Device Involved			How Injury Occurred		
Hypodermic needle & syringe	10,294	30	Collision with worker or sharp	6,269	18
Suture needle	7,595	22	Suturing	4,122	12
Butterfly needle	3,063	9	Manipulate needle in patient	2,719	8
Scalpel blade	2,605	8	Handle or pass equipment	2,713	8
Other devices	10,180	30	Other	17,769	52
Unknown	621	2	Unknown	766	2
Sharps Injury Prevention Feature					
No	18,799	55			
Yes	12,511	36			
Unknown	3,048	9			

*Some categories do not add to 100% due to rounding error.

Persistent Issues

About 3,000 SIs were reported annually in Massachusetts hospitals between 2002 and 2012, underscoring the need for continued efforts to reduce the incidence of these injuries. Findings highlight a number of persistent issues to be addressed in Massachusetts including, but not limited to:

- The unacceptably high proportion of SIs with devices lacking sharps injury prevention features (55%), most notably with devices for which alternatives with SI prevention features have been available for nearly two decades;
- The increasing proportion of SIs associated with devices with sharps injury prevention features (from 26% in 2002 to 43% in 2012), which raises critical questions about the need for improved training in the use of these devices or the need for improved product design, specifically the mechanism of the sharps injury prevention feature (e.g., shielding, retracting, sheathing);
- The high proportion of SIs that occur after use of a device (36%), which emphasizes the need for improved disposal practices; and
- The high proportion of SIs in the operating room (43%), which stresses the need to implement safe work practices and alternative methods for wound closure.

Reference: Panlilio AI, Orelie JG, Srivastava PU, Jagger J, Cohn RD, Cardo DM (2004). Estimate of the annual number of percutaneous injuries among hospital-based healthcare workers in the United States, 1997–1998. *Infect Control Hosp Epidemiology*, 25:556-562.

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For more information, visit www.mass.gov/dph/ohsp, email Sharps.Injury@state.ma.us or call us at 617-624-5632.