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

THE LANCET

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. A similar report had already involved a man from Africa.
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

2010
??

HBV
U.S. Health Care Workers with Occupationally Acquired HIV/AIDS

Giuseppe Ippolito
Gabriella de Carli
Vincenzo Puro
Progress in Outcome of HCV Infections

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Injuries per 100 hospital beds</th>
<th>Hospitals</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>84/513</td>
<td>1 teaching hospital</td>
<td>85%</td>
</tr>
<tr>
<td>1993</td>
<td>14/550</td>
<td>1 teaching hospital</td>
<td>99.9%</td>
</tr>
<tr>
<td>1999</td>
<td>17/4,454</td>
<td>9 teaching hospitals</td>
<td></td>
</tr>
</tbody>
</table>
Glass Capillary Tubes:
Joint Safety Advisory About Potential Risks

February 1999

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Devices</th>
<th>Rate per 100,000</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>3 hospitals</td>
<td>1.2</td>
<td></td>
</tr>
</tbody>
</table>

*International Healthcare Worker Safety Center, University of Virginia*
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

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

International Healthcare Worker Safety Center, University of Virginia
Device Specific Injury Rates

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

Figure 3

International Healthcare Worker Safety Center, University of Virginia
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

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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?
### Appropriate applications for syringes with different safety features

<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>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>yes</td>
<td>yes</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></td>
<td></td>
</tr>
<tr>
<td>(with fixed needle)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional syringe</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>(no safety feature)</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.
EPINet Distribution Around the World Color Coded by Language
Japan Fellows Program
2000-2004

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Figure 1. Percentage of Hollow-Bore Needle Injuries to Healthcare Workers’ Feet, by Device

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

Russian Fellows September 2009

International Healthcare Worker Safety Center, University of Virginia
International Fellows

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

International Healthcare Worker Safety Center, University of Virginia
World Health Organization Project Protecting Healthcare Workers
King Saud Bin Abdulaziz University for Health Sciences
Riyadh, Saudi Arabia, August 2009

International Healthcare Worker Safety Center, University of Virginia
Congo

Columbia

Congo

Columbia
Progress this way

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

Look behind you to see how far you have come.