Injection Safety and Simulated Infusion Product Awareness

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Centers for Disease Control and Prevention

INS 2016: National Academy of Infusion Therapy
May, 15, 2016
Objectives

- Identify safe injection practices and resources.

- Discuss an adverse event associated with the infusion of unsterile simulated infusion products.

- Identify strategies to help ensure simulated infusion products are not administered to patients.
SoCal Health Clinic Patients Possibly Exposed To Hepatitis, HIV
An unidentified nurse is believed to have contaminated the IV line. Watch Glen Walker's report.

KTLA News
4:51 a.m. PST, January 12, 2011
E-mail Print Share Text

SAN PEDRO (KTLA) — A contaminated IV line is being blamed for a patient contracting Hepatitis at a San Pedro health clinic.

Officials are urging patients of the Advanced Internal Medicine Center who were treated on Aug. 18, 2010 to get tested for Hepatitis.

Nurse Reuses Syringe While Giving Flu Shots to Patients at NJ Clinic: Officials

By David Chang

Hepatitis C Danger In Your MD's Office?
Outbreaks Of Dangerous Infection Coming From An Unlikely Place
NEW YORK, Feb. 25, 2008

AnswerTips™ enabled (What's this?)
(CBS) During treatment for breast cancer in 2002, Evelyn McKnight was floored to learn that she would have to fight a second serious disease: Hepatitis C, CBS News medical correspondent Dr. Emily Senay reports.

"We were completely confounded," McKnight said. "We had no idea where I could have gotten that."

Soon her husband Tom, a family physician in Fremont, Neb., discovered some of his patients had also been infected.

"The only common denominator was that we were a cancer patients," McKnight said.
Injections without Infections

- Injections and infusions of parenteral medications are the most common invasive procedure across all of healthcare
  - Sedation/anesthesia for surgical procedures, endoscopy, and imaging/diagnostic studies
  - Spinal and intra-articular steroid injections
  - Chemotherapy
- Unsafe injection practices have been identified as the root cause of dozens of recent outbreaks
  - Hepatitis B and hepatitis C viruses
  - Bacterial infections
Unsafe Injection Practices Can Lead to Transmission of Life-Threatening Infections

**SOURCE**
Infectious person, e.g., chronic, acute

**CONTAMINATED INJECTION EQUIPMENT OR MEDICATION**

**HOST**
Susceptible, non-immune person

LIMIT OR ELIMINATE REUSE
Unsafe Injection Practices
U.S. Experience – Outbreaks and Patient Alerts

>50 recognized outbreaks
- Viral hepatitis
- Bacterial infections
- Most occurred in outpatient settings

>150,000 patients received notification advising bloodborne pathogen testing following potential exposure to unsafe injections
- 2016: ~3,000 patients notified related to injectable drug diversion by healthcare worker
- 2015: Reuse of syringe on 67 people during worksite flu clinic
- 2015: more than 1,000 patients notified related to unsafe injection practices and infection control breaches at a prolotherapy clinic

Guh et al. Medical Care 2012
99 cancer patients in Nebraska became infected with hepatitis C virus in the early 2000’s as a result of syringe reuse to access a shared bag of saline for flush procedures.
CDC Standard Precautions, 2007
Safe Injection Practices

Key elements

- Use aseptic technique when preparing and administering medications
- Never administer medications from the same syringe to multiple patients
- Do not reuse a syringe to enter a medication vial or solution
- Do not administer medications from single-dose vials or intravenous solution bags to more than one patient
- Limit the use of multi-dose vials and dedicate them to a single patient whenever possible
- Wear a surgical mask when performing spinal injections
Three things every provider needs to know about injection safety

1. Needles and syringes are single use devices. They should not be used for more than one patient or reused to draw up additional medication.

2. Do not administer medications from a single-dose vial or IV bag to multiple patients.

3. Limit the use of multi-dose vials and dedicate them to a single patient whenever possible.

Source: Centers for Disease Control and Prevention (CDC).
http://www.cdc.gov/injectionsafety/providers/provider_faqs.html
Ok to reuse a syringe?

