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| Sharps Injuries among Hospital Workers in Massachusetts |
| Findings from the Massachusetts Sharps Injury Surveillance System, 2012 |
| Occupational Health Surveillance Program – Massachusetts Department of Public Health | August 2014 |

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| **Data Highlights and Prevention Measures** |
| * 3,019 sharps injuries (SIs) were reported in 2012. The SI rate for workers in all MDPH licensed hospitals was 16.4 SIs per 100 licensed beds, similar to rates for the three previous years (Figure 2). Comparable findings were observed in rates for employees (per 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 2002-2009 is leveling off. Not all workers report their SIs to employee health, thus this plateauing could possibly reflect a positive change, i.e., improvements in worker reporting. Nevertheless, these findings underscore need for a continuing commitment to preventing SIs. Hospitals in interpreting their own SI rates need to understand the employee reporting practices in their facilities.

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| * After excluding SIs involving sutures, 54% of the SIs involved Sharps with engineered sharps injury protections **(**SESIPs) (Table 5). This is a substantially higher proportion than observed in the early years of surveillance (32% in 2002) and is good news as it likely reflects increased use of SESIPS as required. However, while use of these devices is critical to preventing SIs, they are not failsafe. Inexperience and lack of training in use of these devices as well as flaws in product design can contribute to injuries with these devices. Hospitals should provide training in use of SESIPS and safe work practices, and seek input from front line workers in selecting devices as part of a comprehensive SI prevention program and continuous quality improvement.
 |
| * The presence of a SI prevention features is most crucial after the device is used. There were 280 SIs due to non-SESIPs that involved commonly used devices for which SEIPS are widely available. Of these, 154 (55%) 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.
 |
| * SIs in the operating room constituted 44% of all SIs reported. Work-practice controls are particularly important in operating and procedure rooms due to the limited number of SEISPs available for use in these settings. These measures include use of neutral zone for hands-free passing and increased oral communication when transferring devices among staff. In addition to the use of blunt suture needles, evaluation of multi-dose administration of injection medications should be reviewed to incorporate use of SESIPs. Alternative methods of closure, such as staples and glues should also be considered.
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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 (approximately 99 hospitals) since 2001. This report includes data on sharps injuries that occurred during 2012.

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 2012.

**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.

**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, 2012** |
|  |  |  | **Number of sharps injuries** | **Rate per 100 licensed beds** | **95% CI** |
| **Hospital size** |  |  |  |  |  |  |  |  |
|  | Small (< 100 licensed beds) |  | 227 |  | 14.0 |  | 12.3-15.7 |  |
|  | Medium (101-300 licensed beds) |  | 1,038 |  | 10.3 |  | 9.7-10.9 |  |
|  | Large (>300 licensed beds) |  | 1,754 |  | 26.6 |  | 25.5-27.7 |  |
|  |  |  |  |  |  |  |  |  |
| **Service Type** |  |  |  |  |  |  |  |  |
|  | Acute care |  | 2,912 |  | 19.0 |  | 18.4-19.6 |  |
|  | Non-acute care\* |  | 107 |  | 3.6 |  | 3.0-4.3 |  |
|  |  |  |  |  |  |  |  |  |
| **Teaching Status** |  |  |  |  |  |  |  |  |
|  | Teaching  |  | 1,910 |  | 27.7 |  | 26.7-28.8 |  |
|  | Non-teaching |  | 1,109 |  | 9.7 |  | 9.2-10.3 |  |
|  |  |  |  |  |  |  |  |  |
| **Total** |  |  | **3,019** |  | **16.5** |  | **16.0-17.1** |  |

\*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, 2012**

In all hospitals among both employees and non-employees from 2002 to 2012, there was a statistically significant decrease for the sharps injury rate (# of sharps injuries/ # of licensed beds) over the 11 year period. The rate decreased by 14.7% from 19.1 in 2002 to 16.3 in 2012.

**Sharps injuries per 100 licensed beds**

**Figure 2. Number and rate of sharps injuries per licensed beds among all workers in acute care hospitals only, Massachusetts, 2012**

In acute care hospitals among both employees and non-employees from 2002 to 2011, there was a statistically significant decrease in the rate of sharp injuries from 2002 to 2011. During this period the rates of injuries decreased by 17.8% from 23.1 in 2002 to 19.0 in 2012. The rates for the past several years appear to be holding steady. A similar pattern was observed when calculating the rate of sharps injuries among employees of acute care hospitals by FTEs.

