Sharps Injuries among Hospital Workers in Massachusetts, 2004

Findings from the Massachusetts Sharps Injury Surveillance System

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Executive Summary

Health care worker exposures to bloodborne pathogens as a result of injuries caused by needles and other sharp devices are a significant public health concern. The U.S. Centers for Disease Control and Prevention (CDC) estimate that, nationwide, between 600,000 and 800,000 percutaneous injuries from contaminated sharp devices occur each year in health care; approximately half are sustained by hospital workers.

Sharps injuries are preventable, and health care facilities are required by state and federal regulations to implement comprehensive plans to reduce these injuries. Elements of a successful sharps injury prevention program (as outlined by the CDC) include: promoting an overall culture of safety in the workplace, eliminating the unnecessary use of needles and other sharp devices, using devices with sharps injury prevention features (safety devices), employing safe workplace practices, and training health care personnel. Sharps injury surveillance is also a key component of a comprehensive program.

Prior to 2000, while some national data had been collected, little was known about the extent and distribution of sharps injuries among health care workers at the state level. In 2001, pursuant to the Massachusetts law – An Act Relative to Needlestick Injury Prevention (MGL Chapter 111 §53D) – the Massachusetts Department of Public Health (MDPH) promulgated regulations requiring hospitals to report sharps injury data to MDPH. This led to the establishment of the Massachusetts Sharps Injury Surveillance System.

This third annual report from the Massachusetts Sharps Injury Surveillance System provides information about sharps injuries among Massachusetts hospital workers that occurred in 2004. For all hospitals combined, patterns of sharps injuries by a) occupation of the injured worker, b) department in which the injury occurred, c) procedure for which the device was used, and d) device involved are described. Sharps injury rates\(^1\) (defined as number of sharps injuries per 100 licensed hospital beds) are presented for the state overall and for three hospital size categories (small, medium and large hospitals). The report also provides feedback to hospitals regarding data quality. Results stratified by hospital size and by teaching status are included at the end of the report.

Under-reporting of sharps injuries by employees has been well documented in the literature, and varies by occupation and by hospital. Hospitals with well established sharps injury surveillance programs and strong safety cultures may identify and report more injuries than hospitals with less well developed programs. Under-reporting must be taken into account in interpreting the findings presented in this report. Hospitals, in evaluating their own data, should do so within the context of their own sharps injury surveillance and prevention programs. Assessment of under-reporting should be an integral part of sharps injury prevention activities.

The Massachusetts Sharps Injury Surveillance System is intended to provide information that can assist Massachusetts hospitals and health care workers in targeting and evaluating efforts to reduce the incidence of sharps injuries and the associated human and economic costs. This report illustrates ways in which surveillance data can be used within hospitals to identify prevention priorities. Input from hospitals and health care workers regarding the surveillance activities and the content of this report is welcome. MDPH looks forward to continued collaboration in building an effective sharps injury surveillance system to improve the health and safety of health care workers in Massachusetts.

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\(^1\) Rates based on the number of licensed beds have a number of limitations, and should be interpreted with caution. Alternative approaches to calculating rates are being explored for future reports.
Findings:

Overview

- A total of 3,279 sharps injuries among hospital health care workers in Massachusetts were reported for the surveillance period January 1 to December 31, 2004. Ninety-seven percent (3,180) of the injuries were reported by acute care hospitals.

- Eighty-five percent of workers (2,776) who sustained injuries were hospital employees, 9% (310) were non-employee practitioners, 3% (83) were students, and 1% (35) were temporary or contract employees.

Occupation and Department

- Nurses sustained more injuries (1,279, 39%) than any other occupational group followed by physicians, who sustained 33% (1,068) of all reported sharps injuries. Close to half of the injuries in the physician category were sustained by interns and residents. Physicians accounted for proportionately more injuries in large hospitals (> 300 licensed beds).

- Technicians and support service workers were also at risk for sharps injuries. Technicians, such as surgical technicians and phlebotomists, accounted for 657 (20%) injuries. Support service workers sustained 123 (4%) injuries; 78 (2%) were sustained by housekeepers.

- Injuries occurred most frequently in operating and procedure rooms (1,460, 45%) and inpatient units (excluding intensive care units) (732, 22%).

Type of Device

- Hollow bore needles as a group accounted for 56% (1,836) of all injuries reported and proportionately more injuries among nurses (77%) than physicians (33%). More than half of the injuries involving hollow bore needles occurred with hypodermic needles.

- The type of device involved in the incident varied by occupation. Hypodermic needles accounted for the greatest number of injuries (583, 46%) among nurses, whereas suture needles accounted for the greatest number of injuries (456, 43%) among physicians.

- Over half of the injuries (1,773, 54%) involved standard devices that were reported as not having engineered sharps injury prevention features. Hypodermic needles accounted for 23% (416) of the injuries involving devices without safety features, even though hypodermic needles with safety features have been available on the market for the past 12 years.

Procedure for which the Device was Used and When the Injury Occurred

- Devices involved in injuries were most frequently used for injections (754, 23%) and suturing (729, 22%). Proportionately more of the injuries in large hospitals were related to suturing, while in medium hospitals, more injuries were related to injections. In small hospitals, blood procedures resulted in the most injuries.

- Injuries occurred during the use of devices in 42% (1,363) of the cases. After use of the device was a more dangerous time to handle a device. About half (1,603, 49%) of the injuries occurred after use of the device, including injuries sustained after use but before disposal of devices (1,105, 34%) and injuries occurring during or after disposal (498, 15%).
Introduction

Health care worker exposures to bloodborne pathogens as a result of injuries from needles and other sharp devices are a significant public health concern. The U.S. Centers for Disease Control and Prevention (CDC) estimate that, nationwide, there are between 600,000 and 800,000 percutaneous injuries from contaminated needles and other sharp devices (referred to as “sharps injuries” in this report) each year in the health care industry, approximately half of which are sustained by hospital-based health care workers (NIOSH, 1999). This averages out to more than 1,000 percutaneous injuries each day in US hospitals (Panlilio, Cardo, Campbell, Srivastava, Jagger, Orelien, et al., 2000). As a measure of the likelihood of injury among hospital workers, it has been estimated that annually there are 22 sharps injuries for every 100 occupied hospital beds (Perry, Parker & Jagger, 2003).

Sharps injuries have been associated with occupational transmission of hepatitis B (HBV), hepatitis C (HCV) and human immunodeficiency virus (HIV), as well as other pathogens. As of 2000, 25 million individuals in the general population are infected with HBV, 4 million are infected with HCV, and 900,000 with HIV (OSHA, 1998). For many, infection status is not known. The estimated risk of a health care worker developing HCV after each percutaneous exposure to blood or body fluids from an infected patient is estimated to be between 0.4-1.8% (OSHA, 1998). For HIV, the calculated risk is 0.3% (OSHA, 1998). The risk of developing HBV after percutaneous exposure is estimated to be between 6-30% among those workers who have not received HBV vaccinations (OSHA, 1998). HBV vaccination lowers this risk and has been shown to be 80-95% effective in preventing the disease (MMWR, 1982). Since 1992, when the Occupational Safety and Health Administration (OSHA) promulgated the Bloodborne Pathogen Standard, employers have been required to offer the HBV vaccine to employees who may be exposed to blood or potentially bloody body fluids in the course of their jobs. As a result, HBV vaccination rates have increased in recent years, and rates of HBV infection have dropped significantly among health care providers (OSHA, 1998).

The U.S. Public Health Service has recommended guidelines for post-exposure management of all workers who have sustained occupational exposures to bloodborne pathogens (MMWR, 2001; MMWR, 2005). These guidelines provide information for determining when post-exposure prophylaxis is appropriate. Preventive medical treatment following exposure may decrease the likelihood of seroconversion for HIV (Cardo, Culver, Ciesielski, Srivastava, Marcus, Abiteboul, et al., 1997).

While the risk of developing disease after a sharps injury is low, the economic and human costs associated with these injuries are substantial. These include the costs for baseline and follow-up testing of the exposed worker, testing the source patient if serostatus is not already known, and the costs of post-exposure prophylaxis. The costs are estimated to range from $500 to $3,000 per incident depending on the treatment provided (Jagger, Bentley & Julliet, 1998). Other direct costs include health care costs when workers develop infection and disease as a result of exposure, overtime to make up for any staffing changes that may result from the injury, and increases in workers’ compensation costs. In addition to these direct costs, there are indirect costs, that are more difficult to quantify; including the emotional costs to workers and their families associated with the anxiety about the possible consequences of sharps injuries, as well as other human costs when workers become infected. Also difficult to quantify are the effects of sharps injuries on morale of workers, turnover, and perceptions of quality of care within the hospital.

Sharps injuries are preventable, and the OSHA Bloodborne Pathogen Standard requires all health care facilities to have comprehensive plans in place to reduce sharps injuries and other bloodborne pathogen exposures. According to the CDC, sharps injuries can be prevented by: promoting a culture of safety in the work environment; eliminating the unnecessary use of needles and other
sharps devices; using devices with sharps injury prevention features; using safe work practices; and educating and training health care personnel (CDC, 2004). Surveillance of sharps injuries sustained by workers is also a critical component of a comprehensive prevention strategy. Information about the types of devices and procedures associated with sharps injuries, the departments in which the injuries occurred, and the occupations at risk is essential to developing effective prevention programs in health care facilities, and at the state and national levels.

**Surveillance of Sharps Injuries among Health Care Workers**

Currently, there are two national surveillance systems for tracking sharps injuries to health care workers: The National Surveillance System for Health Care Workers (NaSH), operated by the Centers for Disease Control and Prevention (http://www.cdc.gov/ncidod/hip/SURVEILL/nash.htm); and EpiNet which is operated by the International Health Care Worker Safety Center at the University of Virginia (www.med.virginia.edu/epinet).

NaSH is a voluntary reporting system with approximately 20 (mostly teaching) hospitals throughout the country. NaSH has collected data since 1995 on vaccine preventable diseases, bloodborne pathogen exposures, and tuberculosis exposures. EpiNet is also voluntary and has collected data regarding occupational bloodborne pathogen exposures since 1992; approximately 70 hospitals in three geographic regions report exposure data through EpiNet.

Surveillance of sharps injuries is limited by the fact that health care workers often fail to report sharps injuries to their employers. NaSH and EpiNet have estimated the under-reporting rate for sharps injuries to be 56% and 39% respectively (Perry, 2000). There are many reasons why health care workers may not report sharps injuries; they may perceive that the injuries or the source patients are low risk; they may fear the diseases to which they have potentially been exposed; they may have concerns about job security or the extra paperwork and time involved in follow-up (Tandberg, Stewart & Doezema, 1991). In addition, they may lack information and training about appropriate reporting procedures or the reporting procedures themselves may be inadequate. Under-reporting should be taken into account in interpreting sharps injury surveillance data.

Although these two national reporting systems are in place, and a few states in addition to Massachusetts and California have released data, there is still a lack of comprehensive information about sharps injuries among health care workers at the state level. State specific data are important to inform state prevention activities and promote action at the local level. Statewide surveillance of sharps injuries can provide important information about trends in sharps injuries and the devices, procedures, and departments associated with sharps injuries. It can identify health care facilities where increased intervention efforts are needed. Statewide surveillance can also identify facilities where prevention efforts have been effective, and facilitate sharing of information about successful programs and practices.

**The Massachusetts Sharps Injury Surveillance System**

Work-related sharps injuries potentially affect the lives of many individuals in Massachusetts. The health care industry employs almost 390,000 people in the Commonwealth, more than any other industrial sector (Massachusetts Department of Workforce Development, 2004). Forty-four percent of Massachusetts health care workers are employed in hospitals, including over 80,000 health care practitioners and technical occupations, as well as thousands of others who perform other important functions in the hospital setting (Massachusetts Department of Workforce Development, 2005). Notably, the risk of sharps injury is not limited to direct care providers, but also affects support staff such as maintenance and environmental service workers. When sharps devices are improperly disposed of, many people, including patients and visitors, are placed at risk.
In 2000, Massachusetts joined a growing number of states that have enacted state laws to prevent sharps injuries among health care workers. The Massachusetts law—An Act Relative to Needlestick Injury Prevention (MGL Chapter 111 §53D)—requires all Massachusetts hospitals licensed by the Massachusetts Department of Public Health (MDPH) (except state facilities) to (See Appendix B for MGL Chapter 111 §53D):

- Utilize sharps with engineered sharps injury prevention features to the extent feasible;
- Develop written exposure control plans that include effective procedures for identifying and selecting existing sharps injury prevention technology;
- Record percutaneous exposure incidents in sharp injury logs (including information about the type and brand of device involved in the incidents);
- Use this information for continuous quality improvement in reducing sharps injuries through education and procurement of improved products; and
- Report information from sharps injury logs annually to MDPH.

The Massachusetts law also calls for the formation of an advisory committee at MDPH to address sharps injuries, and the compilation of a list of safer sharps devices to be maintained by MDPH. (See Appendix A for current Advisory Committee membership.)

Shortly after the enactment of MGL Chapter 111 §53D, Congress mandated OSHA to amend the existing Bloodborne Pathogens Standard (29 CFR 1910.1030) to include provisions explicitly requiring employers to use safer sharps devices, to record percutaneous injuries on Sharps Logs and to utilize this information for quality improvement.

In 2001, regulations pursuant to MGL Chapter 111 §53D went into effect requiring hospitals to record sharps injuries (also referred to as "reportable exposure incidents" as defined below) on Sharps Injury Logs starting October 1, 2001 (See Appendix C for 105 CMR 130.1001 et seq.). The MDPH regulations implementing the state law mirror federal law regarding use of safe devices and recording sharps injuries, and they add the requirement that MDPH licensed hospitals submit the data from their Sharps Injury Logs annually to the Department. The initial reporting period was defined as October 1, 2001 – December 31, 2001. The first Annual Summaries of Sharps Injuries, to include data from this period, were due at MDPH on February 1, 2002. The subsequent reporting periods cover the full calendar year.

This third annual report from the Massachusetts Sharps Injury Surveillance System uses data reported by licensed hospitals (except state facilities) and provides a look at sharps injuries among Massachusetts hospital workers from January 1, 2004 through December 31, 2004. This picture will be augmented in the future, as more data become available. This report includes information regarding the devices and procedures associated with sharps injuries in Massachusetts hospitals as well as the departments in which these injuries occurred and the occupations involved. Findings are presented by hospital bed-size categories and by teaching status as well as for the state as a whole to allow hospitals to compare their individual experiences with those in similar facilities. Several data quality issues are discussed. Data from the Sharps Injury Surveillance System are intended to assist hospitals and health care workers in targeting and evaluating their efforts to prevent sharps injuries. Feedback from hospitals and health care workers regarding the content and format of this report is welcome, and it will be taken into account in preparing future reports.
Methods

Reportable Exposure Incident: A reportable exposure incident is a bloodborne pathogen exposure incident that is the result of events involving a contaminated sharp device that pierces the skin or mucous membranes. It is also referred to in this report as a “reportable sharps injury”. Bloodborne pathogen exposure is defined more broadly as a specific eye, mouth or other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that result from the performance of an employee’s duties. A sharp is defined as 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 MDPH, as well as any satellite units (e.g., community health centers, ambulatory care centers) operating under a hospital license, are included in the population under surveillance. These health care workers include hospital employees, employees of other agencies working in the hospital, those providing patient services without compensation such as students, and anyone providing care within the facility, regardless of the source of their compensation.

