

# INJECTION SAFETY POINT OF CARE TESTING

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Nebraska  
Infection  
Control  
Network

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## Topics

- Discuss the “Why”
- Define injection safety
- Discuss the key principles of administering safe injections in multiple care settings
- Discuss Guidelines and Resources

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## Consequences of unsafe Injection Practice

- **66 outbreaks** of viral hepatitis related to health care between 2008-2019.
  - **94%** of these occurred in a non-hospital setting.
  - **Hepatitis B** – 183 outbreak-associated cases, 13,246 persons notified to screen
    - 19 outbreaks occurred in long-term care facilities – 79% associated with monitoring of blood glucose
    - 6 outbreaks occurred in other settings (cardiology clinic, free dental clinic in a school gymnasium, oncology clinic, hospital surgery service, pain management clinic)
  - **Hepatitis C** – 328 outbreak-associated cases, >112,406 persons notified to screen
    - 16 outbreaks occurred in in outpatient or long-term care facilities
    - 22 outbreaks occurred in hemodialysis settings
    - 4 occurred because of drug diversion by HCV-infected health care providers

\*Single cases are not included in the data above and can be difficult to confirm as health-care-associated  
<https://www.cdc.gov/hepatitis/outbreaks/healthcarehepoutbreaktable.htm>



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## Safe Injection Practice Research

- 2010 Report found 5,446 provider respondents:
  - 6% sometimes or always use single-dose/single-use vials for more than one patient
  - 1% sometimes or always reuse a syringe but change the needle for a second patients
  - 15.1% reuse a syringe to enter a multi-dose vial
  - 6.5% save multi-dose vial for use on another patient

*Pugliese G, Gosnell C, Bartley JM, Robinson S. Injection practices among clinicians in United States health care settings. Am J Infect Control. 2010;38(10):789-98.*

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## Safe Injection Practice Research

- 2017 Report found 690 physicians and nurses in 8 states:
  - 34% of physicians and 16.9% of nurses believed using a single-dose vial for more than one patient was acceptable practice
  - 12.4% of physicians and 3.4 % of nurses reported reusing a syringe for more than one patient
  - 43.2% of physicians and 24.1% of nurses reported reentering a vial with the same syringe

*Kossover-Smith RA, Coutts K, Hatfield KM, et al. One needle, one syringe, only one time? A survey of physician and nurse knowledge, attitudes, and practices around injection safety. Am J Infect Control. 2017;45(9):1018-23.*

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## Safe Injection Practice Research

### 2010 Research

- 5,446 Respondents
- Healthcare practitioners were asked about their own practices

### 2017 Research

- 690 Respondents
- Nurses were asked about their own practices
- Physicians were asked about the frequency of unsafe practices by all HCW in their work area

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## A Growing Problem?

- “...growing reservoir of infected individuals who can serve as a source of transmission to others if safe injection practices and other basic infection control precautions are not followed”
- Aging population – more frequent interactions with the healthcare system



Perz et al, *Hepatology* 2012; 'Accepted Article', doi: 10.1002/hep.25688

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## A GROWING PROBLEM?

- The COVID-19 pandemic revealed a range of safety gaps across all core components of health systems, at all levels.
- Disruption to the systems and processes in place affected previously known safety risks and sources of harm in health care and introduced new ones.
- The pandemic caused substantial disruptive impacts to the health workforce.
- While most of the consequences have been negative, several positive developments have also occurred.

*Implications of the COVID-19 pandemic for patient safety: a rapid review. Geneva: World Health Organization; 2022. Licence: CC BY-NC-SA 3.0 IGO.*

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## What is Injection Safety?



Injection safety, or safe injection practices, is a set of measures taken to perform injections in an optimally safe manner for patients, healthcare personnel, and others.

[https://www.cdc.gov/injectionsafety/providers/provider\\_faqs.html](https://www.cdc.gov/injectionsafety/providers/provider_faqs.html)

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## Safe Injection Practices

- **NEVER** administer medications from the same syringe to more than one patient, even if the needle is changed or you are injecting through an intervening length of IV tubing.
- Do **NOT** enter a medication vial, bag, or bottle with a used syringe or needle.
- **NEVER** use medication packaged as single-dose or single-use for more than one patient. This includes ampoules, bags, and bottles of intravenous solutions.
- **ALWAYS** use aseptic technique when preparing and administering injections.