**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, 2012** |
|   | Hospital Size |
|  | All Hospitals | Small | Medium | Large |
|  | 97 hospitals | 29 hospitals | 53 hospitals | 15 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Work status of injured worker** | **3,019** |  | **100** |  | **227** |  | **100** |  | **1,038** |  | **100** |  | **1,754** |  | **100** |  |
|  | Employee | 2,614 |  | 87 |  | 200 |  | 88 |  | 858 |  | 83 |  | 1,556 |  | 89 |  |
|  | Non-Employee Practitioner | 300 |  | 10 |  | 11 |  | 5 |  | 138 |  | 13 |  | 151 |  | 9 |  |
|  | Student | 64 |  | 2 |  | 6 |  | 3 |  | 22 |  | 2 |  | 36 |  | 2 |  |
|  | Temporary / Contract Worker | 30 |  | 1 |  | 10 |  | 4 |  | 10 |  | 1 |  | 10 |  | 1 |  |
|  | Other / Unknown / Not answered | 11 |  | <1 |  | 0 |  | 0 |  | 10 |  | 1 |  | 1 |  | <1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Occupation** | **3,019** |  | **100** |  | **227** |  | **100** |  | **1,038** |  | **100** |  | **1,754** |  | **100** |  |
|  | Physician | 1,131 |  | 37 |  | 59 |  | 26 |  | 259 |  | 25 |  | 813 |  | 46 |  |
|  | Nurse | 1,130 |  | 37 |  | 107 |  | 47 |  | 427 |  | 41 |  | 596 |  | 34 |  |
|  | Technician | 507 |  | 17 |  | 44 |  | 19 |  | 247 |  | 24 |  | 216 |  | 12 |  |
|  | Support Services | 108 |  | 4 |  | 7 |  | 3 |  | 44 |  | 4 |  | 57 |  | 3 |  |
|  | Dental Staff | 16 |  | <1 |  | 2 |  | 1 |  | 1 |  | <1 |  | 13 |  | 1 |  |
|  | Other Medical Staff | 76 |  | 3 |  | 5 |  | 2 |  | 33 |  | 3 |  | 38 |  | 2 |  |
|  | Other / Unknown / Not answered | 51 |  | 2 |  | 3 |  | 1 |  | 27 |  | 3 |  | 21 |  | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Department where injury occurred** | **3,019** |  | **100** |  | **227** |  | **100** |  | **1,038** |  | **100** |  | **1,754** |  | **100** |  |
|  | Operating and Procedure Rooms | 1,344 |  | 45 |  | 97 |  | 43 |  | 430 |  | 41 |  | 817 |  | 47 |  |
|  | Inpatient Units | 561 |  | 19 |  | 47 |  | 21 |  | 244 |  | 23 |  | 270 |  | 15 |  |
|  | Emergency Department | 303 |  | 10 |  | 29 |  | 13 |  | 131 |  | 13 |  | 143 |  | 8 |  |
|  | Intensive Care Units | 296 |  | 10 |  | 6 |  | 3 |  | 73 |  | 7 |  | 217 |  | 12 |  |
|  | Outpatient areas | 161 |  | 5 |  | 13 |  | 6 |  | 43 |  | 4 |  | 105 |  | 6 |  |
|  | Laboratories | 131 |  | 4 |  | 10 |  | 4 |  | 37 |  | 4 |  | 84 |  | 5 |  |
|  | Other / Unknown / Not answered | 223 |  | 7 |  | 25 |  | 11 |  | 80 |  | 8 |  | 118 |  | 7 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Device involved in the injury** | **3,019** |  | **100** |  | **227** |  | **100** |  | **1,038** |  | **100** |  | **1,754** |  | **100** |  |
|  | Hypodermic needle/syringe  | 912 |  | 30 |  | 81 |  | 36 |  | 355 |  | 34 |  | 476 |  | 27 |  |
|  | Suture needle | 685 |  | 23 |  | 35 |  | 15 |  | 182 |  | 18 |  | 468 |  | 27 |  |
|  | Other hollow bore needle | 331 |  | 11 |  | 20 |  | 9 |  | 120 |  | 12 |  | 191 |  | 11 |  |
|  | Scalpel blade | 242 |  | 9 |  | 18 |  | 8 |  | 72 |  | 7 |  | 152 |  | 9 |  |
|  | Winged steel needle | 233 |  | 8 |  | 19 |  | 8 |  | 100 |  | 10 |  | 114 |  | 7 |  |
|  | Vacuum tube collection holder/needle | 131 |  | 4 |  | 13 |  | 6 |  | 49 |  | 5 |  | 69 |  | 4 |  |
|  | Glass | 26 |  | 1 |  | 0 |  | 0 |  | 8 |  | 1 |  | 18 |  | 1 |  |
|  | Other / Unknown / Not answered | 459 |  | 14 |  | 41 |  | 18 |  | 152 |  | 15 |  | 266 |  | 15 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Procedure for which the device was used** | **3,019** |  | **100** |  | **227** |  | **100** |  | **1,038** |  | **100** |  | **1,754** |  | **100** |  |
|  | Injection | 780 |  | 26 |  | 72 |  | 32 |  | 291 |  | 28 |  | 417 |  | 24 |  |
|  | Suturing | 700 |  | 23 |  | 39 |  | 17 |  | 181 |  | 17 |  | 480 |  | 27 |  |
|  | Blood procedures | 404 |  | 13 |  | 30 |  | 13 |  | 186 |  | 18 |  | 188 |  | 11 |  |
|  | Making the incision | 354 |  | 12 |  | 34 |  | 15 |  | 109 |  | 11 |  | 211 |  | 12 |  |
|  | Line procedures | 322 |  | 11 |  | 17 |  | 8 |  | 109 |  | 11 |  | 196 |  | 12 |  |
|  | To obtain body fluid or tissue sample | 79 |  | 3 |  | 2 |  | 1 |  | 26 |  | 3 |  | 51 |  | 3 |  |
|  | Dental procedures | 12 |  | <1 |  | 1 |  | <1 |  | 0 |  | 0 |  | 11 |  | <1 |  |
|  | Other / Unknown / Not answered | 368 |  | 12 |  | 32 |  | 14 |  | 136 |  | 13 |  | 200 |  | 11 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| a Hospital size: small<100 licensed beds; medium 101-300 licensed beds; large >300 licensed beds |