Surveillance Period: The surveillance period is defined as January 1 through December 31, 2004. MDPH regulations require that sharps injury data be submitted by licensed hospitals to MDPH (except for state facilities) by February 1 for the previous calendar year.

Definitions:

Sharps Injury Prevention Technology: Sharps injury prevention technology is defined as devices or other technology that minimize the risk of injury to health care workers from hypodermic syringes, needles or other sharps. OSHA refers to non-needle sharps and needle devices used for withdrawing body fluids, accessing a vein or artery, or administering medications or other fluids, with built-in safety features or mechanisms that effectively reduce the risk of an exposure incident as “sharps with engineered sharps injury protections” (SESIPs). They are referred to in this report as “safety devices”.

Teaching hospital: Teaching hospitals are defined by the Medicare Payment Advisory Commission as hospitals with at least 25 medical residents per 100 hospital beds. Hospitals self-designate as teaching hospitals when reporting financial records to the Massachusetts Division of Health Care Finance and Policy.

Data collection methods: Prior to implementing the record-keeping and annual reporting requirements, MDPH worked with members of its Sharps Injury Prevention Advisory Committee to develop effective mechanisms for collecting and reporting sharps injury data. MDPH identified data elements to be recorded on the sharps injury log, consistent with OSHA record-keeping requirements. Several additional data elements were recommended (Appendix D). To facilitate collection of standard data and reduce the need for coding narrative text at both the hospital and state levels, MDPH developed a recommended Bloodborne Pathogen Exposure Incident Recording Form that includes lists of device types, procedures, clinical practice settings, occupations, and how the injury occurred (Appendix E). Based on lists developed for NaSH, these standard lists allow data from Massachusetts to be compared with national data. Use of the Bloodborne Pathogen Exposure Incident Recording Form was voluntary. MDPH also developed a mandatory Annual Summary of Sharps Injury reporting form (referred to in this report as the Annual Summary) that included the same standard lists (Appendix F). Hospitals have the option of submitting this form either as hard copy or electronically.

For most hospitals, information from Sharps Injury Logs was submitted to the Occupational Health Surveillance Program at MDPH by infection control practitioners or employee health staff. In some
hospitals, reports were submitted by staff in risk management or human resources. Data from the Annual Summaries were entered at MDPH into an MSExcel spreadsheet, imported into MSAccess and coded as needed using the standard lists developed for NaSH (See Appendix F). Expert clinicians assisted in making coding decisions, and data were then imported into SAS for analysis.

**Experimental 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 injury cases. 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.

Sharps injury rates presented in this report are defined as the number of reported sharps injuries divided by the number of licensed hospital beds. Information regarding bed numbers for each hospital was obtained from the MDPH Division of Health Care Quality that licenses hospitals. Rates were calculated for all hospitals combined, as well as by hospital size. Hospitals were divided into three groups based on the number of licensed beds - small (0-100 beds), medium (101-300 beds) and large (301+ beds) for this analysis. Rates by hospital size were calculated by adding all injuries reported in each category (small, medium, and large hospitals) and dividing by the total number of licensed beds in the respective category. The use of licensed beds as a denominator is a preliminary step in the process to determine the most appropriate denominator to be used for rate calculations. Currently, additional denominators, such as number of occupied beds, number of procedures, number of patients, and number of full-time equivalent employees, are being evaluated for use in rate calculations.

**Limitations**

There are a number of data limitations that need to be taken into account when interpreting sharps injury rates. Optimally, sharps injury rates would be calculated using information on the total number of hours worked, sharps devices purchased or used, or procedures performed at the hospitals in the denominator. This information, however, was not available. Rates based on numbers of licensed beds are approximate measures of risk, and are included in this report to allow hospitals to compare their injury experience with that of other hospitals in same size categories. However, it should be recognized that the number of licensed beds is neither an accurate reflection of the average daily census, nor does it take into account the number of inpatient or outpatient procedures performed in a hospital or satellite facilities. These rates, for example, may overestimate the risks of sharps injuries in facilities in which large numbers of procedures are performed. For these reasons, these rates are considered experimental and should be interpreted with caution. MDPH welcomes input on the usefulness of these rates, and is exploring alternative rate calculations for future reports.

There are also other limitations to be considered in interpreting the findings presented in this report. In order for an injury to be included on the Annual Sharps Summary, hospitals rely on health care workers to report sharps injuries. As discussed previously, there are many reasons why health care workers may choose not to report sharps injuries, and under-reporting by health care workers has been well documented. Thus the surveillance findings presented in this report should be considered conservative estimates of the burden of sharps injuries among hospital workers in Massachusetts.

Also, there is evidence that the likelihood of reporting varies by occupation and completeness of reporting varies by hospital (CDC, 1999). Hospitals with well established sharps injury surveillance programs and strong safety cultures may identify and report more injuries than hospitals with less
well developed employee health programs. Hospitals, in evaluating their own data, should do so within the context of their own sharps injury surveillance and prevention program.

Assessment of under-reporting should be an integral part of the sharps injury prevention activities in hospitals. Caution is advised in comparing experiences among hospitals. Hospitals with high numbers or rates of reported sharps injuries are not necessarily hospitals with the highest risks of sharps injury, but, rather, may have stronger internal reporting systems. This, however, should not detract from the need to address real problems in these facilities.

For the most part, the information about reported injuries provided by hospitals was complete. However, there was some missing information, and for several data elements (such as department where injury occurred and brand of device) there was some confusion about what information should be submitted. MDPH is working with hospitals to clarify these outstanding issues.
Results
Overview

All 99 hospitals licensed by MDPH submitted Annual Sharps Injury Reports for 2004. A total of 3,279 sharps injuries were sustained and reported by Massachusetts hospital workers from January 1 through December 31, 2004; these injuries were then reported by the hospitals to MDPH. The number of sharps injuries reported by individual hospitals ranged from 0 to 317. Over half of the hospitals reported fewer than 20 injuries. The extent to which high numbers of reported injuries in some hospitals reflect a truly higher incidence of injuries in these hospitals compared to those with low numbers or better sharps injury reporting practices is not known. MDPH plans to work with hospitals over time to better understand injury patterns, and improve reporting and prevention practices.

There are 76 acute care hospitals in Massachusetts. These hospitals reported 97% (3,180) of all sharps injuries. The 18 teaching hospitals in Massachusetts reported 59% (1,923) of all sharps injuries. Teaching status is strongly correlated with hospital size; more than half of the teaching hospitals (12, 67%) have over 300 beds. The 23 non-acute care hospitals are chronic care hospitals.

Key findings for all hospitals combined are presented in the following sections. When the pattern of sharps injuries varied markedly by hospital size, this is noted in the text. Detailed tables, including findings by hospital size categories and teaching status, are provided in Appendices G, H and I.

Comments on data quality are offered to assist hospital staff responsible for compiling the required information for reported injuries. These comments do not address under-reporting of sharps injuries to the surveillance system, which cannot be evaluated without additional sources of information.
State reporting regulations require hospitals to report sharps injuries to all workers in the hospital and satellite sites, regardless of the source of compensation for these workers. Eighty-five percent (2,776) of all sharps injuries reported were sustained by employees, followed by non-employee practitioners, with 9% (310) of the injuries (Figure 1). Three percent (83) of those injured were students. Non-employee practitioners include, but are not limited to, physicians with admitting privileges at a particular hospital and nurse practitioners or physicians assistants from private medical practices who are checking on patients from those practices.

*Data quality: Information about work status was provided for 98% of the cases.*
Occupation of Injured Worker

Nursing department staff sustained more sharps injuries than any other occupational category, accounting for 39% (1,279) of the injuries (Figure 2). Of these, 9 were among nursing students and 59 were among nursing assistants. Physicians followed nurses with 33% (1,068) of the sharps injuries. Close to half of the injuries in this category (476) were sustained by interns and residents. The physician category also included 66 injuries among medical students. Technicians comprised the third leading occupational group accounting for 20% (657) of sharps injuries. This group included individuals in a wide variety of technical occupations; the most frequently reported were operating room/surgical technicians (252) and phlebotomists (144) and clinical laboratory technicians (69). Of the 123 injuries (4%) sustained by workers in support services, 78 were among housekeepers.

The occupational distribution of the cases varied by hospital size. Most notably, physicians comprised 43% of the injuries in the large hospitals whereas they comprised 22% and 19% in the small and medium sized hospitals respectively (See Appendix H).

Recent studies indicate that the likelihood of workers reporting sharps injuries to employee health departments in hospitals varies by occupation. However, findings are not consistent among studies. In one study, nurses were found to be more likely than physicians to report needle stick injuries (Tandberg, et al., 1991). The CDC found, however, that while nurses were more likely to report needle stick injuries than surgeons, they were less likely to report than other physicians (CDC, 1999). This variation needs to be taken into account in interpreting the findings throughout this report.

Data quality: Information about occupation was provided for almost 100% (3278) of the cases.
The greatest number of reported sharps injuries (1,460; 45%) occurred in operating or procedure rooms (Figure 3); of these, almost three-quarters (1,038) occurred in operating rooms.

In-patient units accounted for the second largest number of cases with 732 (22%) of the injuries. Of these, 570 occurred on medical surgical units, 29 in pediatrics, 24 in Ob/Gyn units, and 20 in psychiatry. For 8 of the injuries that occurred on in-patient units, hospitals reported hospital specific unit identifiers (such as 2 East) that could not be coded to more specific standard locations (See Table 1, page 13 for findings regarding occupation by department).

Data Quality: Some information on location where injuries occurred was provided for almost 100% (3,278) of the cases. However, in a number of cases, hospitals reported hospital specific unit identifiers that could not be coded to standard locations or departments without additional information from the hospitals. MDPH is interested in the department or clinical practice area (physical location) where the injury occurred. Hospitals are encouraged to use the standard department list provided on the Annual Summary of Sharps Injuries reporting form rather than hospital specific nomenclature.
Physicians were most frequently injured in operating and procedure rooms (688, 64%) (Table 1). In contrast, nurses were most frequently injured on in-patient units (512, 40%). Of the 123 support staff who were injured, 78 were housekeepers, of whom 25 were injured on in-patient units.

Within operating and procedure rooms, physicians sustained more injuries than any other occupation group, accounting for 47% (688 of 1,460) of the injuries, followed by nurses with 23% (337 of 1,460) of the injuries. Nurses accounted for by far the greatest number of injuries - 512 of 732 or 70% - in in-patient units. In emergency departments, similar numbers of physicians and nurses were injured. Sixty-five percent (101 of 156) of the injuries in laboratories were sustained by technicians, followed by physicians who accounted for 22% (35 of 156).
Twenty-three percent (754) of the injuries reported involved devices used for injections (Figure 4). Information about type of injection was provided for 444 of these injuries. Of these, 370 involved needles used for subcutaneous injections and 63 for intramuscular injections. In another 22% (729) of the injuries, workers were injured with devices used for suturing. Devices used for blood procedures accounted for 19% (624) of the injuries. The majority of blood procedures (418, 13% of the total) involved devices used for percutaneous venous punctures. Blood procedures are those procedures which involve drawing blood; line procedures involve the insertion or removal of intravenous lines.

The distribution of sharps injuries by procedure varied by hospital size, with 25% of the injuries in large hospitals associated with suturing compared to 19% in both small and medium sized hospitals. In turn, 22% of the injuries in small hospitals and 23% in medium sized hospitals were associated with devices used for blood procedures, compared to 16% in large hospitals. (See Appendix H.)

Data quality: For 7% (228) of the injuries, the procedure for which the device was used or intended was reported as unknown. Most of these cases with unknown procedure (192 of 228) occurred after use of the device, either before, during or after disposal.
Injuries from hollow bore needles, particularly those used in procedures accessing a vein or artery and those where residual blood is visible, are associated with increased risk of transmission of HIV when compared to other sharps devices (Cardo, et al., 1997).

As a group, hollow bore needles accounted for the majority – 56% (1,836) - of the sharps injuries reported (Figure 5). These included 1009 (31%) injuries from hypodermic needles, 335 injuries (10%) from butterfly needles, and 143 (4%) from vacuum tube needles. An additional 349 (11%) injuries were associated with "other hollow bore needle", including IV stylets (152 injuries), epidural needles (21 injuries) and biopsy needles (19 injuries).

Suture needles accounted for 22% (722) of sharps injuries. Information as to whether these were straight or curved needles was provided for only 201 of these injuries; of these, 175 involved curved needles. Consistent with findings for procedures for which devices were used, suture needles accounted for proportionately more injuries in the larger hospitals (25%), as compared to small (19%) and medium (18%) size hospitals.

Data Quality: Information about device type available was not provided for 65 of the injuries. In 57 cases device type was reported as unknown and in 8 cases the question was not answered.
The type of device involved in the incident varied by occupation (Table 2). Hollow bore needles, as a group, accounted for 77% of injuries sustained by nurses compared to 33% of injuries sustained by physicians. Hypodermic needles accounted for the greatest number of injuries (583; 46%) among nurses, whereas suture needles accounted for the greatest number of injuries (456; 43%) among physicians. The technicians with sharps injuries worked in a wide variety of technical occupations, such as operating room / surgical technicians, phlebotomists, and clinical laboratory technicians. No single device type stood out among the technicians who sustained sharps injuries.
As expected, the type of device associated with sharps injuries varied by department. Within operating and procedure rooms, suture needles accounted for the largest number of injuries reported (597, 41%) followed by hypodermic needles (272, 19%). Suture needles also accounted for a substantial proportion of the injuries in emergency departments (41, 16%) and intensive care units (27, 11%). On in-patient units, hypodermic needles accounted for the greatest number of injuries (366, 50%), followed by butterfly needles (118, 16%) and “other hollow bore needles” (93, 13%). Almost one third of the injuries in laboratory settings involved non-needle devices including scalpels (26, 17%), and glass (20, 13%), which is included in the “all other” category.
Safety Devices

On the Annual Summary, for each injury, hospitals were encouraged to answer the question “Was it (the device) a safety device?”. For the majority of injuries reported (1,773, 54%), the answer to this question was “No”; the devices involved were not safety devices (Figure 6).

Thirty-three percent (1,072) of injuries were reported to have involved safety devices, underscoring the need to evaluate these devices and to train health care workers in their appropriate use. These data alone cannot be used to assess the efficacy of safety devices, as there is no information regarding the prevalence of safety devices in hospitals. Likewise, these data do not reveal the number of injuries that were prevented by using safety devices. Recent findings from EPINet demonstrate a marked decline in the rate of sharps injuries among nurses in teaching hospitals from 1993 – 2001 (Jagger & Perry, 2003). During this period, there was a substantial increase in the adoption of safety devices. As the number of safety devices increased, there was a rise in the proportion of injuries associated with them, as would be expected. However, the overall injury rate declined.

