Your Best Shot: Training Your Staff to Give Safe Injections

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Program Sponsors

- New York State Department of Health

- Empire State Public Health Training Center
  - University at Albany, School of Public Health
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- No Sound? Make sure your computer speakers/sound is turned on! You may have to turn up the volume.

- If you experience any technological problems during the program, try exiting and logging in again.

- This program will be recorded and available for on demand viewing within 1 week.

- Contact info: coned@albany.edu / 518-402-0330

Handouts & CEs

- http://www.empirestatephtc.org/events.cfm
  - View and print handouts
  - CME, CNE, CECHs credits
    - evaluation and post-test required

- Viewing as a group?
  - Please submit sign in sheet via fax 518-402-1137 or email coned@albany.edu
Program Goal

To provide safe injection practices information and resources that can be incorporated into patient safety and infection control staff education activities.
Program Objectives

- Identify five components of an effective safe injections case study used as part of staff training.
- Identify one to three disciplines within the learner’s institution or practice setting that could benefit from safe injection education.
- Identify four resources the learner could use as part of a safe injections training program in their facility.

What is Injection Safety?

- A safe injection prevents:
  - Harms such as needlestick injuries
  - Transmission of infectious diseases between patients and between healthcare providers and patients
- A safe injection does not:
  - Harm the patient
  - Expose the provider to any avoidable risks
  - Result in waste that is dangerous for the community.
What are Some Examples of Unsafe Injection Practices?

- Using the same syringe to administer medication to more than one patient, even if the needle is changed.
- Accessing a medication vial with a syringe that has already been used to administer medication to a patient and then using medication from that vial for other patients.
- Accessing a bag of IV fluid with a syringe that has already been used to flush a patient’s IV catheter and then using the same bag as a common source of IV flush for more than one patient.

Source: CDC Injection Safety
http://www.cdc.gov/injectionsafety/

Myths & Facts I

Myth
- Changing the needle makes a syringe safe for re-use
- Syringes can be reused as long as injection is given through an intervening length of tubing

Fact
- Once used, both needle and syringe are contaminated and must be discarded. Microscopic backflow into the syringe can occur when removing the needle.
- Everything from the IV bag to the patient’s IV catheter is a single, interconnected unit. Distance from patient, gravity, or infusion pressure do not ensure syringe won’t be contaminated
### Myths & Facts II

<table>
<thead>
<tr>
<th>Myth</th>
<th>Fact</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ No visible blood in IV tubing or syringe means the equipment is safe for reuse.</td>
<td>➢ HBV, HCV, and HIV can be present in sufficient quantities to produce infections without visible blood.</td>
</tr>
<tr>
<td>➢ Single-dose vials with large volumes that appear to contain multiple doses can be used for more than one patient.</td>
<td>➢ Single-dose vials should not be used for more than one patient regardless of vial size or volume.</td>
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</tbody>
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### Case Study 1: Sharing syringes between patients

- New nursing graduate just off orientation
- Working on the night shift
- Needleless system and pre-filled saline syringes for flushing IV lines
Case Study 1:
Sharing syringes between patients

- Staff noticed used saline flush syringes lying on medication cart
- During orientation there was no improper use of saline syringes observed

Case Study 1:
Sharing syringes between patients

- The facility interviewed the nurse about her practices
  - Concern about re-use of the syringes
  - Nurse could not say syringes were never shared between patients
- The facility decided to notify patients
- Over 200 patients recommended to be tested for HBV, HCV, and HIV
Five Components of an Effective Safe Injection Case Study

- Infection control breach
  - What went wrong?
- Root cause
  - Why did it go wrong?
- Barrier(s) to correct procedure
  - What contributed to the breach?
  - What could have been done to stop it?
- Sequelae (potential or actual)
  - What harm was done?
- Corrective Actions
  - How can patient harm be mitigated?
  - How can similar breaches be prevented in the future?

Case Study 1:
What was the breach?

- Sharing syringes between multiple patients
Case Study 1:
What was the root cause?

- Unclear, possibilities include:
  - Nursing education and/or orientation might not have included safe injection procedures
    - Taught what to do but not what not to do and why?; lack of awareness of written procedures?
  - Belief in myths regarding the potential for syringe contamination
    - e.g., myths about lack of contamination if no back pressure on plunger, no aspiration, no needle, injection into IV tubing, etc.?
  - Syringes used for flushing contained more saline than needed for task?
  - Pressure to conserve resources?