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| **Table 3.**  | **Sharps injuries among hospital workers by occupation by hollow bore device, Massachusetts, 2012** |
|  |  | **Hollow Bore** |
| **Occupation** | **Total** | **Hypodermic Needle** | **Butterfly Needle** | **Vacuum**  | **Other Hollow**  |
|  |  | **Needle** | **Needle** | **Tube** | **Bore** |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Nurse** | 897 |  | 100 |  | 557 |  | 62 |  | 106 |  | 12 |  | 61 |  | 7 |  | 173 |  | 19 |  |
| **Physician** | 345 |  | 100 |  | 212 |  | 61 |  | 13 |  | 4 |  | 14 |  | 4 |  | 106 |  | 31 |  |
| **Technician** | 259 |  | 100 |  | 88 |  | 37 |  | 90 |  | 37 |  | 51 |  | 21 |  | 30 |  | 5 |  |
| **Support**  | 36 |  | 100 |  | 18 |  | 50 |  | 1 |  | 3 |  | 3 |  | 8 |  | 14 |  | 39 |  |
| **Services** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **All Others/Not Answered** | 70 |  | 100 |  | 37 |  | 51 |  | 23 |  | 32 |  | 2 |  | 3 |  | 8 |  | 15 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **1,607** |  | **100** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| **Table 4.**  | **Sharps injuries among hospital workers by occupation by solid bore device, Massachusetts, 2012** |
| **Occupation** | **Total** | **Suture Needle** | **Scalpel** | **Other/** |
|  |  |  |  | **Unknown** |
|  | N |  | % |  | N |  | % |  | N |  | %1550262708 |  | N |  | % |  |
| **Physician** | 786 |  | 100 |  | 499 |  | 64 |  | 121 |  | 15 |  | 166 |  | 21 |  |
| **Technician** | 248 |  | 100 |  | 88 |  | 36 |  | 63 |  | 25 |  | 97 |  | 39 |  |
| **Nurse** | 233 |  | 100 |  | 80 |  | 34 |  | 36 |  | 15 |  | 117 |  | 50 |  |
| **Support**  | 72 |  | 100 |  | 2 |  | 3 |  | 5 |  | 7 |  | 65 |  | 90 |  |
| **Services** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **All Others/Not Answered** | 73 |  | 100 |  | 16 |  | 22 |  | 17 |  | 23 |  | 40 |  | 55 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **1,412** |  | **100** |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| **Table 5.**  | **Sharps injuries among hospitals workers by SESIP by hospital size: all devices and excluding suture needles, Massachusetts, 2012** |
|  | Hospital Size |
|  | All Hospitals | Small | Medium | Large |
|  | 97 hospitals | 29 hospitals | 53 hospitals | 15 hospitals |
| Sharps Injury Protections | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **All devices** | **3,019** |  | **100** |  | **227** |  | **100** |  | **1,038** |  | **100** |  | **1,754** |  | **100** |  |
|  | SESIP | 1,290 |  | 43 |  | 103 |  | 45 |  | 515 |  | 50 |  | 672 |  | 38 |  |
|  | Non-SESIP | 1,526 |  | 51 |  | 113 |  | 50 |  | 429 |  | 41 |  | 984 |  | 56 |  |
|  | Unknown/Not answered | 203 |  | 7 |  | 11 |  | 5 |  | 94 |  | 9 |  | 98 |  | 6 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Devices excluding suture needles** | **2,334** |  | **100** |  | **192** |  | **100** |  | **856** |  | **100** |  | **1,286** |  | **100** |  |
|  | SESIP | 1,252 |  | 54 |  | 103 |  | 54 |  | 514 |  | 60 |  | 635 |  | 49 |  |
|  | Non-SESIP | 899 |  | 39 |  | 78 |  | 41 |  | 260 |  | 30 |  | 561 |  | 44 |  |
|  | Unknown/Not answered | 183 |  | 8 |  | 11 |  | 6 |  | 82 |  | 10 |  | 90 |  | 7 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| a 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, 2012** |

