

Massachusetts Department of Public Health AUGUST 2022

**Data Brief:
Sharps Injuries among Hospital Workers in Massachusetts: Findings from the Massachusetts Sharps Injury Surveillance System, 2020**

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 §53D) and to use sharps with engineered sharps injury prevention features (SESIPs). Data have been collected from all DPH licensed hospitals since 2001. This report includes data on sharps injuries that occurred during 2020.

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: [Sharps Injuries among Hospital Workers in Massachusetts, 2004: Findings from the Massachusetts Sharps Injury Surveillance System](https://www.mass.gov/doc/sharps-injuries-among-hospital-workers-in-massachusetts-2004/download).

|  |
| --- |
|  |
| **Data Highlights and Prevention Measures** |
| * Compared to 2019, 11% fewer sharps injuries were reported in 2020. The extent to which the COVID-19 pandemic impacted injury reporting is unknown, however national data indicates that rates for all work-related injuries decreased in 2020.[[1]](#footnote-1)
* Activating the sharps injury prevention feature accounted for 11% (279) of all injuries. This highlights the need for hands-on training on the use of the various sharps injury prevention mechanisms to ensure that clinicians are familiar with how to effectively deploy the sharps injury prevention feature.
* For the first time, the proportion of sharps injuries involving SESIPs (48%) was greater than the proportion involving non-SESIPs (44%). It is important to note this positive shift may be due to the impact of COVID-19 rather than changes in procurement and an increased use of devices with sharps injury prevention features.
* Suture needles represented 20% (530) of all sharps injuries which is 16% lower than the previous year. Sharps injuries in operating rooms represented 43% (1,117) of all sharps injuries which is 19% lower than the previous year. Nonetheless, these injuries represented a substantial proportion of all injuries. Continued efforts are needed to ensure practices such as use of neutral zones, verbal cuing, and use of devices with sharps injury prevention features are in place. Alternative methods of closure, such as staples and glues, should be explored.

Impact of the COVID-19 Pandemic on Sharps Injuries* Given the fluctuations in patient volume by department and two high-volume surges in cases and hospitalizations in 2020[[2]](#footnote-2), and the impact of COVID-19 on healthcare worker staffing, it is difficult to assess if the decrease in sharps injuries is the result of a true decrease in the number of events, or a decrease in the sharps injury reporting. On March 10, 2020, Massachusetts declared a state of emergency and subsequently ordered that hospitals and ambulatory surgery centers postpone or cancel any nonessential, elective, invasive procedures on March 15, 2020.[[3]](#footnote-3) Beginning in May 2020, DPH authorized the provision of increased in-person services for acute hospitals and non-hospital providers through a phased re-opening approach.[[4]](#footnote-4) Throughout the Commonwealth, hospitals functioned at high occupancy levels due to the number of patients admitted for COVID-19 treatment. Restrictions on elective procedures in addition to patients voluntarily postponing procedures and overall wellness visits, along with the surges in COVID-19 cases, likely impacted the types of procedures performed and devices used. These factors likely impacted the incidence of sharps injuries.
 |

**Key Definitions and Methods**

**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 2020.

**Sharps injury rates:**Numbers are the counts of sharps injuries, while sharps injury rates indicate the probability or risk of a worker sustaining a sharps injury within the surveillance period. Rates were calculated by dividing the number of sharps injuries among all workers by the number of licensed beds, and by dividing the number of sharps injuries among employees of acute care hospitals by the number of full-time equivalent employees in those hospitals. 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 2020. Joinpoint regression was used to identify any changes in the trends over the same period. Both rates and numbers of injuries must be considered when targeting and evaluating prevention efforts. 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.

**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**

|  |  |
| --- | --- |
| **Table 1.**  | **Number and rate of sharps injuries among hospital workers by hospital characteristics, Massachusetts, 2020** |
|  |  | **Number of Hospitals** | **Number of sharps injuries** | **Rate per 100 licensed beds** | **95% CI** |
| **Hospital size** |  |  |  |  |  |  |  |  |  |
|  | Small (< 100 licensed beds) | 27 |  | 143 |  | 9.4 |  | 7.9 – 11.0 |  |
|  | Medium (101-300 licensed beds) | 47 |  | 849 |  | 10.3 |  | 9.6 – 11.0 |  |
|  | Large (>300 licensed beds) | 15 |  | 1,619 |  | 21.3 |  | 20.3 – 22.4 |  |
|  |  |  |  |  |  |  |  |  |  |
| **Service Type** |  |  |  |  |  |  |  |  |  |
|  | Acute care | 71 |  | 2,555 |  | 17.6 |  | 16.9 – 18.3 |  |
|  | Non-acute care\* | 18 |  | 56 |  | 2.0 |  | 1.5 – 2.5 |  |
|  |  |  |  |  |  |  |  |  |  |
| **Teaching Status** |  |  |  |  |  |  |  |  |  |
|  | Teaching  | 16 |  | 1,575 |  | 24.7 |  | 23.4 – 25.9 |  |
|  | Non-teaching | 73 |  | 1,036 |  | 9.5 |  | 8.9 – 10.1 |  |
|  |  |  |  |  |  |  |  |  |  |
| **Total** |  | **89** |  | **2,611** |  | **15.1** |  | **14.5 – 15.7** |  |

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

**Figure 1. Number and rate of sharps injuries per licensed beds among all workers in acute and non-acute care hospitals, Massachusetts, 2002-2020**

**Sharps injuries per 100 licensed beds**

The sharps injury rate for all hospitals combined decreased significantly between 2002 and 2009. The average annual percent change in the sharps injury rate between 2002 and 2009 was -2.50 (p<0.01). However, the average annual percent change from 2009 to 2020 was 0.21 (p=0.38), indicating the rate remained relatively steady over that time period.