“I’m preventing contamination and infection transmission as long as I’m…”

“…changing the needle between patients.”  FALSE

“…injecting through intervening lengths of intravenous tubing.”  FALSE

“…maintaining pressure on the plunger to prevent backflow of body fluids.”  FALSE

“…not able to observe contamination or blood.”  FALSE
Corning Hospital nurse reused syringes; tests urged for 236 patients

By John Zick
Corning Leader
Posted Feb 07, 2013 @ 03:31 PM
Last update Feb 07, 2013 @ 04:24 PM

This incident involved needless saline syringes used to flush IV tubing

Business News
DFS Force-Placed Insurance Legislation is a Joke
With Payroll Tax Back, Consumers Look to Refunds for Basic Needs

treated at Corning hospital between mid-October and late January may have been exposed to disease by a nurse who reused saline syringes.
The hospital has notified 236 people who were patients between Oct. 15 and Jan. 29 that they were potentially exposed to HIV and Hepatitis B
Not All Vials Are Created Equal

Which one of these is a multidose vial?
SINGLE-DOSE OR MULTI-DOSE?

NOT ALL VIALS ARE CREATED EQUAL.
Dozens of recent outbreaks have been associated with reuse of single-dose vials and misuse of multiple-dose vials. As a result of these incidents, patients have suffered significant harms, including death. CDC and the One & Only Campaign urge healthcare providers to recognize the differences between single-dose and multiple-dose vials and to understand appropriate use of each container type.

This information can literally save a life.

ONE NEEDLE, ONE SYRINGE, ONLY ONE TIME.
Safe Injection Practices Coalition
www.ONEandONLYcampaign.org

ONEANDONLYCAMPAIGN.ORG
FDA’s investigation into patients being injected with simulated IV fluids continues

[Updated: 04/08/15] FDA’s laboratory analysis of Wallcur’s simulated Practi-0.9% sodium chloride IV is now complete. FDA sampled 11 of Wallcur’s simulated saline solution bags and identified large amounts of endotoxin and significant bacterial contamination in the samples.

These include bacteria (e.g., *Bacillus* spp., *Brevundimonas* sp., *Pseudomonas* spp., *Rhizobium radiobacter*, *Sphingomonas koreensis*, *Sphingomonas trueperi*, *Sphingobium* sp.). It is possible that additional bacteria are present in other bags that were not included in this analysis.
Ten facilities in nine states might have administered the product to 45 patients.

- 9 adverse events reported for 25 patients
- 11 hospitalizations
- 2 deaths in patients administered the product, but unclear whether deaths were related to use of the product.
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Price</th>
<th>Description</th>
<th>Add to Cart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practi-Insulin Training Pack™</td>
<td>$59.95</td>
<td>For training. Includes 20 vials labelled Practi-Regular Insulin™ and 20 labelled Practi-NPH Insulin™. FOR TRAINING PURPOSES ONLY.</td>
<td></td>
</tr>
<tr>
<td>Practi-Dantrolene™</td>
<td>$94.95</td>
<td>For clinical training. Teaches skills of drug intervention of Malignant Hyperthermia. 100 mL vial with yellow powder.</td>
<td></td>
</tr>
<tr>
<td>Practi-Powder White™ 10 mL</td>
<td>$52.95</td>
<td>For clinical training. Is a white powder to simulate multiple drug dosages for reconstitution.</td>
<td></td>
</tr>
<tr>
<td>Practi-5% Dextrose™ 50 mL I.V. Bag</td>
<td>$3.45</td>
<td>For clinical training. Simulates 5% Dextrose 50 mL. NO FOR HUMAN OR ANIMAL USE. TRAINING PURPOSE ONLY.</td>
<td></td>
</tr>
<tr>
<td>Practi-Heparin Normal Saline™ 250 mL</td>
<td>$3.95</td>
<td>For clinical training. Simulates Heparin Normal Saline 250,000 USP units. NO FOR HUMAN OR ANIMAL USE. TRAINING PURPOSE ONLY.</td>
<td></td>
</tr>
<tr>
<td>Practi-Lactated Ringer’s™ 1000 mL</td>
<td>$4.95</td>
<td>For clinical training. Simulates 1000 mL IV bag of Lactated Ringer’s solution. NO FOR HUMAN OR ANIMAL USE. TRAINING PURPOSE ONLY.</td>
<td></td>
</tr>
</tbody>
</table>
UAF investigates injections of students

By - Associated Press - Wednesday, April 9, 2014

FAIRBANKS, Alaska (AP) - An assistant professor was placed on paid leave while the University of Alaska Fairbanks reviews the injecting of about 30 students with a solution not intended for human use.
November 28, 2013

- Caution on Demo-Dose products from Pocket Nurse.