For some sharps devices, such as suture needles and scalpels, there are only a limited number of alternative devices with engineered sharps injury prevention features available on the market. Excluding injuries involving suture needles and scalpels changed the distribution of safety devices only slightly. The proportion of injuries with standard devices decreased by 12%, while the proportion of injuries with safety devices increased by 12%. This finding highlights the need for increased efforts to meet the federal and state requirements for use of sharps devices with sharps injury prevention features where feasible. Documentation of these situations, as required by MDPH and OSHA, is important to promote effective work-practice controls and the development of new technologies.

The proportion of injuries associated with safety devices was highest in medium hospitals (43%), followed by small sized hospitals (36%) and large hospitals (25%). (See Appendix H) The extent to which this can be explained by the variation in the types of devices used in different sized hospitals is not known.
Information as to whether or not the device involved in the injury was a safety device was provided for 2,845 of the 3,279 injuries reported (87%). Among injuries associated with suture needles where safety device information was provided, 621 (100%) occurred with standard devices (Figure 7). Regarding injuries involving scalpel blades, 180 of 195 injuries (92%) occurred with standard devices. Among the 918 injuries from hypodermic needles for which safety device information was reported, 45% involved devices reported as standard devices (416 of 918 injuries). This is the first time the proportion of injuries from standard hypodermic needles is less than the proportion of injuries from hypodermic needles with safety features (Massachusetts Department of Public Health, 2004 and 2006). Among “other hollow-bore needles”, 53% (160 of 302 with information) of injuries involving butterfly needles and 72% (93 of 130 with information) of injuries involving vacuum tubes occurred with devices reported as safety devices. It should be noted that safety devices are widely available for many of the device categories shown, such as hypodermic needles, butterfly needles, vacuum tube collection holders and needles, as well as many other types of hollow bore needles. There are, however, a few specific devices currently on the market for which there are no alternative devices with engineered sharps injury prevention features. As previously noted, MDPH and OSHA require employers to maintain documentation of situations where alternative devices are not utilized. This is essential in the promotion of effective work-practice controls and the development of new technologies.
Information about the manufacturer of the device involved in the injury was provided or was able to be ascertained from the name of the product line in 77% (2,532) of the injuries reported (Figure 8). In 12% (396) of the injuries, the manufacturer of the product was not known, and in 11% (351) there was no response.

Because information about the market share of different manufacturers and product lines was not available, it is not possible to use these data to make judgments about a particular manufacturer’s products and the efficacy of the products with respect to safety.

Data quality: Both OSHA and MDPH regulations pertaining to sharps injuries require facilities to collect and record information about the “brand” of the devices involved in the incidents. There is some legitimate confusion about whether “brand” means the name of the manufacturer or name of the product line. Technically “brand” means name of the product line. This distinction was not made clear in previous instructions to hospitals. MDPH is interested in the name of the product line as well as the manufacturer, and will clarify this on forms for the future.
Injuries occurred at various points in the course of handling needles or other sharp devices (Figure 9). After use was a dangerous time: about half of the injuries (1,603, 49%) occurred either after use and before disposal (1,105, 34%) or during or after disposal (498, 15%) of the device. Forty-two percent (1,363) occurred during use of the item. The 53 injuries (2%) that happened before use of the item involved sharps devices penetrating contaminated gloves.
How the Injury Occurred

The largest number of injuries reported (751, 23%) fell into the broadly defined category of “collision with sharp or other person”. Another 12% of injuries (387) occurred while suturing (Figure 10).

Improper disposal of sharps accounted for 8% (250) of the injuries. These included cases in which the contaminated sharps were left on the floor, in the trash, or in beds. Others cases involved sharps found in linens or laundry, in clothing, or on tables or trays.

Eight percent (247) of the injuries occurred during disposal. A majority of these (133, 4%) were reported as involving sharps containers. In 2% (71) of the injuries, the health care worker was injured by the sharp being disposed of while placing it in the sharps container. In 13 cases (<1%), the health care worker was injured by a sharp already in the container.

Five percent of the injuries (156) occurred during activation of safety devices. No information was collected regarding the failure rate of safety features; therefore it is not possible to use this information to assess the efficacy of the safety features on those devices.

It should be noted that the OSHA Bloodborne Pathogen standard states that contaminated needles shall not be recapped. In 3% (100) of the cases, injuries occurred while recapping devices.
Experimental Sharps Injury Rates by Number of Licensed Hospital Beds

The statewide rate of sharps injuries among hospital workers for this twelve month surveillance period was 18.3 sharps injuries per 100 licensed hospital beds. The annual rate of sharps injuries varied by hospital size (Figure 11). Large hospitals had the highest annual rate of 24.9 sharps injuries per 100 licensed hospital beds, followed by small and medium sized hospitals, which had annual sharps injury rates of approximately 15 sharps injuries and 13 sharps injuries per 100 licensed hospital beds, respectively. As discussed on page 7, given the limitations of hospital bed size as a denominator for assessing risks, these rates should be interpreted with caution. In comparing experience among hospitals, under-reporting must be taken into account. The extent to which high rates of reported injuries in some hospitals reflect a true higher incidence of injuries in these hospitals or better sharps injury reporting practices compared to those with low rates is not known. Comparison of rates among facilities is of limited usefulness (CDC, 2004; Perry, et. al., 2003). Hospitals evaluating their own rates should do so within the context of their own sharps injury surveillance and prevention programs.

Injuries reported by acute care hospitals accounted for 97% of all injuries reported. However, acute care hospitals account for only 79% of all licensed hospital beds. Therefore, sharps injury rates which include all licensed hospitals underestimate the risk for acute care hospitals. Sharps injury rates for acute care hospitals are presented below in order to more accurately reflect the injury rates in those settings.
Discussion

Sharps injuries are preventable and the overall goal should be their elimination. As a step in that direction, the U.S. Public Health Service has called for the reduction of sharps injuries among health care workers by 30% as a national health objective for 2010 (DHHS, 2000). Preventing sharps injuries requires the combined efforts of government agencies, employers, and equipment manufacturers, as well as health care workers. The Massachusetts Sharps Injury Surveillance System is intended to provide information to guide and evaluate these efforts in Massachusetts.

Nearly 3,300 sharps injuries were reported by Massachusetts hospitals in 2004, underscoring the need for continued efforts to reduce the incidence of these injuries. Given previously documented underreporting of sharps injuries to employee health by health care workers, this figure likely underestimates the full extent of the problem. While overall patterns are similar to NaSH and EpiNET, findings highlight a number of specific issues to be addressed in Massachusetts:

- Almost 50% of the injuries reported occurred after use of devices, including 23% which occurred either during clean up or disposal or as a result of improper disposal. Elimination of these preventable injuries will have a large impact on the incidence of sharps injuries in hospitals. (These injuries are entirely preventable.) Prevention strategies include the purchase and appropriate placement of sharps containers that allow staff to determine when containers should be emptied before they are dangerously full. It is also crucial to implement systems to regularly check containers to identify those that need to be replaced. Increased training and supervision to avoid improper disposal is needed in addition to appropriate sharps containers, and is essential to protect health care providers, support service workers and patients.

- Close to a third of the injuries reported were associated with hypodermic needles, and of these, more than 41% involved devices without sharps injury prevention features. There are a wide variety of hypodermic needles with engineered sharps injury prevention features on the market. Hospitals should evaluate their device inventory and aggressively identify, evaluate and implement use of alternative devices with engineered sharps injury prevention features.

- Blood procedures continue to account for about 20% of all injuries reported. This may be related to the device used, particularly whether or not the device was one with engineered sharps injury prevention features. As previously shown, almost a third of all injuries with vacuum tube collection holders and needles occurred with standard devices. There are a wide variety of products with safety features available for these types of devices. As mentioned earlier, injuries with hollow bore needles, particularly those used for blood procedures, are associated with a higher risk of transmission of bloodborne pathogens.

- It may be more difficult to institute change in some areas than others: the operating room setting, for example, poses unique challenges. Some devices, such as suture needles, have fewer options for engineering controls; to date, safer options for suture needles have been blunt needles, which are not appropriate for all situations. In this instance, exploring alternative methods of closing wounds may be more appropriate than finding alternative devices. The use of neutral zones in the operating room to minimize hand-to-hand transfer of sharps is an effective work practice control to reduce sharps injuries.

The Massachusetts Sharps Injury Surveillance System is a collaborative effort between the MDPH, hospitals, professional associations and community advocates. The success of the program in collecting data is a result of this collaboration. MDPH will continue to work with these groups to conduct surveillance, review exposure control activities in hospitals, and facilitate the exchange of information among hospitals about successful prevention strategies.
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Massachusetts Department of Public Health
Sharps Injury Prevention Advisory Committee

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Chapter 252 of the Acts of 2000

AN ACT RELATIVE TO NEEDLESTICK INJURY PREVENTION.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. Chapter 111 of the General Laws is hereby amended by inserting after section 53C the following section:

Section 53D. (a) Any acute or non-acute hospital licensed under this chapter shall ensure the provision of services to individuals through the use of hollow-bore needle devices or other technology that minimize the risk of injury to health care workers from hypodermic syringes or needles, in accordance with rules and regulations promulgated pursuant to subsection (b).

(b) The department shall promulgate rules and regulations requiring the use, at all acute and non-acute hospitals, of only such devices which minimize the risk of injury to health care workers from needlestick and sharps, so-called. Such rules and regulations promulgated by the department shall include the following requirements:

(1) Written exposure control plans shall be developed by each acute and non-acute hospital that include an effective procedure for identifying and selecting existing sharps prevention technology, so-called, of the types specified by the department.

(2) Sharps injury prevention technology shall be included as engineering or work practice controls, except in cases where the employer or other appropriate party can demonstrate circumstances in which the technology does not promote employee or patient safety or interferes with a medical procedure. Those circumstances shall be specified by the employer and shall include, but not be limited to, circumstances where the technology is medically contraindicated or not more effective than alternative measures used by the employer to prevent exposure incidents. In all cases the department shall make the final determination as to whether an employer or other appropriate party has demonstrated in a satisfactory manner circumstances which warrant an exemption from the inclusion of sharps injury prevention technology.

(3) Information concerning exposure incidents shall be recorded in a sharps injury log to be kept within such acute and non-acute hospitals and reported annually to the department, including but not limited to, the type and brand of device involved in the incident. Such logs shall be used as the basis for continuing quality improvement in reducing sharps injuries through the provision of education and the procurement of improved products. Such logs shall be kept confidential and shall be used only for the intended purposes of this section.

(4) Written exposure control plans shall be updated when necessary to reflect progress in sharps prevention technology as determined by the department.

(c) The department shall promulgate all rules and regulations pursuant to this section in consultation with an advisory committee composed of, but not limited to: the department's director of infectious disease, a consumer to be selected by the commissioner, a technical expert to be selected by the commissioner, and a representative from the Massachusetts Nurses Association, the Massachusetts Association of Occupational and Environmental Medicine, the Massachusetts Medical Society and the Massachusetts Hospital Association.
APPENDIX B

The department, in consultation with the advisory committee, shall compile and maintain a list of needleless systems, needles and sharps, so-called, with engineered injury protections meeting the purposes of this section. The list shall be available to assist employers in complying with rules and regulations promulgated in accordance with this section.

SECTION 2. The department of public health shall promulgate the rules and regulations required by section 53D of chapter 111 of the General Laws no later than November 1, 2000.

Approved August 17, 2000.
APPENDIX C

NOTE: This is an unofficial copy.

105 CMR 130.000 Hospital Licensure Regulations
105 CMR 130.000 is amended by adding the following new sections:

130.1001: Definitions

As used in 105 CMR 130.1001 through 130.1008 the following definitions shall apply:

“Advisory committee,” means a committee composed of, but not limited to the Department’s director of infectious disease; a consumer to be selected by the commissioner; a technical expert to be selected by the commissioner; and a representative from the Massachusetts Nurses Association, the New England Association of Occupational and Environmental Medicine, the Massachusetts Medical Society and the Massachusetts Hospital Association.

“Commissioner” means the Commissioner of the Massachusetts Department of Public Health.

“Department” means the Massachusetts Department of Public Health.

“Engineering and work practice controls” mean controls such as, but not limited to, sharps disposal containers, needleless systems, and sharps with engineered injury protections, that isolate or remove the bloodborne pathogens hazard from the workplace.

“Exposure Control Plan” means a plan that includes an effective procedure for identifying and selecting existing sharps injury prevention technology.

“Exposure Incident” means a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that result from the performance of an employee’s duties.

“Health care worker” means all workers employed by the hospital, working within the hospital but employed by other agencies, those providing patient care services without pay such as students, or providers who are delivering care but receiving compensation from sources other than the hospital.

“Hospital” means any hospital licensed by the Department pursuant to M.G.L. c.111, § 51.

“Reportable Exposure incident” means an exposure incident a result of events that pierce the skin or mucus membranes.

“Sharp” means 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, broken capillary tubes and exposed ends of dental wires.

“Sharps injury log” means a log to be kept within acute and non-acute hospitals that records information concerning exposure incidents, including but not limited to, the type and brand of device involved in the incident.

“Sharps injury prevention technology” means devices or other technology that minimizes the risk of injury to health care workers from hypodermic syringes, needles or other sharps.

130.1002: Minimizing Risk of Injury
Every hospital shall:

(A) Ensure the provision of services to individuals through the use of safe needle devices or other technology that minimizes the risk of injury to health care workers from hypodermic syringes, needles, and sharps; and

(B) Except as provided in 105 CMR 130.1005; use only such devices designed to reduce risk of percutaneous exposure to bloodborne pathogens.

130.1003: Written Exposure Control Plans

Hospitals shall develop written exposure control plans that include an effective procedure for identifying and selecting existing sharps injury prevention technology consistent with the federal regulations concerning occupational exposure to bloodborne pathogens, 29 CFR 1910.1030 et seq. the Occupational Safety & Health Administration’s (OSHA) Occupational Exposure to Bloodborne Pathogens standards. Written exposure control plans shall be updated when necessary to reflect progress in sharps injury prevention technology as determined by the Department.

130.1004: Engineering and Work Practice Controls

Hospitals shall include sharps injury prevention technology as engineering and work practice controls to isolate or remove the bloodborne pathogens hazard from the workplace consistent with the federal regulations concerning occupational exposure to bloodborne pathogens, 29 CFR 1910.1030 et seq.

130.1005: Exemption from the Inclusion of Sharps Injury Prevention Technology

(A) Sharps injury prevention technology may be excluded as engineering and work practice controls in cases where the hospital or other appropriate party can demonstrate circumstances in which the technology does not promote employee or patient safety or interferes with a medical procedure.