**Figure 2. Number and rate of sharps injuries per licensed beds among all workers in acute care hospitals only, Massachusetts, 2002-2020**

**Sharps injuries per 100 licensed beds**

The sharps injury rate for acute care hospitals decreased significantly between 2002 and 2010. The average annual percent change in the sharps injury rate between 2002 and 2010 was -2.69 (p<0.01). However, the average annual percent change from 2010 to 2020 was -0.01 (p=0.96), indicating that the rate remained relatively steady over that time period. When looking at the rate of sharps injuries among employees of acute care hospitals by full time equivalents (FTEs), the rate significantly decreased between 2002 and 2009 with an average annual percent change of -4.97 (p<0.01). Between 2009 to 2018 the rate remained relatively steady (average annual percent change = -0.41 (p=0.11)), while from 2018 to 2020 the rate significantly decreased with an average annual percent change of -8.09 (p<0.01).

|  |  |
| --- | --- |
| **Table 2.**  | **Sharps injuries by worker and incident characteristics and hospital size, Massachusetts hospital workers, 2020** |
|   | Hospital Size |
|  | All Hospitals | Small | Medium | Large |
|  | 89 hospitals | 27 hospitals | 47 hospitals | 15 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Work status of injured worker** | **2,611** |  | **100** |  | **143** |  | **100** |  | **849** |  | **100** |  | **1,619** |  | **100** |  |
|  | Employee | 2,262 |  | 87 |  | 128 |  | 90 |  | 727 |  | 86 |  | 1,407 |  | 87 |  |
|  | Non-Employee practitioner | 223 |  | 9 |  | 4 |  | 3 |  | 87 |  | 10 |  | 132 |  | 8 |  |
|  | Temporary / Contract worker | 65 |  | 2 |  | 6 |  | 4 |  | 17 |  | 2 |  | 42 |  | 3 |  |
|  | Student | 61 |  | 2 |  | 5 |  | 3 |  | 18 |  | 2 |  | 38 |  | 2 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Occupation** | **2,611** |  | **100** |  | **143** |  | **100** |  | **849** |  | **100** |  | **1,619119** |  | **100** |  |
|  | Nurse | 1,054 |  | 40 |  | 62 |  | 43 |  | 390 |  | 46 |  | 602 |  | 37 |  |
|  | Physician | 954 |  | 37 |  | 44 |  | 31 |  | 215 |  | 25 |  | 695 |  | 43 |  |
|  | Technician | 380 |  | 15 |  | 22 |  | 15 |  | 158 |  | 19 |  | 200 |  | 12 |  |
|  | Support Services | 115 |  | 4 |  | 6 |  | 4 |  | 46 |  | 5 |  | 63 |  | 4 |  |
|  | Dental staff | 9 |  | <1 |  | 1 |  | 1 |  | 1 |  | <1 |  | 7 |  | <1 |  |
|  | Other medical staff | 58 |  | 2 |  | 5 |  | 3 |  | 20 |  | 2 |  | 33 |  | 2 |  |
|  | Other / Unknown / Not answered | 41 |  | 2 |  | 3 |  | 2 |  | 19 |  | 2 |  | 19 |  | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Department where injury occurred** | **2,611** |  | **100** |  | **143** |  | **100** |  | **849** |  | **100** |  | **1,619** |  | **100** |  |
|  | Operating and Procedure rooms | 1,117 |  | 43 |  | 57 |  | 40 |  | 312 |  | 37 |  | 748 |  | 46 |  |
|  | Inpatient units | 606 |  | 23 |  | 29 |  | 20 |  | 232 |  | 27 |  | 345 |  | 21 |  |
|  | Emergency Department | 285 |  | 11 |  | 18 |  | 13 |  | 106 |  | 12 |  | 161 |  | 10 |  |
|  | Intensive Care Units | 230 |  | 9 |  | 5 |  | 3 |  | 70 |  | 8 |  | 155 |  | 10 |  |
|  | Outpatient areas | 159 |  | 6 |  | 18 |  | 13 |  | 36 |  | 4 |  | 105 |  | 6 |  |
|  | Laboratories | 41 |  | 2 |  | 1 |  | 1 |  | 17 |  | 2 |  | 23 |  | 1 |  |
|  | Other / Unknown / Not answered | 173 |  | 7 |  | 15 |  | 10 |  | 76 |  | 9 |  | 82 |  | 5 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Device involved in the injury** | **2,611** |  | **100** |  | **143** |  | **100** |  | **849** |  | **100** |  | **1,619** |  | **100** |  |
|  | Hypodermic needle/syringe  | 949 |  | 36 |  | 51 |  | 36 |  | 332 |  | 39 |  | 566 |  | 35 |  |
|  | Suture needle | 530 |  | 20 |  | 31 |  | 22 |  | 128 |  | 15 |  | 371 |  | 23 |  |
|  | Winged-steel needle | 197 |  | 8 |  | 12 |  | 8 |  | 77 |  | 9 |  | 108 |  | 7 |  |
|  | Scalpel blade | 180 |  | 7 |  | 9 |  | 6 |  | 44 |  | 5 |  | 127 |  | 8 |  |
|  | Vacuum tube collection holder/needle | 86 |  | 3 |  | 7 |  | 5 |  | 37 |  | 4 |  | 42 |  | 3 |  |
|  | Glass | 32 |  | 1 |  | 0 |  | 0 |  | 8 |  | 1 |  | 24 |  | 1 |  |
|  | Dental device or item | 10 |  | 0 |  | 0 |  | 0 |  | 2 |  | 0 |  | 8 |  | 0 |  |
|  | Other hollow bore needle | 253 |  | 10 |  | 12 |  | 8 |  | 93 |  | 11 |  | 148 |  | 9 |  |
|  | Other / Unknown / Not answered | 374 |  | 14 |  | 21 |  | 15 |  | 128 |  | 15 |  | 225 |  | 14 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Procedure for which the device was used** | **2,611** |  | **100** |  | **143** |  | **100** |  | **849** |  | **100** |  | **1,619** |  | **100** |  |
|  | Injection | 822 |  | 31 |  | 41 |  | 29 |  | 289 |  | 34 |  | 492 |  | 30 |  |
|  | Suturing | 549 |  | 21 |  | 33 |  | 23 |  | 130 |  | 15 |  | 386 |  | 24 |  |
|  | Blood procedures | 348 |  | 13 |  | 21 |  | 15 |  | 134 |  | 16 |  | 193 |  | 12 |  |
|  | Line procedures | 264 |  | 10 |  | 17 |  | 12 |  | 96 |  | 11 |  | 151 |  | 9 |  |
|  | Making the incision | 226 |  | 9 |  | 12 |  | 8 |  | 58 |  | 7 |  | 156 |  | 10 |  |
|  | To obtain body fluid or tissue sample | 47 |  | 2 |  | 2 |  | 1 |  | 18 |  | 2 |  | 27 |  | 2 |  |
|  | Dental procedures | 11 |  | <1 |  | 1 |  | 1 |  | 1 |  | <1 |  | 9 |  | 1 |  |
|  | Other / Unknown / Not answered | 344 |  | 13 |  | 16 |  | 11 |  | 123 |  | 14 |  | 205 |  | 13 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |

