

Massachusetts Department of Public Health April, 2017

**Data Brief:
Sharps Injuries among Hospital Workers in Massachusetts: Findings from the Massachusetts Sharps Injury Surveillance System, 2015**

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| **Data Highlights and Prevention Measures** |
| * 2,866 sharps injuries were reported in 2015. The sharps injury rate for workers in all Massachusetts Department of Public Health (DPH) licensed hospitals was 15.8 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. Hospitals, in interpreting their own sharps injury rates, need to understand employee reporting practices in their facilities.

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| * For the second time in 14 years, the percentage of injuries among nurses equals the percentage among physicians (38%) unlike earlier years when nurses accounted for more injuries than physicians. This may reflect greater adoption over time of devices with sharps injury prevention features (SESIPs) for devices most often used by nurses coupled with targeted efforts to improve physician reporting of sharps injuries in some larger hospitals. This overall pattern was driven by the experience in larger hospitals and was reversed in smaller and medium sized hospitals where nurses reported 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).

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| * Injuries involving injection procedures accounted for 28% of all sharps injuries, with subcutaneous injections accounting for the majority of those (79% of injection related injuries). Of all injection related injuries, 20% occurred with non-SESIPs. In accordance with 105 CMR 130.1001 *et seq*, hospitals are required to use devices with sharps injury prevention features as a means of minimizing the risk of injury to healthcare workers from needles and other sharps. The high number of injuries involving non-SESIPs indicates that more work needs to be done to promote use of SESIPs. An additional 78% of all injection related injuries occurred with SESIPs. This high percentage of SESIPs likely reflects increased use of SESIPs as required. It is also important to evaluate the SESIPs currently being used in order to identify opportunities for using more protective devices. Regular evaluation of devices is necessary in order to select and implement devices that are more effective at preventing injuries.

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| * The presence of a sharps injury prevention feature is most crucial *after* the device is used. There were 229 sharps injuries due to non-SESIPs that involved common devices for which SESIPS are widely available. Hypodermic needles/syringes, most often used for injections, accounted for 174 of these injuries, and 68% (119) of the hypodermic needles/syringe injuries occurred after use. These 119 injuries after use could be thought of as “preventable adverse events” in that use of SESIPs may have 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 2015.

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 2015.

**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. Trends in annual rates were modeled using both negative binomial and joinpoint regressions. Negative binomial regression was used to model the overall trends of these rates from 2002 to 2015. 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, 2015** |
|  |  | **Number of Hospitals** | **Number of sharps injuries** | **Rate per 100 licensed beds** | **95% CI** |
| **Hospital size** |  |  |  |  |  |  |  |  |  |
|  | Small (< 100 licensed beds) | 28 |  | 190 |  | 11.8 |  | 10.2-13.4 |  |
|  | Medium (101-300 licensed beds) | 52 |  | 972 |  | 10.5 |  | 9.9-11.2 |  |
|  | Large (>300 licensed beds) | 14 |  | 1,704 |  | 23.2 |  | 22.2-24.2 |  |
|  |  |  |  |  |  |  |  |  |  |
| **Service Type** |  |  |  |  |  |  |  |  |  |
|  | Acute care | 75 |  | 2,823 |  | 18.5 |  | 17.9-19.1 |  |
|  | Non-acute care\* | 19 |  | 43 |  | 1.5 |  | 1.0-1.9 |  |
|  |  |  |  |  |  |  |  |  |  |
| **Teaching Status** |  |  |  |  |  |  |  |  |  |
|  | Teaching  | 16 |  | 1,768 |  | 27.7 |  | 26.6-28.7 |  |
|  | Non-teaching | 78 |  | 1,098 |  | 9.3 |  | 8.8-9.8 |  |
|  |  |  |  |  |  |  |  |  |  |
| **Total** |  | **94** |  | **2,866** |  | **15.8** |  | **15.2-16.3** |  |

\*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, 2015**

The annual sharps injury rate in all hospitals combined declined significantly by 16.8% (p ≤ 0.05) from 19.1 sharps injuries per 100 licensed beds in 2002 to 15.9 in 2010. However, from 2010 to 2015 the sharps injury rate has plateaued.

**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, 2015**

Sharps injury rates in acute care hospitals declined significantly by 18.2% (p ≤ 0.05) from 24.2 sharps injuries per 100 licensed beds in 2002 to 18.9 in 2010. However, the sharps injury rate has plateaued since 2010.