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| **Table 6.**  | **Sharps injuries among hospital workers by procedure and SESIP, Massachusetts, 2012** |
| Procedure | Total | SESIP | Non-SESIP | Unknown |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Injection procedures** | **780** |  | **26** |  | **580** |  | **45** |  | **179** |  | **12** |  | **21** |  | **10** |  |
|  | Subcutaneous injection | 599 |  | 20 |  | 474 |  | 37 |  | 113 |  | 72348 |  | 12 |  | 6 |  |
|  | Intramuscular injection | 83 |  | 3 |  | 63 |  | 5 |  | 19 |  | 1 |  | 1 |  | <1 |  |
|  | Other injections | 98 |  | 3 |  | 43 |  | 3 |  | 47 |  | 3 |  | 8 |  | 4 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Blood procedures** | **404** |  | **13** |  | **324** |  | **25** |  | **68** |  | **5** |  | **12** |  | **6** |  |
|  | Percutaneous venous puncture | 298 |  | 10 |  | 279 |  | 22 |  | 17 |  | 1 |  | 2 |  | 1 |  |
|  | Finger stick/Heel stick | 43 |  | 1 |  | 8 |  | <1 |  | 30 |  | 2 |  | 5 |  | 3 |  |
|  | Percutaneous arterial puncture | 35 |  | 1 |  | 24 |  | 2 |  | 11 |  | 1 |  | 0 |  | 0 |  |
|  | Other blood procedures | 28 |  | 1 |  | 13 |  | 1 |  | 10 |  | 1 |  | 5 |  | 3 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Line procedures** | **322** |  | **11** |  | **210** |  | **16** |  | **97** |  | **6** |  | **15** |  | **7** |  |
|  | To insert peripheral IV/set up heparin lock | 138 |  | 5 |  | 121 |  | 9 |  | 15 |  | 1 |  | 2 |  | 1 |  |
|  | To insert central line | 49 |  | 2 |  | 11 |  | 1 |  | 31 |  | 2 |  | 7 |  | 3 |  |
|  | Other line procedures | 135 |  | 4 |  | 78 |  | 6 |  | 51 |  | 3 |  | 6 |  | 3 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Other procedures** | **1,513** |  | **50** |  | **176** |  | **14** |  | **1,182** |  | **77** |  | **155** |  | **76** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **3,019** |  | **100** |  | **1,290** |  | **100** |  | **1,526** |  | **100** |  | **203** |  | **100** |  |

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| **Table 7.**  | **Sharps injuries among hospitals workers involving devices included in prepackaged kits by hospital size, Massachusetts, 2012** |
|  | Hospital Size |
|  | All Hospitals | Small | Medium | Large |
|  | 97 hospitals | 29 hospitals | 53 hospitals | 15 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Device included in prepackaged kit** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Yes | 627 |  | 21 |  | 48 |  | 21 |  | 231 |  | 22 |  | 348 |  | 20 |  |
|  | No | 2,107 |  | 70 |  | 162 |  | 71 |  | 728 |  | 70 |  | 1,217 |  | 69 |  |
|  | Unknown/Not answered | 285 |  | 9 |  | 17 |  | 7 |  | 79 |  | 8 |  | 189 |  | 11 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **3,019** |  | **100** |  | **227** |  | **100** |  | **1,038** |  | **100** |  | **1,754** |  | **100** |  |
| a Hospital size: small <100 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, 2012** |