Case Study 1:
Were there barriers to performing the correct procedure?

- None identified, possibilities include:
  - Lack of appropriate supplies?
  - Lack of understanding of supply acquisition?
  - Difficult or inconvenient to obtain supplies?
Case Study 1:
What are the sequelae?

- Potential cross-contamination between patients (e.g. bacteria, bloodborne viruses)
- Disciplinary action against healthcare provider (loss of employment, potential actions against license)
- Lawsuits
- Negative press
- Loss of trust in healthcare by consumers

Case Study 1:
What are some potential corrective actions?

- Include safe injection practices education in basic nursing education and facility orientation programs.
- Incorporate injection safety competencies into evaluations.
- Instruct what to do, and what not to do.
Why Case Studies?

- Connecting to real-life situations adds impact
  - Audiences may relate to clinical scenarios
- Knowing the recommendations may not always translate into correct clinical practice
  - Need to bridge the gap between general recommendations and specific daily practice
- Examples may help
- Important to understand consequences of unsafe practice

Why Case Studies?

- Large volume vials
  - Everyone knows single use means for one patient only, but staff using a large volume vial of medication may assume it is multi-use when it is actually single-use
Why Case Studies?

We all know that reusing a syringe on another patient is wrong, even if there is no needle or the needle is changed. Everyone knows this… right?

![Syringe Image]

Why Case Studies?

Staff may not realize that insulin pens are really syringes with removable needles.

![Insulin Pen Diagram]
Case Study 2: IV Bag as Common Source of Flush

- Nebraska, September 2002
  - Four patients diagnosed with HCV
  - Cluster reported by a gastroenterologist to Nebraska Department of Health
  - All patients had received cancer chemotherapy at one clinic
  - All had HCV genotype 3a


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Case Study 2: IV Bag as Common Source of Flush

- Clinic independently owned and operated within a hospital complex
  - Approximately 500 patients per month
  - One oncologist, a registered nurse, a certified nurse assistant, and a secretary

Case Study 2: IV Bag as Common Source of Flush

- Epi investigation revealed
  - No active infection control program
  - RN responsible for all central venous catheter (CVC) care, medication administration, and blood collection
    - Reused disposable syringes to withdraw saline solution from 500-ml bags (potentially used for 25-50 patients) after withdrawing blood from central venous catheters
  - Hospital and clinic notified of infection control concerns in February and April 2001.

- RN dismissed for infection control breaches in July 2001 (19 mos prior to outbreak identification)
- Physician oversight of practices
Case Study 2: IV Bag as Common Source of Flush

- Investigators reviewed records of 367 patients treated at the clinic between March 2000 and July 2001
- 99/367 HCV positive
  - 95/99 (96%) had detectable virus (genotype 3a)
  - All 99 had CVC flushes on the same days as one patient with prior history of HCV (genotype 3a)
- Only 20 exhibited clinical signs of HCV
- 2/99 spontaneously cleared HCV

Case Study 2: What was the breach?

- Using IV bag of fluid as a common source for multiple patients
Case Study 2:
What was the root cause?

- Unclear, possibilities include:
  - High volume clinic with one RN?
    - Pressure to cut corners related to high through-put in the clinic (trying to save time, resources, etc.)?
  - Lack of sufficient oversight of professional staff?
  - Belief in myths regarding the potential for syringe contamination (e.g., no visible blood = no contamination)?

Case Study 2:
Were there barrier(s) to the correct procedure?

- None identified, possibilities include:
  - Lack of appropriate supplies (e.g., vials of normal saline for flushing IVs)?
Case Study 2: What were the sequelae?

- Spread of HCV to multiple patients and deaths related to HCV
- Disciplinary action against healthcare providers (loss of employment, loss of license)
  - Clinic voluntarily closed October 2002
    (1 month after outbreak identification)
- Lawsuits
- Negative press
- Loss of trust in healthcare by consumers

Case Study 2: What are some corrective actions?

