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| Sharps Injuries among Hospital Workers in Massachusetts |
| Findings from the Massachusetts Sharps Injury Surveillance System, 2011 |
| Occupational Health Surveillance Program – Massachusetts Department of Public Health | August 2014 |

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| **Data Highlights and Prevention Measures** |
| * 2,892 sharps injuries (SIs) were reported in 2011. The SI rate for workers in all MDPH licensed hospitals was 15.7 SIs per 100 licensed beds, similar to rates for 2009-10 (Figure 1). Comparable findings were noted in rates for employees (per full time employee equivalents) in acute care hospitals only (Figure 2).

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| * The trend in rates over time (Figures 2) suggests that the earlier observed decline in rates from 2002-2009 may be leveling off. Not all workers report their SIs to employee health, thus this plateauing could reflect a positive change, i.e., increased worker reporting. Nevertheless, these findings underscore the need for continued commitment to preventing SIs. Hospitals, in interpreting their own SI rates, need to understand reporting practices in their facilities.
 |
| * After excluding SIs due to suture needles, 53% of SIs involved (Sharps with engineered sharps injury protections) SESIPs. 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 SESIPs is critical to preventing SIs, these devices are not failsafe. These findings raise critical questions about the extent to which these injuries are associated with factors such as inexperience and lack of training in the use of these devices or flaws in the product design. Hospitals should provide training in use of SESIPS and safe work practices and involve front line workers in selecting devices as part of a comprehensive SI prevention program.
 |
| * Injuries during sharps disposal are entirely preventable. They account for 6% of reported SIs, and may be due to improper disposal, over filled or poorly placed sharps disposal containers. Prevention strategies include the appropriate placement and selection of containers that allow staff to determine when containers should be emptied before they are dangerously full. It is recommended that containers are replaced when ¾ full. It is also crucial to implement systems to regularly check containers to identify those that need replacement. This may be done by assigning someone to check containers at the beginning of a shift or other regular intervals, and requesting replacements where needed. Staff should be provided with a number to call when containers need to be replaced.
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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 2011.

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 2011.

**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, 2011** |
|  |  |  | **Number of sharps injuries** | **Rate per 100 licensed beds** | **95% CI** |
| **Hospital size** |  |  |  |  |  |  |  |  |
|  | Small (< 100 licensed beds) |  | 183 |  | 11.3 |  | 9.7-12.8 |  |
|  | Medium (100-300 licensed beds) |  | 982 |  | 10.1 |  | 9.5-10.7 |  |
|  | Large (>300 licensed beds) |  | 1,727 |  | 25.5 |  | 24.4-26.5 |  |
|  |  |  |  |  |  |  |  |  |
| **Service Type** |  |  |  |  |  |  |  |  |
|  | Acute care |  | 2,817 |  | 18.6 |  | 17.9-19.2 |  |
|  | Chronic care |  | 75 |  | 2.5 |  | 2.0-3.1 |  |
|  |  |  |  |  |  |  |  |  |
| **Teaching Status** |  |  |  |  |  |  |  |  |
|  | Teaching  |  | 1753 |  | 25.9 |  | 24.8-26.9 |  |
|  | Non-teaching status |  | 1139 |  | 10.0 |  | 9.5-10.6 |  |
|  |  |  |  |  |  |  |  |  |
| **Total** |  |  | **2,892** |  | **15.9** |  | **15.4-16.5** |  |

**Figure 1. Number and rate of sharps injuries among all workers in acute and non-acute care hospitals, Massachusetts, 2011**

In all hospitals among both employees and non-employees from 2002 to 2011, there was a statistically significant decrease in the sharps injury rate (# of sharps injuries/ # of licensed beds) over the 10 year period. The rate decreased by 16.8% from 19.1 in 2002 to 15.9 in 2011.

