

Massachusetts Department of Public Health April, 2016

**Data Brief:
Sharps Injuries among Hospital Workers in Massachusetts: Findings from the Massachusetts Sharps Injury Surveillance System, 2014**

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| **Data Highlights and Prevention Measures** |
| * 2,946 sharps injuries were reported in 2014. The sharps injury rate for workers in all Massachusetts Department of Public Health (DPH) licensed hospitals was 16.2 sharps injuries per 100 licensed beds, similar to rates for the three previous years (Figure 2). Comparable findings were observed in rates for employees (per 1,000 full time employee equivalents) in acute care hospitals only (data not shown). These findings (Figure 2) suggest that the earlier observed decline in rates from 2002-2010 is leveling off and underscore the need for a continuing commitment to preventing sharps injuries. It is also possible this plateau reflects an increase in workers reporting these injuries. Hospitals, in interpreting their own sharps injury rates, need to understand employee reporting practices in their facilities.

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| * Of the reported injuries, more sharps injuries occurred among physicians than nurses (39% v. 36%) for the third year in a row. This differs from findings from earlier years where nurses accounted for more injuries than physicians. This likely reflects greater adoption over time of devices with sharps injury prevention features (SESIPs) for devices most often used by nurses. This overall pattern was driven by the experience in larger hospitals and was reversed in smaller and medium sized hospitals where nurses experienced more sharps injuries than physicians. This difference by hospital size may reflect differences in the types of procedures conducted (i.e., more surgery in larger hospitals). Targeted efforts to improve physician reporting of sharps injuries in some larger hospitals may also have played a role.
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| * Sharps injuries in operating and procedure rooms accounted for nearly half of all sharps injuries (46%). While engineering controls (for example, use of blunt suture needles or alternative methods of closure) may have limited application in the OR setting, work practice controls play an important role in the prevention of sharps injuries. Practices such as hands-free passing and use of neutral zones, as well as verbal cuing when passing instruments can reduce the risk of sharps injuries.

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| * The presence of a sharps injury prevention feature is most crucial after the device is used. There were 263 sharps injuries due to non-SESIPs that involved commonly used devices for which SESIPS are widely available. Of these, 180 (68%) occurred after use of the device (Table 9). These injuries could be thought of as “never events” in that use of SESIPs could have likely prevented the injury.
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Since 2001, hospitals licensed by the Massachusetts Department of Public Health (DPH) have been required to report data on sharps injuries among workers to the Department annually (MGL/Chapter 111 s 53D). Data have been collected from all DPH licensed hospitals (an average of 98 hospitals annually) since 2001. This report includes data on sharps injuries that occurred during 2014.

The Massachusetts Sharps Injury Surveillance System is intended to provide information to assist Massachusetts hospitals and hospital workers in targeting and evaluating efforts to reduce the incidence of sharps injuries and the associated human and economic costs. For a more comprehensive description of the system, please see: <http://www.mass.gov/eohhs/docs/dph/occupational-health/injuries/injuries-hospital-2004.pdf>.

**Key Definitions**

**Sharps injury (also referred to as an exposure incident):**An exposure to blood or other potentially infectious materials as a result of an incident involving a contaminated sharp device that pierces the skin or mucous membranes. An injury with a clean sharp or device (before use) through contaminated gloves or other contaminated mediums is also considered a sharps injury. An injury involving a clean device without any contact with infectious materials is not considered an exposure incident.

**Sharps device:**Any object that can penetrate the skin or any part of the body and result in an exposure incident, including but not limited to needle devices, scalpels, lancets, broken glass, and broken capillary tubes.

**Population under surveillance:**All health care workers in acute and non-acute care hospitals licensed by DPH, as well as any satellite units (e.g., ambulatory care centers) operating under a hospital license.

**Surveillance Period:** Calendar year 2014.

**Sharps injury rates:**Sharps injury rates indicate the probability or risk of a worker sustaining a sharps injury within the surveillance period. Numbers are the counts of sharps injuries. A large hospital may have many workers who sustain sharps injuries but the rate of injury may be low. Conversely, in a smaller hospital, relatively few workers may sustain sharps injuries but the risk may be high. Both rates and numbers of injuries must be considered when targeting and evaluating prevention efforts. The rates presented in this report were calculated by dividing the number of sharps injuries among all workers by the number of licensed beds. Confidence intervals (CI) are presented for each rate. We modelled trends in annual rates using both negative binomial and joinpoint regressions. Negative binomial regression was used to model the overall trends of these rates from 2002 to 2014. Joinpoint regression was used to identify any changes in the trends over the same period.

**Sharps with engineered sharps injury protections (SESIPs):**Needle devices and non-needle sharps used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, with built-in sharps injury prevention features or mechanisms that effectively reduce the risk of an exposure incident.