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| **Table 8.**  | **Sharps injuries among hospital workers by when and how the injury occurred, Massachusetts, 2012** |
|  | Hospital Size |
|  | All Hospitals | Small | Medium | Large |
|  | 97 hospitals | 29 hospitals | 53 hospitals | 15 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Before use of the item** | **19** |  | **1** |  | **1** |  | **<1** |  | **5** |  | **1** |  | **13** |  | **1** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **During use of the item** | **1,340** |  | **44** |  | **99** |  | **44** |  | **422** |  | **41** |  | **819** |  | **47** |  |
|  | Suturing | 363 |  | 12 |  | 20 |  | 9 |  | 84 |  | 8 |  | 259 |  | 15 |  |
|  | Manipulate needle in patient | 283 |  | 9 |  | 13 |  | 6 |  | 108 |  | 10 |  | 162 |  | 9 |  |
|  | Patient moved and jarred device | 215 |  | 7 |  | 32 |  | 14 |  | 97 |  | 9 |  | 86 |  | 5 |  |
|  | Collision with worker or sharp | 102 |  | 3 |  | 8 |  | 4 |  | 38 |  | 4 |  | 56 |  | 3 |  |
|  | Handle/pass equipment | 85 |  | 3 |  | 0 |  | 0 |  | 23 |  | 2 |  | 62 |  | 4 |  |
|  | Device malfunction | 37 |  | 1 |  | 4 |  | 2 |  | 17 |  | 2 |  | 16 |  | 1 |  |
|  | Access IV line | 20 |  | 1 |  | 1 |  | <1 |  | 6 |  | 1 |  | 13 |  | 1 |  |
|  | Recap needle |  6 |  | <1 |  | 1 |  | <1 |  | 2 |  | <1 |  | 3 |  | <1 |  |
|  | Other / Unknown / Nonclassifiable | 229 |  | 8 |  | 20 |  | 9 |  | 47 |  | 5 |  | 162 |  | 9 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **After use, before disposal** | **1,118** |  | **37** |  | **96** |  | **42** |  | **398** |  | **38** |  | **624** |  | **36** |  |
|  | Activating injury protection mechanism | 219 |  | 7 |  | 19 |  | 7 |  | 90 |  | 9 |  | 110 |  | 6 |  |
|  | Handle/pass equipment | 213 |  | 7 |  | 21 |  | 9 |  | 62 |  | 6 |  | 130 |  | 7 |  |
|  | During clean-up | 182 |  | 6 |  | 13 |  | 6 |  | 56 |  | 6 |  | 113 |  | 6 |  |
|  | Improper disposal | 145 |  | 5 |  | 8 |  | 4 |  | 61 |  | 6 |  | 76 |  | 4 |  |
|  | Collision with worker or sharp | 118 |  | 4 |  | 13 |  | 6 |  | 30 |  | 3 |  | 75 |  | 4 |  |
|  | Sharps injury prevention mechanism | 82 |  | 3 |  | 8 |  | 4 |  | 42 |  | 4 |  | 32 |  | 2 |  |
|  |  | not activated |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Recap needle | 69 |  | 2 |  | 8 |  | 4 |  | 23 |  | 2 |  | 38 |  | 2 |  |
|  | Device malfunction | 23 |  | 1 |  | 2 |  | 1 |  | 17 |  | 2 |  | 4 |  | <1 |  |
|  | Patient moved and jarred device | 4 |  | <1 |  | 0 |  | 0 |  | 3 |  | <1 |  | 1 |  | <1 |  |
|  | Access IV line | 1 |  | <1 |  | 0 |  | 0 |  | 1 |  | <1 |  | 0 |  | 0 |  |
|  | Other / Unknown / Nonclassifiable | 62 |  | 2 |  | 4 |  | 2 |  | 13 |  | 1 |  | 45 |  | 3 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **During or after disposal of item** | **199** |  | **7** |  | **8** |  |  **4** |  | **100** |  | **10** |  | **91** |  | **5** |  |
|  | During sharps disposal | 171 |  | 6 |  | 7 |  | 3 |  | 87 |  | 8 |  | 77 |  | 4 |  |
|  | Sharps injury prevention mechanism | 12 |  | <1 |  | 0 |  | 0 |  | 8 |  | 1 |  | 4 |  | <1 |  |
|  |  | not activated |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Collision with worker or sharp | 5 |  | <1 |  | 1 |  | <1 |  | 1 |  | <1 |  | 3 |  | <1 |  |
|  | Device malfunction | 1 |  | <1 |  | 0 |  | 0 |  | 1 |  | <1 |  | 0 |  | 0 |  |
|  | Patient moved and jarred device | 1 |  | <1 |  | 0 |  | 0 |  | 1 |  | <1 |  | 0 |  | 0 |  |
|  | Other / Unknown / Nonclassifiable | 9 |  | <1 |  | 0 |  | 0 |  | 2 |  | <1 |  | 7 |  | <1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Unknown / Not answered / Nonclassifiable** | **343** |  | **11** |  | **23** |  | **10** |  | **113** |  | **11** |  | **207** |  | **12** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **3,019** |  | **100** |  | **227** |  | **100** |  | **1,038** |  | **100** |  | **1,754** |  | **100** |  |
| a 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, 2012** |
|  |  | **Time of Injury**Hospital Size |
| **Device**  | **Total** | **Before use** | **During use** | **After use,**  | **During or after disposal** | **Unknown/** |
|  |  | **use** |  | **Before Disposal\***  **disposal\*** | **Disposal\*** | **Non-classifiable** |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| Hypodermic Needle/Syringe | 211 |  | 100 |  | 3 |  | 1 |  | 69 |  | 33 |  | 96 |  | 46 |  | 18 |  | 9 |  | 25 |  | 12 |  |
| IV Stylet | 37 |  | 100 |  | 0 |  | 0 |  | 13 |  | 35 |  | 16 |  | 43 |  | 4 |  | 11 |  | 4 |  | 11 |  |
| Vacuum Tube Collection Holder | 28 |  | 100 |  | 0 |  | 0 |  | 10 |  | 36 |  | 12 |  | 43 |  | 4 |  | 14 |  | 2 |  | 7 |  |
| Winged-Steele Needle Holder | 4 |  | 100 |  | 0 |  | 0 |  | 3 |  | 75 |  | 1 |  | 25 |  | 0 |  | 0 |  | 0 |  | 0 |  |
| **Total** | **2800** |  | **100** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| \*SESIPs offer protection during the period after use. Injuries presented in this table that occurred after use (n=151) 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, 2012** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Physician** | **1,131** |  | **37** |  | **Support Services** | **108** |  | **4** |  |
|  | Intern/Resident | 458 |  | 15 |  |  | Housekeeper | 66 |  | 2 |  |
|  | MD | 310 |  | 10 |  |  | Central supply | 37 |  | 1 |  |
|  | Fellow | 108 |  | 4 |  |  | Safety/security | 2 |  | <1 |  |
|  | Physician Assistant | 87 |  | 3 |  |  | Attendant/orderly | 1 |  | <1 |  |
|  | Surgeon | 68 |  | 2 |  |  | Maintenance | 1 |  | <1 |  |
|  | Medical Student | 62 |  | 2 |  |  | Food service | 1 |  | <1 |  |
|  | Anesthesiologist | 28 |  | 1 |  |  |  |  |  |  |  |
|  | Radiologist | 10 |  | <1 |  | **Other Medical Staff** | **76** |  | **3** |  |
|  |  |  |  |  |  |  | Medical assistant | 74 |  | 2 |  |
| **Nurse** | **1,130** |  | **37** |  |  | Physical therapist | 1 |  | <1 |  |
|  | RN or LPN | 989 |  | 33 |  |  | Other medical staff | 1 |  | <1 |  |
|  | Nursing assistant | 54 |  | 2 |  |  |  |  |  |  |  |
|  | Nurse practitioner | 30 |  | 1 |  | **Dental Staff** | **16** |  | **1** |  |
|  | Patient care technician | 27 |  | 1 |  |  | Dental assistant/tech | 9 |  | <1 |  |
|  | Nurse anesthetist | 12 |  | <1 |  |  | Dentist | 4 |  | <1 |  |
|  | Nurse midwife | 9 |  | <1 |  |  | Dental hygienist | 1 |  | <1 |  |
|  | Nursing student | 8 |  | <1 |  |  | Dental student | 1 |  | <1 |  |
|  | Home health aide | 1 |  | <1 |  |  | Other dental worker | 1 |  | <1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **Technician** | **507** |  | **17** |  | **Other** | **47** |  | **2** |  |
|  | OR/Surgical technician | 211 |  | 7 |  |  | Researcher | 8 |  | <1 |  |
|  | Phlebotomist | 109 |  | 4 |  |  | EMT/paramedic | 6 |  | <1 |  |
|  | Radiologic technician | 47 |  | 2 |  |  | Clerical/administrative | 3 |  | <1 |  |
|  | Clinical lab technician | 46 |  | 2 |  |  | Counselor/social worker | 3 |  | <1 |  |
|  | Respiratory therapist/ Tech | 27 |  | 1 |  |  | Other student | 24 |  | 1 |  |
|  | Hemodialysis technician | 2 |  | <1 |  |  | Other | 3 |  | <1 |  |
|  | Morgue technician | 2 |  | <1 |  |  |  |  |  |  |  |
|  | Other technician | 63 |  | 2 |  |  | **Unknown/Not Answered** | **4** |  | **<1** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Total** | **3,019** |  | **100** |  |