**Sharps injuries per 100 licensed beds**

**Figure 2. Number and rate of sharps injuries among all workers in acute care hospitals only, Massachusetts, 2011**

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 rate of injuries decreased by 19.5% from 23.1 in 2002 to 18.6 in 2011. 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, 2011** |
|   | Hospital Size |
|  | All Hospitals | Small | Medium | Large |
|  | 97 hospitals | 29 hospitals | 53 hospitals | 15 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Work status of injured worker** | **2,892** |  | **100** |  | **183** |  | **100** |  | **982** |  | **100** |  | **1,727** |  | **100** |  |
|  | Employee | 2,485 |  | 86 |  | 170 |  | 93 |  | 842 |  | 86 |  | 1,473 |  | 85 |  |
|  | Non-Employee Practitioner | 292 |  | 10 |  | 8 |  | 4 |  | 92 |  | 9 |  | 192 |  | 11 |  |
|  | Student | 78 |  | 3 |  | 1 |  | 1 |  | 30 |  | 3 |  | 47 |  | 3 |  |
|  | Temporary / Contract Worker | 24 |  | 1 |  | 4 |  | 2 |  | 14 |  | 1 |  | 6 |  | <1 |  |
|  | Other / Unknown / Not answered | 13 |  | <1 |  | 0 |  | 0 |  | 4 |  | <1 |  | 9 |  | <1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Occupation** | **2,892** |  | **100** |  | **183** |  | **100** |  | **982** |  | **100** |  | **1,727** |  | **100** |  |
|  | Physician | 1,152 |  | 40 |  | 53 |  | 29 |  | 238 |  | 24 |  | 861 |  | 50 |  |
|  | Nurse | 1,017 |  | 35 |  | 76 |  | 42 |  | 417 |  | 42 |  | 524 |  | 30 |  |
|  | Technician | 467 |  | 16 |  | 33 |  | 18 |  | 224 |  | 23 |  | 210 |  | 12 |  |
|  | Support Services | 119 |  | 4 |  | 11 |  | 6 |  | 44 |  | 4 |  | 64 |  | 4 |  |
|  | Dental Staff | 13 |  | <1 |  | 0 |  | 0 |  | 5 |  | 1 |  | 8 |  | <1 |  |
|  | Other Medical Staff | 72 |  | 2 |  | 4 |  | 2 |  | 35 |  | 4 |  | 33 |  | 2 |  |
|  | Other / Unknown / Not answered | 52 |  | 2 |  | 6 |  | 3 |  | 19 |  | 2 |  | 27 |  | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Department where injury occurred** | **2,892** |  | **100** |  | **183** |  | **100** |  | **982** |  | **100** |  | **1,7277** |  | **100** |  |
|  | Operating and Procedure Rooms | 1,261 |  | 44 |  | 78 |  | 43 |  | 353 |  | 36 |  | 830 |  | 48 |  |
|  | Inpatient Units | 551 |  | 19 |  | 41 |  | 22 |  | 263 |  | 27 |  | 247 |  | 14 |  |
|  | Intensive Care Units | 269 |  | 9 |  | 7 |  | 4 |  | 67 |  | 7 |  | 195 |  | 11 |  |
|  | Emergency Department | 261 |  | 9 |  | 18 |  | 10 |  | 116 |  | 12 |  | 127 |  | 7 |  |
|  | Outpatient areas | 187 |  | 6 |  | 7 |  | 4 |  | 69 |  | 7 |  | 111 |  | 6 |  |
|  | Laboratories | 137 |  | 5 |  | 11 |  | 6 |  | 34 |  | 3 |  | 92 |  | 5 |  |
|  | Other / Unknown / Not answered | 226 |  | 8 |  | 21 |  | 12 |  | 80 |  | 8 |  | 125 |  | 7 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Device involved in the injury** | **2,892** |  | **100** |  | **183** |  | **100** |  | **982** |  | **100** |  | **1,727** |  | **100** |  |
|  | Hypodermic needle/syringe  | 857 |  | 30 |  | 59 |  | 32 |  | 339 |  | 35 |  | 459 |  | 27 |  |
|  | Suture needle | 633 |  | 22 |  | 27 |  | 15 |  | 162 |  | 16 |  | 444 |  | 26 |  |
|  | Other hollow bore needle | 367 |  | 13 |  | 16 |  | 9 |  | 118 |  | 12 |  | 233 |  | 13 |  |
|  | Scalpel blade | 236 |  | 8 |  | 15 |  | 8 |  | 58 |  | 6 |  | 163 |  | 9 |  |
|  | Winged steel needle | 217 |  | 8 |  | 13 |  | 7 |  | 111 |  | 11 |  | 93 |  | 5 |  |
|  | Vacuum tube collection holder/needle | 79 |  | 3 |  | 11 |  | 6 |  | 36 |  | 4 |  | 32 |  | 2 |  |
|  | Glass | 28 |  | 1 |  | 3 |  | 2 |  | 8 |  | 1 |  | 17 |  | 1 |  |
|  | Other / Unknown / Not answered | 475 |  | 16 |  | 39 |  | 21 |  | 150 |  | 15 |  | 286 |  | 17 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Procedure for which the device was used** | **2,892** |  | **100** |  | **183** |  | **100** |  | **982** |  | **100** |  | **1,727** |  | **100** |  |
|  | Injection | 699 |  | 24 |  | 49 |  | 27 |  | 283 |  | 29 |  | 367 |  | 21 |  |