  A demonstration product, supplied by Pocket Nurse, was found by a pharmacy technician during routine inspection of a code cart. This could have led to the delayed emergency treatment of a critically ill patient. Learn more about how to prevent demo products from getting mixed-up with real products.

January – March 2014

ISMP Quarterly Action Agenda

A nurse opened a carton of EpiPens and administered what she thought was EPINEPHrine to a patient experiencing a severe infusion reaction to CARBOplatin. The pen was actually a trainer device that did not contain EPINEPHrine. The patient arrested and failed to regain consciousness. The trainer device is labeled as a trainer, but the font is small and the pens look very similar. Packaging both devices in the same carton makes it easy for this error to happen.

Trainee EPIPEN (EPINEPHrine) used during code

Reserve use of trainer devices to the classroom only. Establish a process to account for each device to be sure it doesn’t accidently reach patient care units. Remove the trainer devices from the carton and either discard them or store them in non-patient care areas by themselves. Alert pharmacy staff that drug companies are co-packaging “active” device products with “inactive” trainers for numerous products.

Figure 1. Demo “EPINEPHRN” found in cart.
Prevent Mix-ups

✓ Increase perception of risk
✓ Store simulation products separately
✓ Label simulation medications and storage areas
✓ Keep “demo” and training products off patient care units
✓ Consider alternatives
CDC addresses and promotes injection safety through guidelines and education.
CDC Guide to Infection Prevention in Outpatient Settings: Minimum Expectations for Safe Care

Summary of existing guidance that provides basic infection prevention recommendations for nearly any outpatient setting

Outpatient Settings

Guide to Infection Prevention in Outpatient Settings: Minimum Expectations for Safe Care


Note to Readers
The following document is a summary guide of infection prevention recommendations for outpatient (ambulatory care) settings. The recommendations included in this document are not new but rather reflect existing evidence-based guidelines produced by the Centers for Disease Control and Prevention and the Healthcare Infection Control Practices Advisory Committee. This summary guide is based primarily upon elements of Standard Precautions and represents the minimum infection prevention expectations for safe care in ambulatory care settings. Readers are urged to consult the full guidelines for additional background, rationale, and evidence behind each recommendation. All guidelines are available at: Guidelines and Recommendations

•www.cdc.gov/HAI/settings/outpatient/
CDC Infection Prevention Checklist for Outpatient Settings: Minimum Expectations for Safe Care

INFECTION PREVENTION CHECKLIST FOR OUTPATIENT SETTINGS:

Minimum Expectations for Safe Care

The following checklist is a companion to the Guide to Infection Prevention for Outpatient Settings: Minimum Expectations for Safe Care. The checklist should be used:

1. To ensure that the facility has appropriate infection prevention policies and procedures in place and supplies to allow healthcare personnel to provide safe care.

2. To systematically assess personnel adherence to correct infection prevention practices. (Assessment of adherence should be conducted by direct observation of healthcare personnel during the performance of their duties.)

www.cdc.gov/HAI/settings/outpatient/
<table>
<thead>
<tr>
<th>Injection safety</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>A. Needles and syringes are used for only one patient (this includes manufactured(prefilled syringes and cartridge devices such as insulin pens)</td>
<td>Yes No</td>
</tr>
<tr>
<td>B. The rubber septum on a medication vial is disinfected with alcohol prior to piercing</td>
<td>Yes No</td>
</tr>
<tr>
<td>C. Medication vials are entered with a new needle and a new syringe, even when obtaining additional doses for the same patient</td>
<td>Yes No</td>
</tr>
<tr>
<td>D. Single dose (single-use) medication vials, ampules, and bags or bottles of intravenous solution are used for only one patient</td>
<td>Yes No</td>
</tr>
<tr>
<td>E. Medication administration tubing and connectors are used for only one patient</td>
<td>Yes No</td>
</tr>
<tr>
<td>F. Multi-dose vials are dated by HCP when they are first opened and discarded within 28 days unless the manufacturer specifies a different (shorter or longer) date for that opened vial</td>
<td>Yes No</td>
</tr>
</tbody>
</table>

*Note: This is different from the expiration date printed on the vial.*
Basic Infection Control and Prevention Plan for Outpatient Oncology Settings

Each year, about 650,000 cancer patients receive chemotherapy in an outpatient oncology clinic in the United States. Patients receiving chemotherapy are at risk for developing infections that may lead to hospitalization, disruptions in chemotherapy schedules, and even death.

