



# Overview of Sharps Injuries among Hospital Workers in Massachusetts

Massachusetts Sharps Injury Surveillance System

August 2017

## 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. The U.S. Centers for Disease Control and Prevention (CDC) estimates that approximately 1,000 sharps injuries (SIs) occur in U.S. hospitals daily.<sup>1</sup>

In 2001, the Massachusetts Department of Public Health (MDPH) promulgated regulations regarding sharps injury surveillance and prevention (105 CMR 130.1001 *et seq*) requiring that all acute and non-acute care hospitals licensed by MDPH incorporate the use of devices with sharps injury prevention features into the provision of patient care and submit an Annual Summary of Sharps Injuries to MDPH. 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

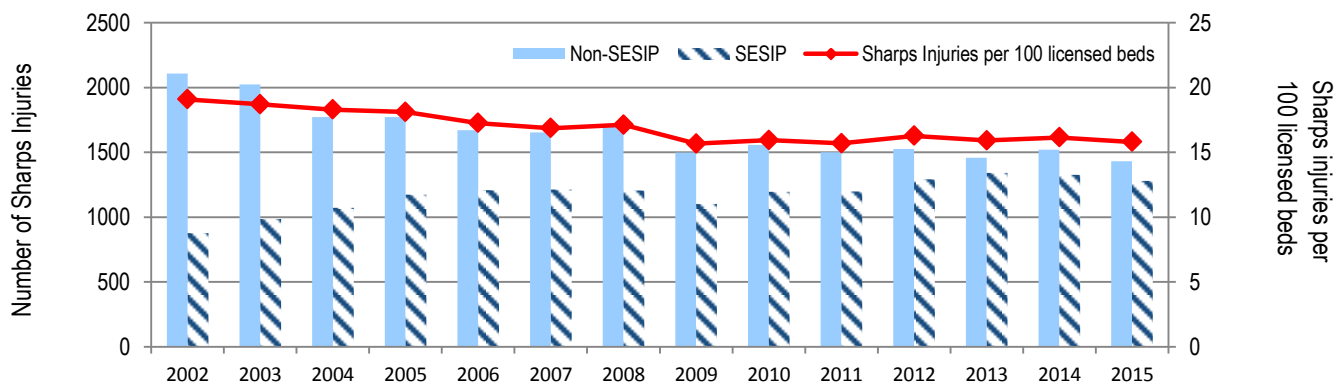
All healthcare workers in MDPH licensed hospitals are included in the population under surveillance. This includes hospital employees, non-employee practitioners, employees of other agencies working in the hospital, those providing patient care services without compensation, such as students, and anyone 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.

Annual surveillance reports have been published with findings presented for all hospitals combined as well as by hospital size categories (defined by the number of licensed beds) and by teaching status. Distributions of SIs are presented in aggregate (counts and percents); 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, 2015: Findings from the Massachusetts Sharps Injury Surveillance System," and special topic reports are also available on the Occupational Health Surveillance Program web site ([www.mass.gov/dph/ohsp](http://www.mass.gov/dph/ohsp)).

## Data Highlights

All MDPH licensed hospitals (~98) have submitted data each year as required. A total of 43,117 SIs were reported to MDPH between January 1, 2002 and December 31, 2015 (about 3,100 per year). The annual sharps injury rate in all hospitals combined declined significantly by 16.8% ( $p \leq 0.05$ ) from 19.1 sharps injuries per 100 licensed beds in 2002 to 15.9 in 2010. In that time, the proportion of SIs with devices lacking sharps injury prevention features has also declined. However, from 2010 to 2015 the sharps injury rate has plateaued. (Figure 1.)

Figure 1. Number of sharps injuries per licensed beds among workers in acute and non-acute care hospitals, Massachusetts



Sharps injuries in acute care hospitals account for 98% of all sharps injuries reported to the Massachusetts Sharps Injury Surveillance System. Analysis of SI among employees of all acute care hospitals showed that sharps injuries per 100 beds declined significantly by 18.2% ( $p \leq 0.05$ ) from 24.2 sharps injuries per 100 licensed beds in 2002 to 18.9 in 2010. However, the sharps injury rate has plateaued since 2010. A similar decline was observed when using FTEs as the denominator (data not shown).

Overall descriptive findings for the first 14 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](http://www.mass.gov/dph/ohsp)).

<b>Table 2. MDPH Annual Summary of Sharps Injuries, 2002-2015, N=43,117</b>					
<b>Occupation</b>	<b>N</b>	<b>%*</b>	<b>Procedure Involved</b>	<b>N</b>	<b>%*</b>
Nurse	16,133	37	Injection	10,665	25
Physician	15,447	36	Suturing	9,561	22
Technician	7,717	18	Blood procedures	6,649	15
Support Services	1,748	4	Line procedures	4,240	10
Other occupations	1,993	5	Other procedures	9,529	22
Unknown/ Nonclassifiable	79	<1	Unknown/ Nonclassifiable	2,473	6
<b>Department</b>			<b>When Injury Occurred</b>		
Operating and Procedure rooms	18,845	44	Before use of the item	456	1
Inpatient Units	9,133	21	During use of the item	18,924	44
Emergency Department	3,959	9	After use and before disposal	15,635	36
Intensive Care Units	3,611	8	During or after disposal of the item	5,148	12
Other areas	7,390	17	Unknown/ Nonclassifiable	2,954	7
Unknown/ Nonclassifiable	179	<1			
<b>Device Involved</b>			<b>How Injury Occurred</b>		
Hypodermic needle & syringe	13,167	31	Collision with worker or sharp	7,445	17
Suture needle	9,542	22	Suturing	5,194	12
Winged-steel needle	3,700	9	Handle or pass equipment	4,009	9
Scalpel blade	3,278	8	Manipulate needle in patient	3,465	8
Other devices	12,649	29	While activating sharps injury prevention feature	3,334	8
Unknown/ Nonclassifiable	781	2	Patient moved and jarred device	3,027	7
<b>Sharps Injury Prevention Feature</b>			During sharps disposal	2,809	7
No	23,208	54	Other	12,742	30
Yes	16,457	38	Unknown/ Nonclassifiable	1,092	3
Unknown	3,452	8			

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

### Persistent Issues

Approximately 3,100 SIs continue to be reported each year in Massachusetts hospitals, underscoring the need for ongoing efforts to reduce the incidence of these injuries. Findings highlight a number of persistent issues to be addressed in Massachusetts:

- The high proportion of SIs with devices lacking sharps injury prevention features (50% in 2015). Even after excluding suture needles, for which SI prevention features are not readily available, the proportion of SIs with devices lacking sharps injury prevention features was 37% in 2015;
- The increasing proportion of SIs associated with devices with sharps injury prevention features (from 26% in 2002 to 45% in 2015), which highlights the importance of selecting the most effective device, improved training in the use of these devices and improved product design, specifically the mechanism of the sharps injury prevention feature (e.g., shielding, retracting, sheathing);
- The high proportion of SIs occurring after use of a device (49% in 2015), emphasizing the need for improved disposal practices, and avoiding recapping of devices; and
- The high proportion of SIs in operating and procedure rooms (44% in 2015), which stresses the need to implement safer work practices, such as avoiding hand to hand passing, and alternative methods of wound closure.

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<sup>1</sup> 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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