|  | Suturing | 631 |  | 22 |  | 27 |  | 15 |  | 159 |  | 16 |  | 445 |  | 26 |  |
|  | Blood procedures | 375 |  | 13 |  | 27 |  | 15 |  | 178 |  | 18 |  | 170 |  | 10 |  |
|  | Making the incision | 338 |  | 12 |  | 22 |  | 12 |  | 99 |  | 10 |  | 217 |  | 13 |  |
|  | Line procedures | 319 |  | 11 |  | 18 |  | 10 |  | 114 |  | 12 |  | 187 |  | 11 |  |
|  | To obtain body fluid or tissue sample | 97 |  | 3 |  | 9 |  | 5 |  | 24 |  | 2 |  | 64 |  | 4 |  |
|  | Dental procedures | 10 |  | <1 |  | 0 |  | 0 |  | 5 |  | 1 |  | 5 |  | <1 |  |
|  | Other / Unknown / Not answered | 423 |  | 15 |  | 31 |  | 17 |  | 120 |  | 12 |  | 272 |  | 16 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 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, 2011** |
|  |  | **Hollow Bore** |
| **Occupation** | **Total** | **Hypodermic Needle** | **Butterfly Needle** | **Vacuum**  | **Other Hollow**  |
|  |  | **Needle** | **Needle** | **Tube** | **Bore** |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Nurse** | 805 |  | 100 |  | 473 |  | 59 |  | 101 |  | 13 |  | 42 |  | 5 |  | 189 |  | 23 |  |
| **Physician** | 354 |  | 100 |  | 235 |  | 66 |  | 11 |  | 3 333 |  | 4 |  | 2 |  | 104 |  | 29 |  |
| **Technician** | 239 |  | 100 |  | 85 |  | 36 |  | 82 |  | 34 |  | 29 |  | 12 |  | 43 |  | 18 |  |
| **Support**  | 40 |  | 100 |  | 17 |  | 43 |  | 3 |  | 8 |  | 1 |  | 3 |  | 19 |  | 48 |  |
| **Services** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **All Others/**  | 82 |  | 100 |  | 47 |  | 57 |  | 20 |  | 24 |  | 3 |  | 4 |  | 12 |  | 15 |  |
| **Not Answered** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **1,520** |  | **100** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| **Table 4.**  | **Sharps injuries among hospital workers by occupation by solid bore device, Massachusetts, 2011** |
| **Occupation** | **Total** | **Suture Needle** | **Scalpel** | **Other/** |
|  |  |  |  | **Unknown** |
|  | N |  | % |  | N |  | % |  | N |  | %1550262708 |  | N |  | % |  |
| **Physician** | 798 |  | 100 |  | 473 |  | 59 |  | 150 |  | 19 |  | 175 |  | 22 |  |
| **Technician** | 228 |  | 100 |  | 68 |  | 30 |  | 50 |  | 22 |  | 110 |  | 48 |  |
| **Nurse** | 212 |  | 100 |  | 77 |  | 36 |  | 22 |  | 10 |  | 113 |  | 53 |  |
| **Support**  | 79 |  | 100 |  | 6 |  | 8 |  | 6 |  | 8 |  | 67 |  | 85 |  |
| **Services** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **All Others/** | 55 |  | 100 |  | 9 |  | 16 |  | 8 |  | 15 |  | 38 |  | 69 |  |
| **Not Answered** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **1,372** |  | **100** |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| **Table 5.**  | **Sharps injuries among hospitals workers by SESIP by hospital size: all devices and excluding suture needles, Massachusetts, 2011** |
|  | Hospital Size |
|  | All Hospitals | Small | Medium | Large |
|  | 97 hospitals | 29 hospitals | 53 hospitals | 15 hospitals |
| Sharps Injury Protections | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **All devices** | **2,892** |  | **100** |  | **183** |  | **100** |  | **982** |  | **100** |  | **1,727** |  | **100** |  |
|  | SESIP | 1,198 |  | 41 |  | 80 |  | 44 |  | 525 |  | 53 |  | 593 |  | 35 |  |
|  | Non-SESIP | 1,501 |  | 52 |  | 94 |  | 51 |  | 402 |  | 41 |  | 1,005 |  | 58 |  |
|  | Unknown/Not answered | 193 |  | 7 |  | 9 |  | 5 |  | 55 |  | 6 |  | 129 |  | 7 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Devices excluding suture needles** | **2,259** |  | **100** |  | **156** |  | **100** |  | **820** |  | **100** |  | **1,283** |  | **100** |  |
|  | SESIP | 1,189 |  | 53 |  | 80 |  | 51 |  | 517 |  | 63 |  | 592 |  | 46 |  |
|  | Non-SESIP | 910 |  | 40 |  | 69 |  | 44 |  | 251 |  | 31 |  | 590 |  | 46 |  |
|  | Unknown/Not answered | 160 |  | 7 |  | 7 |  | 4 |  | 52 |  | 6 |  | 101 |  | 8 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 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, 2011** |