(B) Where sharps injury prevention technology is not utilized, the hospital shall specify those circumstances, which shall include but not be limited to, situations where the technology is medically contraindicated or not more effective than alternative measures used by the hospital to prevent exposure incidents.

(C) In all cases the Department shall make the final determination as to whether a hospital or other appropriate party has demonstrated in a satisfactory manner those circumstances which warrant an exemption from the inclusion of sharps injury prevention technology.

130.1006: Sharps Injury Log

(A) Information concerning exposure incidents shall be recorded in a sharps injury log that includes, but is not limited to, the type and brand of device involved in the incident, the department or work area where the exposure incident occurred, and an explanation of how the incident occurred.

(B) Sharps injury logs shall be kept within the hospital and shall be used as the basis for continuing quality improvement in reducing sharps injuries through the provision of education and the procurement of improved products; and,
(C) Sharps injury logs shall be kept confidential.

130.1007: Reporting

Every licensed acute and non-acute care hospital shall report annually to the Department information from its sharps injury logs and such other information as the Department may require concerning exposure incidents. The Department shall supply each reporting hospital with guidelines indicating the specific data elements to be submitted.

130.1008: Advisory Committee

The Department shall convene an advisory committee composed of, but not limited to the Department’s director of infectious disease; a consumer to be selected by the commissioner; a technical expert to be selected by the commissioner; and a representative from the Massachusetts Nurses Association, the New England Association of Occupational and Environmental Medicine, the Massachusetts Medical Society and the Massachusetts Hospital Association.

130.1009: List of Needleless Systems

The Department, in consultation with the advisory committee, shall compile, maintain and periodically update a list of needleless systems, with engineered injury protections meeting the purposes set forth in M.G.L. c. 111, § 53D. The list shall be available as a resource to assist hospitals in complying with these regulations.
MDPH Data Elements to be Recorded for each Exposure Incident

Those items in bold are required to be recorded by both OSHA and MDPH. The additional items are strongly recommended by MDPH to be recorded. The checks in the left-hand column identify the subset of data elements that should be reported annually to MDPH for each exposure incident. See also Annual Summary of Sharps Injuries. The items in bold are those data elements which employers are required to collect as outlined in the OSHA Bloodborne Pathogen Standard (29 CFR 1910.1030) and the OSHA Recordkeeping Standard (29 CFR 1904).

<table>
<thead>
<tr>
<th>To be reported to MDPH annually</th>
<th>Data elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>√</td>
<td>Employer</td>
</tr>
<tr>
<td>√</td>
<td>Unique Incident Number</td>
</tr>
<tr>
<td>√</td>
<td>Employment status of exposed health care worker (temp, agency employee, pool nurse, contractor, employee)</td>
</tr>
<tr>
<td>√</td>
<td>Date of incident</td>
</tr>
<tr>
<td></td>
<td>Time of incident</td>
</tr>
<tr>
<td></td>
<td>Time work shift began</td>
</tr>
<tr>
<td>√</td>
<td>Occupation</td>
</tr>
<tr>
<td>√</td>
<td>Department or work area in which the exposure incident occurred</td>
</tr>
<tr>
<td>√</td>
<td>Device or item that was involved in the injury</td>
</tr>
<tr>
<td>√</td>
<td>Brand and model of device</td>
</tr>
<tr>
<td>√</td>
<td>Was the device a safety device?</td>
</tr>
<tr>
<td>√</td>
<td>Purpose or procedure for which the sharp was intended or used</td>
</tr>
<tr>
<td>√</td>
<td>How the incident occurred</td>
</tr>
<tr>
<td></td>
<td>Health care worker’s recommendations to prevent similar injuries</td>
</tr>
</tbody>
</table>
This form meets the requirements of recording sharps injuries under M.G.L. 105 CMR 130.1001 et seq. Please complete this form with the exposed health care worker.  

**REQUIRED DATA ELEMENTS FOR RECORDING**

### Massachusetts Department of Public Health

**Bloodborne Pathogen Exposure Incident Recording Form**

<table>
<thead>
<tr>
<th>Employer:*</th>
<th>Unique Exposure Incident Number:*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed Worker’s Name: (or unique ID number)</td>
<td>OSHA Recordable:</td>
</tr>
<tr>
<td>Status of Exposed Worker: □ Employee □ Volunteer □ Student □ Non Employee Practitioner □ Temp / Contract □ Other _________</td>
<td></td>
</tr>
<tr>
<td>Time Work: am pm</td>
<td>Shift Began:* : pm</td>
</tr>
<tr>
<td>Date of Incident:* /</td>
<td>Time of Incident:* : am pm</td>
</tr>
<tr>
<td>Date Reported:* /</td>
<td>Time Reported:* : am pm</td>
</tr>
<tr>
<td>Type of Exposure:*</td>
<td>Type of Fluid:</td>
</tr>
<tr>
<td>Body Part Injured:</td>
<td>Personal Protective Equipment Worn by Worker at Time of Exposure:</td>
</tr>
<tr>
<td>Occupation:*</td>
<td></td>
</tr>
<tr>
<td>Department or Work Area Where Exposure Incident Occurred:*</td>
<td>Select all that apply</td>
</tr>
</tbody>
</table>

#### DEPARTMENT OR WORK AREA WHERE EXPOSURE INCIDENT OCCURRED:*  
Identify specific location (room number, floor etc.): ________________________________

| Ambulance | Endoscopy / | Intensive care unit | Obstetrics / gynecology ward |
| Blood bank | bronchoscopy /cytoscopy | Jail unit | Operating room |
| Central sterile supply | Exam room | Labor and delivery | Pediatrics |
| Central trash area | Hematology | Laundry room | Procedure room |
| Clinical chemistry | Histology / pathology | Medical / surgical ward | Psychiatry ward |
| Dialysis | Home health visit (home) | Microbiology | Radiology department room |
| Dental Clinic | Hospital grounds | Morgue / autopsy room | Other location _________ |
| Emergency Department | | Nursery | (specify) |

Is This the Department to Which the Worker is Regularly Assigned? □ Yes □ No □ N/A

If No, to Which Department is the Worker Regularly Assigned?
### APPENDIX E

**WHAT DEVICE OR ITEM WAS INVOLVED IN THE INJURY?***

<table>
<thead>
<tr>
<th>Hollow bore needle</th>
<th>Other sharp object</th>
<th>Suture needle</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Biopsy needle</td>
<td>□ Bone chip / chipped tooth</td>
<td>□ Curved suture needle</td>
</tr>
<tr>
<td>□ IV stylet</td>
<td>□ Bone cutter</td>
<td>□ Straight suture needle</td>
</tr>
<tr>
<td>□ Hollow-bore needle, type unknown</td>
<td>□ Bovie electrocuatery device</td>
<td></td>
</tr>
<tr>
<td>□ Huber needle</td>
<td>□ Bur</td>
<td></td>
</tr>
<tr>
<td>□ Hypodermic needle attached to a disposable syringe</td>
<td>□ Explorer</td>
<td></td>
</tr>
<tr>
<td>□ Hypodermic needle attached to IV tubing</td>
<td>□ Histology cutting blade</td>
<td></td>
</tr>
<tr>
<td>□ Prefilled cartridge syringe</td>
<td>□ Lancet</td>
<td></td>
</tr>
<tr>
<td>□ Spinal or epidural needle</td>
<td>□ Laser</td>
<td></td>
</tr>
<tr>
<td>□ Unattached hypodermic needle</td>
<td>□ Pin</td>
<td></td>
</tr>
<tr>
<td>□ Winged steel needle</td>
<td>□ Razor</td>
<td></td>
</tr>
<tr>
<td>□ Winged steel needle attached to a vacuum tube collection holder</td>
<td>□ Retractor</td>
<td></td>
</tr>
<tr>
<td>□ Winged steel needle attached to IV tubing</td>
<td>□ Scaler / curette</td>
<td></td>
</tr>
<tr>
<td>□ Vacuum tube collection holder / needle</td>
<td>□ Scalpel blade</td>
<td></td>
</tr>
<tr>
<td>□ Other type of hollow bore needle</td>
<td>□ Sharp object, type unknown</td>
<td></td>
</tr>
<tr>
<td>_____________________ (Specify)</td>
<td>□ Tenaculum</td>
<td></td>
</tr>
<tr>
<td>□ Other type of sharp object</td>
<td>□ Trocar</td>
<td></td>
</tr>
<tr>
<td>_____________________ (Specify)</td>
<td>□ Wire</td>
<td></td>
</tr>
<tr>
<td>□ Other device or item</td>
<td></td>
<td></td>
</tr>
<tr>
<td>_____________________ (Specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BRAND / MODEL OF DEVICE:**

**WAS IT A SAFETY DEVICE?**  □ Yes   □ No   □ Unknown

**IF YES, WHEN DID THE INJURY OCCUR?**

| □ Before activation of safety feature | □ Safety feature failed; after activation | □ Other | |
| □ During activation of safety feature | □ Safety feature not activated (specify) | | |
| □ Safety feature improperly activated | □ Passive safety feature, activation not required | | |
| □ Safety feature failed; after activation | | | |
| □ Safety feature not activated | | | |
| □ Passive safety feature, activation not required | | | |

**IF YES, WAS THE WORKER TRAINED IN THE PROPER USE OF THIS SAFETY DEVICE?**  □ Yes   □ No

**PURPOSE OR PROCEDURE FOR WHICH SHARP WAS USED OR INTENDED:**

#### Line procedures:

- □ To insert a peripheral IV line or set up a heparin lock
- □ To insert a central IV line
- □ To insert an arterial line
- □ To connect IV line (intermittent IV / piggy back / IV infusion / other IV line connection)
- □ To flush heparin / saline
- □ Other injection into IV injection site or IV port ____________________ (specify)
- □ Other line procedure ____________________ (specify)

#### Blood procedures:

- □ Percutaneous venous puncture (e.g. phlebotomy)
- □ Percutaneous arterial puncture
- □ Central of peripheral IV line or port
- □ Arterial line
- □ Dialysis / AV fistula site
- □ Umbilical vessel
- □ Fingerstick / heel stick
- □ Other blood sampling ____________________ (specify)
- □ Cutting (e.g. surgery / autopsy)
- □ During disposal
- □ Epidural / spinal anesthesia
- □ Intramuscular (IM) injection
- □ Subcutaneous / intradermal injection / skin test placement
- □ Suturing
- □ Transferring blood / body fluid to another container
- □ To obtain a body fluid or tissue sample (CFS / amniotic / biopsy)
- □ To obtain laboratory specimens
- □ Other procedure (not a line procedure or blood sampling procedure) ____________________ (specify)
- □ Unknown

**Dental procedure:**

- □ During disposal
- □ Hygiene (prophy, root plane, curettage)

**Oral surgery**

- □ Simple Extraction
- □ Surgical Extraction
- □ Fracture Reduction
- □ Other ____________________ (specify)
- □ Unknown

**Orthodontic procedure**

- □ Periodontal surgery
- □ Restorative(amalgam, composite, crown)
- □ Root canal
- □ Other ____________________ (specify)
- □ Unknown

**Where did the injury occur?**

- □ Inside the patient’s mouth
- □ Outside the patient’s mouth
- □ Unknown
### APPENDIX E

**How Did the Injury Occur?**

Select up to two

<table>
<thead>
<tr>
<th>During use of the item</th>
<th>After use, before disposal</th>
<th>During or after disposal of item</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Before use of the item</td>
<td>□ Activating safety device</td>
<td>□ Collided with co-worker or other person</td>
</tr>
<tr>
<td>□ Collided with co-worker or other person</td>
<td>□ Cap fell off after recapping</td>
<td>□ Collided with sharp during / after disposal</td>
</tr>
<tr>
<td>□ Collided with sharp</td>
<td>□ Collided with co-worker or other person</td>
<td>□ In trash</td>
</tr>
<tr>
<td>□ Incising</td>
<td>□ Collided with sharp after procedure</td>
<td>□ In linen / laundry</td>
</tr>
<tr>
<td>□ Manipulating suture needle in holder</td>
<td>□ Disassembling device or equipment</td>
<td>□ In pocket / clothing</td>
</tr>
<tr>
<td>□ Palpating / Exploring</td>
<td>□ Decontamination / processing of used equipment</td>
<td>□ Left on table / tray</td>
</tr>
<tr>
<td>□ Passing or receiving equipment</td>
<td>□ During clean-up</td>
<td>□ Left in bed / mattress</td>
</tr>
<tr>
<td>□ Passing or transferring equipment</td>
<td>□ Handling equipment on a tray or stand</td>
<td>□ On floor</td>
</tr>
<tr>
<td>□ Patient moved and jarred device</td>
<td>□ In transit to disposal</td>
<td>□ Over-filled sharps container</td>
</tr>
<tr>
<td>□ Sharp object dropped</td>
<td>□ Opening / breaking glass containers</td>
<td>□ Punctured sharps container</td>
</tr>
<tr>
<td>□ Suturing</td>
<td>□ Processing specimens</td>
<td>□ Protruding from opened container</td>
</tr>
<tr>
<td>□ Tying sutures</td>
<td>□ Passing or transferring equipment</td>
<td>□ Sharp object dropped during / after disposal</td>
</tr>
<tr>
<td>□ While inserting needle in line</td>
<td>□ Recapping (missed or pierced cap)</td>
<td>□ Struck by detached I.V. line needle during / after disposal</td>
</tr>
<tr>
<td>□ While inserting needle in patient</td>
<td>□ Sharp object dropped after procedure</td>
<td>□ While manipulating container</td>
</tr>
<tr>
<td>□ While manipulating needle in line</td>
<td>□ Struck by detached I.V. line needle</td>
<td>□ While placing sharp in container, injured by sharp being disposed</td>
</tr>
<tr>
<td>□ While manipulating needle in patient</td>
<td>□ Transferring blood / bodily fluids into specimen container</td>
<td>□ While placing sharp in container, injured by sharp already in container</td>
</tr>
<tr>
<td>□ While withdrawing needle from line</td>
<td>□ Other ______________________ (specify)</td>
<td>□ Other ______________________ (specify)</td>
</tr>
<tr>
<td>□ While withdrawing needle from patient</td>
<td>□ Unknown</td>
<td>□ Unknown</td>
</tr>
<tr>
<td>□ Other ______________________ (specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Unknown</td>
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</tbody>
</table>

### NARRATIVE DESCRIPTION OF THE INCIDENT:


### WHAT SUGGESTIONS DOES THE WORKER HAVE FOR PREVENTING SIMILAR INJURIES IN THE FUTURE?

Prepared by:                                                                                       Title:   Date:
APPENDIX E

INSTRUCTIONS FOR MDPH BLOODBORNE PATHOGEN EXPOSURE INCIDENT RECORDING FORM

The Bloodborne Pathogen Exposure Incident Recording Form shall be completed with the exposed health care worker at the time that post-exposure care is given following a percutaneous injury resulting in an exposure to blood and potentially infectious bodily fluids.

