Factors Affecting Compliance with the Safety Agenda

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Building the Chain of Safety: Stakeholders Summit
College of Physicians, Philadelphia

June 7, 2011
25 years of progress

1984  →  present

NEEDLESTICK TRANSMISSION OF HTLV-III FROM A PATIENT INFECTED IN AFRICA

The Lancet has received news of worrying events in a British hospital and, to preserve confidentiality, an anonymous report seems appropriate.
University Hospital, 1985

Overfilled trash

Needles in IV lines

Inappropriate trash disposal
Two Types of Advances:

1 - Pathogen-Specific
   - Hepatitis B vaccine
   - Effective therapies for HCV
   - HIV: PEP for HCWs and ARVs for patients

2 - Exposure Prevention
   - Improved sharps disposal systems
   - Appropriate personal protective equipment
   - Safety-engineered sharp devices
THE GOOD NEWS . . .
1985
12,500 US HCWs occupationally infected with HBV
250 deaths

HBV

2010

??

Of 10 cases of occupational HCV infection occurring in Italian healthcare workers from 2003-2006 “viral clearance was eventually observed in all cases (3 spontaneously, 4 following therapy during the acute phase and 3 during the chronic phase)”
Exposure Prevention

NO DATA

NO PROBLEM
Multi-hospital surveillance in U.S. begins 1993
A New Generation of Protective Devices

safety-engineered devices

conventional devices

illegal

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DATA POLICY

EPINet, OSHA, FDA, other
Pulling Levers

guidelines, regulations, legislation
Dear Colleague:

This is to alert you to the risk of needlestick injuries from the use of hypodermic needles as a connection between two pieces of intravenous (I.V.) equipment. The use of exposed hypodermic needles on I.V. administration sets or the use of syringes to access I.V. administration set ports or injection sites are unnecessary and should be avoided. Hypodermic needles should only be used in situations where there is a need to penetrate the skin.
Injury Rates from Needles on IV Lines
Before & After the 1992 FDA Safety Alert

EPINet hospitals, International Healthcare Worker Safety Center

- 1986: 84/513 injuries, 1 teaching hospital, 85% injury rate
- 1993: 14/550 injuries, 1 teaching hospital, 99.9% injury rate
- 1999: 17/4,454 injuries, 9 teaching hospitals
Dear Colleague:

The Food and Drug Administration (FDA), the National Institute for Occupational Safety and Health (NIOSH) of the Centers for Disease Control and Prevention (CDC), and the Occupational Safety and Health Administration (OSHA) want to alert you to the potential risk of injury and/or infection from bloodborne pathogens, including human immunodeficiency virus (HIV), hepatitis B and hepatitis C viruses, due to accidental breakage of glass capillary tubes...
Non-Breakable Plastic Hematocrit Tubes
IV catheter injury rates per 100,000 devices

- **1986**: 18.4 injuries per 100,000 devices (1 hospital)
- **1993**: 7.5 injuries per 100,000 devices (3 hospitals)
- **1993**: 1.2 injuries per 100,000 devices (3 hospitals)

The Needlestick Safety and Prevention Act
November 6, 2000
U.S. Estimated percent market share* of safety compared to conventional devices, 1998 – 2009

* Market share (reflects $ spent/purchase volume) and is a proxy for conversion or use

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87 hospitals; total injuries = 24,440 (excludes injuries occurring before use of device)
Device Specific Injury Rates

US EPINet 1993-2004: 87 hospitals; total injuries = 10,778. Excludes injuries occurring before use of device
Two areas where progress lags:

Operating Room
Non-hospital settings
OR versus Non-OR Injury Rates

EPINet 1993-2003: 87 hospitals; total injuries = 28,895. Excludes injuries occurring before use of device

Rate per 100 occupied beds

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A misconception about safety-engineered sharp devices
Question: What is the best safety device?

The answer is . . . .
Wrong question

The correct question is . . . .

What is the appropriate safety device for the procedure being performed?
<table>
<thead>
<tr>
<th>Safety Feature</th>
<th>IM/SC injection (complete injection)</th>
<th>IM/SC injection (partial injection*)</th>
<th>Blood drawing</th>
<th>Drug mixing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retractable needle</td>
<td>yes</td>
<td>no*</td>
<td>no**</td>
<td>not necessary</td>
</tr>
<tr>
<td>(spring-loaded or manual)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(with fixed needle)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hinged-cap needle</td>
<td>yes</td>
<td>yes</td>
<td>yes***</td>
<td>not necessary</td>
</tr>
<tr>
<td>(with removable needle)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(with fixed needle)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articulated, unfolding shield</td>
<td>yes</td>
<td>yes</td>
<td>yes***</td>
<td>not necessary</td>
</tr>
<tr>
<td>(with removable needle)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(with fixed needle)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sliding sleeve</td>
<td>yes</td>
<td>yes</td>
<td>yes**</td>
<td>not necessary</td>
</tr>
<tr>
<td>(with removable needle)</td>
<td></td>
<td></td>
<td>conditional yes, if sleeve is large enough to admit a vacuum tube</td>
<td></td>
</tr>
<tr>
<td>(with fixed needle)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* When residual fluid remains in the syringe after injection the plunger cannot be fully depressed and cannot engage the retraction mechanism.
** Safety mechanism cannot be activated before transfer of blood to a specimen container
*** Needle can be covered and removed before transfer of blood to a specimen container.

International Standardized Surveillance

Allows countries to share and compare data and to learn best practices and identify high risk practices wherever they are in use.
Figure 1. Percentage of Hollow-Bore Needle Injuries to Healthcare Workers’ Feet, by Device

(Japan and U.S. EPINet Surveillance Networks, 1996-2001)

International Fellows

Dr. Bassem Zayed, Dr. David Meya, Dr. Sydney Shampile

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Japanese colleague: Progress is slow, our steps are small
Distance traveled

Look behind you to see how far you have come.