|  |  |
| --- | --- |
| **Table 3.**  | **Sharps injuries involving hollow-bore devices by device type and occupation, Massachusetts hospital workers, 2020** |
|  |  | **Hollow Bore** |
| **Occupation** | **Total** | **Hypodermic**  | **Winged-Steel** | **Vacuum Tube** | **Other Hollow**  |
|  |  | **Needle/Syringe** | **Needle** | **Collection Set** | **Bore** |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Nurse** | 876 |  | 100 |  | 596 |  | 68 |  | 101 |  | 12 |  | 42 |  | 5 |  | 137 |  | 16 |  |
| **Physician** | 292 |  | 100 |  | 210 |  | 72 |  | 8 |  | 3 |  | 3 |  | 1 |  | 71 |  | 24 |  |
| **Technician** | 210 |  | 100 |  | 73 |  | 35 |  | 78 |  | 37 |  | 36 |  | 17 |  | 23 |  | 11 |  |
| **Support services** | 39 |  | 100 |  | 20 |  | 51 |  | 2 |  | 5 |  | 4 |  | 10 |  | 13 |  | 33 |  |
| **Dental staff** | 1 |  | 100 |  | 1 |  | 100 |  | - |  | - |  | - |  | - |  | - |  | - |  |
| **Other medical staff** | 45 |  | 100 |  | 35 |  | 78 |  | 4 |  | 9 |  | 1 |  | 2 |  | 5 |  | 11 |  |
| **Other / Unknown / Not answered** | 22 |  | 100 |  | 14 |  | 64 |  | 4 |  | 18 |  | - |  | - |  | 4 |  | 18 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **1,485** |  | **100** |  | **949** | **64** |  | **197** |  | **13** |  | **86** |  | **6** |  | **253** |  | **17** |  |

|  |  |
| --- | --- |
| **Table 4.**  | **Sharps injuries involving solid-bore devices by device type and occupation, Massachusetts hospital workers, 2020** |
| **Occupation** | **Total** | **Suture Needle** | **Scalpel** | **Glass** | **Other/** |
|  |  |  |  |  | **Unknown** |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Physician** | 662 |  | 100 |  | 398 |  | 60 |  | 107 |  | 16 |  | 7 |  | 1 |  | 150 |  | 23 |  |
| **Nurse** | 178 |  | 100 |  | 52 |  | 29 |  | 31 |  | 17 |  | 17 |  | 10 |  | 78 |  | 44 |  |
| **Technician** | 170 |  | 100 |  | 68 |  | 40 |  | 32 |  | 19 |  | 6 |  | 4 |  | 64 |  | 38 |  |
| **Support services** | 76 |  | 100 |  | 4 |  | 5 |  | 1 |  | 1 |  | 2 |  | 3 |  | 69 |  | 91 |  |
| **Dental staff** | 8 |  | 100 |  | 1 |  | 13 |  | - |  | - |  | - |  | - |  | 7 |  | 88 |  |
| **Other medical staff** | 13 |  | 100 |  | 2 |  | 15 |  | 4 |  | 31 |  | - |  | - |  | 7 |  | 54 |  |
| **Other / Unknown / Not answered** | 19 |  | 100 |  | 5 |  | 26 |  | 5 |  | 26 |  | - |  | - |  | 9 |  | 47 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **1,126** |  | **100** |  | **530** |  | **47** |  | **180** |  | **16** |  | **32** |  | **3** |  | **384** |  | **34** |  |