Health care workers are defined as: all workers employed in the hospital, working within the hospital but employed by other agencies, those providing patient care services without pay such as students, or providers who are delivering care but receiving compensation from sources other than the hospital.

This form shall be kept in a place that protects the confidentiality of the exposed health care worker. If this information is to be shared with committees within the hospital, all measures that protect the privacy of the exposed health care worker shall be taken.

The name of the employer shall be recorded. If incident occurred in a satellite site, note site here.

A unique exposure incident number shall be assigned to each incident. This number along with the ID number should be used when referring to this incident on subsequent reports. There should be only one location where the connection is made between the ID number, incident number and the health care worker’s name. This information shall be kept confidential.

The exposed health care worker’s name or unique ID number shall be recorded. An ID number, unique to the exposed health care worker should be assigned. A social security number or employee ID number should not be used. If this form is shared with other departments, then the health care worker’s name should not be used, in order to maintain confidentiality.

Indicate if this is an OSHA recordable incident.

The employment status shall be given. If the health care worker is a paid employee of the organization, then indicate that the health care worker is an employee. If the health care worker is from an outside agency, (e.g., staffing agency) then indicate that the health care worker is a temp or a contract employee. An attending physician employed by a group practice would be classified as a non-employee practitioner.

Indicate the time that the health care worker began the work shift in which the incident occurred.

Indicate the date and time of the incident, and the date and time that the incident was reported.
APPENDIX E

Indicate the **type of exposure**.
- Percutaneous – punctured or broke the skin
- Mucous membrane – contact with mouth, eyes or other mucous membranes
- Skin – contact with unprotected skin
- Bite – bite where the skin was broken

Identify the **type of fluid** involved in the exposure. If the fluid type is not listed, describe in OTHER.

Describe the **depth of the injury**.
- Superficial – injuries such as a scratch
- Moderate – those injuries that are more serious than scratches, but not so serious that they would be considered to be deep (e.g., superficial laceration or tissue avulsion)
- Deep – injuries that touched bone or muscle contracted

Indicate whether there was **blood visible on the device** before the incident occurred.

Indicate the **body part injured**. If it is not listed, describe in OTHER.

Indicate the type of **personal protective equipment** worn by the exposed health care worker at the time of exposure. If the type of protection is not listed, describe in OTHER.

Indicate the usual **occupation** of the exposed health care worker. If the occupation is not listed, provide the occupation in OTHER.

Indicate the **department or work area where the incident occurred**. This may be different from the department in which the health care worker is regularly assigned. If the department is not listed, indicate the department in OTHER. In the space provided, indicate the specific location of the incident, such as the room number, or the floor in which the incident occurred.

Indicate whether the department in which the exposure occurred is the department to which the health care worker is regularly assigned. If the answer is no, please indicate the department to which the employee is regularly assigned.

Indicate which **device or item was involved in the injury**. If the device is not listed, indicate the type of device in the space for OTHER in the category of devices provided.

Identify the **brand and or model of the device**. It may be helpful to have the samples or pictures of the types of devices available, with the sharp covered, so that the injured employee can identify the device.

Indicate whether the **device was a safety device**. If yes, indicate **when the injury occurred**, relative to the activation of the safety feature.
APPENDIX E

If the device was a safety device, indicate whether the health care worker was trained in the use of the device. Describe the training provided (e.g., printed instructions, on the job, in-service demonstration, hands on in-service).

Identify the purpose or procedure for which the sharp was used or intended. If the purpose is not listed, indicate the purpose in OTHER within the category of uses provided.

Choose up to two items describing how the injury occurred.

Provide a narrative description of the incident, identifying the events that led up to the incident, as well as if anyone else was involved. Describe the nature of the injury and the body part injured, along with any other information about the incident.

Ask the injured health care worker to suggest ways to prevent this type of injury from occurring in the future. Suggestions may range from increased training, to changing the devices that are utilized within the facility.

The name and title of the individual filling out the recording form as well as the date it is completed shall be recorded.
# Annual Summary of Sharps Injuries

Massachusetts Department of Public Health
Occupational Health Surveillance Program

Use of the attached lists is encouraged when completing this form.
*Required data elements for reporting to MDPH.

<table>
<thead>
<tr>
<th>Date of Exposure Incident</th>
<th>Unique Exposure Incident Number</th>
<th>Employment status of exposed health care worker (e.g., Employee, temp/contract, student, volunteer, non-employee practitioner, other)</th>
<th>Occupation</th>
<th>Department or work area where the exposure incident occurred</th>
<th>Device or item that was involved in the injury</th>
<th>Was it a safety device? Y / N / Unknown</th>
<th>Brand / model of device</th>
<th>Purpose or procedure for which the sharp was used or intended</th>
<th>How did the injury occur?</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
INSTRUCTIONS for
MDPH ANNUAL SUMMARY OF SHARPS INJURIES

This form shall be either typed or computer generated. This form shall cover sharps injuries occurring in the previous calendar year and shall be sent to MDPH-OHSP by February 1.

Provide the name and license number of the hospital facility.

Provide the calendar year of the data.

Provide a contact name and phone number for the person who is responsible for the data at the hospital.

A unique exposure incident number shall be assigned to each exposure event.

Indicate the usual occupation of the exposed health care worker. Use of the list of occupations provided on the attached list is encouraged.

Identify the department or work area where the incident occurred. Use of the list of departments provided on the attached list is encouraged.

Identify the device or item involved in the exposure incident. Use of the list of devices provided on the attached list is encouraged.

Indicate whether the device involved was a safety device.

Identify the brand and model of the device involved in the exposure incident.

Identify the purpose or procedure for which the sharp was used or intended, that is what the device was being utilized for at the time of the exposure incident. Use of the list of procedures provided on the attached list is encouraged.

Indicate how the exposure incident occurred. Use of the list of possible causes provided on the attached list is encouraged.

Insert page numbers and total number of pages.
## OCCUPATION
| Attendant / orderly | Dietician | Licensed Practical Nurse | Patient care technician | Respiratory Therapist / tech |
| Attending physician | EMT / paramedic | Maintenance | Pharmacist | Safety / security |
| Central supply | Fellow | Morgue technician | Phlebotomist | Transport / messenger |
| Clerical / administrative | Fireperson / First responder | Medical student | Physician assistant | Volunteer |
| Clinical lab technician | Food service | Nurse Anesthetist | Physical therapist | Other ancillary staff (specify) |
| Counselor / social worker | Hemodialysis technician | Nursing Assistant | Public health worker | Other dental worker (specify) |
| Dentist | Housekeeper | Nurse Midwife | Psychiatric technician | Other medical staff (specify) |
| Dental assistant / tech | Intern / resident | Nurse Practitioner | Radiologic technician | Other student (specify) |
| Dental hygienist | Laundry staff | Nursing student | Registered Nurse | Other (specify) |
| Dental student | Law enforcement officer | OR / surgical technician | Researcher | Other technician (specify) |

## DEPARTMENT OR WORK AREA WHERE EXPOSURE INCIDENT OCCURRED
| Ambulance | Emergency Department | Home health visit (home) | Medical / surgical ward | Pediatrics |
| Blood bank | Endoscopy / bronchoscopy /cytoscopy | Hospital grounds | Microbiology | Procedure room |
| Central sterile supply | Exam room | Intensive care unit | Morgue / autopsy room | Psychiatry ward |
| Central trash area | Hematology | Jail unit | Nursery | Radiology department room |
| Clinical chemistry | Histology / pathology | Labor and delivery | Obstetrics / gynecology ward | Other laboratory (specify) |
| Dialysis | | Laundry room | Operating room | Other outpatient area (specify) |
| Dental Clinic | | | | Other location (specify) |

## WHAT DEVICE OR ITEM WAS INVOLVED IN THE INJURY?
| Hollow bore needle | Winged steel needle attached to a vacuum tube collection holder | Bur | Tenaculum | Suture Needle |
| Biopsy needle | Explorer | History cutting blade | Trocar | Curved suture needle |
| Hollow-bore needle, type unknown | Winged steel needle attached to IV tubing | Lancet | Wire | Straight suture needle |
| Huber needle | Laser | Pin | Other type of sharp object (specify) | Additional dental / surgical devices |
| Hypodermic needle attached to a disposable syringe | Razor | Retractor | Hypodermic needle attached to non-disposable syringe |
| Hypodermic needle attached to IV tubing | Bone chip / chipped tooth | Scaler / curette | Elevator |
| Prefilled cartridge syringe | Bone cutter | Scalpel blade | Extraction forceps |
| Spinal or epidural needle | Bovie electrocautery device | Scissors | Root canal file |
| Unattached Hypodermic needle | | Sharp object, type unknown | Slide | Rod (orthopaedic) |
| Winged steel needle | | | Specimen / test / vacuum tube | Other device or item (specify) |
### APPENDIX F

#### PURPOSE OR PROCEDURE FOR WHICH SHARP WAS USED OR INTENDED:

<table>
<thead>
<tr>
<th><strong>Line procedures:</strong></th>
<th><strong>Other procedures:</strong></th>
<th><strong>Dental procedure:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>To insert a peripheral IV line or set up a heparin lock</td>
<td>Cutting (e.g. surgery / autopsy)</td>
<td>During disposal</td>
</tr>
<tr>
<td>To insert a central IV line</td>
<td>During disposal</td>
<td>Hygiene (prophy, root plane, curettage)</td>
</tr>
<tr>
<td>To insert an arterial line</td>
<td>Epidural / spinal anesthesia</td>
<td>Oral surgery</td>
</tr>
<tr>
<td>To connect IV line (intermittent IV / piggy back / IV infusion / other IV line connection)</td>
<td>Intramuscular (IM) injection</td>
<td>Simple Extraction</td>
</tr>
<tr>
<td>To flush heparin / saline</td>
<td>Subcutaneous / intradermal injection / skin test placement</td>
<td>Surgical Extraction</td>
</tr>
<tr>
<td>Other injection into IV injection site or IV port (specify)</td>
<td>Suturing</td>
<td>Fracture Reduction</td>
</tr>
<tr>
<td>Other line procedure (specify)</td>
<td>Transferring blood / body fluid to another container</td>
<td>Other (specify)</td>
</tr>
<tr>
<td><strong>Blood procedures:</strong></td>
<td>To obtain a body fluid or tissue sample (CFS / amniotic / biopsy)</td>
<td>Unknown</td>
</tr>
<tr>
<td>Percutaneous venous puncture (e.g. phlebotomy)</td>
<td>To obtain laboratory specimens</td>
<td>Where did the injury occur?</td>
</tr>
<tr>
<td>Percutaneous arterial puncture</td>
<td>Other procedure (not a line or blood sampling procedure) (specify)</td>
<td>Inside the patient's mouth</td>
</tr>
<tr>
<td>Central of peripheral IV line or port</td>
<td>Unknown</td>
<td>Outside the patient's mouth</td>
</tr>
<tr>
<td>Arterial line</td>
<td></td>
<td>Unknown</td>
</tr>
<tr>
<td>Dialysis / AV fistula site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Umbilical vessel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finger stick / heel stick</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other blood sampling (specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### HOW DID THE INJURY OCCUR?  Choose up to two.

<table>
<thead>
<tr>
<th><strong>Before use of the item</strong></th>
<th><strong>During use of the item</strong></th>
<th><strong>After use, before disposal</strong></th>
<th><strong>During or after disposal of item</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Activating safety device</td>
<td>Collided with co-worker or other person</td>
<td>Cap fell off after recapping</td>
<td>Collided with co-worker or other person</td>
</tr>
<tr>
<td>Cap fell off after recapping</td>
<td>Collided with sharps during / after disposal</td>
<td>Collided with sharp after procedure</td>
<td>In trash</td>
</tr>
<tr>
<td>Collided with co-worker or other person</td>
<td>In linen / laundry</td>
<td>Collided with sharp after procedure</td>
<td>In pocket / clothing</td>
</tr>
<tr>
<td>Collided with sharp after procedure</td>
<td>Left on table / tray</td>
<td>Disassembling device or equipment</td>
<td>Left in bed / mattress</td>
</tr>
<tr>
<td>Disassembling device or equipment</td>
<td></td>
<td>Decontamination / processing of used equipment</td>
<td>On floor</td>
</tr>
<tr>
<td>Decontamination / processing of used equipment</td>
<td></td>
<td>During clean-up</td>
<td>Over-filled sharps container</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Handling equipment on a tray or stand</td>
<td>Punctured sharps container</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Protruding from opened container</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sharp object dropped during / after disposal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Struck by detached I.V. line needle during / after disposal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In transit to disposal</td>
<td>While manipulating container</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>While placing sharp in container, injured by sharp being disposed</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>While placing sharp in container, injured by sharp already in container</td>
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<td></td>
<td>While withdrawing needle from patient, injured by sharp already in container</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>While withdrawing needle from patient, injured by sharp already in container</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Opening / breaking glass containers</td>
<td>Other (specify)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Processing specimens</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Passing or transferring equipment</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recapping (missed or pierced cap)</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sharp object dropped after procedure</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Struck by detached I.V. line needle</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transferring blood / bodily fluids into specimen container</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other (specify)</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

### Before use of the item

<table>
<thead>
<tr>
<th><strong>Dental procedure:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown</td>
</tr>
</tbody>
</table>

| **Other (specify) | Unknown |
| Unknown |

| **Unknown** |
| Unknown |

| **Unknown** |
| Unknown |

| **Unknown** |
| Unknown |
### Table G-1

**Work Status of Injured Worker**

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee</td>
<td>2,776</td>
<td>85</td>
</tr>
<tr>
<td>Non-Employee Practitioner</td>
<td>310</td>
<td>9</td>
</tr>
<tr>
<td>Student</td>
<td>83</td>
<td>3</td>
</tr>
<tr>
<td>Temp / Contract</td>
<td>35</td>
<td>1</td>
</tr>
<tr>
<td>Volunteer</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>--</td>
</tr>
<tr>
<td>Not answered</td>
<td>71</td>
<td>2</td>
</tr>
<tr>
<td><strong>State Total</strong></td>
<td>3,279</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Table G-2