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| **Table 11.**  | **Sharps injuries among hospital workers by department (detailed), Massachusetts, 2012** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Operating and Procedure Rooms** | **1,344** |  | **44** |  | **Laboratory** | **131** |  | **4** |  |
|  | Operating room | 986 |  | 33 |  |  | Histology/pathology | 45 |  | 1 |  |
|  | Labor and delivery | 115 |  | 4 |  |  | Clinical chemistry | 8 |  | <1 |  |
|  | Radiology | 101 |  | 3 |  |  | Microbiology | 5 |  | <1 |  |
|  | Hematology/oncology | 38 |  | 1 |  |  | Blood bank | 2 |  | <1 |  |
|  | Cardiac catheterization laboratory | 37 |  | 1 |  |  | Morgue/autopsy room | 2 |  | <1 |  |
|  | Phlebotomy room | 24 |  | 1 |  |  | Hematology | 1 |  | <1 |  |
|  | Endoscopy/bronchoscopy/cystoscopy | 18 |  | 1 |  |  | Other laboratory | 20 |  | 1 |  |
|  | Dialysis | 12 |  | <1 |  |  | Laboratory, unspecified | 48 |  | 2 |  |
|  | Other procedure room | 1 |  | <1 |  |  |  |  |  |  |  |
|  | Procedure room, unspecified | 12 |  | <1 |  | **Other Areas** | **214** |  | **7** |  |
|  |  |  |  |  |  | Rehabilitation unit | 50 |  | 2 |  |
| **Inpatient Units** | **561** |  | **19** |  |  | Central sterile supply | 39 |  | 1 |  |
|  | Medical/surgical ward | 479 |  | 16 |  |  | Dermatology | 33 |  | 1 |  |
|  | Psychiatry ward | 32 |  | 1 |  |  | Exam room | 25 |  | 1 |  |
|  | Obstetrics/gynecology | 17 |  | 1 |  |  | Long term care | 20 |  | 1 |  |
|  | Pediatrics | 14 |  | <1 |  |  | Pain clinic | 11 |  | <1 |  |
|  | Nursery | 6 |  | <1 |  |  | Hospital grounds | 3 |  | <1 |  |
|  | Patient room, ward unspecified | 13 |  | <1 |  |  | Anesthesia | 1 |  | <1 |  |
|  |  |  |  |  |  |  | Ambulance | 1 |  | <1 |  |
| **Emergency Department** | **303** |  | **10** |  |  | Central trash area | 1 |  | <1 |  |
|  |  |  |  |  |  |  | Employee health/ | 1 |  | <1 |  |
| **Intensive Care Units** | **296** |  | **10** |  |  |  | Infection control |  |  |  |  |
|  | Intensive care unit | 217 |  | 7 |  |  | Podiatry | 1 |  | <1 |  |
|  | Post anesthesia care unit | 79 |  | 3 |  |  | Laundry room | 1 |  | <1 |  |
|  |  |  |  |  |  |  | Detox unit | 1 |  | <1 |  |
| **Outpatient areas** | **161** |  | **5** |  |  | Other Location | 26 |  | 1 |  |
|  | Ambulatory care clinic | 70 |  | 2 |  |  |  |  |  |  |  |
|  | Physician’s office | 24 |  | 1 |  | **Unknown/Not Answered** | **9** |  | **<1** |  |
|  | Home health visit | 16 |  | 1 |  |  |  |  |  |  |
|  | Dental clinic | 15 |  | <1 |  |  |  |  |  |  |  |
|  | Community health center | 7 |  | <1 |  |  |  |  |  |  |  |
|  | Other outpatient areas | 29 |  | 1 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total**  | **3,019** |  | **100** |  |