**Findings**

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| **Table 1.**  | **Number and rate of sharps injuries among hospital workers by hospital characteristics, Massachusetts, 2014** |
|  |  | **Number of Hospitals** | **Number of sharps injuries** | **Rate per 100 licensed beds** | **95% CI** |
| **Hospital size** |  |  |  |  |  |  |  |  |  |
|  | Small (< 100 licensed beds) | 28 |  | 172 |  | 10.4 |  | 8.9-11.8 |  |
|  | Medium (101-300 licensed beds) | 53 |  | 1101 |  | 11.6 |  | 11.0-12.3 |  |
|  | Large (>300 licensed beds) | 14 |  | 1673 |  | 23.6 |  | 22.6-24.6 |  |
|  |  |  |  |  |  |  |  |  |  |
| **Service Type** |  |  |  |  |  |  |  |  |  |
|  | Acute care | 76 |  | 2,891 |  | 18.7 |  | 18.1-19.3 |  |
|  | Non-acute care\* | 19 |  | 55 |  | 2.0 |  | 1.5-2.5 |  |
|  |  |  |  |  |  |  |  |  |  |
| **Teaching Status** |  |  |  |  |  |  |  |  |  |
|  | Teaching  | 18 |  | 1832 |  | 26.9 |  | 25.9-28.0 |  |
|  | Non-teaching | 77 |  | 1114 |  | 9.7 |  | 9.2-10.3 |  |
|  |  |  |  |  |  |  |  |  |  |
| **Total** |  | **95** |  | **2,946** |  | **16.2** |  | **15.6-16.7** |  |

\*Non-acute care hospitals include chronic care and rehabilitation facilities.

**Figure 1. Number and rate of sharps injuries per licensed beds among all workers in acute and non-acute care hospitals, Massachusetts, 2014**

**Sharps injuries per 100 licensed beds**

In all hospitals among both employees and non-employees from 2002 to 2014, there was a statistically significant (p ≤ 0.05) decrease for the sharps injury rate (# of sharps injuries/ # of licensed beds) over the 13 year period. The rate decreased by 15.2% from 19.1 in 2002 to 16.2 in 2014. When using joinpoint, a statically significant (p ≤ 0.05) leveling off was observed beginning in 2010.

**Figure 2. Number and rate of sharps injuries per licensed beds among all workers in acute care hospitals only, Massachusetts, 2014**

In acute care hospitals among both employees and non-employees from 2002 to 2014, there was a statistically significant (p ≤ 0.05) decrease in the rate of sharp injuries from 2002 to 2014. During this period the rates of injuries decreased by 19.0% from 23.1 in 2002 to 18.7 in 2014. When using joinpoint, a statically significant (p ≤ 0.05) leveling off was observed beginning in 2010.