[https://www.cdc.gov/injectionsafety/providers/provider\\_faqs.html](https://www.cdc.gov/injectionsafety/providers/provider_faqs.html)

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## What are the Risks?

- Aseptic technique
- Syringe/Sharp reuse
- Mishandling of medications
- Safer medical devices
- Drug diversion



PHIL:<https://phil.cdc.gov/Details.aspx?pid=2676>

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## ASEPTIC TECHNIQUE

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## Aseptic Technique

The use of various barriers and precautions to prevent the transfer of microorganisms from the Health Care Provider (HCP) and the environment to the patient during a procedure.

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## Aseptic Technique

- Prepare medication in clean area
  - Well lit                                      Refrigerator log
  - No food                                        Handwashing/ABHR
  - Nothing on floor                            Sharps container
- Store unused supplies/medications in clean areas separate from used supplies and equipment (e.g., glucose meters, etc.)
- Do not carry supplies and medications in pockets
- Scrub vial septum and scrub hubs (and allow to dry)
- Do NOT remove packaging/wrapper from syringes and store
- Discard all opened vials, IV solutions, and prepared or opened syringes involved in an emergency situation

*S.A. Dolan et al. / American Journal of Infection Control 44 (2016) 750-7*

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## PERSONAL PROTECTIVE EQUIPMENT

- Handwashing before and after glove use
- Wear gloves during blood glucose monitoring and during any other procedure that involves potential exposure to blood or body fluids
- Avoid handling test strip containers with soiled gloves to avoid contamination. If a new test strip is needed, discard soiled gloves and perform hand hygiene before obtaining a new test strip.
- Change gloves between patient contacts include hand hygiene
- Dispose of sharps in approved containers
- Consider having sharps containers in public restrooms

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## PERSONAL PROTECTIVE EQUIPMNT

- Glove Use

Key Elements	Indications	Precautions
When	Wear non-sterile single use gloves: when performing venipuncture or venous access injections	Do not use gloves for routine intradermal, subcutaneous or intramuscular injections
Change	If soiled, torn or punctured	Do not wash or decontaminate gloves
After Treatment	Remove before leaving the area	Do not wear outside of treatment area, charting, hallways, handling clean linen or supplies

**Wash Hands!**

*WHO Best Practices for Injections and Related Procedures toolkit 2010, page 59*

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## SYRINGE /SHARP REUSE

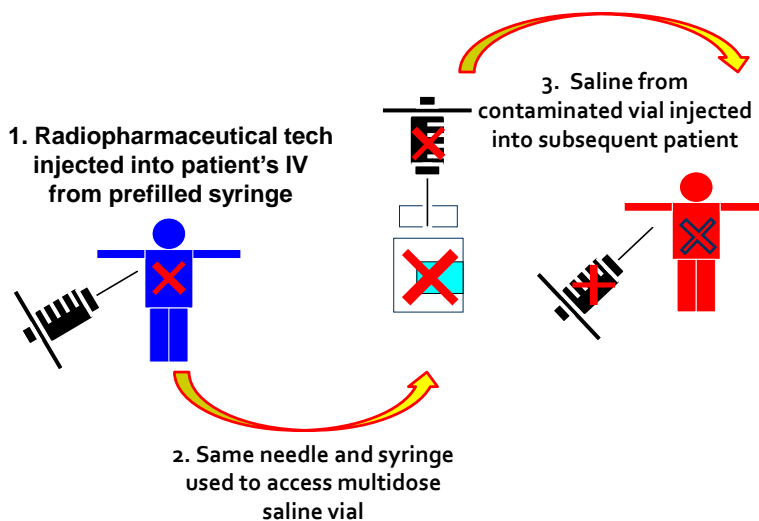
- New Jersey, 2015 routine flu shot clinic
  - Contracted nurse failed to follow proper medical procedures and safeguards. Needles were changed but syringes were reused.
  - 67 persons were notified – free testing offered
- Dermatology Clinic – St Paul, MN
  - Needles were changed but syringes reused from Oct 2017 through Feb 2018, when other staff reported breach in IC practice.
  - 161 patients were notified – free testing offered



