Sharps Injuries among Massachusetts Hospital Workers

Findings from the Massachusetts Sharps Injuries Surveillance System, 2002-2009

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Background

384,325 needlestick injuries occur annually among hospital workers in the U.S. (CDC estimates)

- Risk of infection from a known positive source for:
  - HBV 6% to 30% (for those not immune to HBV)
  - HCV 1.8% (range 0% to 7%)
  - HIV 0.3%

Costs of exposures to can range from $71 to $4,838 (O’Malley, et al., ICHE, 2007)

Data source: Massachusetts Sharps Injury Surveillance System, 2002-2010
### Timeline of Massachusetts Regulations

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 1998</td>
<td>Legislation filed by MNA</td>
</tr>
<tr>
<td>August 2000</td>
<td>An Act Relative to Needlestick Injury Prevention (MA)</td>
</tr>
<tr>
<td>November 2000</td>
<td>Needlestick Safety and Prevention Act (Federal)</td>
</tr>
<tr>
<td>January 2001</td>
<td>Revised OSHA BBP standard published</td>
</tr>
<tr>
<td>April 2001</td>
<td>MDPH regulations published</td>
</tr>
</tbody>
</table>

Data source: Massachusetts Sharps Injury Surveillance System, 2002-2010
MDPH Sharps Injury Prevention Regulations
105 CMR 130.1001 et seq.

• Incorporate the use of needles / sharps devices with engineered sharps injury prevention features (SESIPs)

• Maintain a written exposure control plan
  - with procedures for selecting safer devices

• Maintain a Sharps Injury Log
  - use data for continuous quality improvement

• Report to MPDH annually

Data source: Massachusetts Sharps Injury Surveillance System, 2002-2010
SLIDING SHEATH

HINGED ARM / SNAP DOWN

RETRACTING NEEDLE

http://www.osha.gov/SLTC/etools/hospital/hazards/sharps/sharps.html#bluntingneedles
Massachusetts Sharps Injury Surveillance System

• Population under surveillance:
  All health care workers in Massachusetts hospitals licensed by MDPH

• Reportable exposure incident:
  BBP exposure that is the result of events that pierce the skin or mucous membranes

• Reporting period:
  January 1 – December 31

• Data elements:
  - Date of exposure
  - Unique exposure ID
  - Employment status
  - Occupation
  - Department
  - Device
  - Was it a safety device?
  - What is the mechanism?
  - Is it part of a prepackaged kit?
  - Manufacturer / Brand / Model
  - Purpose or procedure
  - How the injury occurred
  - Who was holding the device?

Data source: Massachusetts Sharps Injury Surveillance System, 2002-2010
Sharps Injuries among Massachusetts Hospital Workers, 2002-2009

• 100% participation by MDPH licensed hospitals

• 25,500 injuries between 2002 and 2009
  ~ 3,000 each year

• More than half (56%) of injuries occur with devices *lacking* sharps injury prevention features

Data source: Massachusetts Sharps Injury Surveillance System, 2002-2010
97% of sharps injuries occur among workers at acute care hospitals.
Sharps Injuries among Employees of Acute Care Hospitals, Massachusetts, 2002-2009, N=21,348

Data source: Massachusetts Sharps Injury Surveillance System, 2002-2010
Sharps Injuries among Employees of Acute Care Hospitals, Massachusetts, 2002-2009, N=21,348

Data source: Massachusetts Sharps Injury Surveillance System, 2002-2010
## Incident Characteristics of Sharps Injuries