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| **Table 12.**  | **Sharps injuries among hospital workers by device (detailed), Massachusetts, 2012** |
|  |  | N |  | % |  |  |  N |  | % |  |
| **Hypodermic needles/syringe (hollow bore)** | **912** |  | **30** |  | **Glass**  | **26** |  | **1** |  |
|  |  Hypodermic needle attached to a disposable syringe syringe |  812 |  27 | 27 |  |  | Medication ampule / Vial / IV bottle | 11 |  | <1 |  |
|  |  | disposable syringe syringe |  |  |  |  |  | Specimen / Test / Vacuum tube | 4 |  | <1 |  |
|  | Prefilled cartridge syringe | 56 |  | 2 |  |  | Pipette | 3 |  | <1 |  |
|  | Unattached hypodermic needle | 22 |  | 1 |  |  | Slide | 3 |  | <1 |  |
|  | Hypodermic Needle Attached to a  | 14 |  | <1 |  |  | Capillary tube | 1 |  | <1 |  |
|  |  | non-disposable syringe |  |  |  |  |  | Other glass item | 4 |  | <1 |  |
|  | Hypodermic needle attached to IV  | 5 |  | <1 |  |  |  |  |  |  |
|  |  | tubing |  |  |  |  | **Dental Device of item** |  **19** |  | **1** |  |
|  | Hypodermic needle, unspecified | 3 |  | <1 |  |  | Dental bur | 2 |  | <1 |  |
|  |  |  |  |  |  |  | Scaler/curette | 3 |  | <1 |  |
| **Suture Needle** | **685 685** |  | **23** |  |  | Dental explorer | 2 |  | <1 |  |
|  | Curved suture needle | 593 |  | 20 |  |  | Dental pick | 3 |  | <1 |  |
|  | Suture needle, unspecified | 68 |  | 2 |  |  | Other dental device or item | 9 |  | <1 |  |
|  | Straight suture needle | 24 |  | 1 |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Other** | **393** |  | 13 |  |
| **Other Hollow Bore Needles** | **331** |  | **11** |  |  | Wire |  46  |  | 2 |  |
|  | IV Stylet | 179 |  | 6 |  |  | Lancet | 42 |  | 1 |  |
|  | Huber Needle | 44 |  | 1 |  |  | Retractor | 38 |  | 1 |  |
|  | Other type of hollow bore needle | 33 |  | 1 |  |  | Scissors | 31 |  | 1 |  |
|  | Spinal or epidural needle | 26 |  | 1 |  |  | Cutting blade other than scalpel | 31 |  | 1 |  |
|  | Hollow bore needle, unspecified | 25 |  | 1 |  |  | Bovie electrocautery device | 22 |  | 1 |  |
|  | Biopsy Needle | 24 |  | 1 |  |  | Electrode | 19 |  | 1 |  |
|  |  |  |  |  |  |  | Forceps | 19 |  | 1 |  |
| **Scalpel Blade** | **242** |  | **8** |  |  | Trocar | 14 |  | <1 |  |
|  |  |  |  |  |  |  | Drill bit | 10 |  | <1 |  |
| **Butterfly Needle** | **233** |  | 8 |  |  | Staple  | 8 |  | <1 |  |
|  | Winged Steel needle attached to a  | 139 |  | 5 |  |  | Pin | 7 |  | <1 |  |
|  |  | vacuum tube collection holder |  |  |  |  |  | Needle/unspecified | 6 |  | <1 |  |
|  | Winged Steele Needle | 79 |  | 3 |  |  | Bone cutter | 5 |  | <1 |  |
|  | Winged Steele Needle attached to IV  | 15 |  | <1 |  |  | Other needle | 5 |  | <1 |  |
|  |  | tubing  |  |  |  |  |  | Rod | 3 |  | <1 |  |
|  |  |  |  |  |  |  | Bone chip/chipped tooth | 2 |  | <1 |  |
| **Vacuum Tube Collection Holder/Needle** | **131** |  | **4** |  |  | Tenaculum | 2 |  | <1 |  |
|  | Vacuum tube collection holder/needle | 107 |  | 4 |  |  | Elevator | 1 |  | <1 |  |
|  | Phlebotomy needle (other than winged  | 24 |  | 1 |  |  | Other Type of Sharp Object | 82 |  | 3 |  |
|  |  | steel needle) |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Unknown/Not Answered 47**  | **47** |  | **2** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total** | **3,019** |  | **100** |  |