**Sharps injuries per 100 licensed beds**

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| **Table 2.**  | **Sharps injuries by worker and incident characteristics and hospital size, Massachusetts hospital workers, 2015** |
|   | Hospital Size |
|  | All Hospitals | Small | Medium | Large |
|  | 94 hospitals | 28 hospitals | 52 hospitals | 14 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Work status of injured worker** | **2,866** |  | **100** |  | **190** |  | **100** |  | **972** |  | **100** |  | **1,704** |  | **100** |  |
|  | Employee | 2,463 |  | 86 |  | 172 |  | 91 |  | 812 |  | 84 |  | 1,479  |  | 87 |  |
|  | Non-Employee Practitioner | 311 |  | 11 |  | 11 |  | 6 |  | 120 |  | 12 |  | 180 |  | 11 |  |
|  | Student | 73 |  | 3 |  | 2 |  | 1 |  | 33 |  | 3 |  | 38 |  | 2 |  |
|  | Temporary / Contract Worker | 19 |  | 1 |  | 5 |  | 3 |  | 7 |  | 1 |  | 7 |  | <1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Occupation** | **2,866** |  | **100** |  | **190** |  | **100** |  | **972** |  | **100** |  | **1,704** |  | **100** |  |
|  | Physician | 1,080 |  | 38 |  | 43 |  | 23 |  | 253 |  | 26 |  | 783 |  | 46 |  |
|  | Nurse | 1,079 |  | 38 |  | 100 |  | 53 |  | 403 |  | 41 |  | 577 |  | 34 |  |
|  | Technician | 482 |  | 17 |  | 31 |  | 16 |  | 219 |  | 23 |  | 232 |  | 14 |  |
|  | Support Services | 99 |  | 3 |  | 5 |  | 3 |  | 39 |  | 4 |  | 55 |  | 3 |  |
|  | Dental Staff | 17 |  | 1 |  | 1 |  | 1 |  | 4 |  | <1 |  | 12 |  | 1 |  |
|  | Other Medical Staff | 62 |  | 2 |  | 4 |  | 2 |  | 30 |  | 3 |  | 28 |  | 2 |  |
|  | Other / Unknown / Not answered | 47 |  | 2 |  | 6 |  | 3 |  | 24 |  | 2 |  | 17 |  | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Department where injury occurred** | **2,866** |  | **100** |  | **190** |  | **100** |  | **972** |  | **100** |  | **1,704** |  | **100** |  |
|  | Operating and Procedure Rooms | 1,259 |  | 44 |  | 63 |  | 33 |  | 394 |  | 41 |  | 802 |  | 47 |  |
|  | Inpatient Units | 582 |  | 20 |  | 48 |  | 25 |  | 243 |  | 25 |  | 291 |  | 17 |  |
|  | Emergency Department | 297 |  | 10 |  | 23 |  | 12 |  | 135 |  | 14 |  | 139 |  | 8 |  |
|  | Intensive Care Units | 236 |  | 8 |  | 14 |  | 7 |  | 49 |  | 5 |  | 173 |  | 10 |  |
|  | Outpatient areas | 217 |  | 8 |  | 23 |  | 12 |  | 64 |  | 7 |  | 130 |  | 8 |  |
|  | Laboratories | 103 |  | 4 |  | 9 |  | 5 |  | 22 |  | 2 |  | 72 |  | 4 |  |
|  | Other / Unknown / Not answered | 172 |  | 6 |  | 10 |  | 5 |  | 65 |  | 7 |  | 97 |  | 6 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Device involved in the injury** | **2,866** |  | **100** |  | **190** |  | **100** |  | **972** |  | **100** |  | **1,704** |  | **100** |  |
|  | Hypodermic needle/syringe  | 917 |  | 32 |  | 61 |  | 32 |  | 309 |  | 32 |  | 547 |  | 32 |  |
|  | Suture needle | 628 |  | 22 |  | 26 |  | 14 |  | 186 |  | 19 |  | 416 |  | 24 |  |
|  | Scalpel blade | 215 |  | 8 |  | 16 |  | 8 |  | 67 |  | 7 |  | 132 |  | 8 |  |
|  | Winged-steel needle | 211 |  | 7 |  | 23 |  | 12 |  | 101 |  | 10 |  | 87 |  | 5 |  |
|  | Vacuum tube collection holder/needle | 73 |  | 3 |  | 3 |  | 2 |  | 43 |  | 4 |  | 27 |  | 2 |  |
|  | Glass | 24 |  | 1 |  | 1 |  | 1 |  | 3 |  | <1 |  | 20 |  | 1 |  |
|  | Dental device or item | 18 |  | 1 |  | 3 |  | 2 |  | 5 |  | 1 |  | 10 |  | 1 |  |
|  | Other hollow bore needle | 317 |  | 11 |  | 25 |  | 13 |  | 117 |  | 12 |  | 175 |  | 10 |  |
|  | Other / Unknown / Not answered | 463 |  | 16 |  | 32 |  | 17 |  | 141 |  | 15 |  | 290 |  | 17 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Procedure for which the device was used** | **2,866** |  | **100** |  | **190** |  | **100** |  | **972** |  | **100** |  | **1,704** |  | **100** |  |
|  | Injection | 798 |  | 28 |  | 54 |  | 28 |  | 284 |  | 29 |  | 460 |  | 27 |  |
|  | Suturing | 633 |  | 22 |  | 27 |  | 14 |  | 188 |  | 19 |  | 418 |  | 25 |  |
|  | Blood procedures | 354 |  | 12 |  | 35 |  | 18 |  | 170 |  | 17 |  | 149 |  | 9 |  |
|  | Making the incision | 292 |  | 10 |  | 19 |  | 10 |  | 89 |  | 9 |  | 184 |  | 11 |  |
|  | Line procedures | 291 |  | 10 |  | 20 |  | 11 |  | 92 |  | 9 |  | 179 |  | 11 |  |
|  | To obtain body fluid or tissue sample | 55 |  | 2 |  | 3 |  | 2 |  | 12 |  | 1 |  | 40 |  | 2 |  |
|  | Dental procedures | 22 |  | 1 |  | 0 |  | 0 |  | 5 |  | 1 |  | 17 |  | 1 |  |
|  | Other / Unknown / Not answered | 421 |  | 15 |  | 32 |  | 17 |  | 132 |  | 14 |  | 257 |  | 15 |  |
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| **Table 3.**  | **Sharps injuries involving hollow-bore devices by device type and occupation, Massachusetts hospital workers, 2015** |
|  |  | **Hollow Bore** |
| **Occupation** | **Total** | **Hypodermic**  | **Winged-Steel** | **Vacuum Tube** | **Other Hollow**  |
|  |  | **Needle/Syringe** | **Needle** | **Collection Set** | **Bore** |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Nurse** | 846 |  | 100 |  | 567 |  | 67 |  | 90 |  | 11 |  | 30 |  | 4 |  | 159 |  | 19 |  |
| **Physician** | 329 |  | 100 |  | 217 |  | 66 |  | 8 |  | 2 |  | 2 |  | 1 |  | 102 |  | 31 |  |
| **Technician** | 241 |  | 100 |  | 76 |  | 32 |  | 94 |  | 39 |  | 36 |  | 15 |  | 35 |  | 15 |  |
| **Support Services** | 30 |  | 100 |  | 12 |  | 40 |  | 3 |  | 10 |  | 1 |  | 3 |  | 14 |  | 47 |  |
| **Dental staff** | 2 |  | 100 |  | 2 |  | 100 |  | 0 |  | 0 |  | 0 |  | 0 |  | 0 |  | 0 |  |
| **Other medical staff** | 47 |  | 100 |  | 26 |  | 55 |  | 14 |  | 30 |  | 4 |  | 9 |  | 3 |  | 6 |  |
| **Other** | 23 |  | 100 |  | 17 |  | 74 |  | 2 |  | 9 |  | 0 |  | 0 |  | 4 |  | 17 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **1,518** |  | **100** |  | **917** |  | **60** |  | **211** |  | **14** |  | **73** |  | **5** |  | **317** |  | **211** |  |