Ongoing outbreaks and patient notifications in outpatient settings demonstrate the need for greater understanding and implementation of basic infection prevention guidance.

•http://www.cdc.gov/cancer/preventinfections/providers.htm
The One & Only Campaign is a public health campaign, led by the Centers for Disease Control and Prevention (CDC) and the Safe Injection Practices Coalition (SIPC), to raise awareness among patients and healthcare providers about safe injection practices. The Campaign aims to eliminate infections resulting from unsafe injection practices.
Free Materials Available for Order

One & Only Campaign Materials For Order Via CDC-INFO

You Can Order 3 Ways

SCAN
Scan with your smartphone to access the ordering page

CALL
1-800-CDC-INFO

CLICK
www.cdc.gov/pubs/CDCinfoOnDemand.aspx
Select Injection Safety--One & Only Campaign to order materials

The One & Only Campaign is made possible by a CDC Foundation partnership with Eli Lilly and Company

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Safe Injection Practices DVD
Item 22-0087

Rx for Safe Injections Poster
Item 22-0696

It’s Elementary Poster
Item 22-0697

Provider Brochure
Item 22-0702

Patient Brochure
Item 22-0701

Injection Safety Infographic
Item 22-1504

Single-Dose & Multi-Dose Vial Infographic
Item 22-1509

Injection Safety Pocket Card
Item 22-0713

Logo Poster for General Public
Item 22-0699

Injection Safety Dangerous Misperceptions Flyer
Item 22-1178

Injection Safety Healthcare Provider Checklist
Item 22-1176

Injection Safety Fact Sheet
Item 22-1502

Injection Safety Healthcare Provider Toolkit
Item 22-1177

Be Aware Don’t Share Insulin Poster
Item 22-1503

Be Aware Don’t Share Insulin Brochure
Item 22-1501
## INJECTION SAFETY ✔ CHECKLIST

The following injection safety checklist items are a subset of items that can be found in the CDC Infection Prevention Checklist for Outpatient Settings: Minimum Expectations for Safe Care.

The checklist, which is appropriate for both inpatient and outpatient settings, should be used to systematically assess adherence of healthcare personnel to safe injection practices. Assessment of adherence should be conducted by direct observation of healthcare personnel during the performance of their duties.

<table>
<thead>
<tr>
<th>Injection Safety</th>
<th>Practice Performed?</th>
<th>If answer is No, document plan for remediation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injections are prepared using aseptic technique in a clean area free from contamination or contact with blood, body fluids or contaminated equipment</td>
<td>Yes/No</td>
<td></td>
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<td>Needles and syringes are used for only one patient (this includes manufactured prefilled syringes and cartridge devices such as insulin pens)</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>Multi-dose vials are dedicated to individual patients whenever possible.</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>Multi-dose vials to be used for more than one patient are kept in a centralized medication area and do not enter the immediate patient treatment area (e.g., operating room, patient room/cubicle)</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>Note: If multi-dose vials enter the immediate patient treatment area they should be dedicated for single-patient use and discarded immediately after use.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## RESOURCES

Safe Injection Practices: Protecting Yourself and Your Patients

A Bloodborne Pathogens Training Activity

http://www.oneandonlycampaign.org/content/bloodborne-pathogens-training
Safe Injection Practices - How to Do It Right

http://www.oneandonlycampaign.org/content/audio-video
One & Only Campaign on Social Media

Follow @InjectionSafety

Subscribe to One and Only Campaign Channel

‘Like’ the One and Only Campaign Page
Knowing how to properly identify single-dose and multiple-dose vials will prevent infections and can save lives. Following basic safe injection procedures is not something to take for granted – there is too much at stake. Educate yourself and those around you.

Do your part to make healthcare safe... *One injection at a time.*

ONEANDONLYCAMPAIGN.ORG
Thank You

For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov  Web: http://www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.