*PHIL, ID# 9303 content: CDC/ Judy Schmidt*

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## OUTBREAK ASSOCIATED with REUSE



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## OUTBREAK ASSOICATED with REUSE

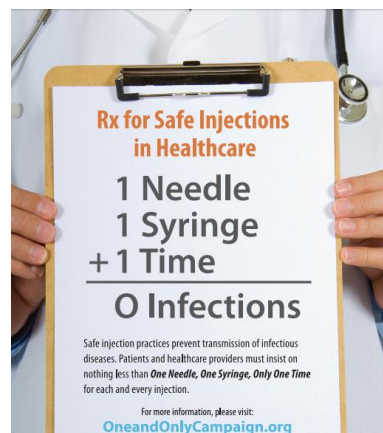
- Hepatitis C Outbreak in Hematology/ Oncology Clinic -- Nebraska, 2002
- Gastroenterologist reported 4 patients with recent HCV infection to health department
- All received chemotherapy at same clinic
- Close to 1,000 patients tested: 99 infected
- Same syringe was used to draw blood from central lines was used to draw catheter-flushing solution from 500-cc saline bags used for multiple patients

MMWR 2003; 52(38);901-06

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## NEEDLES and SYRINGES

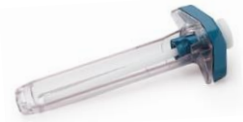
- Never reuse needles or syringes
- Single use only
- For use on a single patient
- **One Needle,  
One Syringe,  
One Time!**



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## CARTRIDGE TYPE SYRINGES

- Do **NOT** withdraw IV push medications from commercially available, cartridge-type syringes into another syringe for administration.
  - Specifically introduced to save time and reduce the potential for medication errors by limiting the number of steps required for preparation of an injectable medication.
- Can lead to contamination, given that the cartridges were not intended to be used in this manner.



2015 ISMP Guidelines Safe Practice of Adult IV Push Medications

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## SALINE or HEPARIN SYRINGES

- Do **NOT** dilute or reconstitute IV push medications by drawing up the contents into a commercially available, prefilled flush syringe of 0.9% sodium chloride.
  - Prefilled syringes of saline and heparin are regulated by the US Food and Drug Administration as **devices, not as medications**. Only approved for flushing



2015 ISMP Guidelines Safe Practice of Adult IV Push Medications

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## OUTBREAK ASSOCIATED with PREFILLED SYRINGE REUSE

- Hospital telemetry unit nurse reused saline flush prefilled syringes in the IV lines of multiple patients
- Discovered after nurse observed leaving a partially filled syringe near a computer work station.
- Nurse reported reusing syringes during last 6 months, believing that this was a **safe, cost-saving** measure if no fluids were withdrawn into the syringe before injection of the saline flush
- As of 10/2016, among 392 potentially exposed living patients, 262 (67%) had completed initial screening, and 182 (46%) had completed all recommended testing.
- Of the 262 patients tested at least once for HBV, HCV, and HIV, 4 patients with newly diagnosed BBP infections identified: two with HBV and two with HCV.

*MMWR Notes from the Field: Hepatitis C Transmission from Inappropriate Reuse of Saline Flush Syringes for Multiple Patients in an Acute Care General Hospital — Texas, 2015 Weekly / March 10, 2017 / 66(9);258–260*

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## MISHANDLING of MEDICATIONS

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## ADMINISTRATION of MEDICATIONS

### BE Mindful:

- Where are medications being prepared?
- Is the area free of contamination?
  - Out of the splash zone of a sink?
- Are medications being placed in pockets?
- If using barcode scanning what is your % of compliance?
- When is hand hygiene being performed?
- How often are gloves being changed?

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## BAR CODE TECHNOLOGY

**NOTE:** All medication preparation should occur in a dedicated medication preparation area (e.g., nurses station), away from immediate patient treatment areas and not adjacent to potential contamination sources.

- If there is a need to access multi-dose vials in the patient room (e.g., for the purposes of bar-coded medication administration) the vial **must be:**
  - Dedicated for single-patient-use only
  - The patient should be housed in a single-patient room
  - Vials should be stored, per manufacturer's instructions, in a manner to prevent inadvertent use for more than one patient and/or cross-contamination.