**Occupation of Injured Worker**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse</td>
<td>1,279</td>
<td>39%</td>
</tr>
<tr>
<td>RN or LPN</td>
<td>1,128</td>
<td>34</td>
</tr>
<tr>
<td>Nursing Assistant</td>
<td>59</td>
<td>2</td>
</tr>
<tr>
<td>Patient Care Technician</td>
<td>41</td>
<td>1</td>
</tr>
<tr>
<td>Nurse Practitioner</td>
<td>19</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Nurse Anesthetist</td>
<td>9</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Nursing Student</td>
<td>9</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Home Health Aide</td>
<td>9</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Nurse Midwife</td>
<td>5</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Physician</td>
<td>1,068</td>
<td>33%</td>
</tr>
<tr>
<td>Intern / Resident</td>
<td>476</td>
<td>15</td>
</tr>
<tr>
<td>MD</td>
<td>372</td>
<td>11</td>
</tr>
<tr>
<td>Medical Student</td>
<td>66</td>
<td>2</td>
</tr>
<tr>
<td>Fellow</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>Physician Assistant</td>
<td>44</td>
<td>1</td>
</tr>
<tr>
<td>Surgeon</td>
<td>37</td>
<td>1</td>
</tr>
<tr>
<td>Anesthesiologist</td>
<td>9</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Radiologist</td>
<td>4</td>
<td>--</td>
</tr>
<tr>
<td>Technician</td>
<td>657</td>
<td>20%</td>
</tr>
<tr>
<td>OR / Surgical Technician</td>
<td>252</td>
<td>8</td>
</tr>
<tr>
<td>Phlebotomist</td>
<td>144</td>
<td>4</td>
</tr>
<tr>
<td>Clinical Lab Technician</td>
<td>69</td>
<td>2</td>
</tr>
<tr>
<td>Radiologic Technician</td>
<td>60</td>
<td>2</td>
</tr>
<tr>
<td>Respiratory Therapist / Tech</td>
<td>22</td>
<td>1</td>
</tr>
<tr>
<td>Hemodialysis Technician</td>
<td>6</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Other Technician</td>
<td>104</td>
<td>3</td>
</tr>
<tr>
<td><strong>Support Services</strong></td>
<td>123</td>
<td>4%</td>
</tr>
<tr>
<td>Housekeeper</td>
<td>78</td>
<td>2</td>
</tr>
<tr>
<td>Central Supply</td>
<td>27</td>
<td>1</td>
</tr>
<tr>
<td>Maintenance</td>
<td>8</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Attendant / Orderly</td>
<td>6</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Food Service</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Safety / Security</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Transport / Messenger / Porter</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Other Ancillary Staff</td>
<td>1</td>
<td>--</td>
</tr>
</tbody>
</table>
APPENDIX G

TABLE G-2

<table>
<thead>
<tr>
<th>OCCUPATION OF INJURED WORKER</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Medical Staff</td>
<td>31</td>
<td>1%</td>
</tr>
<tr>
<td>Medical Assistant</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>Physical Therapist</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Dental Staff</td>
<td>14</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Dentist</td>
<td>6</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Dental Assistant / Tech</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Dental Student</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Dental Hygienist</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>106</td>
<td>3%</td>
</tr>
<tr>
<td>EMT / Paramedic</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Clerical / Administrative</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Counselor / Social Worker</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Pharmacist</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Researcher</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Other student</td>
<td>15</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Other</td>
<td>75</td>
<td>2</td>
</tr>
<tr>
<td>Not answered</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

STATE TOTAL

<table>
<thead>
<tr>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,279</td>
<td>100%</td>
</tr>
</tbody>
</table>

TABLE G-3

<table>
<thead>
<tr>
<th>DEPARTMENT WHERE INCIDENT OCCURRED</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating and Procedure Rooms</td>
<td>1,460</td>
<td>45%</td>
</tr>
<tr>
<td>Operating room</td>
<td>1,038</td>
<td>32%</td>
</tr>
<tr>
<td>Labor and delivery</td>
<td>151</td>
<td>5</td>
</tr>
<tr>
<td>Radiology</td>
<td>139</td>
<td>4</td>
</tr>
<tr>
<td>Cardiac catheterization laboratory</td>
<td>35</td>
<td>1</td>
</tr>
<tr>
<td>Hematology / Oncology</td>
<td>29</td>
<td>1</td>
</tr>
<tr>
<td>Dialysis</td>
<td>27</td>
<td>1</td>
</tr>
<tr>
<td>Endoscopy / Bronchoscopy / Cytoscopy</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Phlebotomy room</td>
<td>5</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Procedure room, not specified</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>Inpatient units</td>
<td>732</td>
<td>22%</td>
</tr>
<tr>
<td>Medical / Surgical ward</td>
<td>570</td>
<td>17</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>29</td>
<td>1</td>
</tr>
<tr>
<td>Obstetrics / Gynecology</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Psychiatry ward</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>Nursery</td>
<td>16</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Specific ward, type unknown**</td>
<td>8</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Patient room, ward unspecified</td>
<td>65</td>
<td>2</td>
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</tbody>
</table>

Emergency Department

<table>
<thead>
<tr>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>263</td>
<td>8%</td>
</tr>
</tbody>
</table>
### APPENDIX G

**TABLE G-3**

<table>
<thead>
<tr>
<th>DEPARTMENT WHERE INCIDENT OCCURRED</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intensive Care Units</strong></td>
<td>248</td>
<td>8%</td>
</tr>
<tr>
<td>Intensive care unit</td>
<td>231</td>
<td>7%</td>
</tr>
<tr>
<td>Post anesthesia care unit</td>
<td>17</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Outpatient areas</strong></td>
<td>171</td>
<td>5%</td>
</tr>
<tr>
<td>Home health visit</td>
<td>24</td>
<td>1%</td>
</tr>
<tr>
<td>Dental Clinic</td>
<td>19</td>
<td>1%</td>
</tr>
<tr>
<td>Ambulatory care clinic</td>
<td>9</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Other outpatient areas</td>
<td>119</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Laboratory</strong></td>
<td>156</td>
<td>5%</td>
</tr>
<tr>
<td>Histology / Pathology</td>
<td>22</td>
<td>1%</td>
</tr>
<tr>
<td>Morgue / Autopsy room</td>
<td>12</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Clinical chemistry</td>
<td>9</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Blood bank</td>
<td>6</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Microbiology</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Other laboratory</td>
<td>36</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Other areas</strong></td>
<td>248</td>
<td>8%</td>
</tr>
<tr>
<td>Rehabilitation unit</td>
<td>34</td>
<td>1%</td>
</tr>
<tr>
<td>Central Sterile Supply</td>
<td>30</td>
<td>1%</td>
</tr>
<tr>
<td>Exam room</td>
<td>17</td>
<td>1%</td>
</tr>
<tr>
<td>Dermatology</td>
<td>15</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Anesthesia</td>
<td>9</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Pain clinic</td>
<td>7</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Employee health / Infection control</td>
<td>5</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>5</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Detox unit</td>
<td>3</td>
<td>--</td>
</tr>
<tr>
<td>Central trash area</td>
<td>2</td>
<td>--</td>
</tr>
<tr>
<td>Ambulance</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Jail unit</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Laundry room</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Long term care</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Other location</td>
<td>113</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Unknown / Not answered</strong></td>
<td>1</td>
<td>--%</td>
</tr>
<tr>
<td><strong>STATE TOTAL</strong></td>
<td>3,279</td>
<td>100%</td>
</tr>
</tbody>
</table>
## APPENDIX G

### TABLE G-4

<table>
<thead>
<tr>
<th>PROCEDURE FOR WHICH DEVICE WAS USED</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Injection</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subcutaneous injection</td>
<td>370</td>
<td>11</td>
</tr>
<tr>
<td>Intramuscular injection</td>
<td>63</td>
<td>2</td>
</tr>
<tr>
<td>Epidural / Spinal anesthesia</td>
<td>7</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Injection, unspecified</td>
<td>314</td>
<td>10</td>
</tr>
<tr>
<td><strong>Suturing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suturing</td>
<td>725</td>
<td>22</td>
</tr>
<tr>
<td>Suture removal</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>Blood procedures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percutaneous venous puncture</td>
<td>418</td>
<td>13</td>
</tr>
<tr>
<td>Percutaneous arterial puncture</td>
<td>63</td>
<td>2</td>
</tr>
<tr>
<td>Finger stick / Heel stick</td>
<td>57</td>
<td>2</td>
</tr>
<tr>
<td>Draw blood from central or peripheral IV line or port</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>Dialysis / AV fistula site</td>
<td>14</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Draw blood from arterial line</td>
<td>8</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Draw blood from umbilical vessel</td>
<td>8</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Other blood sampling</td>
<td>35</td>
<td>1</td>
</tr>
<tr>
<td><strong>Line procedures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To insert a peripheral IV line or set up a heparin lock</td>
<td>116</td>
<td>4</td>
</tr>
<tr>
<td>Other injection into IV site / port</td>
<td>45</td>
<td>1</td>
</tr>
<tr>
<td>To flush heparin / saline</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td>To insert a central IV line</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>To insert an arterial line</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>To connect IV line</td>
<td>4</td>
<td>--</td>
</tr>
<tr>
<td>Other line procedure</td>
<td>57</td>
<td>2</td>
</tr>
<tr>
<td><strong>Making the incision</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>To obtain body fluid or tissue sample</strong></td>
<td>74</td>
<td>2</td>
</tr>
<tr>
<td><strong>Dental procedures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restorative</td>
<td>3</td>
<td>--</td>
</tr>
<tr>
<td>Dental drilling</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Hygiene</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Other dental</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transferring blood / body fluid to another container</td>
<td>23</td>
<td>1</td>
</tr>
<tr>
<td>Drilling</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>To obtain lab specimens</td>
<td>16</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Shaving</td>
<td>9</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Other procedure</td>
<td>244</td>
<td>7</td>
</tr>
<tr>
<td><strong>Unknown / Not answered</strong></td>
<td>251</td>
<td>8</td>
</tr>
<tr>
<td><strong>STATE TOTAL</strong></td>
<td>3,279</td>
<td>100%</td>
</tr>
</tbody>
</table>
# APPENDIX G

## TABLE G-5

### DEVICE INVOLVED IN THE INJURY

<table>
<thead>
<tr>
<th>Device</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypodermic needle</td>
<td>1,009</td>
<td>31%</td>
</tr>
<tr>
<td>Hypodermic needle attached to a disposable syringe</td>
<td>837</td>
<td>26</td>
</tr>
<tr>
<td>Prefilled cartridge syringe</td>
<td>59</td>
<td>2</td>
</tr>
<tr>
<td>Hypodermic needle attached to a non-disposable syringe</td>
<td>48</td>
<td>1</td>
</tr>
<tr>
<td>Unattached hypodermic needle</td>
<td>48</td>
<td>1</td>
</tr>
<tr>
<td>Hypodermic needle attached to IV tubing</td>
<td>4</td>
<td>--</td>
</tr>
<tr>
<td>Suture needle</td>
<td>722</td>
<td>22%</td>
</tr>
<tr>
<td>Curved suture needle</td>
<td>175</td>
<td>5</td>
</tr>
<tr>
<td>Straight suture needle</td>
<td>26</td>
<td>1</td>
</tr>
<tr>
<td>Suture needle, unspecified</td>
<td>521</td>
<td>16</td>
</tr>
<tr>
<td>Other hollow bore needle</td>
<td>349</td>
<td>11%</td>
</tr>
<tr>
<td>IV stylet</td>
<td>152</td>
<td>5</td>
</tr>
<tr>
<td>Huber needle</td>
<td>46</td>
<td>1</td>
</tr>
<tr>
<td>Spinal or epidural needle</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>Biopsy needle</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Hollow bore needle, type unknown</td>
<td>101</td>
<td>3</td>
</tr>
<tr>
<td>Other type of hollow bore needle</td>
<td>10</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Butterfly needle</td>
<td>335</td>
<td>10%</td>
</tr>
<tr>
<td>Winged steel needle</td>
<td>253</td>
<td>8</td>
</tr>
<tr>
<td>Winged steel needle attached to a vacuum tube collection holder</td>
<td>69</td>
<td>2</td>
</tr>
<tr>
<td>Winged steel needle attached to IV tubing</td>
<td>13</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Scalpel blade</td>
<td>229</td>
<td>7%</td>
</tr>
<tr>
<td>Vacuum tube collection holder / needle</td>
<td>143</td>
<td>4%</td>
</tr>
<tr>
<td>Vacuum tube collection holder / needle</td>
<td>117</td>
<td>4</td>
</tr>
<tr>
<td>Phlebotomy needle (other than butterfly)</td>
<td>26</td>
<td>1</td>
</tr>
<tr>
<td>Glass</td>
<td>35</td>
<td>1%</td>
</tr>
<tr>
<td>Specimen / Test / Vacuum tube</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Medication ampule / Vial / IV bottle</td>
<td>5</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Pipette</td>
<td>2</td>
<td>--</td>
</tr>
<tr>
<td>Slide</td>
<td>2</td>
<td>--</td>
</tr>
<tr>
<td>Other glass item</td>
<td>7</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Dental device or item</td>
<td>11</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Dental explorer</td>
<td>3</td>
<td>--</td>
</tr>
<tr>
<td>Dental bur</td>
<td>2</td>
<td>--</td>
</tr>
<tr>
<td>Dental needle</td>
<td>2</td>
<td>--</td>
</tr>
<tr>
<td>Scaler / Curette</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Other dental device or item</td>
<td>3</td>
<td>--</td>
</tr>
</tbody>
</table>
### APPENDIX G

#### Other

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lancet</td>
<td>55</td>
<td>2%</td>
</tr>
<tr>
<td>Wire</td>
<td>54</td>
<td>2%</td>
</tr>
<tr>
<td>Scissors</td>
<td>28</td>
<td>1%</td>
</tr>
<tr>
<td>Pin</td>
<td>21</td>
<td>1%</td>
</tr>
<tr>
<td>Forceps</td>
<td>20</td>
<td>1%</td>
</tr>
<tr>
<td>Retractor</td>
<td>20</td>
<td>1%</td>
</tr>
<tr>
<td>Razor</td>
<td>17</td>
<td>1%</td>
</tr>
<tr>
<td>Drill bit</td>
<td>15</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Bovie electrocautery device</td>
<td>13</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Trocar</td>
<td>13</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Bone cutter</td>
<td>7</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Bone chip / chipped tooth</td>
<td>2</td>
<td>--</td>
</tr>
<tr>
<td>Elevator</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Tenaculum</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Other needle</td>
<td>47</td>
<td>1%</td>
</tr>
<tr>
<td>Other type of sharp object</td>
<td>65</td>
<td>2%</td>
</tr>
</tbody>
</table>

| Unknown / Not answered              | 65 | 2%  |

**STATE TOTAL** 3,279 100%

---

#### TABLE G-6

<table>
<thead>
<tr>
<th>SAFETY DEVICE</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>1,773</td>
<td>54%</td>
</tr>
<tr>
<td>Yes</td>
<td>1,072</td>
<td>33%</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>434</td>
<td>13%</td>
</tr>
</tbody>
</table>

**STATE TOTAL** 3,279 100%

---

#### TABLE G-7

<table>
<thead>
<tr>
<th>WHEN THE INJURY OCCURRED</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>During Use of the Item</td>
<td>1,363</td>
<td>42%</td>
</tr>
<tr>
<td>After Use and Before Disposal</td>
<td>1,105</td>
<td>34%</td>
</tr>
<tr>
<td>During or After Disposal of the Item</td>
<td>498</td>
<td>15%</td>
</tr>
<tr>
<td>Before Use of the Item</td>
<td>53</td>
<td>2%</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>260</td>
<td>8%</td>
</tr>
</tbody>
</table>