**Sharps injuries per 100 licensed beds**

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| **Table 2.**  | **Sharps injuries among hospital workers by worker and incident characteristics by hospital size, Massachusetts, 2014** |
|   | Hospital Size |
|  | All Hospitals | Small | Medium | Large |
|  | 95 hospitals | 28 hospitals | 53 hospitals | 14 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Work status of injured worker** | **2,946** |  | **100** |  | **172** |  | **100** |  | **1,101** |  | **100** |  | **1,673** |  | **100** |  |
|  | Employee | 2,464 |  | 84 |  | 156 |  | 91 |  | 896 |  | 81 |  | 1,412 |  | 84 |  |
|  | Non-Employee Practitioner | 384 |  | 13 |  | 7 |  | 4 |  | 159 |  | 14 |  | 218 |  | 13 |  |
|  | Student | 78 |  | 3 |  | 4 |  | 2 |  | 33 |  | 3 |  | 41 |  | 2 |  |
|  | Temporary / Contract Worker | 18 |  | 1 |  | 4 |  | 2 |  | 13 |  | 1 |  | 1 |  | <1 |  |
|  | Other / Unknown / Not answered | 2 |  | <1 |  | 1 |  | 1 |  | 0 |  | 0 |  | 1 |  | <1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Occupation** | **2,946** |  | **100** |  | **172** |  | **100** |  | **1,101** |  | **100** |  | **1,673** |  | **100** |  |
|  | Physician | 1,159 |  | 39 |  | 51 |  | 30 |  | 305 |  | 28 |  | 803 |  | 48 |  |
|  | Nurse | 1,069 |  | 36 |  | 71 |  | 41 |  | 439 |  | 40 |  | 559 |  | 33 |  |
|  | Technician | 468 |  | 16 |  | 37 |  | 22 |  | 242 |  | 22 |  | 189 |  | 11 |  |
|  | Support Services | 123 |  | 4 |  | 7 |  | 4 |  | 49 |  | 4 |  | 67 |  | 4 |  |
|  | Dental Staff | 13 |  | <1 |  | 1 |  | 1 |  | 3 |  | <1 |  | 9 |  | 1 |  |
|  | Other Medical Staff | 72 |  | 2 |  | 4 |  | 2 |  | 42 |  | 4 |  | 26 |  | 2 |  |
|  | Other / Unknown / Not answered | 42 |  | 1 |  | 1 |  | 1 |  | 21 |  | 2 |  | 20 |  | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Department where injury occurred** | **2,946** |  | **100** |  | **172** |  | **100** |  | **1,101** |  | **100** |  | **1,673** |  | **100** |  |
|  | Operating and Procedure Rooms | 1,365 |  | 46 |  | 73 |  | 42 |  | 462 |  | 42 |  | 830 |  | 50 |  |
|  | Inpatient Units | 579 |  | 20 |  | 33 |  | 19 |  | 273 |  | 25 |  | 273 |  | 16 |  |
|  | Emergency Department | 291 |  | 10 |  | 25 |  | 15 |  | 126 |  | 11 |  | 140 |  | 8 |  |
|  | Intensive Care Units | 228 |  | 8 |  | 6 |  | 3 |  | 60 |  | 5 |  | 162 |  | 10 |  |
|  | Outpatient areas | 201 |  | 7 |  | 15 |  | 9 |  | 72 |  | 7 |  | 114 |  | 7 |  |
|  | Laboratories | 101 |  | 3 |  | 8 |  | 5 |  | 35 |  | 3 |  | 58 |  | 3 |  |
|  | Other / Unknown / Not answered | 181 |  | 6 |  | 12 |  | 7 |  | 73 |  | 7 |  | 96 |  | 6 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Device involved in the injury** | **2,946** |  | **100** |  | **172** |  | **100** |  | **1,101** |  | **100** |  | **1,673** |  | **100** |  |
|  | Hypodermic needle/syringe  | 982 |  | 33 |  | 61 |  | 35 |  | 397 |  | 36 |  | 524 |  | 31 |  |
|  | Suture needle | 672 |  | 23 |  | 22 |  | 13 |  | 214 |  | 19 |  | 436 |  | 26 |  |
|  | Other hollow bore needle | 298 |  | 10 |  | 18 |  | 10 |  | 91 |  | 8 |  | 189 |  | 11 |  |
|  | Scalpel blade | 226 |  | 8 |  | 10 |  | 6 |  | 78 |  | 7 |  | 138 |  | 8 |  |
|  | Winged steel needle | 212 |  | 7 |  | 17 |  | 10 |  | 110 |  | 10 |  | 85 |  | 5 |  |
|  | Vacuum tube collection holder/needle | 70 |  | 2 |  | 5 |  | 3 |  | 45 |  | 4 |  | 20 |  | 1 |  |
|  | Glass | 37 |  | 1 |  | 1 |  | 1 |  | 10 |  | 1 |  | 26 |  | 2 |  |
|  | Other / Unknown / Not answered | 449 |  | 15 |  | 38 |  | 22 |  | 156 |  | 14 |  | 255 |  | 15 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Procedure for which the device was used** | **2,946** |  | **100** |  | **172** |  | **100** |  | **1,101** |  | **100** |  | **1,673** |  | **100** |  |
|  | Injection | 841 |  | 29 |  | 46 |  | 27 |  | 329 |  | 30 |  | 466 |  | 28 |  |
|  | Suturing | 685 |  | 23 |  | 28 |  | 16 |  | 214 |  | 19 |  | 443 |  | 26 |  |
|  | Blood procedures | 381 |  | 13 |  | 27 |  | 16 |  | 190 |  | 17 |  | 164 |  | 10 |  |
|  | Making the incision | 311 |  | 11 |  | 20 |  | 12 |  | 115 |  | 10 |  | 176 |  | 11 |  |
|  | Line procedures | 296 |  | 10 |  | 18 |  | 10 |  | 97 |  | 9 |  | 181 |  | 11 |  |
|  | To obtain body fluid or tissue sample | 63 |  | 2 |  | 8 |  | 5 |  | 27 |  | 2 |  | 28 |  | 2 |  |
|  | Dental procedures | 12 |  | <1 |  | 0 |  | 0 |  | 2 |  | <1 |  | 10 |  | 1 |  |
|  | Other / Unknown / Not answered | 357 |  | 12 |  | 25 |  | 15 |  | 127 |  | 12 |  | 205 |  | 12 |  |
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| **Table 3.**  | **Sharps injuries among hospital workers by occupation by hollow bore device, Massachusetts, 2014** |
|  |  | **Hollow Bore** |
| **Occupation** | **Total** | **Hypodermic**  | **Winged-Steel** | **Vacuum Tube** | **Other Hollow**  |
|  |  | **Needle** | **Needle** | **Collection Set** | **Bore** |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Nurse** | 839 |  | 100 |  | 569 |  | 68 |  | 90 |  | 11 |  | 20 |  | 2 |  | 160 |  | 19 |  |
| **Physician** | 350 |  | 100 |  | 253 |  | 72 |  | 5 |  | 1 |  | 3 |  | 1 |  | 89 |  | 25 |  |
| **Technician** | 247 |  | 100 |  | 98 |  | 40 |  | 84 |  | 34 |  | 40 |  | 16 |  | 25 |  | 10 |  |
| **Support Services** | 47 |  | 100 |  | 28 |  | 60 |  | 4 |  | 9 |  | 2 |  | 4 |  | 13 |  | 28 |  |
| **All others / Not answered** | 79 |  | 100 |  | 34 |  | 43 |  | 29 |  | 37 |  | 5 |  | 6 |  | 11 |  | 14 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **1,562** |  | **100** |  | **982** |  | **63** |  | **212** |  | **14** |  | **70** |  | **4** |  | **298** |  | **19** |  |

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| **Table 4.**  | **Sharps injuries among hospital workers by occupation by solid bore device, Massachusetts, 2014** |
| **Occupation** | **Total** | **Suture Needle** | **Scalpel** | **Glass** | **Other/** |
|  |  |  |  |  | **Unknown** |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Physician** | 809 |  | 100 |  | 493 |  | 61 |  | 139 |  | 17 |  | 5 |  | 1 |  | 172 |  | 21 |  |
| **Nurse** | 230 |  | 100 |  | 82 |  | 36 |  | 33 |  | 14 |  | 14 |  | 6 |  | 101 |  | 44 |  |
| **Technician** | 221 |  | 100 |  | 82 |  | 37 |  | 46 |  | 21 |  | 15 |  | 7 |  | 78 |  | 35 |  |
| **Support Services** | 76 |  | 100 |  | 6 |  | 8 |  | 3 |  | 4 |  | 0 |  | 0 |  | 67 |  | 88 |  |
| **All others / Not answered** | 48 |  | 100 |  | 9 |  | 19 |  | 5 |  | 10 |  | 3 |  | 6 |  | 31 |  | 65 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **1,384** |  | **100** |  | **672** |  | **49** |  | **226** |  | **16** |  | **37** |  | **3** |  | **449** |  | **32** |  |