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| **Table 4.**  | **Sharps injuries involving solid-bore devices by device type and occupation, Massachusetts hospital workers, 2015** |
| **Occupation** | **Total** | **Suture Needle** | **Scalpel** | **Glass** | **Other/** |
|  |  |  |  |  | **Unknown** |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Physician** | 750 |  | 100 |  | 441 |  | 59 |  | 125 |  | 17 |  | 2 |  | <1 |  | 182 |  | 24 |  |
| **Technician** | 241 |  | 100 |  | 86 |  | 36 |  | 46 |  | 19 |  | 16 |  | 7 |  | 93 |  | 39 |  |
| **Nurse** | 234 |  | 100 |  | 75 |  | 32 |  | 36 |  | 15 |  | 6 |  | 3 |  | 117 |  | 50 |  |
| **Support Services** | 69 |  | 100 |  | 7 |  | 10 |  | 4 |  | 6 |  | 0 |  | 0 |  | 58 |  | 84 |  |
| **Dental staff** | 15 |  | 100 |  | 5 |  | 33 |  | 1 |  | 7 |  | 0 |  | 0 |  | 9 |  | 60 |  |
| **Other medical staff** | 15 |  | 100 |  | 1 |  | 7 |  | 0 |  | 0 |  | 0 |  | 0 |  | 14 |  | 93 |  |
| **Other / Unknown / Not answered** | 24 |  | 100 |  | 13 |  | 57 |  | 3 |  | 13 |  | 0 |  | 0 |  | 8 |  | 33 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **1,348** |  | **100** |  | **628** |  | **47** |  | **215** |  | **16** |  | **24** |  | **2** |  | **481** |  | **36** |  |

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| **Table 5.**  | **Sharps injuries by SESIP by hospital size: all devices and excluding suture needles, Massachusetts hospital workers, 2015** |
|  | Hospital Size^ |
|  | All Hospitals | Small | Medium | Large |
|  | 94 hospitals | 28 hospitals | 52 hospitals | 14 hospitals |
| Sharps Injury Protections | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **All devices** | **2,866`** |  | **100** |  | **190** |  | **100** |  | **972** |  | **100** |  | **1,704** |  | **100** |  |
|  | SESIP | 1,279 |  | 45 |  | 88 |  | 46 |  | 509 |  | 52 |  | 682 |  | 40 |  |
|  | Non-SESIP | 1,431 |  | 50 |  | 89 |  | 47 |  | 392 |  | 40 |  | 950 |  | 56 |  |
|  | Unknown/Not answered | 156 |  | 5 |  | 13 |  | 7 |  | 71 |  | 7 |  | 72 |  | 4 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Devices excluding suture needles** | **2,238** |  | **100** |  | **164** |  | **100** |  | **786** |  | **100** |  | **1,237** |  | **100** |  |
|  | SESIP | 1,275 |  | 57 |  | 88 |  | 54 |  | 508 |  | 65 |  | 679 |  | 53 |  |
|  | Non-SESIP | 823 |  | 37 |  | 63 |  | 38 |  | 218 |  | 28 |  | 542 |  | 42 |  |
|  | Unknown/Not answered | 140 |  | 6 |  | 13 |  | 8 |  | 60 |  | 8 |  | 67 |  | 5 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ^Hospital size: small= <100 licensed beds; medium=101-300 licensed beds; large=>300 licensed beds |