|  |  |
| --- | --- |
| **Table 5.**  | **Sharps injuries by SESIP by hospital size: all devices and excluding suture needles, Massachusetts hospital workers, 2020** |
|  | Hospital Size^ |
|  | All Hospitals | Small | Medium | Large |
|  | 89 hospitals | 27 hospitals | 47 hospitals | 15 hospitals |
| Sharps Injury Protections | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **All devices** | **2,611** |  | **100** |  | **143** |  | **100** |  | **849** |  | **100** |  | **1,619** |  | **100** |  |
|  | SESIP | 1,260 |  | 48 |  | 67 |  | 47 |  | 452 |  | 53 |  | 741 |  | 46 |  |
|  | Non-SESIP | 1,136 |  | 44 |  | 62 |  | 43 |  | 324 |  | 38 |  | 750 |  | 46 |  |
|  | Unknown/Not answered | 215 |  | 8 |  | 14 |  | 10 |  | 73 |  | 9 |  | 128 |  | 8 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Devices excluding suture needles** | **2,081** |  | **100** |  | **112** |  | **100** |  | **721** |  | **100** |  | **1,248** |  | **100** |  |
|  | SESIP | 1,258 |  | 60 |  | 67 |  | 60 |  | 451 |  | 63 |  | 740 |  | 59 |  |
|  | Non-SESIP | 627 |  | 30 |  | 32 |  | 29 |  | 202 |  | 28 |  | 393 |  | 31 |  |
|  | Unknown/Not answered | 196 |  | 9 |  | 13 |  | 12 |  | 68 |  | 9 |  | 115 |  | 9 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ^Hospital size: small= <100 licensed beds; medium=101-300 licensed beds; large=>300 licensed beds |

|  |  |
| --- | --- |
| **Figure 3.**  | **Sharps injuries by device and SESIP, Massachusetts hospital workers, 2020** |

|  |  |
| --- | --- |
| **Table 6.**  | **Sharps injuries by procedure and SESIP, Massachusetts hospital workers, 2020** |
| Procedure | Total | SESIP | Non-SESIP | Unknown |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Injection procedures** | **822** |  | **100** |  | **670** |  | **53** |  | **117** |  | **10** |  | **35** |  | **16** |  |
|  | Subcutaneous injection | 630 |  | 100 |  | 530 |  | 42 |  | 79 |  | 7 |  | 21 |  | 10 |  |
|  | Intramuscular injection | 149 |  | 100 |  | 128 |  | 10 |  | 13 |  | 1 |  | 8 |  | 4 |  |
|  | Other injections | 43 |  | 100 |  | 12 |  | 1 |  | 25 |  | 2 |  | 6 |  | 3 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Blood procedures** | **348** |  | **100** |  | **288** |  | **23** |  | **37** |  | **3** |  | **23** |  | **11** |  |
|  | Percutaneous venous puncture | 250 |  | 100 |  | 225 |  | 18 |  | 15 |  | 1 |  | 10 |  | 5 |  |
|  | Percutaneous arterial puncture | 49 |  | 100 |  | 41 |  | 3 |  | 4 |  | 0 |  | 4 |  | 2 |  |
|  | Finger stick / Heel stick | 34 |  | 100 |  | 13 |  | 1 |  | 15 |  | 1 |  | 6 |  | 3 |  |
|  | Other blood procedures | 15 |  | 100 |  | 9 |  | 1 |  | 3 |  | 0 |  | 3 |  | 1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Line procedures** | **264** |  | **100** |  | **188** |  | **15** |  | **64** |  | **6** |  | **12** |  | **6** |  |
|  | To insert peripheral IV/set up heparin lock | 118 |  | 100 |  | 113 |  | 9 |  | 2 |  | 0 |  | 1 |  | 0 |  |
|  | Other line procedures | 116 |  | 100 |  | 62 |  | 5 |  | 47 |  | 4 |  | 7 |  | 3 |  |
|  | To insert central line | 30 |  | 100 |  | 11 |  | 1 |  | 15 |  | 1 |  | 4 |  | 2 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Other procedures** | **1,177** |  | **100** |  | **116** |  | **9** |  | **917** |  | **81** |  | **145** |  | **67** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **2,611** |  | **100** |  | **1,260** |  | **100** |  | **1,136** |  | **100** |  | **215** |  | **100** |  |

|  |  |
| --- | --- |
| **Table 7.**  | **Sharps injuries by inclusion in prepackaged kit and hospital size, Massachusetts hospital workers, 2020** |
|  | Hospital Size^ |
|  | All Hospitals | Small | Medium | Large |
|  | 89 hospitals | 27 hospitals | 47 hospitals | 15 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Device included in prepackaged kit** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Yes | 529 |  | 20 |  | 30 |  | 21 |  | 228 |  | 27 |  | 271 |  | 17 |  |
|  | No | 1,854 |  | 71 |  | 98 |  | 69 |  | 545 |  | 64 |  | 1,211 |  | 75 |  |
|  | Unknown/Not answered | 228 |  | 9 |  | 15 |  | 10 |  | 76 |  | 9 |  | 137 |  | 8 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **2,611** |  | **100** |  | **143** |  | **100** |  | **849** |  | **100** |  | **1,619** |  | **100** |  |
| ^Hospital size: small <101 licensed beds; medium =101-300 licensed beds; large >300 licensed beds |

|  |  |
| --- | --- |
| **Figure 4.**  | **Sharps injuries involving devices from prepackaged kits by device and SESIP, Massachusetts hospital workers, 2020** |