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| **Table 5.**  | **Sharps injuries among hospitals workers by SESIP by hospital size: all devices and excluding suture needles, Massachusetts, 2014** |
|  | Hospital Size^ |
|  | All Hospitals | Small | Medium | Large |
|  | 95 hospitals | 28 hospitals | 53 hospitals | 14 hospitals |
| Sharps Injury Protections | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **All devices** | **2,946`** |  | **100** |  | **172** |  | **100** |  | **1,101** |  | **100** |  | **1,673** |  | **100** |  |
|  | SESIP | 1,326 |  | 45 |  | 69 |  | 40 |  | 589 |  | 53 |  | 668 |  | 40 |  |
|  | Non-SESIP | 1,520 |  | 52 |  | 94 |  | 55 |  | 470 |  | 43 |  | 956 |  | 57 |  |
|  | Unknown/Not answered | 100 |  | 3 |  | 9 |  | 5 |  | 42 |  | 4 |  | 49 |  | 3 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Devices excluding suture needles** | **2,274** |  | **100** |  | **150** |  | **100** |  | **887** |  | **100** |  | **1,237** |  | **100** |  |
|  | SESIP | 1,316 |  | 58 |  | 69 |  | 46 |  | 586 |  | 66 |  | 661 |  | 53 |  |
|  | Non-SESIP | 866 |  | 38 |  | 72 |  | 48 |  | 266 |  | 30 |  | 528 |  | 43 |  |
|  | Unknown/Not answered | 92 |  | 4 |  | 9 |  | 6 |  | 35 |  | 4 |  | 48 |  | 4 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ^Hospital size: small= <100 licensed beds; medium=101-300 licensed beds; large=>300 licensed beds |

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| **Figure 3.**  | **Sharps injuries among hospital workers by device and SESIP, Massachusetts, 2014** |

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| **Table 6.**  | **Sharps injuries among hospital workers by procedure and SESIP, Massachusetts, 2014** |
| Procedure | Total | SESIP | Non-SESIP | Unknown |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Injection procedures** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Subcutaneous injection | 625 |  | 21 |  | 484 |  | 37 |  | 133 |  | 9 |  | 8 |  | 8 |  |
|  | Intramuscular injection | 94 |  | 3 |  | 81 |  | 6 |  | 13 |  | 1 |  | 0 |  | 0 |  |
|  | Other injections | 122 |  | 4 |  | 72 |  | 5 |  | 45 |  | 3 |  | 5 |  | 5 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Blood procedures** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Percutaneous venous puncture | 247 |  | 8 |  | 241 |  | 18 |  | 4 |  | <1 |  | 2 |  | 2 |  |
|  | Percutaneous arterial puncture | 47 |  | 2 |  | 44 |  | 3 |  | 3 |  | <1 |  | 0 |  | 0 |  |
|  | Finger stick / Heel stick | 43 |  | 1 |  | 19 |  | 1 |  | 19 |  | 1 |  | 5 |  | 5 |  |
|  | Other blood procedures | 44 |  | 1 |  | 19 |  | 1 |  | 24 |  | 2 |  | 1 |  | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Line procedures** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | To insert peripheral IV/set up heparin lock | 99 |  | 3 |  | 89 |  | 7 |  | 10 |  | 1 |  | 0 |  | 0 |  |
|  | To insert central line | 33 |  | 1 |  | 18 |  | 1 |  | 13 |  | 1 |  | 2 |  | 2 |  |
|  | Other line procedures | 164 |  | 6 |  | 100 |  | 8 |  | 61 |  | 4 |  | 3 |  | 3 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Other procedures** | 1,428 |  | 48 |  | 159 |  | 12 |  | 1,195 |  | 79 |  | 74 |  | 74 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **2,946** |  | **100** |  | **1,326** |  | **100** |  | **1,520** |  | **100** |  | **100** |  | **100** |  |

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| **Table 7.**  | **Sharps injuries among hospitals workers involving devices included in prepackaged kits by hospital size, Massachusetts, 2014** |
|  | Hospital Size^ |
|  | All Hospitals | Small | Medium | Large |
|  | 95 hospitals | 28 hospitals | 53 hospitals | 14 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Device included in prepackaged kit** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Yes | 563 |  | 19 |  | 26 |  | 15 |  | 256 |  | 23 |  | 281 |  | 17 |  |
|  | No | 2,257 |  | 77 |  | 137 |  | 80 |  | 793 |  | 72 |  | 1,327 |  | 79 |  |
|  | Unknown/Not answered | 126 |  | 4 |  | 9 |  | 5 |  | 52 |  | 5 |  | 65 |  | 4 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **2,946** |  | **100** |  | **172** |  | **100** |  | **1,101** |  | **100** |  | **1,673** |  | **100** |  |
| ^Hospital size: small <101 licensed beds; medium =101-300 licensed beds; large >300 licensed beds |