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## MEDICATION MISHANDLING

Multiple opportunities along the continuum

- Single use, Single dose and Multidose vials
- Preparation
  - Labeling
- Expiration of Medication
  - Expiration date
  - Beyond use date
  - In use time
- Compounding pharmacy
  - Clean rooms

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## MEDICATION VIALS

- Vials are labeled by the manufacturer as either single-dose or multi-dose
- **Always disinfect the vial septum and allow to dry before entry**
- Use single-dose vials and discard after single entry
- Dedicate multi-dose vials for a single patient whenever possible
- If multi-dose vials must be used for more than one patient:
  - prepare away from bedside in clean medication area
  - label the vial for expiration at 28 days (maximum) or manufacturer's expiration date (if shorter)

**NOTE:** In times of critical need, contents from unopened single-dose/single-use vials can be repackaged for multiple patients

*Repackaging by United States Pharmacopeia General Chapter 35 CDC Position Statement. Single-dose/Single-use Vial. May 2, 2012*

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## SINGLE-USE/ SINGLE-DOSE

### Recommended whenever possible

- Vial of liquid medication intended for parenteral administration meant for use in a single patient for a single case/procedure/injection.
- Single-dose or single-use vials are labeled as such by the manufacturer and typically lack an antimicrobial preservative.
- Size does not matter

[http://www.cdc.gov/injectionsafety/providers/provider\\_faqs\\_single\\_vials.html](http://www.cdc.gov/injectionsafety/providers/provider_faqs_single_vials.html)



PHIL #14227 CDC/ Doug Jordan, M.A



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## SINGLE USE MEDICATION VIALS

### **CANNOT:**

- Be used for more than one patient!
- Be returned to a medication cabinet
- Have remaining medication withdrawn and pooled with the partial contents of other vials

PHIL #14537 Content: CDC/ Debora Cartagena

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## MULTI-DOSE VIALS (MDV)

- A bottle of liquid medication (injectable) that contains more than one dose of medication
- Is approved by the Food and Drug Administration (FDA) for use on multiple persons
- Is labeled as multi-dose/multi-use
- Contains a preservative



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## MULTI-DOSE MEDICATIONS

Multi-dose medications:

- Dedicated to **single patient**
- Entered only with **sterile** needle and **sterile** syringe
- **Dated** upon initial entry
- **Discarded** if sterility is compromised
- Multi-dose vials **should not be** brought to the immediate patient treatment area



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## INSULIN PENS and VIALS



- Insulin pens are intended for use by a single person
- Insulin pens should be labeled with the individual persons name on the barrel
- The needle is changed after each administration
- Multiple pens should not be stored in same bin
- Multi-dose insulin vials should be dedicated to a single person whenever possible

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## APPROPRIATE LABELING

- Medication name and dose
- Initials of person preparing
- Appropriate date
- Place label on vial and not box
- Provide blank or printed, ready-to-apply labels where needed

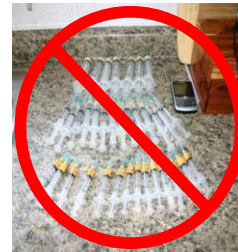


**MULTI-DOSE VIAL**  
 DISCARD \_\_\_\_ days after  
 opening or reconstituting.  
 Date Opened:

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## APPROPRIATE LABELING

- Label all clinician-prepared syringes unless prepared at bedside **and** immediately administered
  - Multiple syringes: Label each syringe as it is prepared, prior to the preparation of any subsequent syringes.
  - Bring **only one patient's** labeled syringe(s) to the bedside for administration.
- **Immediately discard** any unattended, unlabeled syringes
- **Never** pre-label empty syringes in anticipation of use.



2015 ISMP Guidelines Safe Practice of Adult IV Push Medications

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## EXPIRATION DATE/BEYOND-USE DATE

**Manufacturer's expiration date:** the date after which an **unopened** multi-dose vial should not be used

**Beyond-use date (BUD):** The date after which an **opened** multi-dose vial should not be used

- Beyond-use date should never exceed the manufacturer's original expiration date
- Discarded within 28 days of opening or according to manufacturer's instructions
- Joint Commission Standard MM.03.01.01, requires organizations to re-label multi-dose vials with a revised expiration date once the multi-dose vial is opened or punctured."