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| **Table 13.**  | **Sharps injuries among hospital workers by procedure (detailed), Massachusetts, 2012** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Injection** | **780** |  | **26** |  | **Line Procedures** | **322** |  | **11** |  |
|  | Subcutaneous injection | 599 |  | 20 |  |  | To insert a peripheral IV line or   | 138 |  | 5 |  |
|  | Intramuscular injection | 83 |  | 3 |  |  |  | set up a heparin lock |  |  |  |  |
|  | Injection, unspecified | 51 |  | 2 |  |  | To insert a central IV line | 49 |  | 2 |  |
|  | Epidural/spiral anesthesia | 25 |  | 1 |  |  | Draw blood from central or  | 32 |  | 1 |  |
|  | Other injection | 22 |  | 1 |  |  |  | peripheral IV line or port |  |  |  |  |
|  |  |  |  |  |  |  | Other injection into IV site/port | 27 |  | 1 |  |
| **Suturing**  | **700** |  | **23** |  |  | To insert an arterial line | 17 |  | 1 |  |
|  | Suturing | 689 |  | 23 |  |  | Draw Blood from Arterial lineddraw | 15 |  | <1 |  |
|  | Suture removal | 11 |  | <1 |  |  | To flush heparin/saline | 12 |  | <1 |  |
|  |  |  |  |  |  |  | To connect IV line | 8 |  | <1 |  |
| **Blood Procedures** | **404** |  | **13** |  |  | Other line procedure | 23 |  | 1 |  |
|  | Percutaneous venous puncture | 298 |  | 10 |  |  | Line procedure, unspecified | 1 |  | <1 |  |
|  | Finger stick/heel stick | 43 |  | 1 |  |  |  |  |  |  |  |
|  | Percutaneous arterial puncture | 35 |  | 1 |  | **To Obtain Body Fluid or Tissue Sample** | **79** |  | **3** |  |
|  | Draw blood from umbilical vessel | 12 |  | <1 |  |  |  |  |  |
|  | Dialysis/AV Fistula site | 9 |  | <1 |  |  |  |  |  |  |  |
|  | Blood Procedure, unspecified | 7 |  | <1 |  | **Dental Procedures** | **12** |  | **<1** |  |
|  |  |  |  |  |  |  | Oral surgery | 2 |  | <1 |  |
| **Making the incision**  | **354** |  | **12** |  |  | Dental drilling | 1 |  | <1 |  |
|  | Making the incision | 263 |  | 9 |  |  | Hygiene | 5 |  | <1 |  |
|  | Cauterization | 15 |  | <1 |  |  | Dental procedure, unspecified | 4 |  | <1 |  |
|  | Surgical procedure, unspecified | 46 |  | 2 |  |  |  |  |  |  |  |
|  | Other surgical procedure | 30 |  | 1 |  | **Other** | **276** |  | **9** |  |
|  |  |  |  |  |  |  | Transferring blood/body fluid to  | 18 |  | 1 |  |
|  |  |  |  |  |  |  |  | another container |  |  |  |  |
|  |  |  |  |  |  |  | To obtain lab specimens | 16 |  | 1 |  |
|  |  |  |  |  |  |  | Drilling | 13 |  | <1 |  |
|  |  |  |  |  |  |  | Shaving | 6 |  | <1 |  |
|  |  |  |  |  |  |  | Procedure, unspecified | 7 |  | <1 |  |
|  |  |  |  |  |  |  | Other procedure | 216 |  | 7 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Unknown/Not answered** | **92** |  | **3** |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total** | **3,019** |  | **100** |  |

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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 |