Safer Needle Devices: Protecting Health Care Workers
Purpose of this Presentation:

- Update statistics
- Define and discuss safer needle devices
- Examine OSHA’s position on the use of safer needle devices
The Pattern of Needlestick Injuries

• Who?
• What?
• Where?
• When?
800,000 Needlestick Injuries Occur Each Year in the United States
Needlestick Injuries Are Costly:

- Time and money to investigated the source
- Post-exposure care
- Lost work time and productivity
- Treatment of resulting illnesses
- Workers’ lives
Who Is Injured Most Frequently?
Needlestick Injuries Among Health Care Workers

Source: EPINet data, University of Virginia
Needlestick Injuries Are Underreported by Health Care Workers

Source: Harmony, 1983; Chiarello, 1992
Underreporting Reasons

• Lack of time
• Employer response
• Concern about HIV status
What Types of Devices Are Most Commonly Involved in Needlestick Injuries?
• Hollow-bore needles are the cause of injury in 68.5% of cases

Items Most Frequently Causing Sharp-Object Injuries, 1995

63 hospitals, 3,003 cases

- Syringe
- Other needle
- Suture needle
- IV stylet
- Scalpel blade
- Butterfly needle
- Phlebotomy needle
- Prefilled syringe
- Needle on IV line
- Lancet
- Glass item
- Blood gas syringe

Adapted from Ippolito et al, 1997
Where Do Most Needlestick Injuries Occur?
Location Where Puncture Injuries and Other Blood Exposures Occurred, 1995

Source: Adapted from Ippolito et al., 1997.
Which Tasks Involve the Most Injuries?
• The majority of needlesticks occur when health care workers:
  – Dispose of needles
  – Administer injections
  – Draw blood
  – Recap needles
  – Handle trash and dirty linens

Source: Chiarello, 1992
When Do Needlesticks Happen?

- After use and before disposal: 70%
- Before and during use: 20%
- During and after disposal: 10%
How Serious a Threat Are Needlestick Injuries to Health Care Workers?
800,000 Needlestick Injuries Occur Each Year in the United States
16,000 of These Are Likely to Be Contaminated by HIV

Source: American Hospital Association, 1992
Up to 80% of All Accident Exposures to Blood Are Caused by Needlestick Injuries

Source: Jagger, J., 1988
More Than 20 Pathogens Can Be Transmitted Through Sharps or Needlestick Injuries

Source: Chiarello, 1992
HBV and HCV Pose an Even Greater Risk Than HIV

Source: Centers for Disease Control and Prevention, 1991
Prevalence in the Patient Population

Source: Kalen, et. al, 1997
Occupational Risk of Hepatitis B:

- Much more transmissible than HIV
- Risk after needlestick: 2% - 40%
- 1994 - 1000 health care workers developed HBV infection
- Approximately 200 HCWs die each year

Source: CDC, 1991; 1997
Estimated Incidence of Acute Hepatitis B
United States, 1978-1995

*Provisional date
Occupational Risk of Hepatitis C:

• HCV - major cause of chronic liver disease
• No vaccine
• No effective post-exposure prophylaxis
• 85% of HCV infected people develop chronic infection

Source: CDC, 1997; NIH, 1997
Occupational Risk of HIV:

- Risk after needlestick - 1 in 300
- Exposures from needlesticks or cuts cause most infections

Source: CDC, 1991; 1996
## HCWs with Occupationally Acquired HIV/AIDS Infection

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Documented occupational transmission</th>
<th>Possible occupational transmission</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse</td>
<td>22</td>
<td>33</td>
<td>55</td>
</tr>
<tr>
<td>Laboratory technician, clinical</td>
<td>16</td>
<td>16</td>
<td>32</td>
</tr>
<tr>
<td>Physician, nonsurgical</td>
<td>6</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Health aide/attendant</td>
<td>1</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>Housekeeper/maintenance worker</td>
<td>1</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Emergency medical technician/paramedic</td>
<td>0</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Technician/therapist</td>
<td>0</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Dental worker, including dentist</td>
<td>0</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Physician, surgical</td>
<td>0</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Technician/dialysis</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Technician/surgical</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Embalmer/morgue technician</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Technician/laboratory, nonclinical</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Respiratory Therapist</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Other health care occupations</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>54</strong></td>
<td><strong>134</strong></td>
<td><strong>188</strong></td>
</tr>
</tbody>
</table>
Health Care Workers with Occupationally Acquired AIDS/HIV Infection

Personal Protective Equipment (PPE) Alone Usually Does Not Adequately Protect the Health Care Worker from Needlesticks

- PPE, such as gloves provide a barrier, but...
- Most personal protective equipment is easily penetrated by needles
UNSAFE NEEDLE DEVICES

NEEDLESTICK INJURIES
Safer Needle Devices

Engineering Controls

Built-in Safety Features

Risk Reduction

Occupational Safety & Health Administration
Do Safer Needle Devices Prevent Injury?

• Can’t eliminate all, but…
• 83% can be prevented

Source: Ippolito, et. al., 1997
Reduction in Needlestick Injuries

- Blunt suture needles
- Safer phlebotomy needles

86%  
27% to 76%

Source: MMWR, 1997
STEPS

- Analyze Data
- Evaluate Products
- Develop Criteria
- Define Priorities
- Create Team

Source: Chiarello, 1995
Source: Chiarello, 1995
Evaluating and Selecting Safer Needle Devices
Design Features of a Safer Needle Device

Protection in place before and after disposal

Integral part of device

Simple to operate

Barrier between hands and needle

Visual or audible cues

Source: FDA, 1992, 1995
Types of Safety Features

Active vs. Passive

Integrated vs. Accessory

Source: Chiarello, 1995
OSHA’s Position on Safer Needle Devices:

• Bloodborne Pathogens Standard requires use of engineering and work practice controls

• Failure to use engineering/work practice controls could result in a citation

• Devices which offer alternatives to needles are preferable
Safer Needle Devices

Use reduces risk

Are widely available

Are engineering controls
Safer Needle Devices protect workers from exposure to life-threatening diseases by preventing needlestick injuries.