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| **Figure 4.**  | **Sharps injuries among hospital workers involving devices from prepackaged kits by SESIP, Massachusetts, 2014** |

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| **Table 8.**  | **Sharps injuries among hospital workers by when and how the injury occurred, Massachusetts, 2014** |
|  | Hospital Size^ |
|  | All Hospitals | Small | Medium | Large |
|  | 95 hospitals | 28 hospitals | 53 hospitals | 14 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Before use of the item** | **48** |  | **2** |  | **3** |  | **2** |  | **12** |  | **1** |  | **33** |  | **2** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **During use of the item** | **1,191** |  | **40** |  | **53** |  | **31** |  | **399** |  | **36** |  | **739** |  | **44** |  |
|  | Suturing | 375 |  | 13 |  | 13 |  | 8 |  | 89 |  | 8 |  | 273 |  | 16 |  |
|  | Manipulate needle in patient | 262 |  | 9 |  | 11 |  | 6 |  | 93 |  | 8 |  | 158 |  | 9 |  |
|  | Patient moved and jarred device | 211 |  | 7 |  | 9 |  | 5 |  | 100 |  | 9 |  | 102 |  | 6 |  |
|  | Handle/pass equipment  | 148 |  | 5 |  | 6 |  | 3 |  | 49 |  | 4 |  | 93 |  | 6 |  |
|  | Collision with worker or sharp | 25 |  | 1 |  | 1 |  | 1 |  | 12 |  | 1 |  | 12 |  | 1 |  |
|  | Access IV line | 20 |  | 1 |  | 1 |  | 1 |  | 7 |  | 1 |  | 12 |  | 1 |  |
|  | Recap needle | 2 |  | <1 |  | 2 |  | 1 |  | 0 |  | 0 |  | 0 |  | 0 |  |
|  | Other / Unknown / Nonclassifiable | 148 |  | 5 |  | 10 |  | 6 |  | 49 |  | 4 |  | 89 |  | 5 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **After use, before disposal** | **1,192** |  | **40** |  | **88** |  | **51** |  | **478** |  | **43** |  | **626** |  | **37** |  |
|  | Activating injury protection mechanism | 300 |  | 10 |  | 14 |  | 8 |  | 144 |  | 13 |  | 142 |  | 8 |  |
|  | Collision with worker or sharp | 260 |  | 9 |  | 33 |  | 19 |  | 97 |  | 9 |  | 130 |  | 8 |  |
|  | During clean-up | 179 |  | 6 |  | 12 |  | 7 |  | 60 |  | 5 |  | 107 |  | 6 |  |
|  | Handle/pass equipment | 161 |  | 5 |  | 7 |  | 4 |  | 65 |  | 6 |  | 89 |  | 5 |  |
|  | Recap needle | 105 |  | 4 |  | 11 |  | 6 |  | 32 |  | 3 |  | 62 |  | 4 |  |
|  | Sharps injury prevention mechanism | 94 |  | 3 |  | 5 |  | 3 |  | 37 |  | 3 |  | 52 |  | 3 |  |
|  |  | not activated |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Device malfunction | 33 |  | 1 |  | 2 |  | 1 |  | 19 |  | 2 |  | 12 |  | 1 |  |
|  | Improper disposal | 32 |  | 1 |  | 3 |  | 2 |  | 17 |  | 2 |  | 12 |  | 1 |  |
|  | Other / Unknown / Nonclassifiable | 28 |  | 1 |  | 1 |  | 1 |  | 7 |  | 1 |  | 20 |  | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **During or after disposal of item** | **365** |  | **12** |  | **23** |  | **13** |  | **148** |  | **13** |  | **194** |  | **12** |  |
|  | During sharps disposal | 191 |  | 6 |  | 12 |  | 7 |  | 81 |  | 7 |  | 98 |  | 6 |  |
|  | Improper Disposal | 112 |  | 4 |  | 8 |  | 5 |  | 42 |  | 4 |  | 62 |  | 4 |  |
|  | Collision with worker or sharp | 47 |  | 2 |  | 3 |  | 2 |  | 15 |  | 1 |  | 29 |  | 2 |  |
|  | Sharps injury prevention mechanism | 9 |  | <1 |  | 0 |  | 0 |  | 7 |  | 1 |  | 2 |  | <1 |  |
|  |  | not activated |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Other / Unknown / Nonclassifiable | 6 |  | <1 |  | 0 |  | 0 |  | 3 |  | <1 |  | 3 |  | <1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Unknown / Not answered / Nonclassifiable** | **150** |  | **5** |  | **5** |  | **3** |  | **64** |  | **6** |  | **81** |  | **5** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **2,946** |  | **100** |  | **172** |  | **100** |  | **1,101** |  | **100** |  | **1,673** |  | **100** |  |
| ^Hospital size: small<100 licensed beds; medium 101-300 licensed beds; large >300 licensed beds |