- Establish and maintain an effective infection control program
- Include safe injections in infection control training upon hire and at least annually thereafter
  - Include examples pertinent to audience’s practice
- Monitor the practice of those under your supervision
- Have a mechanism to recognize and address infection breaches in a timely manner
### Examples of Investigations Related to Unsafe Injections

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Practice Setting</th>
<th>Professions Involved</th>
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</thead>
<tbody>
<tr>
<td>Sharing insulin pens</td>
<td>Acute (3) and long term care (1) facilities</td>
<td>Nursing</td>
</tr>
<tr>
<td>Sharing diabetes care equipment without reprocessing</td>
<td>Long term psychiatric care facility, Adult care facility</td>
<td>Nursing</td>
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<tr>
<td>Reusing contaminated multi-use vials</td>
<td>Pain management clinic</td>
<td>MD (anesthesia)</td>
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<tr>
<td>Flu vaccine syringe reuse</td>
<td>Private practices (3)</td>
<td>MD (1 OB/GYN, 2 GP)</td>
</tr>
<tr>
<td>Allergy skin testing needle reuse</td>
<td>Clinic affiliated with hospital</td>
<td>MD (fellow)</td>
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<tr>
<td>Inadequate med prep area</td>
<td>Dialysis facility</td>
<td>MD (renal), Nursing</td>
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<tr>
<td>Improper storage of injection equipment</td>
<td>Private practice</td>
<td>MD (dermatology), Nursing</td>
</tr>
<tr>
<td>IV tubing reuse</td>
<td>Hospital (2)</td>
<td>Nursing</td>
</tr>
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### Unsafe Injection Practices and Disease Transmission

Reuse of syringes combined with the use of single-dose vials for multiple patients undergoing anesthesia can transmit infectious diseases. The syringe does not have to be used on multiple patients for this to occur.

1. A clean syringe and needle are used to draw the sedative from a new vial.
2. It is then administered to a patient who has been previously injected with hepatitis C virus (HCV). Blood from the syringe contaminates the syringe with HCV.
3. The needle is replaced, but the syringe is reused to draw additional sedative from the same vial for the same patient, contaminating the vial with HCV.
4. A clean needle and syringe are used for a second patient, but the contaminated vial is reused. Subsequent patients are now at risk for infection.
Excuses for Unsafe Injections

- We all know not to re-use needles. What’s the big fuss?
- My colleagues all do it like this, so it must be okay.
- That’s just something the government bureaucrats tell us to do, but no one really does it.
- That’s not how I trained.
- It’s wasteful and expensive; I can’t afford it.
- You can’t really transmit hepatitis that way!
- The policies in place when I came here say to do it this way, so it must be okay.

Pictures from Investigations
Opened, unlabeled vials ready for use on next patient left unattended in an exam room
Pictures from Investigations

Used needle

Full sharps container

“Clean”
“flu vaccine” syringe with 1-ml of fluid

Medication vial stored in refrigerator with staff food
Pictures from Investigations

Single-dose vial of propofol with vented spike for use on multiple patients

Resources

NYS One & Only Campaign Partner Website http://www.oneandonlycampaign.org/partner/new-york

- Healthcare provider and patient education materials
- Newsletter and links to recent alerts and advisories regarding safe injections
One & Only Campaign
Educational Materials

Resources

Centers for Disease Control and Prevention: Injection Safety Website
http://www.cdc.gov/injectionsafety/
Resources

- Contains recommendations for safe injection practices with references

Resources

CDC: Recommended Practices for Preventing Bloodborne Pathogen Transmission during Blood Glucose Monitoring and Insulin Administration in Healthcare Settings
http://www.cdc.gov/injectionsafety/blood-glucose-monitoring.html#Recommended
Resources

US Food and Drug Administration (FDA) - Information for Healthcare Professionals: Risk of Transmission of Blood-borne Pathogens from Shared Use of Insulin Pens

References

Case/Outbreak Reports:

**Bacterial Contamination**

Abe K et al. Outbreak of Burkholderia cepacia bloodstream infection at an outpatient hematology and oncology practice. *ICHE* 2007;28:1311-1313.


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Diabetes Testing

Centers for Disease Control and Prevention. Notes from the field: Deaths from acute hepatitis B virus infection associated with assisted blood glucose monitoring in an assisted-living facility – North Carolina, August-October 2010. MMWR 2011;60:182.


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References

**Medication handling**


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**Contamination of syringes/blood glucose equipment**

Hughes RR. Syringe contamination following intramuscular and subcutaneous injections. *J R Army Med Corps* 1948;87:156-68.


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Guidelines/Recommendations

Environmental survival of hepatitis viruses
Ciesek S et al. How stable is the hepatitis C virus (HCV)? Environmental stability of HCV and its susceptibility to chemical biocides. JID 2010:201 (15 June);1859-1866
Paintsil E et al. Survival of hepatitis C virus in syringes: Implication for transmission among injection drug users. JID 2010:202(1 October);984-990
Questions?

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