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| **Figure 3.**  | **Sharps injuries by device and SESIP, Massachusetts hospital workers, 2015** |

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| **Table 6.**  | **Sharps injuries by procedure and SESIP, Massachusetts hospital workers, 2015** |
| Procedure | Total | SESIP | Non-SESIP | Unknown |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Injection procedures** | **798** |  | **28** |  | **625** |  | **49** |  | **160** |  | **11** |  | **13** |  | **8** |  |
|  | Subcutaneous injection | 628 |  | 22 |  | 516 |  | 40 |  | 104 |  | 7 |  | 8 |  | 5 |  |
|  | Intramuscular injection | 113 |  | 4 |  | 93 |  | 7 |  | 18 |  | 1 |  | 2 |  | 1 |  |
|  | Other injections | 57 |  | 2 |  | 16 |  | 1 |  | 38 |  | 3 |  | 3 |  | 2 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Blood procedures** | **354** |  | **12** |  | **299** |  | **23** |  | **40** |  | **3** |  | **15** |  | **10** |  |
|  | Percutaneous venous puncture | 245 |  | 9 |  | 227 |  | 18 |  | 11 |  | 1 |  | 7 |  | 4 |  |
|  | Percutaneous arterial puncture | 39 |  | 1 |  | 35 |  | 3 |  | 3 |  | <1 |  | 1 |  | 1 |  |
|  | Finger stick / Heel stick | 39 |  | 1 |  | 14 |  | 1 |  | 19 |  | 1 |  | 6 |  | 4 |  |
|  | Other blood procedures | 31 |  | 1 |  | 23 |  | 2 |  | 7 |  | <1 |  | 1 |  | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Line procedures** | **291** |  | **10** |  | **209** |  | **16** |  | **71** |  | **5** |  | **11** |  | **7** |  |
|  | To insert peripheral IV/set up heparin | 93 |  | 3 |  | 84 |  | 7 |  | 8 |  | 1 |  | 1 |  | 1 |  |
|  |  | lock |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | To insert central line | 43 |  | 2 |  | 16 |  | 1 |  | 26 |  | 2 |  | 1 |  | 1 |  |
|  | Other line procedures | 155 |  | 5 |  | 109 |  | 9 |  | 37 |  | 3 |  | 9 |  | 6 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Other procedures** | **1,423** |  | **50** |  | **146** |  | **11** |  | **1,159** |  | **81** |  |  **118** |  | **75** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **2,866** |  | **100** |  |  **1,279** |  | **100** |  | **1,431** |  | **100** |  | **156** |  | **100** |  |

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| **Table 7.**  | **Sharps injuries by inclusion in prepackaged kit and hospital size, Massachusetts hospital workers, 2015** |
|  | Hospital Size^ |
|  | All Hospitals | Small | Medium | Large |
|  | 94 hospitals | 28 hospitals | 52 hospitals | 14 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Device included in prepackaged kit** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Yes | 505 |  | 18 |  | 31 |  | 16 |  | 219 |  | 23 |  | 255 |  | 15 |  |
|  | No | 2,165 |  | 76 |  | 138 |  | 73 |  | 666 |  | 69 |  | 1,361 |  | 80 |  |
|  | Unknown/Not answered | 196 |  | 7 |  | 21 |  | 11 |  | 87 |  | 9 |  | 88 |  | 5 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **2,866** |  | **100** |  | **190** |  | **100** |  | **972** |  | **100** |  | **1,704** |  | **100** |  |
| ^Hospital size: small <101 licensed beds; medium =101-300 licensed beds; large >300 licensed beds |

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| **Figure 4.**  | **Sharps injuries involving devices from prepackaged kits by device and SESIP, Massachusetts hospital workers, 2015** |