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| **Table 9.**  | **Sharps injuries involving select devices without sharps injury prevention features but for which SESIPs are widely available, by when the injury occurred, Massachusetts, 2014** |
|  |  | **When the Injury Occurred** |
| **Device**  | **Total** | **Before use** | **During use** | **After use,**  | **During or after disposal** | **Unknown/** |
|  |  | **use** |  | **Before Disposal\***  | **Disposal\*** | **Non-classifiable** |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| Hypodermic Needle/Syringe | 219 |  | 100 |  | 3 |  | 1 |  | 58 |  | 26 |  | 116 |  | 53 |  | 36 |  | 16 |  | 6 |  | 2 |  |
| IV Stylet | 29 |  | 100 |  | 0 |  | 0 |  | 11 |  | 38 |  | 9 |  | 31 |  | 8 |  | 28 |  | 1 |  | 3 |  |
| Vacuum Tube Collection Holder | 8 |  | 100 |  | 0 |  | 0 |  | 1 |  | 13 |  | 3 |  | 38 |  | 3 |  | 38 |  | 1 |  | 13 |  |
| Winged-Steele Needle Holder | 7 |  | 100 |  | 0 |  | 0 |  | 2 |  | 29 |  | 2 |  | 29 |  | 3 |  | 43 |  | 0 |  | 0 |  |
| **Total** | **263** |  | **100** |  | **3** |  | **1** |  | **72** |  | **27** |  | **130** |  | **49** |  | **50** |  | **19** |  | **8** |  | **3** |  |
| \*SESIPs offer protection during the period after use. Injuries presented in this table that occurred after use (n=180) can be considered “never events” – events that could have been prevented with the use of SESIPS.  |

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| **Table 10.**  | **Sharps injuries among hospital workers by occupation (detailed), Massachusetts, 2014** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Physician** | **1,159** |  | **39** |  | **Support Services** | **123** |  | **4** |  |
|  | Intern/Resident | 468 |  | 16 |  |  | Housekeeper | 70 |  | 2 |  |
|  | MD | 290 |  | 10 |  |  | Central supply | 46 |  | 2 |  |
|  | Fellow | 115 |  | 4 |  |  | Attendant/orderly | 3 |  | <1 |  |
|  | Surgeon  | 89 |  | 3 |  |  | Maintenance | 1 |  | <1 |  |
|  | Physician Assistant | 81 |  | 3 |  |  | Safety/security | 1 |  | <1 |  |
|  | Medical Student | 64 |  | 2 |  |  | Other ancillary staff | 2 |  | <1 |  |
|  | Anesthesiologist | 41 |  | 1 |  |  |  |  |  |  |  |
|  | Radiologist | 11 |  | <1 |  | **Other Medical Staff** | **72** |  | **2** |  |
|  |  |  |  |  |  |  | Medical assistant | 66 |  | 2 |  |
| **Nurse** | **1,069** |  | **36** |  |  | Other medical staff | 6 |  | <1 |  |
|  | RN or LPN | 921 |  | 31 |  |  |  |  |  |  |  |
|  | Nurse assistant | 48 |  | 2 |  |  |  |  |  |  |  |
|  | Nursing practitioner | 35 |  | 1 |  | **Dental Staff** | **13** |  | **<1** |  |
|  | Patient care technician | 23 |  | 1 |  |  | Dental assistant/tech | 5 |  | <1 |  |
|  | Nurse anesthetist | 21 |  | 1 |  |  | Dentist | 5 |  | <1 |  |
|  | Nurse midwife | 10 |  | <1 |  |  | Dental hygienist | 3 |  | <1 |  |
|  | Nursing student | 10 |  | <1 |  |  |  |  |  |  |  |
|  | Home health aide | 1 |  | <1 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **Technician** | **468** |  | **16** |  | **Other** | **42** |  | **1** |  |
|  | OR/Surgical technician | 205 |  | 7 |  |  | Pharmacist | 6 |  | <1 |  |
|  | Phlebotomist | 104 |  | 4 |  |  | Counselor/social worker | 5 |  | <1 |  |
|  | Radiologic technician | 33 |  | 1 |  |  | EMT/paramedic | 4 |  | <1 |  |
|  | Clinical lab technician | 33 |  | 1 |  |  | Clerical/administrative | 3 |  | <1 |  |
|  | Respiratory therapist/ Tech | 23 |  | 1 |  |  | Other student | 22 |  | 1 |  |
|  | Hemodialysis technician | 4 |  | <1 |  |  | Other | 2 |  | <1 |  |
|  | Morgue technician | 3 |  | <1 |  |  |  |  |  |  |  |
|  | Psychiatric technician | 1 |  | <1 |  |  |  |  |  |  |  |
|  | Other technician | 62 |  | 2 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Total** | **2,946** |  | **100** |  |