The Joint Commission. Standards FAQ Details. Punctured or Opened New Expiration Date.

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## IN USE TIME

The time before which a conventionally manufactured product or a Compounded Sterile Preparation (CSP) must be used after it has been opened or needle-punctured

- Cannot exceed the expiration date or the beyond use date
- May be dependent on the type of product and the environment where the manipulations occur

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## SPIKING/PRIMING IV BAGS “In Advance”



- 1 hour time limit from preparation (spiking bag) until beginning administration if not prepared in an ISO 5 environment
- Precludes microbial growth in the event of contamination
- Organism growth can occur within 1-4 hours
- Longer timeframes if primed by pharmacy in ISO 5 environment

United States Pharmacopeia Convention (USP 797)

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## COMPOUNDING PHARMACIES/IN USE TIMES

Components	In-Use Time
<b>Conventionally Manufactured Sterile Product</b>	
Ampuls	Use <i>immediately</i> after opening and passing through a sterile particulate filter
Pharmacy Bulk Package	As specified by the manufacturer
Single-dose container (e.g., bag, bottle, syringe, or vial)	6 hours
Multiple-dose container	28 days, unless otherwise specified by the manufacturer
<b>CSP</b>	
Compounded single-dose container	6 hours
Compounded stock solutions	6 hours
Compounded multiple-dose container <sup>a</sup>	28 days, unless otherwise specified by the original compounder

<sup>a</sup> The particular CSP formulation must pass antimicrobial effectiveness testing in accordance with (51) at

\*\* Compounding must take place in clean rooms as outlined in USP 797.

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## COMPOUNDING PHARMACIES/IN USE TIMES

Components	In-Use Time
<b>Conventionally Manufactured Sterile Product</b>	
Ampuls	Use <i>immediately</i> after opening and passing through a sterile particulate filter
Pharmacy Bulk Package	Not applicable. Contents of pharmacy bulk packages must be used only in an ISO Class 5 or better environment.
Single-dose container (e.g. bag, bottle, syringe, vial)	Use for a single patient within the time specified by the manufacturer, or by the end of the case or procedure, whichever comes first. Discard remainder.
Multiple-dose container	28 days, unless otherwise specified by the manufacturer
<b>CSP</b>	
Compounded single-dose container	Use for a single patient immediately. Discard remainder.
Compounded multiple-dose container <sup>a</sup>	28 days, unless otherwise specified by the original compounder

<sup>a</sup> Compounding or repackaging must not occur in worse than ISO Class 5 air.  
<sup>b</sup> The particular CSP formulation must pass antimicrobial effectiveness testing in accordance with (51) at the completion of the sterility test (if conducted) or at the time of preparation (if sterility testing is not performed). The test must be completed and the results obtained on the specific formulation before any of the CSP is released or dispensed. The test needs to be conducted only once on each formulation in the particular container-closure system in which it will be stored or released/dispensed.

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## Fungal Meningitis and Other Infections R/T Compounding

- Multi-state outbreak 2012: Contaminated compounded medication sent to healthcare facilities & providers across the US
- Methylprednisolone acetate, steroid injected to spine to treat back pain
- Total: 800 cases; 64 deaths



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## Fungal Meningitis and Other Infections R/T Compounding

- Outbreak of fungal bloodstream infections associated with an outpatient oncology clinic — New York City, 2016
  - Exophiala (Wangiella) dermatitidis
  - Common environmental fungus – Black yeast/mold
  - Vulnerable population



[https://www.hospira.com/en/images/0409-7983-09\\_tcm83-3764.jpg](https://www.hospira.com/en/images/0409-7983-09_tcm83-3764.jpg)

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## GLUCOSE MONITORING

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## BLOOD GLUCOSE METERS

- Personal blood glucose meters should be assigned to an individual and not shared
- Professional blood glucose monitoring systems are intended for multiple-patient use in professional healthcare settings.
- Clean/disinfect using an EPA registered product as outlined in the manufacturers instructions for use (IFU)
- Do not use alcohol as a disinfectant
- Educate staff on product and cleaning/disinfection process



PHIL #13565 CDC/Amanda Mills

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## PRACTICES ASSOCIATED with HBV TRANSMISSION DURING ASSISTED MONITORING OF BLOOD GLUCOSE