|  |  |
| --- | --- |
| **Table 8.**  | **Sharps injuries among hospital workers by when and how the injury occurred by hospital size, Massachusetts, 2020** |
|  | Hospital Size^ |
|  | All Hospitals | Small | Medium | Large |
|  | 89 hospitals | 27 hospitals | 47 hospitals | 15 hospitals |
|  | N |  | % |  | N |  | % |  | N |  | % |  | N |  | % |  |
| **Before use of the item** | **22** |  | **1** |  | **0** |  | **0** |  | **3** |  | **<0** |  | **19** |  | **1** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **During use of the item** | **1,282** |  | **49** |  | **72** |  | **50** |  | **412** |  | **49** |  | **798** |  | **49** |  |
|  | Manipulate needle in patient | 299 |  | 11 |  | 21 |  | 15 |  | 112 |  | 13 |  | 166 |  | 10 |  |
|  | Suturing | 298 |  | 11 |  | 16 |  | 11 |  | 62 |  | 7 |  | 220 |  | 14 |  |
|  | Patient moved and jarred device | 275 |  | 11 |  | 16 |  | 11 |  | 115 |  | 14 |  | 114 |  | 9 |  |
|  | Collision with worker or sharp | 208 |  | 8 |  | 11 |  | 8 |  | 73 |  | 9 |  | 124 |  | 8 |  |
|  | Handle/pass equipment  | 60 |  | 2 |  | 4 |  | 3 |  | 14 |  | 2 |  | 42 |  | 3 |  |
|  | Access IV line  | 14 |  | 1 |  | 1 |  | 1 |  | 2 |  | 0 |  | 11 |  | 1 |  |
|  | Other / Unknown / Nonclassifiable | 128 |  | 5 |  | 3 |  | 2 |  | 34 |  | 8 |  | 121 |  | 15 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **After use, before disposal** | **966** |  | **37** |  | **52** |  | **36** |  | **317** |  | **37** |  | **597** |  | **37** |  |
|  | Activating injury protection mechanism | 279 |  | 11 |  | 9 |  | 6 |  | 96 |  | 11 |  | 174 |  | 11 |  |
|  | Handle/pass equipment | 218 |  | 8 |  | 11 |  | 8 |  | 67 |  | 8 |  | 140 |  | 9 |  |
|  | During clean-up | 184 |  | 7 |  | 12 |  | 8 |  | 60 |  | 7 |  | 112 |  | 7 |  |
|  | Collision with worker or sharp | 95 |  | 4 |  | 10 |  | 7 |  | 21 |  | 2 |  | 64 |  | 4 |  |
|  | Recap needle | 59 |  | 2 |  | 5 |  | 3 |  | 23 |  | 3 |  | 31 |  | 2 |  |
|  | Sharps injury prevention mechanism | 20 |  | 1 |  | 1 |  | 1 |  | 12 |  | 1 |  | 7 |  | <0 |  |
|  |  | not activated |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Device malfunction | 10 |  | <1 |  | 1 |  | 1 |  | 3 |  | <0 |  | 6 |  | <0 |  |
|  | Other / Unknown / Nonclassifiable | 101 |  | 4 |  | 3 |  | 6 |  | 35 |  | 11 |  | 63 |  | 11 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **During or after disposal of item** | **293** |  | **11** |  | **19** |  | **13** |  | **102** |  | **12** |  | **172** |  | **11** |  |
|  | During sharps disposal | 120 |  | 5 |  | 9 |  | 6 |  | 39 |  | 5 |  | 72 |  | 4 |  |
|  | Improper disposal | 159 |  | 6 |  | 10 |  | 7 |  | 60 |  | 7 |  | 89 |  | 5 |  |
|  | Collision with worker or sharp | 8 |  | 0 |  | 0 |  | 0 |  | 1 |  | <0 |  | 7 |  | <0 |  |
|  | Other / Unknown / Nonclassifiable | 6 |  | <1 |  | 0 |  | 0 |  | 2 |  | 2 |  | 4 |  | 2 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Unknown / Not answered / Nonclassifiable**  | **48** |  | **2** |  | **0** |  | **0** |  | **15** |  | **2** |  | **33** |  | **3** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Total** | **2,611** |  | **100** |  | **143** |  | **100** |  | **849** |  | **100** |  | **1,619** |  | **100** |  |
| ^Hospital size: small<100 licensed beds; medium 101-300 licensed beds; large >300 licensed beds |

|  |  |
| --- | --- |
| **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, 2020** |
|  |  | **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 | 125 |  | 100 |  | - |  | - |  | 44 |  | 35 |  | 69 |  | 55 |  | 12 |  | 10 |  | - |  | - |  |
| IV Stylet | 28 |  | 100 |  | 2 |  | 7 |  | 12 |  | 43 |  | 7 |  | 25 |  | 7 |  | 25 |  | - |  | - |  |
| Vacuum Tube Collection Holder | 19 |  | 100 |  | - |  | - |  | 4 |  | 21 |  | 10 |  | 53 |  | 5 |  | 26 |  | - |  | - |  |
| Winged-Steel Needle Holder | 4 |  | 100 |  | - |  | - |  | 1 |  | 25 |  | 1 |  | 25 |  | 2 |  | 50 |  | - |  | - |  |
| **Total** | **176** |  | **100** |  | **2** |  | **1** |  |  **61** |  | **35** |  | **87** |  | **49** |  | **26** |  | **15** |  | **-** |  | **-** |  |
| \*SESIPs offer protection during the period after use. Injuries presented in this table that occurred after use (n=136) can be considered “preventable adverse events” – events that could have been prevented with the use of SESIPS.  |