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| **Table 11.**  | **Sharps injuries among hospital workers by department (detailed), Massachusetts, 2014** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Operating and Procedure Rooms** | **1,365** |  | **46** |  | **Laboratory** | **101** |  | **3** |  |
|  | Operating room | 1,015 |  | 34 |  |  | Histology/pathology | 35 |  | 1 |  |
|  | Labor and delivery | 105 |  | 4 |  |  | Microbiology | 6 |  | <1 |  |
|  | Radiology | 91 |  | 3 |  |  | Morgue/autopsy room | 5 |  | <1 |  |
|  | Cardiac catheterization laboratory | 64 |  | 2 |  |  | Blood bank | 4 |  | <1 |  |
|  | Hematology/oncology | 32 |  | 1 |  |  | Clinical chemistry | 3 |  | <1 |  |
|  | Phlebotomy room | 27 |  | 1 |  |  | Other laboratory | 35 |  | 1 |  |
|  | Endoscopy/bronchoscopy/cystoscopy | 15 |  | 1 |  |  | Laboratory, unspecified | 13 |  | <1 |  |
|  | Dialysis | 10 |  | <1 |  |  |  |  |  |  |  |
|  | Other procedure room | 1 |  | <1 |  |  |  |  |  |  |  |
|  | Procedure room, unspecified | 5 |  | <1 |  | **Other Areas** | **181** |  | **6** |  |
|  |  |  |  |  |  | Central sterile supply | 52 |  | 2 |  |
| **Inpatient Units, other than ICU** | **579** |  | **20** |  |  | Dermatology | 35 |  | 1 |  |
|  | Medical/surgical ward | 500 |  | 17 |  |  | Exam room | 18 |  | 1 |  |
|  | Psychiatry ward | 23 |  | 1 |  |  | Rehabilitation unit | 17 |  | 1 |  |
|  | Pediatrics  | 22 |  | 1 |  |  | Long term care | 11 |  | <1 |  |
|  | Obstetrics/gynecology | 17 |  | 1 |  |  | Pain clinic | 11 |  | <1 |  |
|  | Nursery | 11 |  | <1 |  |  | Anesthesia | 6 |  | <1 |  |
|  | Patient room, ward unspecified | 6 |  | <1 |  |  | Pharmacy | 5 |  | <1 |  |
|  |  |  |  |  |  |  | Detox unit | 4 |  | <1 |  |
| **Emergency Department** | **291** |  | **10** |  |  | Hospital grounds | 4 |  | <1 |  |
|  |  |  |  |  |  |  | Central trash area | 3 |  | <1 |  |
| **Intensive Care Units** | **228** |  | **8** |  |  | Other Location | 15 |  | 1 |  |
|  | Intensive care unit | 208 |  | 7 |  |  |  |  |  |  |  |
|  | Post anesthesia care unit | 20 |  | 1 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **Outpatient Areas** | **201** |  | **7** |  |  |  |  |  |  |  |
|  | Ambulatory care clinic | 102 |  | 3 |  |  |  |  |  |  |  |
|  | Physician’s office  | 20 |  | 1 |  |  |  |  |  |  |
|  | Dental clinic | 19 |  | 1 |  |  |  |  |  |  |
|  | Home health visit | 10 |  | <1 |  |  |  |  |  |  |  |
|  | Other outpatient areas | 50 |  | 2 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total**  | **2,946** |  | **100** |  |