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| **Table 6.**  | **Sharps injuries among hospital workers by procedure and SESIP, Massachusetts, 2011** |
| Procedure | Total | SESIP | Non-SESIP | Unknown |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Injection procedures** | **699** |  | **24** |  | **511** |  | **43** |  | **168** |  | **11** |  | **20** |  | **10** |  |
|  | Subcutaneous injection | 565 |  | 20 |  | 422 |  | 35 |  | 126 |  | 8 |  | 17 |  | 9 |  |
|  | Intramuscular injection | 97 |  | 3 |  | 82 |  | 7 |  | 15 |  | 1 |  | 0 |  | 0 |  |
|  | Other injections | 37 |  | 1 |  | 7 |  | 1 |  | 27 |  | 2 |  | 3 |  | 2 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Blood procedures** | **375** |  | **13** |  | **302** |  | **25** |  | **56** |  | **4** |  | **17** |  | **9** |  |
|  | Percutaneous venous puncture | 258 |  | 9 |  | 235 |  | 20 |  | 16 |  | 1 |  | 7 |  | 4 |  |
|  | Percutaneous arterial puncture | 49 |  | 2 |  | 40 |  | 3 |  | 7 |  | 0 |  | 2 |  | 1 |  |
|  | Finger stick/Heel stick | 45 |  | 2 |  | 12 |  | 1 |  | 25 |  | 2 |  | 8 |  | 4 |  |
|  | Other blood procedures | 23 |  | 1 |  | 15 |  | 1 |  | 8 |  | 1 |  | 0 |  | 0 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Line procedures** | **319** |  | **11** |  | **223** |  | **19** |  | **81** |  | **5** |  | **15** |  | **8** |  |
|  | To insert peripheral IV/set up heparin lock | 127 |  | 4 |  | 109 |  | 9 |  | 12 |  | 1 |  | 6 |  | 3 |  |
|  | To insert central line | 41 |  | 1 |  | 11 |  | 1 |  | 26 |  | 2 |  | 4 |  | 2 |  |
|  | Other line procedures | 151 |  | 5 |  | 103 |  | 9 |  | 43 |  | 3 |  | 5 |  | 3 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Other procedures** | **1,499** |  | **52** |  | **162** |  | **14** |  | **1,196** |  | **80** |  | **141** |  | **73** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **2,892** |  | **100** |  | **1,198** |  | **100** |  | **1,501** |  | **100** |  | **193** |  | **100** |  |

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| **Table 7.**  | **Sharps injuries among hospitals workers involving devices included in prepackaged kits by hospital size, Massachusetts, 2011** |
|  | Hospital Size |
|  | All Hospitals | Small | Medium | Large |
|  | 97 hospitals | 29 hospitals | 53 hospitals | 15 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Device included in prepackaged kit** | **2,892** |  | **100** |  | **183** |  | **100** |  | **982** |  | **100** |  | **1,727** |  | **100** |  |
|  | Yes | 709 |  | 25 |  | 44 |  | 24 |  | 217 |  | 22 |  | 448 |  | 26 |  |
|  | No | 2,063 |  | 71 |  | 129 |  | 70 |  | 716 |  | 73 |  | 1,218 |  | 71 |  |
|  | Unknown/Not answered | 120 |  | 4 |  | 10 |  | 5 |  | 49 |  | 5 |  | 61 |  | 4 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **2,892** |  | **100** |  | **183** |  | **100** |  | **982** |  | **100** |  | **1,727** |  | **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, 2011** |

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| **Table 8.**  | **Sharps injuries among hospital workers by when and how the injury occurred, Massachusetts, 2011** |
|  | Hospital Size |
|  | All Hospitals | Small | Medium | Large |
|  | 97 hospitals | 29 hospitals | 53 hospitals | 15 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Before use of the item** | **25** |  | **1** |  | **0** |  | **0** |  | **7** |  | **1** |  | **18** |  | **1** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **During use of the item** | **1,292** |  | **45** |  | **81** |  | **44** |  | **409** |  | **42** |  | **802** |  | **46** |  |
|  | Suturing | 365 |  | 13 |  | 17 |  | 9 |  | 87 |  | 9 |  | 261 |  | 15 |  |
|  | Manipulate needle in patient | 286 |  | 10 |  | 15 |  | 8 |  | 112 |  | 11 |  | 159 |  | 9 |  |
|  | Patient moved and jarred device | 233 |  | 8 |  | 15 |  | 8 |  | 91 |  | 9 |  | 127 |  | 7 |  |