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| **Table 8.**  | **Sharps injuries among hospital workers by when and how the injury occurred by hospital size, Massachusetts, 2015** |
|  | Hospital Size^ |
|  | All Hospitals | Small | Medium | Large |
|  | 94 hospitals | 28 hospitals | 52 hospitals | 14 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Before use of the item** | **36** |  | **1** |  | **1** |  | **1** |  | **15** |  | **2** |  | **20** |  | **1** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **During use of the item** | **1,273** |  | **44** |  | **89** |  | **47** |  | **413** |  | **42** |  | **771** |  | **45** |  |
|  | Suturing | 331 |  | 12 |  | 17 |  | 9 |  | 87 |  | 9 |  | 227 |  | 13 |  |
|  | Manipulate needle in patient | 236 |  | 8 |  | 17 |  | 9 |  | 88 |  | 9 |  | 131 |  | 8 |  |
|  | Patient moved and jarred device | 230 |  | 8 |  | 19 |  | 10 |  | 107 |  | 11 |  | 104 |  | 6 |  |
|  | Collision with worker or sharp | 213 |  | 7 |  | 23 |  | 12 |  | 74 |  | 8 |  | 116 |  | 7 |  |
|  | Access IV line | 54 |  | 2 |  | 4 |  | 2 |  | 11 |  | 1 |  | 39 |  | 2 |  |
|  | Handle/pass equipment  | 44 |  | 2 |  | 1 |  | 1 |  | 6 |  | 1 |  | 37 |  | 2 |  |
|  | Recap needle | 3 |  | <1 |  | 0 |  | 0 |  | 1 |  | <1 |  | 2 |  | <1 |  |
|  | Other / Unknown / Nonclassifiable | 162 |  | 6 |  | 8 |  | 4 |  | 39 |  | 4 |  | 115 |  | 7 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **After use, before disposal** | **1,116** |  | **39** |  | **74** |  | **39** |  | **382** |  | **39** |  | **660** |  | **39** |  |
|  | Activating injury protection mechanism | 289 |  | 10 |  | 22 |  | 12 |  | 110 |  | 11 |  | 157 |  | 9 |  |
|  | Handle/pass equipment | 266 |  | 9 |  | 10 |  | 5 |  | 75 |  | 8 |  | 181 |  | 11 |  |
|  | During clean-up | 162 |  | 6 |  | 9 |  | 5 |  | 42 |  | 4 |  | 111 |  | 7 |  |
|  | Collision with worker or sharp | 120 |  | 4 |  | 6 |  | 3 |  | 38 |  | 4 |  | 76 |  | 4 |  |
|  | Recap needle | 82 |  | 3 |  | 6 |  | 3 |  | 37 |  | 4 |  | 39 |  | 2 |  |
|  | Sharps injury prevention mechanism | 69 |  | 2 |  | 6 |  | 3 |  | 43 |  | 4 |  | 20 |  | 1 |  |
|  |  | not activated |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Device malfunction | 48 |  | 2 |  | 10 |  | 5 |  | 12 |  | 1 |  | 26 |  | 2 |  |
|  | Improper disposal | 18 |  | 1 |  | 3 |  | 2 |  | 5 |  | 1 |  | 10 |  | 1 |  |
|  | Other / Unknown / Nonclassifiable | 47 |  | 1 |  | 2 |  | 1 |  | 12 |  | 2 |  | 33 |  | 2 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **During or after disposal of item** | **296** |  | **10** |  | **15** |  | **8** |  | **117** |  | **12** |  | **164** |  | **10** |  |
|  | During sharps disposal | 162 |  | 6 |  | 8 |  | 4 |  | 65 |  | 7 |  | 89 |  | 5 |  |
|  | Improper Disposal | 122 |  | 4 |  | 7 |  | 4 |  | 47 |  | 5 |  | 68 |  | 4 |  |
|  | Collision with worker or sharp | 7 |  | <1 |  | 0 |  | 0 |  | 2 |  | <1 |  | 5 |  | <1 |  |
|  | Sharps injury prevention mechanism | 1 |  | <1 |  | 0 |  | 0 |  | 0 |  | 0 |  | 1 |  | <1 |  |
|  |  | not activated |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Other / Unknown / Nonclassifiable | 4 |  | <1 |  | 0 |  | 0 |  | 3 |  | <1 |  | 1 |  | <1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Unknown / Not answered / Nonclassifiable**  | **145** |  | **5** |  | **11** |  | **6** |  | **45** |  | **5** |  | **89** |  | **5** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **2,866** |  | **100** |  | **190** |  | **100** |  | **972** |  | **100** |  | **1,704** |  | **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 hospital workers, 2015** |
|  |  | **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 | 174 |  | 100 |  | 2 |  | 1 |  | 46 |  | 26 |  | 90 |  | 52 |  | 29 |  | 17 |  | 7 |  | 4 |  |
| IV Stylet | 40 |  | 100 |  | 0 |  | 0 |  | 22 |  | 55 |  | 9 |  | 23 |  | 7 |  | 18 |  | 2 |  | 5 |  |
| Vacuum Tube Collection Holder | 9 |  | 100 |  | 0 |  | 0 |  | 2 |  | 22 |  | 4 |  | 44 |  | 2 |  | 22 |  | 1 |  | 11 |  |
| Winged-Steele Needle Holder | 6 |  | 100 |  | 0 |  | 0 |  | 2 |  | 33 |  | 2 |  | 33 |  | 2 |  | 33 |  | 0 |  | 0 |  |
| **Total** | **229** |  | **100** |  | **2** |  | **1** |  | **72** |  | **31** |  | **105** |  | **46** |  | **40** |  | **17** |  | **10** |  | **4** |  |
| \*SESIPs offer protection during the period after use. Injuries presented in this table that occurred after use (n=145) can be considered “preventable adverse events” – events that could have been prevented with the use of SESIPS.  |