**STATE TOTAL** 3,279 100%
## APPENDIX G

### TABLE G-8

<table>
<thead>
<tr>
<th>HOW THE INJURY OCCURRED</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collision with worker or sharp</td>
<td>751</td>
<td>23%</td>
</tr>
<tr>
<td>Collided with sharp</td>
<td>332</td>
<td>10</td>
</tr>
<tr>
<td>Collided with sharp after procedure</td>
<td>272</td>
<td>8</td>
</tr>
<tr>
<td>Collided with coworker or other person</td>
<td>147</td>
<td>4</td>
</tr>
<tr>
<td>Suturing</td>
<td>387</td>
<td>12%</td>
</tr>
<tr>
<td>Suturing</td>
<td>345</td>
<td>11</td>
</tr>
<tr>
<td>Manipulating suture needle in holder</td>
<td>31</td>
<td>1</td>
</tr>
<tr>
<td>Tying suture</td>
<td>11</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Improper disposal</td>
<td>250</td>
<td>8%</td>
</tr>
<tr>
<td>In trash</td>
<td>78</td>
<td>2</td>
</tr>
<tr>
<td>Left on table / tray</td>
<td>58</td>
<td>2</td>
</tr>
<tr>
<td>Left in bed / mattress</td>
<td>36</td>
<td>1</td>
</tr>
<tr>
<td>On floor</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>In pocket / clothing</td>
<td>10</td>
<td>&lt;1</td>
</tr>
<tr>
<td>In linen / laundry</td>
<td>3</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Improper disposal, unspecified</td>
<td>45</td>
<td>1</td>
</tr>
<tr>
<td>During sharps disposal</td>
<td>247</td>
<td>8%</td>
</tr>
<tr>
<td>Collided with sharp during / after disposal</td>
<td>81</td>
<td>2</td>
</tr>
<tr>
<td>While placing sharp in container, injured by sharp being disposed</td>
<td>71</td>
<td>2</td>
</tr>
<tr>
<td>In transit to disposal</td>
<td>33</td>
<td>1</td>
</tr>
<tr>
<td>Protruding from opened container</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>Overfilled sharps container</td>
<td>14</td>
<td>&lt;1</td>
</tr>
<tr>
<td>While placing sharp in container, injured by sharp already in container</td>
<td>13</td>
<td>&lt;1</td>
</tr>
<tr>
<td>While manipulating container</td>
<td>10</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Punctured sharps container</td>
<td>4</td>
<td>&lt;1</td>
</tr>
<tr>
<td>During clean-up</td>
<td>224</td>
<td>7%</td>
</tr>
<tr>
<td>During clean-up</td>
<td>113</td>
<td>3</td>
</tr>
<tr>
<td>Disassembling device or equipment</td>
<td>74</td>
<td>2</td>
</tr>
<tr>
<td>Decontamination / Processing of used equipment</td>
<td>37</td>
<td>1</td>
</tr>
<tr>
<td>Handle / pass equipment</td>
<td>210</td>
<td>6%</td>
</tr>
<tr>
<td>Receiving / Passing / Transferring equipment</td>
<td>115</td>
<td>4</td>
</tr>
<tr>
<td>Handling equipment on tray or stand</td>
<td>80</td>
<td>2</td>
</tr>
<tr>
<td>Opening / breaking glass containers</td>
<td>15</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Patient moved and jarred device</td>
<td>175</td>
<td>5%</td>
</tr>
<tr>
<td>Activating safety device</td>
<td>156</td>
<td>5%</td>
</tr>
<tr>
<td>Manipulate needle in patient</td>
<td>121</td>
<td>4%</td>
</tr>
<tr>
<td>While withdrawing needle from patient</td>
<td>85</td>
<td>3</td>
</tr>
<tr>
<td>While inserting needle in patient</td>
<td>22</td>
<td>1</td>
</tr>
<tr>
<td>While manipulating needle in patient</td>
<td>14</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>
# APPENDIX G

## TABLE G-8

### HOW THE INJURY OCCURRED

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recap needle</td>
<td>107</td>
<td>3%</td>
</tr>
<tr>
<td>Recapping</td>
<td>100</td>
<td>3</td>
</tr>
<tr>
<td>Cap fell off after recapping</td>
<td>7</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Access IV line</td>
<td>82</td>
<td>3%</td>
</tr>
<tr>
<td>While withdrawing needle from line</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>While inserting needle in line</td>
<td>14</td>
<td>&lt;1</td>
</tr>
<tr>
<td>While manipulating needle in line</td>
<td>11</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Struck by detached IV line needle</td>
<td>7</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Failure to activate safety device</td>
<td>66</td>
<td>2%</td>
</tr>
<tr>
<td>Device malfunction</td>
<td>36</td>
<td>1%</td>
</tr>
<tr>
<td>Before use of the item</td>
<td>43</td>
<td>1%</td>
</tr>
<tr>
<td>Other</td>
<td>376</td>
<td>11%</td>
</tr>
<tr>
<td>Incising</td>
<td>66</td>
<td>2</td>
</tr>
<tr>
<td>Sharp object dropped</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>Processing specimens</td>
<td>23</td>
<td>1</td>
</tr>
<tr>
<td>Transferring blood / bodily fluids into specimen container</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>Sharp object dropped after procedure</td>
<td>9</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Palpating / Exploring</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>Other</td>
<td>230</td>
<td>7</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>48</td>
<td>1%</td>
</tr>
<tr>
<td><strong>STATE TOTAL</strong></td>
<td>3,279</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Hospital specific nomenclature provided, without specifying department**

Percentages for frequencies less than 5 were not calculated; Percentages calculated are column percents.
## APPENDIX H

### Sharps Injuries among Hospital Workers by Number of Licensed Hospital Beds, Massachusetts, 2004

<table>
<thead>
<tr>
<th>Number of Licensed Hospital Beds</th>
<th>0-100 Beds</th>
<th>101-300 Beds</th>
<th>300+ Beds</th>
<th>All Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong></td>
<td>32 hospitals</td>
<td>51 hospitals</td>
<td>16 hospitals</td>
<td>99 hospitals</td>
</tr>
<tr>
<td><strong>%</strong></td>
<td>32%</td>
<td>51%</td>
<td>16%</td>
<td>99%</td>
</tr>
</tbody>
</table>

### WORK STATUS OF INJURED WORKER

<table>
<thead>
<tr>
<th>WORK STATUS</th>
<th><strong>N</strong></th>
<th><strong>%</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee</td>
<td>220</td>
<td>79%</td>
</tr>
<tr>
<td>Non-Employee Practitioner</td>
<td>22</td>
<td>8%</td>
</tr>
<tr>
<td>Student</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>Temp / Contract</td>
<td>7</td>
<td>3%</td>
</tr>
<tr>
<td>Volunteer</td>
<td>0</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>24</td>
<td>9%</td>
</tr>
</tbody>
</table>

### OCCUPATION

<table>
<thead>
<tr>
<th>OCCUPATION</th>
<th><strong>N</strong></th>
<th><strong>%</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse</td>
<td>122</td>
<td>44%</td>
</tr>
<tr>
<td>Physician</td>
<td>60</td>
<td>22%</td>
</tr>
<tr>
<td>Technician</td>
<td>70</td>
<td>25%</td>
</tr>
<tr>
<td>Support Services</td>
<td>11</td>
<td>4%</td>
</tr>
<tr>
<td>Other Medical Staff</td>
<td>5</td>
<td>2%</td>
</tr>
<tr>
<td>Dental Staff</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>3%</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>0</td>
<td>1%</td>
</tr>
</tbody>
</table>

### DEPARTMENT WHERE INJURY OCCURRED

<table>
<thead>
<tr>
<th>DEPARTMENT WHERE INJURY OCCURRED</th>
<th><strong>N</strong></th>
<th><strong>%</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating and procedure rooms</td>
<td>122</td>
<td>44%</td>
</tr>
<tr>
<td>Inpatient units</td>
<td>59</td>
<td>21%</td>
</tr>
<tr>
<td>Emergency Department</td>
<td>20</td>
<td>7%</td>
</tr>
<tr>
<td>Intensive Care Units</td>
<td>11</td>
<td>4%</td>
</tr>
<tr>
<td>Laboratories</td>
<td>19</td>
<td>7%</td>
</tr>
<tr>
<td>Outpatient areas</td>
<td>25</td>
<td>9%</td>
</tr>
<tr>
<td>Other areas</td>
<td>21</td>
<td>8%</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>0</td>
<td>1%</td>
</tr>
</tbody>
</table>

### PROCEDURE FOR WHICH DEVICE WAS USED

<table>
<thead>
<tr>
<th>PROCEDURE FOR WHICH DEVICE WAS USED</th>
<th><strong>N</strong></th>
<th><strong>%</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection</td>
<td>56</td>
<td>20%</td>
</tr>
<tr>
<td>Suturing</td>
<td>53</td>
<td>19%</td>
</tr>
<tr>
<td>Blood procedures</td>
<td>62</td>
<td>22%</td>
</tr>
<tr>
<td>Line procedures</td>
<td>30</td>
<td>11%</td>
</tr>
<tr>
<td>Making the incision</td>
<td>18</td>
<td>7%</td>
</tr>
<tr>
<td>To obtain body fluid or tissue sample</td>
<td>4</td>
<td>2%</td>
</tr>
<tr>
<td>Dental procedures</td>
<td>0</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>36</td>
<td>13%</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>18</td>
<td>7%</td>
</tr>
</tbody>
</table>

### Percentages calculated are column percents; Percentages for frequencies less than 5 were not calculated.
### APPENDIX H

Sharps Injuries among Hospital Workers by Number of Licensed Hospital Beds, Massachusetts, 2004

<table>
<thead>
<tr>
<th>Number of Licensed Hospital Beds</th>
<th>0-100 Beds</th>
<th>101-300 Beds</th>
<th>300+ Beds</th>
<th>All Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td><strong>STATE TOTAL</strong></td>
<td>277</td>
<td>100%</td>
<td>1,182</td>
<td>100%</td>
</tr>
</tbody>
</table>

### DEVICE INVOLVED IN THE INJURY

<table>
<thead>
<tr>
<th>Device Involved in the Injury</th>
<th>0-100 Beds</th>
<th>101-300 Beds</th>
<th>300+ Beds</th>
<th>All Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypodermic needle</td>
<td>73</td>
<td>26%</td>
<td>399</td>
<td>34%</td>
</tr>
<tr>
<td>Suture needle</td>
<td>54</td>
<td>19%</td>
<td>217</td>
<td>18%</td>
</tr>
<tr>
<td>Butterfly needle</td>
<td>32</td>
<td>12%</td>
<td>164</td>
<td>14%</td>
</tr>
<tr>
<td>Scalpel blade</td>
<td>13</td>
<td>5%</td>
<td>70</td>
<td>6%</td>
</tr>
<tr>
<td>Vacuum tube collection holder / needle</td>
<td>20</td>
<td>7%</td>
<td>57</td>
<td>5%</td>
</tr>
<tr>
<td>Glass</td>
<td>3</td>
<td>--</td>
<td>11</td>
<td>1%</td>
</tr>
<tr>
<td>Dental device or item</td>
<td>2</td>
<td>--</td>
<td>3</td>
<td>--</td>
</tr>
<tr>
<td>Other hollow bore needle</td>
<td>29</td>
<td>10%</td>
<td>114</td>
<td>10%</td>
</tr>
<tr>
<td>Other</td>
<td>42</td>
<td>15%</td>
<td>124</td>
<td>10%</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>9</td>
<td>3%</td>
<td>23</td>
<td>2%</td>
</tr>
<tr>
<td><strong>STATE TOTAL</strong></td>
<td>277</td>
<td>100%</td>
<td>1,182</td>
<td>100%</td>
</tr>
</tbody>
</table>

### SAFETY DEVICE

<table>
<thead>
<tr>
<th>Safety Device</th>
<th>0-100 Beds</th>
<th>101-300 Beds</th>
<th>300+ Beds</th>
<th>All Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>146</td>
<td>53%</td>
<td>584</td>
<td>49%</td>
</tr>
<tr>
<td>Yes</td>
<td>101</td>
<td>36%</td>
<td>508</td>
<td>43%</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>30</td>
<td>11%</td>
<td>90</td>
<td>8%</td>
</tr>
<tr>
<td><strong>STATE TOTAL</strong></td>
<td>277</td>
<td>100%</td>
<td>1,182</td>
<td>100%</td>
</tr>
</tbody>
</table>

### WHEN THE INJURY OCCURRED

<table>
<thead>
<tr>
<th>When the Injury Occurred</th>
<th>0-100 Beds</th>
<th>101-300 Beds</th>
<th>300+ Beds</th>
<th>All Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>During Use of the Item</td>
<td>94</td>
<td>34%</td>
<td>423</td>
<td>36%</td>
</tr>
<tr>
<td>After Use / Before Disposal</td>
<td>107</td>
<td>39%</td>
<td>444</td>
<td>38%</td>
</tr>
<tr>
<td>During or after disposal of the item</td>
<td>50</td>
<td>18%</td>
<td>209</td>
<td>18%</td>
</tr>
<tr>
<td>Before use of the item</td>
<td>6</td>
<td>2%</td>
<td>15</td>
<td>1%</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>20</td>
<td>7%</td>
<td>91</td>
<td>8%</td>
</tr>
<tr>
<td><strong>STATE TOTAL</strong></td>
<td>277</td>
<td>100%</td>
<td>1,182</td>
<td>100%</td>
</tr>
</tbody>
</table>

### HOW THE INJURY OCCURRED

<table>
<thead>
<tr>
<th>How the Injury Occurred</th>
<th>0-100 Beds</th>
<th>101-300 Beds</th>
<th>300+ Beds</th>
<th>All Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collision with worker or sharp</td>
<td>45</td>
<td>16%</td>
<td>244</td>
<td>21%</td>
</tr>
<tr>
<td>Suturing</td>
<td>30</td>
<td>11%</td>
<td>87</td>
<td>7%</td>
</tr>
<tr>
<td>Improper disposal</td>
<td>20</td>
<td>7%</td>
<td>109</td>
<td>9%</td>
</tr>
<tr>
<td>During sharps disposal</td>
<td>29</td>
<td>10%</td>
<td>99</td>
<td>8%</td>
</tr>
<tr>
<td>During clean-up</td>
<td>33</td>
<td>12%</td>
<td>86</td>
<td>7%</td>
</tr>
<tr>
<td>Handle / pass equipment</td>
<td>18</td>
<td>7%</td>
<td>76</td>
<td>6%</td>
</tr>
<tr>
<td>Patient moved / jarred device</td>
<td>19</td>
<td>7%</td>
<td>82</td>
<td>7%</td>
</tr>
<tr>
<td>Activate safety device</td>
<td>15</td>
<td>5%</td>
<td>78</td>
<td>7%</td>
</tr>
<tr>
<td>Manipulate needle in patient</td>
<td>5</td>
<td>2%</td>
<td>47</td>
<td>4%</td>
</tr>
<tr>
<td>Recap needle</td>
<td>7</td>
<td>3%</td>
<td>40</td>
<td>3%</td>
</tr>
<tr>
<td>Access IV line</td>
<td>13</td>
<td>5%</td>
<td>26</td>
<td>2%</td>
</tr>
<tr>
<td>Failure to activate safety device</td>
<td>8</td>
<td>3%</td>
<td>41</td>
<td>3%</td>
</tr>
<tr>
<td>Before use of item</td>
<td>4</td>
<td>--</td>
<td>12</td>
<td>1%</td>
</tr>
<tr>
<td>Device malfunctioned</td>
<td>4</td>
<td>--</td>
<td>21</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>23</td>
<td>8%</td>
<td>117</td>
<td>10%</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>4</td>
<td>--</td>
<td>17</td>
<td>1%</td>
</tr>
<tr>
<td><strong>STATE TOTAL</strong></td>
<td>277</td>
<td>100%</td>
<td>1,182</td>
<td>100%</td>
</tr>
</tbody>
</table>