Use of fingerstick device or insulin pens on multiple persons



Failure to clean and disinfect blood glucose testing meters between each use

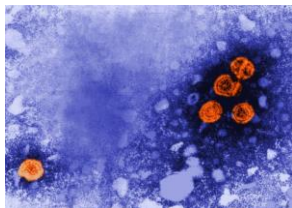


Failure to change or use gloves, or perform hand hygiene between procedures

*Patel et al. ICHE 2009; 30:209-14, Thompson et al. JAGS 2010, MMWR 2005; 54:220-3 [www.cdc.gov/injectionsafety](http://www.cdc.gov/injectionsafety)*

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## OUTBREAKS RELATED to LANCET REUSE



HBV, PHIL #10755 CDC/Dr. Erskine Palmer

- The CDC reports 15 HBV outbreaks in the last 10 years associated with unsafe blood glucose monitoring
  - Health fair in New Mexico (2010) reused fingerstick lancets potentially exposing 2,000+ individuals
  - Assisted Living in North Carolina, reusing lancets and shared glucose meters. 8 contracted Hepatitis B, all were hospitalized and 6 died

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 Weekly*, February 18, 2011 / 60(06):182

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## BLOODBORNE PATHOGENS and SAFER MEDICAL DEVICES

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### OSHA: BBP STANDARD



- Specifies that "safer medical devices, such as sharps with engineered sharps injury protections and needleless systems" constitute an effective engineering control, and **must** be used where feasible.

Revision to OSHA's Blood borne Pathogens Standard Technical Background and Summary, April, 2001

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## SAFE MEDICAL DEVICES ACT of 1990 PROVISIONS & REPORTING REQUIREMENTS

- Requires medical facilities to report a medical device-related serious injury to the manufacturer, or to the FDA if the medical device manufacturer is unknown
  - hospitals
  - ambulatory surgical facility
  - nursing home
  - outpatient treatment facility
- Prohibits disclosure of the identity of a facility which makes a report.
- Prohibits a report from being used in any civil action involving private parties unless the report maker had knowledge of the falsity of the report.
- Provides for recall of devices
- User facilities must report a suspected medical device-related death to both the FDA and the manufacturer.
- Healthcare professionals within a user facility should familiarize themselves with their institution's procedures for reporting adverse events to the FDA.
- A user facility is not required to report a device malfunction, but can advise the FDA of such product problems using the voluntary [MedWatch](#)

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## RISKY SITUATIONS

### Sharps disposal during emergencies and surgeries

- Do not hand pass exposed sharps from one person to another
- Use predetermined neutral zone for placing/retrieving sharps
- Alert others when sharps are being passed
- Don't recap needles

### Engineering controls on syringes

- The CDC estimates that healthcare workers sustain nearly 600,000 percutaneous injuries annually involving contaminated sharps.

IOM of the National Academies, *Hepatitis and Liver Cancer: A National Strategy for Prevention and Control of Hepatitis B and C*, Washington DC, The national Academies Press, 2010

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## SAFE DISPOSAL

- **Functional:** Durable, closeable and locking, puncture resistant, leak resistant, sufficient number and size – accommodate the largest sharp used in the area, stable on horizontal surface, biohazard label
- **Accessible:** conveniently located, must be at location of use,
- **Visible:** readily visible, vertical height where can see opening
- **Accommodating:** Routinely replaced and not allowed to be overfilled.

Selecting, Using and Evaluating Sharps Containers, DHHS NIOSH publication 97-111 OSHA Standard 1910.1030



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## RISK of INFECTION AFTER NEEDLE STICK

SOURCE	RISK	ODDS	SURVIVAL
HBV	6.0 – 30.0%	1/3	>7 day in environment
HBeA g+	22.0-30.0%		
HBeA g-	1.0-6.0%		
HCV	1.8%	1/30	9 weeks in syringe
HIV	0.3%	1/300	Syringe several days

*Paintsil et al, J Infect Dis 2010; 202(7): 984-990*

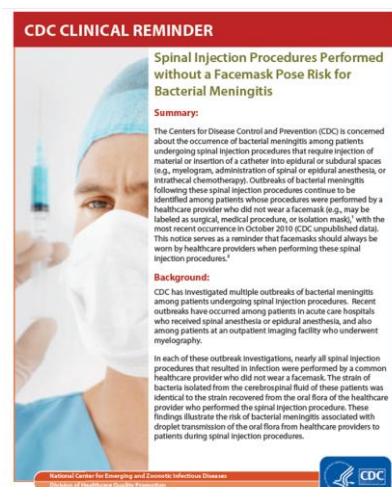
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## SPECIAL SITUATIONS