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| **Table 10.**  | **Sharps injuries by occupation (detailed), Massachusetts hospital workers, 2015** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Nurse** | **1,080** |  | **38** |  | **Support Services** | **99** |  | **3** |  |
|  | RN or LPN | 957 |  | 33 |  |  | Housekeeper | 60 |  | 2 |  |
|  | Nurse assistant | 35 |  | 1 |  |  | Central supply | 27 |  | 1 |  |
|  | Nursing practitioner | 29 |  | 1 |  |  | Safety/security | 5 |  | <1 |  |
|  | Patient care technician | 27 |  | 1 |  |  | Maintenance | 3 |  | <1 |  |
|  | Nurse anesthetist | 19 |  | 1 |  |  | Attendant/orderly | 2 |  | <1 |  |
|  | Nurse midwife | 8 |  | <1 |  |  | Other ancillary staff | 2 |  | <1 |  |
|  | Nursing student | 4 |  | <1 |  |  |  |  |  |  |  |
|  | Home health aide | 1 |  | <1 |  | **Other Medical Staff** | **62** |  | **2** |  |
|  |  |  |  |  |  |  | Medical assistant | 59 |  | 2 |  |
| **Physician** | **1,079** |  | **38** |  |  | Physical Therapist | 2 |  | <1 |  |
|  | Intern/Resident | 443 |  | 15 |  |  | Other medical staff | 1 |  | <1 |  |
|  | MD | 310 |  | 11 |  |  |  |  |  |  |  |
|  | Fellow | 100 |  | 3 |  | **Dental Staff** | **17** |  | **1** |  |
|  | Physician Assistant | 77 |  | 3 |  |  | Dental assistant/tech | 9 |  | <1 |  |
|  | Surgeon | 59 |  | 2 |  |  | Dentist | 5 |  | <1 |  |
|  | Medical Student | 55 |  | 2 |  |  | Dental hygienist | 3 |  | <1 |  |
|  | Anesthesiologist | 30 |  | 1 |  |  |  |  |  |  |  |
|  | Radiologist | 5 |  | <1 |  | **Other** | **46** |  | **2** |  |
|  |  |  |  |  |  |  | Pharmacist  | 7 |  | <1 |  |
| **Technician** | **482** |  | **17** |  |  | Counselor/social worker | 3 |  | <1 |  |
|  | OR/Surgical technician | 199 |  | 7 |  |  | EMT/paramedic | 2 |  | <1 |  |
|  | Phlebotomist | 100 |  | 3 |  |  | Clerical/administrative | 1 |  | <1 |  |
|  | Clinical lab technician | 42 |  | 1 |  |  | Dietician | 1 |  | <1 |  |
|  | Radiologic technician | 28 |  | 1 |  |  | Other student | 23 |  | 1 |  |
|  | Respiratory therapist/ Tech | 19 |  | 1 |  |  | Other | 9 |  | <1 |  |
|  | Morgue technician | 3 |  | <1 |  |  |  |  |  |  |  |
|  | Other technician | 91 |  | 3 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Total** | **2,866** |  | **100** |  |

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| **Table 11.**  | **Sharps injuries by department (detailed), Massachusetts hospital workers, 2015** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Operating and Procedure Rooms** | **1,259** |  | **44** |  | **Laboratory** | **103** |  | **4** |  |
|  | Operating room | 944 |  | 33 |  |  | Histology/pathology | 34 |  | 1 |  |
|  | Labor and delivery | 93 |  | 3 |  |  | Morgue/autopsy room | 7 |  | <1 |  |
|  | Radiology | 77 |  | 3 |  |  | Clinical chemistry | 4 |  | <1 |  |
|  | Cardiac catheterization laboratory | 54 |  | 2 |  |  | Blood bank | 3 |  | <1 |  |
|  | Hematology/oncology | 34 |  | 1 |  |  | Microbiology | 3 |  | <1 |  |
|  | Phlebotomy room | 18 |  | 1 |  |  | Hematology | 1 |  | <1 |  |
|  | Endoscopy/bronchoscopy/cystoscopy | 17 |  | 1 |  |  | Other laboratory | 30 |  | 1 |  |
|  | Dialysis | 12 |  | <1 |  |  | Laboratory, unspecified | 21 |  | 1 |  |
|  | Other procedure room | 1 |  | <1 |  |  |  |  |  |  |  |
|  | Procedure room, unspecified | 9 |  | <1 |  | **Other Areas** | **168** |  | **6** |  |
|  |  |  |  |  |  | Central sterile supply | 37 |  | 1 |  |
| **Inpatient Units, other than ICU** | **582** |  | **20** |  |  | Dermatology | 32 |  | 1 |  |
|  | Medical/surgical ward | 482 |  | 17 |  |  | Exam room | 21 |  | 1 |  |
|  | Obstetrics/gynecology | 25 |  | 1 |  |  | Long term care | 14 |  | <1 |  |
|  | Psychiatry ward | 24 |  | 1 |  |  | Pain clinic | 10 |  | <1 |  |
|  | Pediatrics  | 14 |  | <1 |  |  | Anesthesia | 8 |  | <1 |  |
|  | Nursery | 14 |  | <1 |  |  | Central trash area | 6 |  | <1 |  |
|  | Patient room, ward unspecified | 23 |  | 1 |  |  | Rehabilitation unit | 5 |  | <1 |  |
|  |  |  |  |  |  |  | Pharmacy | 5 |  | <1 |  |
| **Emergency Department** | **297** |  | **10** |  |  | Hospital grounds | 1 |  | <1 |  |
|  |  |  |  |  |  |  | Detox unit | 1 |  | <1 |  |
| **Intensive Care Units** | **236** |  | **8** |  |  | Ambulance | 1 |  | <1 |  |
|  | Intensive care unit | 216 |  | 8 |  |  | Other Location | 27 |  | 1 |  |
|  | Post anesthesia care unit | 20 |  | <1 |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Unknown/Not Answered**  | **4** |  | **<1** |  |
| **Outpatient Areas** | **217** |  | **8** |  |  |  |  |  |  |  |
|  | Ambulatory care clinic | 108 |  | 4 |  |  |  |  |  |  |  |
|  | Dental clinic | 26 |  | 1 |  |  |  |  |  |  |
|  | Physician’s office  | 18 |  | 1 |  |  |  |  |  |  |
|  | Home health visit | 11 |  | <1 |  |  |  |  |  |  |  |
|  | Other outpatient areas | 54 |  | 2 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total**  | **2,866** |  | **100** |  |