|  |  |
| --- | --- |
| **Table 10.**  | **Sharps injuries by occupation (detailed), Massachusetts hospital workers, 2020** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Nurse** | **1,054** |  | **40** |  | **Support Services** | **115** |  | **4** |  |
|  | RN or LPN | 927 |  | 36 |  |  | Housekeeper | 60 |  | 2 |  |
|  | Patient care technician | 43 |  | 2 |  |  | Central supply | 35 |  | 1 |  |
|  | Nurse assistant | 34 |  | 1 |  |  | Safety/security | 11 |  | <1 |  |
|  | Nurse practitioner | 28 |  | 1 |  |  | Attendant/orderly | 3 |  | <1 |  |
|  | Nurse anesthetist | 12 |  | <1 |  |  | Maintenance | 2 |  | <1 |  |
|  | Nursing student | 9 |  | <1 |  |  | Laundry staff | 1 |  | <1 |  |
|  | Nurse midwife | 1 |  | <1 |  |  | Other | 3 |  | <1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| **Physician** | **954** |  | **37** |  | **Other Medical Staff** | **58** |  | **2** |  |
|  | Intern/Resident | 375 |  | 14 |  |  | Medical assistant | 55 |  | 2 |  |
|  | Physician | 237 |  | 9 |  |  | Physical Therapist | 1 |  | <1 |  |
|  | Fellow | 98 |  | 4 |  |  | Other medical staff | 2 |  | <1 |  |
|  | Physician Assistant | 84 |  | 3 |  |  |  |  |  |  |  |
|  | Surgeon | 74 |  | 3 |  | **Dental Staff** | **9** |  | **<1** |  |
|  | Medical student | 41 |  | 2 |  |  | Dental assistant/tech | 5 |  | <1 |  |
|  | Anesthesiologist | 38 |  | 1 |  |  | Dentist  | 2 |  | <1 |  |
|  | Radiologist | 7 |  | <1 |  |  | Dentist hygienist | 1 |  | <1 |  |
|  |  |  |  |  |  |  | Dental student | 1 |  | <1 |  |
| **Technician** | **380** |  | **15** |  |  |  |  |  |  |
|  | OR/Surgical technician | 178 |  | 7 |  | **Other** | **40** |  | **2** |  |
|  | Phlebotomist | 113 |  | 4 |  |  | Pharmacist  | 9 |  | <1 |  |
|  | Respiratory therapist/ Technician | 27 |  | 1 |  |  | EMT/paramedic | 9 |  | <1 |  |
|  | Radiologic technician | 25 |  | 1 |  |  | Researcher | 9 |  | <1 |  |
|  | Clinical lab technician | 16 |  | 1 |  |  | Clerical/administrative | 1 |  | <1 |  |
|  | Emergency department technician  | 7 |  | <1 |  |  | Other student | 11 |  | <1 |  |
|  | Morgue technician | 2 |  | <1 |  |  | Other | 1 |  | <1 |  |
|  | Anesthesia technician | 1 |  | <1 |  |  |  |  |  |  |  |
|  | Other technician | 11 |  | <1 |  | Unknown/Not Answered / Non-classifiable | 1 |  | <1 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Total** | **2,611** |  | **100** |  |
| **Table 11.**  | **Sharps injuries by department (detailed), Massachusetts hospital workers, 2020** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Operating and Procedure Rooms** | **1,117** |  | **43** |  | **Laboratory** | **41** |  | **2** |  |
|  | Operating room | 848 |  | 32 |  |  | Histology/pathology | 11 |  | <1 |  |
|  | Labor and delivery | 79 |  | 3 |  |  | Clinical chemistry | 5 |  | <1 |  |
|  | Radiology | 53 |  | 2 |  |  | Microbiology | 4 |  | <1 |  |
|  | Hematology/oncology | 39 |  | 1 |  |  | Morgue/autopsy room | 3 |  | <1 |  |
|  | Cardiac catheterization laboratory | 38 |  | 1 |  |  | Blood bank | 1 |  | <1 |  |
|  | Phlebotomy room | 35 |  | 1 |  |  | Other laboratory | 13 |  | <1 |  |
|  | Endoscopy/bronchoscopy/cystoscopy | 11 |  | 0 |  |  | Laboratory, unspecified | 4 |  | <1 |  |
|  | Dialysis | 3 |  | 0 |  |  |  |  |  |  |  |
|  | Other procedure room | 11 |  | 0 |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Other Areas** | **172** |  | **7** |  |
|  |  |  |  |  |  | Central sterile supply | 41 |  | 2 |  |
| **Inpatient Units, other than ICU** | **606** |  | **23** |  |  | Rehabilitation unit | 28 |  | 1 |  |
|  | Medical/surgical ward | 543 |  | 21 |  |  | Dermatology | 20 |  | 1 |  |
|  | Obstetrics/gynecology | 24 |  | 1 |  |  | Exam room | 18 |  | 1 |  |
|  | Pediatrics | 18 |  | 1 |  |  | Anesthesia | 13 |  | <1 |  |
|  | Psychiatry ward | 10 |  | <1 |  |  | Pain clinic | 10 |  | <1 |  |
|  | Nursery | 10 |  | <1 |  |  | Long term care | 6 |  | <1 |  |
|  | Patient room, ward unspecified | 1 |  | <1 |  |  | Hospital grounds | 5 |  | <1 |  |
|  |  |  |  |  |  |  | Pharmacy | 3 |  | <1 |  |
| **Emergency Department** | **285** |  | **11** |  |  | Central trash area | 3 |  | <1 |  |
|  |  |  |  |  |  |  | Ambulance | 3 |  | <1 |  |
| **Intensive Care Units** | **230** |  | **9** |  |  | Detox unit | 2 |  | <1 |  |
|  | Intensive care unit | 208 |  | 8 |  |  | Other Location | 20 |  | 1 |  |
|  | Post anesthesia care unit | 22 |  | 1 |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Unknown/Not Answered**  | **1** |  | **<1** |  |
| **Outpatient Areas** | **159** |  | **6** |  |  |  |  |  |  |  |
|  | Ambulatory care clinic | 95 |  | 4 |  |  |  |  |  |  |  |
|  | Physician’s office  | 20 |  | 1 |  |  |  |  |  |  |
|  | Dental clinic | 10 |  | <1 |  |  |  |  |  |  |
|  | Home health visit | 7 |  | <1 |  |  |  |  |  |  |  |
|  | Other outpatient areas | 22 |  | 1 |  |  |  |  |  |  |
|  | Community health center | 5 |  | <1 |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total**  | **2,611** |  | **100** |  |