|  | Collision with worker or sharp | 126 |  | 4 |  | 11 |  | 6 |  | 37 |  | 4 |  | 78 |  | 5 |  |
|  | Handle/pass equipment | 19 |  | 1 |  | 0 |  | 0 |  | 11 |  | 1 |  | 8 |  | <1 |  |
|  | Access IV line | 19 |  | 1 |  | 1 |  | 1 |  | 6 |  | 1 |  | 12 |  | 1 |  |
|  | Device malfunction | 17 |  | 1 |  | 1 |  | 1 |  | 6 |  | 1 |  | 10 |  | 1 |  |
|  | Recap needle | 5 |  | <1 |  | 1 |  | 1 |  | 1 |  | <1 |  | 3 |  | <1 |  |
|  | Sharps injury prevention mechanism | 1 |  | <1 |  | 0 |  | 0 |  | 0 |  | 0 |  | 1 |  | <1 |  |
|  |  | not activated |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Other / Unknown / Nonclassifiable | 221 |  | 8 |  | 20 |  | 11 |  | 58 |  | 6 |  | 143 |  | 8 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **After use, before disposal** | **1,192** |  | **41** |  | **80** |  | **44** |  | **446** |  | **45** |  | **666** |  | **39** |  |
|  | Handle/pass equipment | 291 |  | 10 |  | 17 |  | 9 |  | 73 |  | 7 |  | 201 |  | 12 |  |
|  | Activating injury protection mechanism | 213 |  | 7 |  | 11 |  | 6 |  | 98 |  | 10 |  | 104 |  | 6 |  |
|  | Improper disposal | 167 |  | 6 |  | 11 |  | 6 |  | 63 |  | 6 |  | 93 |  | 5 |  |
|  | During clean-up | 165 |  | 6 |  | 11 |  | 6 |  | 67 |  | 7 |  | 87 |  | 5 |  |
|  | Collision with worker or sharp | 116 |  | 4 |  | 12 |  | 7 |  | 36 |  | 4 |  | 68 |  | 4 |  |
|  | Sharps injury prevention mechanism | 89 |  | 3 |  | 10 |  | 6 |  | 52 |  | 5 |  | 27 |  | 2 |  |
|  |  | not activated |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Recap needle | 80 |  | 3 |  | 5 |  | 3 |  | 24 |  | 2 |  | 51 |  | 3 |  |
|  | Device malfunction | 25 |  | 1 |  | 1 |  | 1 |  | 15 |  | 2 |  | 9 |  | 1 |  |
|  | Patient moved and jarred device | 6 |  | <1 |  | 1 |  | 1 |  | 3 |  | <1 |  | 2 |  | <1 |  |
|  | Access IV line | 2 |  | <1 |  | 0 |  | 0 |  | 1 |  | <1 |  | 1 |  | <1 |  |
|  | Other / Unknown / Nonclassifiable | 38 |  | 1 |  | 1 |  | 1 |  | 14 |  | 1 |  | 23 |  | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **During or after disposal of item** | **181** |  | **6** |  | **11** |  | **6** |  | **76** |  | **8** |  | **94** |  | **5** |  |
|  | During sharps disposal | 160 |  | 5 |  | 8 |  | 4 |  | 71 |  | 7 |  | 81 |  | 5 |  |
|  | Collision with worker or sharp | 7 |  | <1 |  | 1 |  | 1 |  | 2 |  | <1 |  | 4 |  | <1 |  |
|  | Device malfunction | 5 |  | <1 |  | 1 |  | 1 |  | 1 |  | <1 |  | 3 |  | <1 |  |
|  | During clean up | 3 |  | <1 |  | 0 |  | 0 |  | 0 |  | <1 |  | 3 |  | <1 |  |
|  | Sharps injury prevention mechanism | 2 |  |  |  | 0 |  | 0 |  | 2 |  |  |  | 0 |  |  |  |
|  |  | not activated |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Other / Unknown / Nonclassifiable | 4 |  | <1 |  | 1 |  | 10 |  | 0 |  | 0 |  | 3 |  | <1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Unknown / Not answered / Nonclassifiable** | **202** |  | **7** |  | **11** |  | **6** |  | **44** |  | **5** |  | **147** |  | **9** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **2,892** |  | **100** |  | **183** |  | **100** |  | **982** |  | **100** |  | **1,727** |  | **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, 2011** |
|  |  | **Time of Injury**Hospital Size |
| **Device**  | **Total** | **Before use** | **During use** | **After use,**  | **During or after disposal** | **Unknown/** |
|  |  |  | **Before disposal\*** | **Disposal\*** | **Non-classifiable** |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| Hypodermic Needle/Syringe | 205 |  | 100 |  | 3 |  | 2 |  | 67 |  | 33 |  | 106 |  | 52 |  | 16 |  | 8 |  | 13 |  | 6 |  |
| Vacuum Tube Collection Holder | 21 |  | 100 |  | 0 |  | 0 |  | 8 |  | 38 |  | 5 |  | 23 |  | 8 |  | 38 |  | 0 |  | 0 |  |
| IV Stylet | 18 |  | 100 |  | 0 |  | 0 |  | 13 |  | 72 |  | 4 |  | 22 |  | 0 |  | 0 |  | 1 |  | 6 |  |