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| **Table 12.** | **Sharps injuries by device (detailed), Massachusetts hospital workers, 2015** |
|  |  | N |  | % |  |  |  N |  | % |  |
| **Hypodermic needles/syringe**  | **917** |  | **32** |  | **Glass**  | **24** |  | **1** |  |
|  |  Hypodermic needle attached to a disposable syringe syringe | 843 |  | 29 |  |  | Specimen / Test / Vacuum tube | 8 |  | <1 |  |
|  |  | disposable syringe |  |  |  |  |  | Pipette | 5 |  | <1 |  |
|  | Prefilled cartridge syringe | 34 |  | 1 |  |  | Capillary tube | 4 |  | <1 |  |
|  | Unattached hypodermic needle | 28 |  | 1 |  |  | Medication ampule / Vial / IV bottle | 3 |  | <1 |  |
|  | Hypodermic Needle Attached to a  | 6 |  | <1 |  |  | Slide | 2 |  | <1 |  |
|  |  | non-disposable syringe |  |  |  |  |  | Other glass item | 2 |  | <1 |  |
|  | Hypodermic needle attached to IV  | 6 |  | <1 |  |  |  |  |  |  |
|  |  | tubing |  |  |  |  | **Dental Device or item** | **18** |  | **1** |  |
|  |  |  |  |  |  |  | Dental bur  | 6 |  | <1 |  |
|  |  |  |  |  |  |  | Scaler/curette | 4 |  | <1 |  |
| **Suture Needle** | **628** |  | **22** |  |  | Dental explorer | 3 |  | <1 |  |
|  | Curved suture needle | 499 |  | 17 |  |  | Dental needle | 1 |  | <1 |  |
|  | Straight suture needle | 30 |  | 1 |  |  | Other dental device or item | 4 |  | <1 |  |
|  | Suture needle, unspecified | 99 |  | 3 |  |  |  |  |  |  |
|  |  |  |  |  |  | **Other** | **410** |  | **14** |  |
| **Other Hollow Bore Needles** | **317** |  | **11** |  |  | Wire | 51 |  | 2 |  |
|  | IV Stylet | 148 |  | 5 |  |  | Lancet | 47 |  | 2 |  |
|  | Huber Needle | 45 |  | 2 |  |  | Retractor | 40 |  | 1 |  |
|  | Spinal or epidural needle | 25 |  | 1 |  |  | Electrode | 31 |  | 1 |  |
|  | Biopsy Needle | 17 |  | 1 |  |  | Scissors | 28 |  | 1 |  |
|  | Intraosseous needle | 5 |  | <1 |  |  | Cutting blade other than scalpel | 24 |  | 1 |  |
|  | Other type of hollow bore needle | 20 |  | 1 |  |  | Pin | 20 |  | 1 |  |
|  | Hollow bore needle, unspecified | 57 |  | 2 |  |  | Bovie electrocautery device | 19 |  | 1 |  |
|  |  |  |  |  |  | Forceps | 18 |  | 1 |  |
| **Scalpel Blade** | **215** |  | **8** |  |  | Bone cutter | 13 |  | <1 |  |
|  |  |  |  |  |  | Bone chip/chipped tooth | 8 |  | <1 |  |
| **Winged Steel Needle** | **211** |  | **7** |  |  | Drill bit | 7 |  | <1 |  |
|  | Winged Steel needle attached to a  | 128 |  | 4 |  |  | Staple  | 6 |  | <1 |  |
|  |  | vacuum tube collection holder |  |  |  |  |  | Trocar | 6 |  | <1 |  |
|  | Winged Steele Needle | 77 |  | 3 |  |  | Rod | 1 |  | <1 |  |
|  | Winged Steele Needle attached to IV  | 6 |  | <1 |  |  | Tenaculum | 1 |  | <1 |  |
|  |  | tubing |  |  |  |  |  | Elevator | 1 |  | <1 |  |
|  |  |  |  |  |  | Other needle | 7 |  | <1 |  |
| **Vacuum Tube Collection Holder/Needle** | **73** |  | **3** |  |  | Other Type of Sharp Object | 70 |  | 2 |  |
|  | Vacuum tube collection holder/needle | 44 |  | 2 |  |  | Needle, unspecified | 12 |  | <1 |  |
|  | Phlebotomy needle (other than winged  | 29 |  | <1 |  |  |  |  |  |  |
|  |  | steel needle) |  |  |  |  | **Unknown/Not Answered**  | **53** |  | **2** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total** | **2,866** |  | **100** |  |