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| **Table 12.** | **Sharps injuries among hospital workers by device (detailed), Massachusetts, 2014** |
|  |  | N |  | % |  |  |  N |  | % |  |
| **Hypodermic needles/syringe (hollow bore)** | **982** |  | **33** |  | **Glass**  | **37** |  | **1** |  |
|  |  Hypodermic needle attached to a disposable syringe syringe | 832 |  | 28 |  |  | Specimen / Test / Vacuum tube | 21 |  | 1 |  |
|  |  | disposable syringe syringe |  |  |  |  |  | Medication ampule / Vial / IV bottle | 4 |  | <1 |  |
|  | Unattached hypodermic needle | 53 |  | 2 |  |  | Slide | 4 |  | <1 |  |
|  | Prefilled cartridge syringe | 22 |  | 1 |  |  | Capillary tube | 1 |  | <1 |  |
|  | Hypodermic Needle Attached to a  | 11 |  | <1 |  |  | Other glass item | 7 |  | <1 |  |
|  |  | non-disposable syringe |  |  |  |  |  |  |  |  |  |  |
|  | Hypodermic needle attached to IV  | 7 |  | <1 |  |  |  |  |  |  |
|  |  | tubing |  |  |  |  | **Dental Device or item** | **15** |  | **1** |  |
|  | Hypodermic needle, unspecified | 57 |  | 2 |  |  | Dental bur  | 5 |  | <1 |  |
|  |  |  |  |  |  |  | Dental explorer | 1 |  | <1 |  |
| **Suture Needle** | **672** |  | **23** |  |  | Other dental device or item | 9 |  | <1 |  |
|  | Curved suture needle | 504 |  | 17 |  |  |  |  |  |  |  |
|  | Straight suture needle | 38 |  | 1 |  | **Other** | **404** |  | **14** |  |
|  | Suture needle, unspecified | 130 |  | 4 |  |  | Lancet | 49 |  | 2 |  |
|  |  |  |  |  |  |  | Wire | 45 |  | 2 |  |
| **Other Hollow Bore Needles** | **298** |  | **10** |  |  | Retractor | 43 |  | 1 |  |
|  | IV Stylet | 136 |  | 5 |  |  | Scissors | 34 |  | 1 |  |
|  | Huber Needle | 47 |  | 2 |  |  | Electrode | 31 |  | 1 |  |
|  | Biopsy Needle | 23 |  | 1 |  |  | Forceps | 20 |  | 1 |  |
|  | Spinal or epidural needle | 21 |  | 1 |  |  | Razor | 19 |  | 1 |  |
|  | Other type of hollow bore needle | 14 |  | <1 |  |  | Drill bit | 17 |  | 1 |  |
|  | Hollow bore needle, unspecified | 57 |  | 2 |  |  | Bovie electrocautery device | 16 |  | 1 |  |
|  |  |  |  |  |  |  | Pin | 15 |  | 1 |  |
| **Scalpel Blade** | **226** |  | **8** |  |  | Bone cutter | 12 |  | <1 |  |
|  |  |  |  |  |  |  | Cutting blade other than scalpel | 10 |  | <1 |  |
| **Winged Steel Needle** | **212** |  | **7** |  |  | Trocar | 8 |  | <1 |  |
|  | Winged Steel needle attached to a  | 116 |  | 4 |  |  | Staple  | 7 |  | <1 |  |
|  |  | vacuum tube collection holder |  |  |  |  |  | Tenaculum | 3 |  | <1 |  |
|  | Winged Steele Needle | 83 |  | 3 |  |  | Elevator | 1 |  | <1 |  |
|  | Winged Steele Needle attached to IV  | 13 |  | <1 |  |  | Other needle | 7 |  | <1 |  |
|  |  | tubing  |  |  |  |  |  | Other Type of Sharp Object | 64 |  | 2 |  |
|  |  |  |  |  |  |  | Needle, unspecified | 3 |  | <1 |  |
| **Vacuum Tube Collection Holder/Needle** | **70** |  | **2** |  |  |  |  |  |  |
|  | Vacuum tube collection holder/needle | 47 |  | 2 |  | **Unknown/Not Answered**  | **30** |  | **1** |  |
|  | Phlebotomy needle (other than winged  | 23 |  | 1 |  |  |  |  |  |  |  |
|  |  | steel needle) |  |  |  |  | **Total** | **2,946** |  | **100** |  |
|  |  |  |  |  |  |  |  |  |  |  |
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| **Table 13.**  | **Sharps injuries among hospital workers by procedure (detailed), Massachusetts, 2014** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Injection** | **841** |  | **29** |  | **Line Procedures** | **296** |  | **10** |  |
|  | Subcutaneous injection | 625 |  | 21 |  |  | To insert a peripheral IV line or   | 99 |  | 3 |  |
|  | Intramuscular injection | 94 |  | 3 |  |  |  | set up a heparin lock |  |  |  |  |
|  | Epidural/spiral anesthesia | 17 |  | 1 |  |  | Draw blood from central or | 43 |  | 1 |  |
|  | Other injection | 13 |  | <1 |  |  |  | peripheral IV line or port |  |  |  |  |
|  | Injection, unspecified | 92 |  | 3 |  |  | To insert a central IV line | 33 |  | 1 |  |
|  |  |  |  |  |  |  | Other injection into IV site/port | 32 |  | 1 |  |
| **Suturing**  | **685** |  | **23** |  |  | To insert an arterial line | 26 |  | 1 |  |
|  | Suturing | 673 |  | 23 |  |  | To connect IV line | 15 |  | 1 |  |
|  | Suture removal | 12 |  | <1 |  |  | To flush heparin/saline | 14 |  | <1 |  |
|  |  |  |  |  |  |  | Draw blood from arterial lineddraw | 5 |  | <1 |  |
| **Blood Procedures** | **381** |  | **13** |  |  | Other line procedure | 18 |  | 1 |  |
|  | Percutaneous venous puncture | 247 |  | 8 |  |  | Line procedure, unspecified | 11 |  | <1 |  |
|  | Percutaneous arterial puncture | 47 |  | 2 |  |  |  |  |  |  |  |
|  | Finger stick / heel stick | 43 |  | 1 |  | **To Obtain Body Fluid or Tissue Sample** | **63** |  | **2** |  |
|  | Dialysis / AV fistula site | 8 |  | <1 |  |  |  |  |  |
|  | Draw blood from umbilical vessel | 6 |  | <1 |  |  |  |  |  |  |  |
|  | Other blood procedure | 1 |  | <1 |  |
|  | Blood procedure, unspecified | 29 |  | 1 |  | **Dental Procedures** | **12** |  | **<1** |  |
|  |  |  |  |  |  |  | Dental drilling  | 4 |  | <1 |  |
| **Making the Incision**  | **311** |  | **11** |  |  | Oral surgery | 2 |  | <1 |  |
|  | Making the incision | 241 |  | 8 |  |  | Periodontal surgery | 1 |  | <1 |  |
|  | Cauterization | 11 |  | <1 |  |  | Dental procedure, unspecified | 5 |  | <1 |  |
|  | Other surgical procedure | 22 |  | 1 |  |  |  |  |  |  |  |
|  | Surgical procedure, unspecified | 37 |  | 1 |  | **Other** | **242** |  | **8** |  |
|  |  |  |  |  |  |  | Drilling | 26 |  | 1 |  |
|  |  |  |  |  |  |  | Transferring blood/body fluid to  | 25 |  | 1 |  |
|  |  |  |  |  |  |  |  | another container |  |  |  |  |
|  |  |  |  |  |  |  | To obtain lab specimens | 19 |  | 1 |  |
|  |  |  |  |  |  |  | Shaving | 9 |  | <1 |  |
|  |  |  |  |  |  |  | Other procedure | 163 |  | 6 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Unknown/Not answered** | **115** |  | **4** |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total** | **2,946** |  | **100** |  |

For all tables presented, percentages may not total 100% due to rounding.

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| **Resources** |
| CDC Sharps Safety for Healthcare Settings: Workbook and Teaching Tools www.cdc.gov/sharpssafetyNIOSH Preventing Needlesticks and Sharps Injuries www.cdc.gov/niosh/topics/bbp/sharps.htmlOSHA Bloodborne Pathogens and Needlestick Prevention [www.osha.gov/SLTC/bloodbornepathogens](http://www.osha.gov/SLTC/bloodbornepathogens)3/18/16 |