| Winged-Steele Needle Holder | 11 |  | 100 |  | 0 |  | 0 |  | 2 |  | 18 |  | 5 |  | 45 |  | 3 |  | 27 |  | 1 |  | 9 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **255** |  | **100** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| \*SESIPs offer protection during the period after use. Injuries presented in this table that occurred after use (n=147) 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, 2011** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Physician** | **1,152** |  | **40** |  | **Support Services** | **119** |  | **4** |  |
|  | Intern/Resident | 496 |  | 17 |  |  | Housekeeper | 65 |  | 2 |  |
|  | MD | 332 |  | 12 |  |  | Central supply | 42 |  | 1 |  |
|  | Fellow | 98 |  | 3 |  |  | Safety/security | 3 |  | <1 |  |
|  | Medical Student | 73 |  | 3 |  |  | Attendant/orderly | 3 |  | <1 |  |
|  | Physician Assistant | 71 |  | 3 |  |  | Maintenance | 3 |  | <1 |  |
|  | Surgeon | 43 |  | 1 |  |  | Transport/Messenger | 1 |  | <1 |  |
|  | Anesthesiologist | 29 |  | 1 |  |  | Laundry staff | 1 |  | <1 |  |
|  | Radiologist | 10 |  | <1 |  |  | Other support services staff | 1 |  | <1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **Nurse** | **1,017** |  | **35** |  | **Other Medical Staff** | **72** |  | **2** |  |
|  | RN or LPN | 898 |  | 31 |  |  | Medical assistant | 66 |  | 2 |  |
|  | Nursing assistant | 53 |  | 2 |  |  | Physical therapist | 1 |  | <1 |  |
|  | Nurse practitioner | 20 |  | 1 |  |  | Other medical staff | 5 |  | <1 |  |
|  | Patient care technician | 19 |  | 1 |  |  |  |  |  |  |  |
|  | Nurse anesthetist | 10 |  | <1 |  | **Dental Staff** | **13** |  | **<1** |  |
|  | Nursing student | 10 |  | <1 |  |  | Dentist | 7 |  | <1 |  |
|  | Nurse midwife | 7 |  | <1 |  |  | Dental assistant/tech | 5 |  | <1 |  |
|  |  |  |  |  |  |  | Dental hygienist | 1 |  | <1 |  |
| **Technician** | **467** |  | **16** |  |  |  |  |  |  |  |
|  | OR/Surgical technician | 195 |  | 7 |  | **Other** | **49** |  | **2** |  |
|  | Phlebotomist | 96 |  | 3 |  |  | Researcher | 12 |  | <1 |  |
|  | Clinical lab technician | 61 |  | 2 |  |  | EMT/paramedic | 9 |  | <1 |  |
|  | Radiologic technician | 42 |  | 2 |  |  | Pharmacist | 7 |  | <1 |  |
|  | Respiratory therapist/ Tech | 26 |  | 1 |  |  | Clerical/administrative | 1 |  | <1 |  |
|  | Hemodialysis technician | 3 |  | <1 |  |  | Counselor/social worker | 1 |  | <1 |  |
|  | Morgue technician | 1 |  | <1 |  |  | Dietician | 1 |  | <1 |  |
|  | Psychiatric technician | 1 |  | <1 |  |  | Other student | 11 |  | <1 |  |
|  | Other technician | 42 |  | 1 |  |  | Other | 7 |  | <1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Unknown/Not Answered** | **3** |  | **<1** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Total** | **2,892** |  | **100** |  |
| **Table 11.**  | **Sharps injuries among hospital workers by department (detailed), Massachusetts, 2011** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Operating and Procedure Rooms** | **1,261** |  | **44** |  | **Laboratory** | **137** |  | **5** |  |
|  | Operating room | 920 |  | 32 |  |  | Histology/pathology | 47 |  | 2 |  |
|  | Labor and delivery | 102 |  | 4 |  |  | Morgue/autopsy room | 7 |  | <1 |  |
|  | Radiology | 96 |  | 3 |  |  | Microbiology | 7 |  | <1 |  |
|  | Cardiac catheterization laboratory | 37 |  | 1 |  |  | Hematology | 2 |  | <1 |  |
|  | Hematology/oncology | 36 |  | 1 |  |  | Clinical chemistry | 2 |  | <1 |  |
|  | Endoscopy/bronchoscopy/cystoscopy | 20 |  | 1 |  |  | Blood bank | 1 |  | <1 |  |
|  | Phlebotomy room | 17 |  | 1 |  |  | Other laboratory | 30 |  | 1 |  |
|  | Dialysis | 14 |  | <1 |  |  | Laboratory, unspecified | 41 |  | 1 |  |
|  | Procedure room, unspecified | 13 |  | <1 |  |  |  |  |  |  |  |
|  | Other procedure room | 6 |  | <1 |  | **Other Areas** | **206** |  | **7** |  |
|  |  |  |  |  |  | Central sterile supply | 43 |  | 1 |  |
| **Inpatient Units** | **551** |  | **19** |  |  | Rehabilitation unit | 42 |  | 1 |  |
