Consequences of NSI

- Infection/disease
- Side effects of PEP
- Other exposures
- Cost to institution
- Emotional distress of injured, family, & friends; societal
- Liability of institution, company

Infections Transmitted via Sharps Injuries during Patient Care &/or Laboratory/Autopsy

- Brucellosis
- Blastomycosis
- Cryptococcosis
- Diphtheria
- Ebola
- Gonorrhea
- Hepatitis B
- Hepatitis C
- HIV
- Herpes
- Leptospirosis
- Malaria
- M. tuberculosis
- Rocky Mtn. spotted fever
- Scrub typhus
- Streptococcus pyogenes
- Syphilis
- Toxoplasmosis
- Staphylococcus aureus
- Varicella-zoster

Additional Concerns

- Chemotherapeutic Agents
- Radioactive Agents
- Toxic Chemicals

Underreporting

- Reported injuries
- Injuries not reported
  - Overall
  - Physicians
  - Nurses
Percutaneous/mucocutaneous Injury Reporting in a Public Teaching Hospital

Objectives:
1. To determine if HCWs were reporting all exposures
2. To utilize data obtained to make appropriate interventions

Methods:
• Anonymous surveys
• Job classifications elicited
• Data collected 1992-95
• 549 surveys returned

Survey Questions
• How many needlesticks/sharps or mucocutaneous injuries have you had in the 5 years?
• Of these, how many did you report?
• If you did not report every exposure, please explain why

Results
• 245 (45%) Had no injuries
• 163 (30%) Reported all injuries
• 141 (26%) Did not report all injuries

Percentage of Underreporting:
• Overall - 46%
• Nursing - 45%
• Physicians - 80%

Reasons for NOT Reporting Exposures
• 55 (39%) - Sterile/clean needlestick
• 37 (26%) - Little/no perception of risk
• 12 (9%) - Too busy
• 11 (8%) - Dissatisfaction with follow-up procedures
• 18% - No response

Conclusions
Source: Haiduven et al, Journal of Hospital Infection, 1999
• Reasons for not reporting indicate need for more education
• Problems identified on the follow-up procedures should be addressed
• Results illustrate importance of targeting prevention efforts to specific groups, e.g. physicians
• Interventions need to target reasons for not reporting exposures

Why Report Exposures?
• Receive PEP
• Receive compensation for work-related exposures
• Contribute to more accurate risk assessments
• Include information that may have been missing (e.g., trends in MDs)
Who Conducts NSI Surveillance?

- Many hospitals do their own
- EPINet system (voluntary)
- CDC National Surveillance System for Healthcare Workers (NaSH) (voluntary)
- NaSH replaced by HPS/NHSN (voluntary)
- Needlestick Safety & Prevention Act of 2000-(NSPA) (mandatory)

Surveillance of Occupational Needlestick Injuries

Epidemiology of NSI

- Frequency (How many?)
- Distribution (What, Who, Where?)
- Determinants (Reasons)
- Consequences (covered already)

Who is Getting Exposed?


- Nurse 42%
- Physician 30%
- Tech 15%
- Other, 9%
- Student, 4%
- Maintenance/Housekeeping, 2%
- Clinical/Administration, 1%
- Dental, 1%
- Research, 1%

n = 30,945

Work Locations where Blood/Body Fluid Exposures Occurred

- Inpatient Units, 36%
- Operating Room, 29%
- Emergency Dept., 8%
- Outpatient, 8%
- Procedure rooms, 9%
- Laboratories, 4%
- Waste/Laundry/ Central Service, 1%
- Other/Unknown, 5%

n = 30,881

Frequency

- 600,000-800,000 blood exposures/year in health care settings estimated
- CDC: 384,325 in hospitals; 590,164 for both hospital & non-hospital health care workers
- 15 NaSH & 29 EPINet hospitals
- Factored 57% underreporting rate

Exposure Routes for Blood/Body Fluid Exposures* Reported to NaSH

June 1995-December 2007

- Percutaneous 82%
- Bite 1%
- Mucous membrane 14%
- Non-intact skin 3%

n = 30,945
Determinants of NSI*

- 52% during use
- 19% after use & before disposal
- 22% during or after disposal
- 27% occurred when needle inserted, moved, or removed from patient

Work practices
- Recapping needles
- Transferring/processing specimens
- Improper disposal

* of hollow-bore needles

Sharps Injuries Are Preventable

Preventability of Needlestick Injuries involving Hollow-bore Needles June 1995 to December 2007

Unsafe device available, 26%
Unnecessary needle use, 9%
Improper disposal, 9%
Safer work practice, 6%
Safer activation of safety feature, 6%

Preventability: 51%
Uncertain: 17%
Incident: 27%

n = 13,857

What types of devices are causing the exposures?

Solid sharps: 10,407 (41%)
Hollow-bore needle: 13,847 (55%)
n = 25,324

Needlestick Safety & Prevention Act (NSPA)

- The Employer must:
  - Evaluate available engineering controls (devices with ESIP)
  - Train employees on safe use & disposal
  - Review new devices annually
  - Implement new device use, as appropriate & available

(NSPA) Surveillance Requirements

- Sharps Injury Log containing at minimum:
  - Type & brand of device involved
  - Department or area of incident
  - Description of incident

Categories of Sharps Devices

- Phlebotomy devices
- Intravascular catheters
- Pre-filled medications
- Syringes
- I.V. access systems
- Miscellaneous (recapping devices, sharps containers, etc.)
Numerous Safer Needle Device Designs

Types of Devices with ESIP
- Engineered vs. Substitution
- Active
  - Two-handed
  - One-handed
- Passive

Risk of Acquiring Bloodborne Disease Post-Needlestick

What are Uses of Facility NSI Surveillance?
- Internal data re: safety devices & NSI surveillance from facilities are needed:
  - to review at regular intervals & identify trends, possible “hot spots”
  - to guide or direct educational efforts
  - to identify system problems
  - to comply with mandates vs. benchmarking

Problems with NSI Surveillance
- Lack of standardized reporting systems
- Lack of standardized definitions
- Passive surveillance
- Underreporting
- No national surveillance reports
- Important for facilities to collect own data
**Needle Safety**
- Dispose of all sharps as soon as possible and in closest container
- **DO NOT RECAP** contaminated needles!!
- Pay attention to self & others when carrying sharps
- Get help with uncooperative patients
- Use all available appropriate safety products

**Occupational BBP Exposures**
- As long as devices to access blood, risk of HBV, HCV, HIV
- ~1,000 medical devices on market
- Just because a device is designed for safety does not mean it is safe

**Challenges**
- The more we use safer needle devices, the more injuries will be caused by them- **WHY??**
- The more successful preventing NSIs, longer & more difficult to demonstrate efficacy of devices- **WHY??**

**Summary of BBP Risks***
- **HIV** = 0.3% (no preventive therapy; PEP available)
- **HCV** = 1.8% (no preventive or PEP therapy)
- **HBV** = 6-30% (HB vaccine: preventive & HB vaccine, HBIG: PEP)

*** = important