<table>
<thead>
<tr>
<th>STATE TOTAL</th>
<th>21,348</th>
<th>100%^</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCCUPATION</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Nurse</td>
<td>8,787</td>
<td>41</td>
</tr>
<tr>
<td>Physician</td>
<td>6,191</td>
<td>29</td>
</tr>
<tr>
<td>Technician*</td>
<td>4,500</td>
<td>21</td>
</tr>
<tr>
<td>Other occupations</td>
<td>1,870</td>
<td>9</td>
</tr>
<tr>
<td>DEPARTMENT WHERE INCIDENT OCCURRED</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Operating and procedure rooms</td>
<td>8,668</td>
<td>41</td>
</tr>
<tr>
<td>Inpatient units</td>
<td>5,025</td>
<td>24</td>
</tr>
<tr>
<td>Emergency department</td>
<td>1,956</td>
<td>9</td>
</tr>
<tr>
<td>Intensive care units</td>
<td>1,845</td>
<td>9</td>
</tr>
<tr>
<td>Other departments</td>
<td>3,854</td>
<td>18</td>
</tr>
<tr>
<td>PROCEDURE FOR WHICH DEVICE WAS USED</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Injection</td>
<td>4,969</td>
<td>23</td>
</tr>
<tr>
<td>Suturing</td>
<td>4,109</td>
<td>19</td>
</tr>
<tr>
<td>Blood procedures</td>
<td>4,007</td>
<td>19</td>
</tr>
<tr>
<td>Other procedures</td>
<td>8,263</td>
<td>39</td>
</tr>
<tr>
<td>SHARP WITH ENGINEERED SHARPS INJURY PROTECTIONS (SESIPS)?</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>7,769</td>
<td>36</td>
</tr>
<tr>
<td>No</td>
<td>11,466</td>
<td>54</td>
</tr>
<tr>
<td>Unknown</td>
<td>2,113</td>
<td>10</td>
</tr>
</tbody>
</table>

£ Unknown / not answered / nonclassifiable are unlisted as they comprised < 7% in each category.

^ Percentage may be less than 100% due to the rounding of figures or the unlisted unknown / not answered / nonclassifiable.

* Technicians comprised clinical laboratory, hemodialysis, morgue, OR / surgical, phlebotomist, psychiatric, radiologic, and respiratory therapist / technician and other technician.

Data source: Massachusetts Sharps Injury Surveillance System, 2002-2010
Sharps Injury Rates by Occupation

Data source: Massachusetts Sharps Injury Surveillance System, 2002-2010

Physician: (-0.6%, p=0.943)

Nurse: (-6.1%, p<0.001)
Rate of Sharps Injury with **Hypodermic Needles & Syringes** & Proportion of Injuries with SESIPs v. non-SESIPs

Data source: Massachusetts Sharps Injury Surveillance System, 2002-2010

-3.3% (p < 0.001)
Rate of Sharps Injury with Suture Needles & Proportion of Injuries with SESIPs v. non-SESIPs

-2.4% (p < 0.001)

Data source: Massachusetts Sharps Injury Surveillance System, 2002-2010
Interventions

- Site visits to hospitals
  - With BHCS&Q, verify compliance or non-compliance with regulations
  - Demonstrate ways to use data
  - Work with committees & departments within hospitals
- Regional meetings with hospitals
- Provide technical assistance on prevention and surveillance
Interventions

- Presentations to labor and professional organizations
- Work with CDC and other states regarding policy and practice
- Publications in trade journals
- Outreach to manufacturers
- Collaborate with academic partners
Conclusions

- SESIPs make a difference
- Need to increase use of SESIPs
- SESIPs alone are not failsafe
  - Need:
    - better design
    - passive technology
    - training for staff
    - comprehensive program
      - surveillance
      - employee involvement in device selection
      - procurement policies to include SESIPs
      - work practice controls
      - post exposure protocols

Data source: Massachusetts Sharps Injury Surveillance System, 2002-2010
Future Directions

• Continued advocacy for use of SESIPs

• Characterize injuries with SESIPs by mechanism of sharps injury prevention feature

• Explore collection of denominators reflecting number of devices purchased

• Characterize injuries with non-SESIPs

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Occupational Health Surveillance Program

Massachusetts Sharps Injury Surveillance System

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