|  | Medical/surgical ward | 469 |  | 16 |  |  | Dermatology | 33 |  | 1 |  |
|  | Psychiatry ward | 23 |  | 1 |  |  | Long term care | 21 |  | 1 |  |
|  | Pediatrics | 19 |  | 1 |  |  | Exam room | 13 |  | <1 |  |
|  | Obstetrics/gynecology | 17 |  | 1 |  |  | Pain clinic | 11 |  | <1 |  |
|  | Nursery | 9 |  | <1 |  |  | Anesthesia | 9 |  | <1 |  |
|  | Patient room, ward unspecified | 11 |  | <1 |  |  | Hospital grounds | 5 |  | <1 |  |
|  | Specific ward, type unknown | 3 |  | <1 |  |  | Ambulance | 4 |  | <1 |  |
|  |  |  |  |  |  |  | Pharmacy | 4 |  | <1 |  |
| **Intensive Care Units** | **269** |  | **9** |  |  | Central trash area | 4 |  | <1 |  |
|  | Intensive care unit | 206 |  | 7 |  |  | Employee health/ | 3 |  | <1 |  |
|  | Post anesthesia care unit | 63 |  | 2 |  |  |  | Infection control |  |  |  |  |
|  |  |  |  |  |  |  | Other Location | 14 |  | <1 |  |
| **Emergency Department** | **261** |  | **9** |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Unknown/Not Answered** | **20** |  | **1** |  |
| **Outpatient areas** | **187** |  | **7** |  |  |  |  |  |  |
|  | Ambulatory care clinic | 91 |  | 3 |  |  |  |  |  |  |  |
|  | Physician’s office | 27 |  | 1 |  |  |  |  |  |  |  |
|  | Dental clinic | 17 |  | 1 |  |  |  |  |  |  |  |
|  | Home health visit | 15 |  | 1 |  |  |  |  |  |  |  |
|  | Community health center | 7 |  | <1 |  |  |  |  |  |  |
|  | Other outpatient areas | 30 |  | 1 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total**  | **2,892** |  | **100** |  |

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| **Table 12.**  | **Sharps injuries among hospital workers by device (detailed), Massachusetts, 2011** |
|  |  | N |  | % |  |  |  N |  | % |  |
| **Hypodermic needles/syringe (hollow bore)** | **857** |  | **30** |  | **Glass**  | **28** |  | **1** |  |
|  |  Hypodermic needle attached to a disposable syringe syringe | 727 |  | 25 |  |  | Medication ampule / Vial / IV bottle | 7 |  | <1 |  |
|  |  | disposable syringe syringe |  |  |  |  |  | Pipette | 6 |  | <1 |  |
|  | Hypodermic Needle Attached to a | 45 |  | 2 |  |  | Specimen / Test / Vacuum tube | 5 |  | <1 |  |
|  |  | non-disposable syringe |  |  |  |  |  | Slide | 2 |  | <1 |  |
|  | Prefilled cartridge syringe | 37 |  | 1 |  |  | Capillary tube | 1 |  | <1 |  |
|  | Unattached hypodermic needle | 34 |  | 1 |  |  | Other glass item | 7 |  | <1 |  |
|  | Hypodermic needle attached to IV  | 9 |  | <1 |  |  |  |  |  |  |
|  |  | tubing |  |  |  |  | **Dental Device of item** | **25** |  | **1** |  |
|  | Hypodermic needle, unspecified | 5 |  | <1 |  |  | Dental bur | 5 |  | <1 |  |
|  |  |  |  |  |  |  | Scaler/curette | 4 |  | <1 |  |
| **Suture Needle** | **633** |  | **22** |  |  | Dental explorer | 2 |  | <1 |  |
|  | Curved suture needle | 469 |  | 16 |  |  | Dental pick | 1 |  | <1 |  |
|  | Suture needle, unspecified | 137 |  | 5 |  |  | Other dental device or item | 13 |  | <1 |  |
|  | Straight suture needle | 27 |  | 1 |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Other** | **424** |  | **15** |  |
| **Other Hollow Bore Needles** | **367** |  | **13** |  |  | Wire | 47 |  | 2 |  |
|  | IV Stylet | 141 |  | 5 |  |  | Lancet | 46 |  | 2 |  |
|  | Huber Needle | 46 |  | 2 |  |  | Retractor | 42 |  | 1 |  |
|  | Biopsy Needle | 24 |  | 1 |  |  | Scissors | 27 |  | 1 |  |
|  | Spinal or epidural needle | 14 |  | <1 |  |  | Bovie electrocautery device | 27 |  | 1 |  |
|  | Hollow bore needle, unspecified | 83 |  | 3 |  |  | Cutting blade other than scalpel | 26 |  | 1 |  |
|  | Other type of hollow bore needle | 59 |  | 2 |  |  | Forceps | 26 |  | 1 |  |
|  |  |  |  |  |  |  | Other needle | 18 |  | 1 |  |
| **Scalpel Blade** | **236** |  | **8** |  |  | Pin | 18 |  | 1 |  |
|  |  |  |  |  |  |  | Drill bit | 12 |  | <1 |  |
| **Butterfly Needle** | **217** |  | **8** |  |  | Electrode | 12 |  | <1 |  |
|  | Winged Steel needle attached to a  | 130 |  | 4 |  |  | Needle/unspecified | 11 |  | <1 |  |