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| **Table 13.**  | **Sharps injuries by procedure (detailed), Massachusetts hospital workers, 2015** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Injection** | **798** |  | **28** |  | **Line Procedures** | **291** |  | **10** |  |
|  | Subcutaneous injection | 628 |  | 22 |  |  | To insert a peripheral IV line or   | 93 |  | 3 |  |
|  | Intramuscular injection | 113 |  | 4 |  |  |  | set up a heparin lock |  |  |  |  |
|  | Epidural/spiral anesthesia | 22 |  | 1 |  |  | To insert a central IV line | 43 |  | 2 |  |
|  | Other injection | 15 |  | 1 |  |  | Draw blood from central or | 30 |  | 1 |  |
|  | Injection, unspecified | 20 |  | 1 |  |  |  | peripheral IV line or port |  |  |  |  |
|  |  |  |  |  |  |  | To insert an arterial line | 24 |  | 1 |  |
| **Suturing**  | **633** |  | **22** |  |  | Other injection into IV site/port | 18 |  | 1 |  |
|  | Suturing | 626 |  | 22 |  |  | To flush heparin/saline | 13 |  | <1 |  |
|  | Suture removal | 7 |  | <1 |  |  | To connect IV line | 10 |  | <1 |  |
|  |  |  |  |  |  |  | Draw blood from arterial lineddraw | 6 |  | <1 |  |
| **Blood Procedures** | **354** |  | **12** |  |  | Other line procedure | 37 |  | 1 |  |
|  | Percutaneous venous puncture | 245 |  | 9 |  |  | Line procedure, unspecified | 17 |  | 1 |  |
|  | Percutaneous arterial puncture | 39 |  | 1 |  |  |  |  |  |  |  |
|  | Finger stick / heel stick | 39 |  | 1 |  | **To Obtain Body Fluid or Tissue Sample** | **55** |  | **2** |  |
|  | Dialysis / AV fistula site | 9 |  | <1 |  |  |  |  |  |
|  | Draw blood from umbilical vessel | 5 |  | <1 |  |  |  |  |  |  |  |
|  | Other blood procedure | 6 |  | <1 |  |  |  |  |  |  |
|  | Blood procedure, unspecified | 11 |  | <1 |  | **Dental Procedures** | **22** |  | **1** |  |
|  |  |  |  |  |  |  | Dental drilling  | 4 |  | <1 |  |
| **Making the Incision**  | **292** |  | **10** |  |  | Oral surgery | 3 |  | <1 |  |
|  | Making the incision | 204 |  | 7 |  |  | Periodontal surgery | 2 |  | <1 |  |
|  | Cauterization | 17 |  | 1 |  |  | Restorative | 2 |  | <1 |  |
|  | Other surgical procedure | 44 |  | 2 |  |  | Other dental | 11 |  | <1 |  |
|  | Surgical procedure, unspecified | 27 |  | 1 |  |  |  |  |  |  |
|  |  |  |  |  |  | **Other** | **268** |  | **9** |  |
|  |  |  |  |  |  |  | To obtain lab specimens | 39 |  | 1 |  |
|  |  |  |  |  |  |  | Transferring blood/body fluid to  | 21 |  | 1 |  |
|  |  |  |  |  |  |  |  | another container |  |  |  |  |
|  |  |  |  |  |  |  | Drilling | 14 |  | <1 |  |
|  |  |  |  |  |  |  | Processing lab specimens | 10 |  | <1 |  |
|  |  |  |  |  |  |  | Shaving | 9 |  | <1 |  |
|  |  |  |  |  |  |  | Other procedure | 154 |  | 5 |  |
|  |  |  |  |  |  |  | Procedure, unspecified | 21 |  | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Unknown/Not answered** | **153** |  | **5** |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total** | **2,866** |  | **100** |  |

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

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| **Resources** |
| MDPH OHSP…………………www.mass.gov/eohhs/gov/departments/dph/programs/community-health/ohsp/sharpsCDC 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)04/24/17 |