|  |  |
| --- | --- |
| **Table 12.** | **Sharps injuries by device (detailed), Massachusetts hospital workers, 2020** |
|  |  | N |  | % |  |  |  N |  | % |  |
| **Hypodermic needles/syringe**  | **949** |  | **36** |  | **Glass**  | **32** |  | **1** |  |
|  |  Hypodermic needle attached to a  | 834 |  | 32 |  |  | Specimen / Test / Vacuum tube | 20 |  | 1 |  |
|  |  | disposable syringe |  |  |  |  |  | Medication ampule / Vial / IV bottle | 5 |  | <1 |  |
|  | Prefilled cartridge syringe | 67 |  | 3 |  |  | Capillary tube | 1 |  | <1 |  |
|  | Hypodermic needle attached to IV  | 23 |  | 1 |  |  | Slide | 1 |  | <1 |  |
|  |  | tubing |  |  |  |  | Other glass item | 5 |  | <1 |  |
|  | Unattached hypodermic needle | 15 |  | 1 |  |  |  |  |  |  |  |
|  | Hypodermic needle attached to a  | 6 |  | <1 |  |  |  |  |  |  |
|  |  | non-disposable syringe |  |  |  |  | **Dental Device or item** | **10** |  | **<1** |  |
|  | Hypodermic needle, unspecified | 4 |  | <1 |  |  | Dental bur  | 4 |  | <1 |  |
|  |  |  |  |  |  |  | Dental pick | 3 |  | <1 |  |
| **Suture Needle** | **530** |  | **20** |  |  | Dental explorer | 2 |  | <1 |  |
|  | Curved suture needle | 501 |  | 19 |  |  | Scaler/curette | 1 |  | <1 |  |
|  | Straight suture needle | 24 |  | 1 |  |  |  |  |  |  |  |
|  | Suture needle, unspecified | 5 |  | <1 |  |  |  |  |  |  |
|  |  |  |  |  |  | **Other** | **290** |  | **11** |  |
| **Other Hollow Bore Needles** | **253** |  | **10** |  |  | Wire | 39 |  | 1 |  |
|  | IV Stylet | 126 |  | 5 |  |  | Lancet | 36 |  | 1 |  |
|  | Huber needle | 44 |  | 2 |  |  | Electrode | 35 |  | 1 |  |
|  | Biopsy needle | 20 |  | 1 |  |  | Retractor | 29 |  | 1 |  |
|  | Spinal or epidural needle | 16 |  | 1 |  |  | Scissors | 25 |  | 1 |  |
|  | Hollow bore needle, unspecified | 40 |  | 2 |  |  | Forceps | 19 |  | 1 |  |
|  | Other type of hollow bore needle | 7 |  | <1 |  |  | Drill bit | 14 |  | 1 |  |
|  |  |  |  |  |  |  | Pin | 11 |  | <1 |  |
|  |  |  |  |  |  | Staple  | 10 |  | <1 |  |
| **Scalpel Blade** | **180** |  | **7** |  |  | Trocar | 8 |  | <1 |  |
|  |  |  |  |  |  | Cutting blade other than scalpel | 7 |  | <1 |  |
| **Winged Steel Needle** | **197** |  | **8** |  |  | Bone cutter | 7 |  | <1 |  |
|  | Winged steel needle attached to a  | 124 |  | 5 |  |  | Bone chip/chipped tooth | 6 |  | <1 |  |
|  |  | vacuum tube collection holder |  |  |  |  |  | Bovie electrocautery device | 6 |  | <1 |  |
|  | Winged steel needle | 64 |  | 2 |  |  | Tenaculum | 2 |  | <1 |  |
|  | Winged steel needle attached to IV  | 9 |  | <1 |  |  | Razor | 2 |  | <1 |  |
|  |  | tubing |  |  |  |  |  | Rod | 1 |  | <1 |  |
|  |  |  |  |  |  | Other needle | 4 |  | <1 |  |
| **Vacuum Tube Collection Holder/Needle** | **86** |  | **3** |  |  | Other type of sharp object | 29 |  | 1 |  |
|  | Vacuum tube collection holder/needle | 44 |  | 2 |  |  |  |  |  |  |  |
|  | Phlebotomy needle (other than winged  | 42 |  | 2 |  |  |  |  |  |  |
|  |  | steel needle) |  |  |  |  | **Unknown/Not Answered**  | **84** |  | **3** |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total** | **2,611** |  | **100** |  |