|  |  | vacuum tube collection holder |  |  |  |  |  | Trocar | 10 |  | <1 |  |
|  | Winged Steele Needle | 78 |  | 3 |  |  | Bone chip/chipped tooth | 8 |  | <1 |  |
|  | Winged Steele Needle attached to IV  | 9 |  | <1 |  |  | Staple  | 6 |  | <1 |  |
|  |  | tubing  |  |  |  |  |  | Tenaculum | 6 |  | <1 |  |
|  |  |  |  |  |  |  | Bone cutter | 5 |  | <1 |  |
| **Vacuum Tube Collection Holder/Needle** | **79** |  | **3** |  |  | Elevator | 2 |  | <1 |  |
|  | Vacuum tube collection holder/needle | 61 |  | 2 |  |  | Rod | 1 |  | <1 |  |
|  | Phlebotomy needle (other than winged  | 18 |  | 1 |  |  | Other Type of Sharp Object | 74 |  | 3 |  |
|  |  | steel needle) |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Unknown/Not Answered 47**  | **26** |  | **1** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total** | **2,892** |  | **100** |  |

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| **Table 13.**  | **Sharps injuries among hospital workers by procedure (detailed), Massachusetts, 2011** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Injection** | **699** |  | **24** |  | **Line Procedures** | **319** |  | **11** |  |
|  | Subcutaneous injection | 565 |  | 20 |  |  | To insert a peripheral IV line or   | 127 |  | 4 |  |
|  | Intramuscular injection | 97 |  | 3 |  |  |  | set up a heparin lock |  |  |  |  |
|  | Epidural/spiral anesthesia | 13 |  | <1 |  |  | To insert a central IV line | 41 |  | 1 |  |
|  | Injection, unspecified | 17 |  | 1 |  |  | Other injection into IV site/port | 29 |  | 1 |  |
|  | Other injection | 7 |  | <1 |  |  | Draw blood from central or  | 26 |  | 1 |  |
|  |  |  |  |  |  |  |  | peripheral IV line or port |  |  |  |  |
| **Suturing**  | **631** |  | **22** |  |  | To insert an arterial line | 17 |  | 1 |  |
|  | Suturing | 586 |  | 20 |  |  | To connect IV line | 15 |  | 1 |  |
|  | Suture removal | 45 |  | 2 |  |  | Draw blood from arterial lineddraw | 11 |  | <1 |  |
|  |  |  |  |  |  |  | To flush heparin/saline | 10 |  | <1 |  |
| **Blood Procedures** | **375** |  | **13** |  |  | Other line procedure | 39 |  | 1 |  |
|  | Percutaneous venous puncture | 258 |  | 9 |  |  | Line procedure, unspecified | 4 |  | <1 |  |
|  | Percutaneous arterial puncture | 49 |  | 2 |  |  |  |  |  |  |  |
|  | Finger stick/heel stick | 45 |  | 2 |  | **To Obtain Body Fluid or Tissue Sample** | **97** |  | **3** |  |
|  | Draw blood from umbilical vessel | 10 |  | <1 |  |  |  |  |  |
|  | Dialysis/AV Fistula site | 10 |  | <1 |  |  |  |  |  |  |  |
|  | Blood Procedure, unspecified | 1 |  | <1 |  | **Dental Procedures** | **10** |  | **<1** |  |
|  | Other blood procedure | 2 |  | <1 |  |  | Oral surgery | 4 |  | <1 |  |
|  |  |  |  |  |  | Restorative | 2 |  | <1 |  |
| **Making the incision**  | **338** |  | **12** |  |  | Dental drilling | 1 |  | <1 |  |
|  | Making the incision | 248 |  | 9 |  |  | Hygiene | 1 |  | <1 |  |
|  | Cauterization | 11 |  | <1 |  |  | Other dental procedure | 1 |  | <1 |  |
|  | Surgical procedure, unspecified | 60 |  | 2 |  |  | Dental procedure, unspecified | 1 |  | <1 |  |
|  | Other surgical procedure | 19 |  | 1 |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Other** | **278** |  | **10** |  |
|  |  |  |  |  |  |  | Transferring blood/body fluid to  | 30 |  | 1 |  |
|  |  |  |  |  |  |  |  | another container |  |  |  |  |
|  |  |  |  |  |  |  | To obtain lab specimens | 23 |  | 1 |  |
|  |  |  |  |  |  |  | Drilling | 19 |  | 1 |  |
|  |  |  |  |  |  |  | Shaving | 13 |  | <1 |  |
|  |  |  |  |  |  |  | Procedure, unspecified | 15 |  | 1 |  |
|  |  |  |  |  |  |  | Other procedure | 178 |  | 6 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Unknown/Not answered** | **145** |  | **5** |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total** | **2,892** |  | **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 |