Percentages calculated are column percents; Percentages for frequencies less than 5 were not calculated.
APPENDIX I

Sharps Injuries among Hospital Workers by Teaching Status, Massachusetts, 2004

<table>
<thead>
<tr>
<th>Teaching Status</th>
<th>Teaching All Hospitals</th>
<th>Non-teaching All Hospitals</th>
<th>All Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%*</td>
<td>N</td>
</tr>
<tr>
<td><strong>STATE TOTAL</strong></td>
<td>1,923</td>
<td>100%</td>
<td>1,356</td>
</tr>
</tbody>
</table>

**WORK STATUS OF INJURED WORKER**

<table>
<thead>
<tr>
<th>Work Status</th>
<th>Teaching</th>
<th>Non-teaching</th>
<th>All Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employee</strong></td>
<td>1,662</td>
<td>86% 1,114</td>
<td>82% 2,776</td>
</tr>
<tr>
<td><strong>Non-Employee Practitioner</strong></td>
<td>180</td>
<td>9</td>
<td>130</td>
</tr>
<tr>
<td><strong>Student</strong></td>
<td>57</td>
<td>3% 26</td>
<td>2% 83</td>
</tr>
<tr>
<td><strong>Temp / Contract</strong></td>
<td>15</td>
<td>1% 20</td>
<td>1% 35</td>
</tr>
<tr>
<td><strong>Volunteer</strong></td>
<td>1</td>
<td>-- 0</td>
<td>1% 3</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>3</td>
<td>-- 0</td>
<td>3% 3</td>
</tr>
<tr>
<td><strong>Unknown / Not answered</strong></td>
<td>5</td>
<td>&lt;1</td>
<td>66</td>
</tr>
</tbody>
</table>

**OCCUPATION**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nurse</strong></td>
<td>650</td>
<td>34% 629</td>
<td>46% 1,279</td>
<td>39%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Physician</strong></td>
<td>837</td>
<td>44% 231</td>
<td>17% 1,068</td>
<td>33%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Technician</strong></td>
<td>280</td>
<td>15% 377</td>
<td>28% 657</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Support Services</strong></td>
<td>56</td>
<td>3% 67</td>
<td>5% 123</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other Medical Staff</strong></td>
<td>15</td>
<td>1% 16</td>
<td>1% 31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dental Staff</strong></td>
<td>13</td>
<td>1% 1</td>
<td>-- 14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>71</td>
<td>4% 35</td>
<td>3% 106</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unknown / Not answered</strong></td>
<td>1</td>
<td>-- 0</td>
<td>1% 1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DEPARTMENT WHERE INJURY OCCURRED**

<table>
<thead>
<tr>
<th>Department</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating and procedure rooms</strong></td>
<td>930</td>
<td>48% 530</td>
<td>39% 1,460</td>
<td>45%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inpatient units</strong></td>
<td>380</td>
<td>20% 352</td>
<td>26% 732</td>
<td>22%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Emergency Department</strong></td>
<td>134</td>
<td>7% 129</td>
<td>10% 263</td>
<td>8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Intensive Care Units</strong></td>
<td>157</td>
<td>8% 91</td>
<td>7% 248</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Outpatient areas</strong></td>
<td>119</td>
<td>6% 52</td>
<td>4% 171</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Laboratories</strong></td>
<td>81</td>
<td>4% 75</td>
<td>6% 156</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other areas</strong></td>
<td>121</td>
<td>6% 127</td>
<td>9% 248</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unknown / Not answered</strong></td>
<td>1</td>
<td>-- 0</td>
<td>1% 1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PROCEDURE FOR WHICH DEVICE WAS USED**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Injection</strong></td>
<td>400</td>
<td>21% 354</td>
<td>26% 754</td>
<td>23%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Suturing</strong></td>
<td>484</td>
<td>25% 245</td>
<td>18% 729</td>
<td>22%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blood procedures</strong></td>
<td>316</td>
<td>16% 308</td>
<td>23% 624</td>
<td>19%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Line procedures</strong></td>
<td>166</td>
<td>9% 124</td>
<td>9% 290</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Making the incision</strong></td>
<td>159</td>
<td>8% 83</td>
<td>6% 242</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>To obtain body fluid or tissue sample</strong></td>
<td>37</td>
<td>2</td>
<td>37</td>
<td>3</td>
<td>74</td>
<td>2</td>
</tr>
<tr>
<td><strong>Dental procedures</strong></td>
<td>5 &lt;1</td>
<td>1 &lt;1</td>
<td>6 &lt;1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>217</td>
<td>11% 92</td>
<td>7% 309</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unknown / Not answered</strong></td>
<td>139</td>
<td>7% 112</td>
<td>8% 251</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**STATE TOTAL** | 1,923 | 100% | 1,356 | 100% | 3,279 | 100% |

Percentages calculated are column percents; Percentages for frequencies less than 5 were not calculated.
APPENDIX I

Sharps Injuries among Hospital Workers by Teaching Status, Massachusetts, 2004

<table>
<thead>
<tr>
<th>Teaching Status</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 hospitals</td>
<td>1,923</td>
<td>100%</td>
<td>1,356</td>
<td>100%</td>
<td>3,279</td>
<td>100%</td>
</tr>
</tbody>
</table>

DEVICES INVOLVED IN THE INJURY

<table>
<thead>
<tr>
<th>Device Type</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypodermic needle</td>
<td>545</td>
<td>28%</td>
<td>464</td>
<td>34%</td>
<td>1,009</td>
<td>31%</td>
</tr>
<tr>
<td>Suture needle</td>
<td>478</td>
<td>25</td>
<td>244</td>
<td>18</td>
<td>722</td>
<td>22</td>
</tr>
<tr>
<td>Butterfly needle</td>
<td>160</td>
<td>8</td>
<td>175</td>
<td>13</td>
<td>335</td>
<td>10</td>
</tr>
<tr>
<td>Scalpel blade</td>
<td>158</td>
<td>8</td>
<td>71</td>
<td>5</td>
<td>229</td>
<td>7</td>
</tr>
<tr>
<td>Vacuum tube collection holder / needle</td>
<td>68</td>
<td>4</td>
<td>75</td>
<td>6</td>
<td>143</td>
<td>4</td>
</tr>
<tr>
<td>Glass</td>
<td>20</td>
<td>1</td>
<td>15</td>
<td>1</td>
<td>35</td>
<td>1</td>
</tr>
<tr>
<td>Dental device or item</td>
<td>8</td>
<td>&lt;1</td>
<td>3</td>
<td>--</td>
<td>11</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Other hollow bore needle</td>
<td>213</td>
<td>11</td>
<td>136</td>
<td>10</td>
<td>349</td>
<td>11</td>
</tr>
<tr>
<td>Other</td>
<td>239</td>
<td>12</td>
<td>142</td>
<td>10</td>
<td>381</td>
<td>12</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>34</td>
<td>2</td>
<td>31</td>
<td>2</td>
<td>65</td>
<td>2</td>
</tr>
<tr>
<td><strong>STATE TOTAL</strong></td>
<td>1,923</td>
<td>100%</td>
<td>1,356</td>
<td>100%</td>
<td>3,279</td>
<td>100%</td>
</tr>
</tbody>
</table>

SAFETY DEVICE

<table>
<thead>
<tr>
<th>Device Type</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>1,116</td>
<td>58%</td>
<td>657</td>
<td>48%</td>
<td>1,773</td>
<td>54%</td>
</tr>
<tr>
<td>Yes</td>
<td>483</td>
<td>25</td>
<td>589</td>
<td>43</td>
<td>1,072</td>
<td>33</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>324</td>
<td>17</td>
<td>110</td>
<td>8</td>
<td>434</td>
<td>13</td>
</tr>
<tr>
<td><strong>STATE TOTAL</strong></td>
<td>1,923</td>
<td>100%</td>
<td>1,356</td>
<td>100%</td>
<td>3,279</td>
<td>100%</td>
</tr>
</tbody>
</table>

WHEN THE INJURY OCCURRED

<table>
<thead>
<tr>
<th>Event Type</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>During Use of the Item</td>
<td>887</td>
<td>46%</td>
<td>476</td>
<td>35%</td>
<td>1,363</td>
<td>42%</td>
</tr>
<tr>
<td>After Use / Before Disposal</td>
<td>596</td>
<td>31</td>
<td>509</td>
<td>38</td>
<td>1,105</td>
<td>34</td>
</tr>
<tr>
<td>During or after disposal of the item</td>
<td>248</td>
<td>13</td>
<td>250</td>
<td>18</td>
<td>498</td>
<td>15</td>
</tr>
<tr>
<td>Before use of the item</td>
<td>34</td>
<td>2</td>
<td>19</td>
<td>1</td>
<td>53</td>
<td>2</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>158</td>
<td>8</td>
<td>102</td>
<td>8</td>
<td>260</td>
<td>8</td>
</tr>
<tr>
<td><strong>STATE TOTAL</strong></td>
<td>1,923</td>
<td>100%</td>
<td>1,356</td>
<td>100%</td>
<td>3,279</td>
<td>100%</td>
</tr>
</tbody>
</table>

HOW THE INJURY OCCURRED

<table>
<thead>
<tr>
<th>Event Type</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
<th>N</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collision with worker or sharp</td>
<td>487</td>
<td>25%</td>
<td>264</td>
<td>19%</td>
<td>751</td>
<td>23%</td>
</tr>
<tr>
<td>Suturing</td>
<td>287</td>
<td>15</td>
<td>100</td>
<td>7</td>
<td>387</td>
<td>12</td>
</tr>
<tr>
<td>Improper disposal</td>
<td>123</td>
<td>6</td>
<td>127</td>
<td>9</td>
<td>250</td>
<td>8</td>
</tr>
<tr>
<td>During sharps disposal</td>
<td>126</td>
<td>7</td>
<td>121</td>
<td>9</td>
<td>247</td>
<td>8</td>
</tr>
<tr>
<td>During clean-up</td>
<td>122</td>
<td>6</td>
<td>102</td>
<td>8</td>
<td>224</td>
<td>7</td>
</tr>
<tr>
<td>Handle / pass equipment</td>
<td>121</td>
<td>6</td>
<td>89</td>
<td>7</td>
<td>210</td>
<td>6</td>
</tr>
<tr>
<td>Patient moved / jarred device</td>
<td>78</td>
<td>4</td>
<td>97</td>
<td>7</td>
<td>175</td>
<td>5</td>
</tr>
<tr>
<td>Activate safety device</td>
<td>71</td>
<td>4</td>
<td>85</td>
<td>6</td>
<td>156</td>
<td>5</td>
</tr>
<tr>
<td>Manipulate needle in patient</td>
<td>70</td>
<td>4</td>
<td>51</td>
<td>4</td>
<td>121</td>
<td>4</td>
</tr>
<tr>
<td>Recap needle</td>
<td>69</td>
<td>4</td>
<td>38</td>
<td>3</td>
<td>107</td>
<td>3</td>
</tr>
<tr>
<td>Access IV line</td>
<td>48</td>
<td>3</td>
<td>34</td>
<td>3</td>
<td>82</td>
<td>3</td>
</tr>
<tr>
<td>Failure to activate safety device</td>
<td>18</td>
<td>1</td>
<td>48</td>
<td>4</td>
<td>66</td>
<td>2</td>
</tr>
<tr>
<td>Before use of the item</td>
<td>27</td>
<td>1</td>
<td>16</td>
<td>1</td>
<td>43</td>
<td>1</td>
</tr>
<tr>
<td>Device malfunctioned</td>
<td>14</td>
<td>1</td>
<td>22</td>
<td>2</td>
<td>36</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>238</td>
<td>12</td>
<td>138</td>
<td>10</td>
<td>376</td>
<td>11</td>
</tr>
<tr>
<td>Unknown / Not answered</td>
<td>24</td>
<td>1</td>
<td>24</td>
<td>2</td>
<td>48</td>
<td>1</td>
</tr>
<tr>
<td><strong>STATE TOTAL</strong></td>
<td>1,923</td>
<td>100%</td>
<td>1,356</td>
<td>100%</td>
<td>3,279</td>
<td>100%</td>
</tr>
</tbody>
</table>

Percentages calculated are column percents; Percentages for frequencies less than 5 were not calculated.
APPENDIX J

Resources
Sharps Injury Surveillance and Prevention

MDPH Occupational Health Surveillance Program
http://www.mass.gov/dph/ohsp
Sharps Injury Surveillance and Prevention Project - e-mail: Sharps.Injury@state.ma.us

OSHA Subject Page for Needle Sticks
Includes Bloodborne Pathogens Standard and compliance directive

CDC-MMWR September 30, 2005 / Vol. 54 / RR-9
Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HIV and Recommendations for Post Exposure Prophylaxis
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5409a1.htm

CDC-MMWR June 29, 2001 / Vol. 50 / RR-11
Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV and HIV and Recommendations for Post Exposure Prophylaxis
http://www.cdc.gov/mmwr/PDF/rr/rr5011.pdf

CDC Division of Healthcare Quality Promotion
Workbook for Designing, Implementing, and Evaluating a Sharps Injury Prevention Program
http://www.cdc.gov/sharpsafety/

CDC Division of Healthcare Quality Promotion, Issues in Healthcare
Information related to bloodborne pathogens

CDC Division of Healthcare Quality Promotion, National Surveillance System for Health care Workers
http://www.cdc.gov/ncidod/hip/SURVEILL/nash.HTM

National Surveillance System for Health care Workers,
Summary report for data collected from June 1995 through July 1999

NIOSH Alert – Preventing Needlestick Injuries in Health care settings

JCAHO Sentinel Event Alert, Issue 22 August 2001
Preventing Needlestick and Sharps Injuries
http://www.jcaho.org/edu_pub/sealert/sea22.html

EPINet, International Health Care Worker Safety Center, University of Virginia
http://www.med.virginia.edu/medcntr/centers/epinet/

Training for Development of Innovative Control Technologies (TDICT) Project, San Francisco General Hospital
http://www.tdict.org/

Sustainable Hospitals Project, Lowell Center for Sustainable Production, University of Massachusetts Lowell
http://sustainablehospitals.org