|  |  |
| --- | --- |
| **Table 13.**  | **Sharps injuries by procedure (detailed), Massachusetts hospital workers, 2020** |
|  |  | N |  | % |  |  | N |  | % |  |
| **Injection** | **822** |  | **31** |  | **Line Procedures** | **264** |  | **10** |  |
|  | Subcutaneous injection | 630 |  | 24 |  |  | To insert a peripheral IV line or   | 116 |  | 4 |  |
|  | Intramuscular injection | 149 |  | 6 |  |  |  | set up a heparin lock |  |  |  |  |
|  | Epidural/spiral anesthesia | 24 |  | 1 |  |  | Draw blood from central or | 42 |  | 2 |  |
|  | Injection, unspecified | 12 |  | <1 |  |  |  | peripheral IV line or port |  |  |  |  |
|  | Other injection | 7 |  | <1 |  |  | Other injection into IV site/port | 32 |  | 1 |  |
|  |  |  |  |  |  |  | To insert a central IV line | 30 |  | 1 |  |
| **Suturing**  | **549** |  | **21** |  |  | To insert an arterial line | 20 |  | 1 |  |
|  | Suturing | 539 |  | 21 |  |  | Draw blood from arterial lineddraw | 8 |  | <1 |  |
|  | Suture removal | 10 |  | <1 |  |  | To connect IV line | 7 |  | <1 |  |
|  |  |  |  |  |  |  | To flush heparin/saline | 1 |  | <1 |  |
| **Blood Procedures** | **348** |  | **13** |  |  | Line procedure, unspecified | 2 |  | <1 |  |
|  | Percutaneous venous puncture | 250 |  | 10 |  |  | Other line procedure | 6 |  | <1 |  |
|  | Percutaneous arterial puncture | 49 |  | 2 |  |  |  |  |  |  |
|  | Finger stick / heel stick | 34 |  | 1 |  |  |  |  |  |  |
|  | Blood procedure, unspecified | 5 |  | <1 |  |  |  |  |  |
|  | Draw blood from umbilical vessel | 5 |  | <1 |  | **Dental Procedures** | **11** |  | **<1** |  |
|  | Dialysis / AV fistula site | 4 |  | <1 |  |  | Oral surgery | 5 |  | <1 |  |
|  | Other blood procedure | 1 |  | <1 |  |  | Hygiene | 3 |  | <1 |  |
|  |  |  |  |  |  |  | Dental drilling  | 1 |  | <1 |  |
| **Making the Incision**  | **226** |  | **9** |  |  | Dental procedure, unspecified | 1 |  | <1 |  |
|  | Making the incision | 198 |  | 8 |  |  | Other dental | 1 |  | >1 |  |
|  | Cauterization | 5 |  | <1 |  |  |  |  |  |  |  |
|  | Surgical procedure, unspecified | 3 |  | <1 |  | **Other** | **208** |  | **8** |  |
|  | Other surgical procedure | 20 |  | 1 |  |  | To obtain lab specimens | 36 |  | 1 |  |
|  |  |  |  |  |  |  | Drilling | 24 |  | 1 |  |
| **To Obtain Body Fluid or Tissue Sample** | **47** |  | **2** |  |  | Transferring blood/body fluid to 10 <1 | 10 |  | <1 |  |
|  |  |  |  |  |  |  | another container |  |  |  |  |
|  |  |  |  |  |  |  | Shaving | 2 |  | <1 |  |
|  |  |  |  |  |  |  | Other procedure | 136 |  | 5 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Unknown/Not answered** | **136** |  | **5** |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total** | **2,611** |  | **100** |  |

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

|  |
| --- |
| **Resources** |
| MDPH OHSP....<https://www.mass.gov/service-details/needlesticks-and-other-sharps-injuries-among-healthcare-workers>CDC Sharps Safety for Healthcare Settings: Workbook and Teaching Tools……………...[www.cdc.gov/sharpssafety](file:///%5C%5CDPH-FP-CO-121%5Cdph2%5CBHISRE%5COHSP%5COHSPMAIL%5CSharps%20Injuries%5C2020%20Annual%20Summary%5C2020%20report%5Cwww.cdc.gov%5Csharpssafety)NIOSH Preventing Needlesticks and Sharps Injuries……………………..[www.cdc.gov/niosh/topics/bbp/sharps.html](file:///%5C%5CDPH-FP-CO-121%5Cdph2%5CBHISRE%5COHSP%5COHSPMAIL%5CSharps%20Injuries%5C2020%20Annual%20Summary%5C2020%20report%5Cwww.cdc.gov%5Cniosh%5Ctopics%5Cbbp%5Csharps.html)OSHA Bloodborne Pathogens and Needlestick Prevention………………[www.osha.gov/SLTC/bloodbornepathogens](http://www.osha.gov/SLTC/bloodbornepathogens)5/27/22 |

1. Bureau of Labor Statistics (BLS). U.S. Department of Labor. Employer-reported workplace injuries and illnesses – 2020. November 2021. <https://www.bls.gov/news.release/pdf/osh.pdf> [↑](#footnote-ref-1)
2. Massachusetts Health Policy Commission (HCP). Impact of COVID-19 on the Massachusetts Health Care System: Interim Report. April 2021.<https://www.mass.gov/doc/impact-of-covid-19-on-the-massachusetts-health-care-system-interim-report/download> [↑](#footnote-ref-2)
3. Commonwealth of Massachusetts. Executive Office of Health and Human Services. Order of the Commissioner of Public Health. March 15, 2020. <https://www.mass.gov/doc/march-15-2020-elective-procedures-order/download> [↑](#footnote-ref-3)
4. Commonwealth of Massachusetts. Executive Office of Health and Human Services. Health and Human Services Reopening Plans and Guidance. <https://www.mass.gov/lists/reopening-health-and-human-services-in-massachusetts> [↑](#footnote-ref-4)