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## PPE for LUMBAR PUNCTURE

- Bacterial meningitis following:
  - myelogram
  - lumbar puncture,
  - spinal and epidural anesthesia
  - intrathecal chemotherapy
- 2007 Guideline for Isolation Precautions recommend use of a face mask for the individual placing a catheter or injecting material into the spinal or epidural space



2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings (p 69)

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## SURGERY: Incremental Dosing

- Safeguards:
  - Handle the needle and syringe aseptically
  - Never leave it unattended
  - Dispose of it immediately after the procedure
  - Only a single patient during a single procedure
- Do not leave a needle in the septum as provides a direct route for microorganisms



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## SURGERY: Pouring from Vial

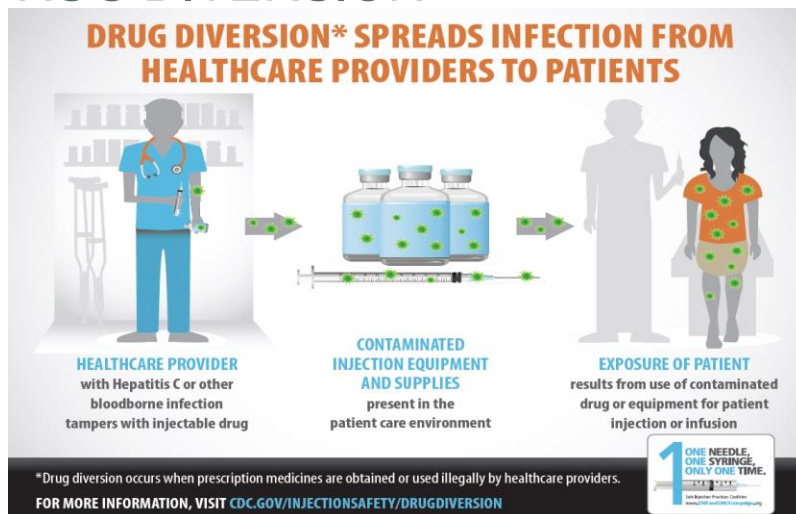
- Never use a decapping device to remove the top from a vial to pour the contents onto the sterile field (e.g., into a sterile basin) as vials are not designed for aseptic pouring.<sup>28,62-3</sup>
  - Use a commercially available sterile transfer device (e.g., vial spike, filter straw, plastic cannula) to aseptically transfer medications/solutions to the sterile field.
  - The circulator should hold the vial so a designated scrub person can withdraw the medication or solution using a sterile syringe and needleless adapter.
  - Remove the vial and transfer device after each use as they are not intended for multiple uses.

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## DRUG DIVERSION

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## DRUG DIVERSION



<https://www.cdc.gov/injectionsafety/drugdiversion/index.html>

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## COMMONLY DIVERTED DRUGS

### Opioid pain relievers, such as:

Codeine  
Fentanyl (Duragesic®, Actiq®)  
Hydromorphone (Dilaudid®)  
Meperidine (Demerol®)  
Morphine (MS Contin®)  
Oxycodone (OxyContin®)  
Pentazocine (Talwin®)  
Dextropropoxyphene (Darvon)  
Methadone (Dolophine®)  
Hydrocodone combinations (Vicodin, Lortab, and Lorcet)

### High-cost antipsychotic and mental health drugs, such as:

Aripiprazole (Abilify®)  
Ziprasidone (Geodon®)  
Risperidone (Risperdal®)  
Quetiapine (Seroquel®)  
Olanzapine (Zyprexa®)  
Benzodiazepines, such as:  
Alprazolam (Xanax®)  
Clonazepam (Klonopin®)  
Lorazepam (Ativan®)

Department of Health & Human Services, Centers for Medicare & Medicaid Services, "Drug Diversion in the Medicaid Program — State Strategies for Reducing Prescription Drug Diversion in Medicaid," January 2012



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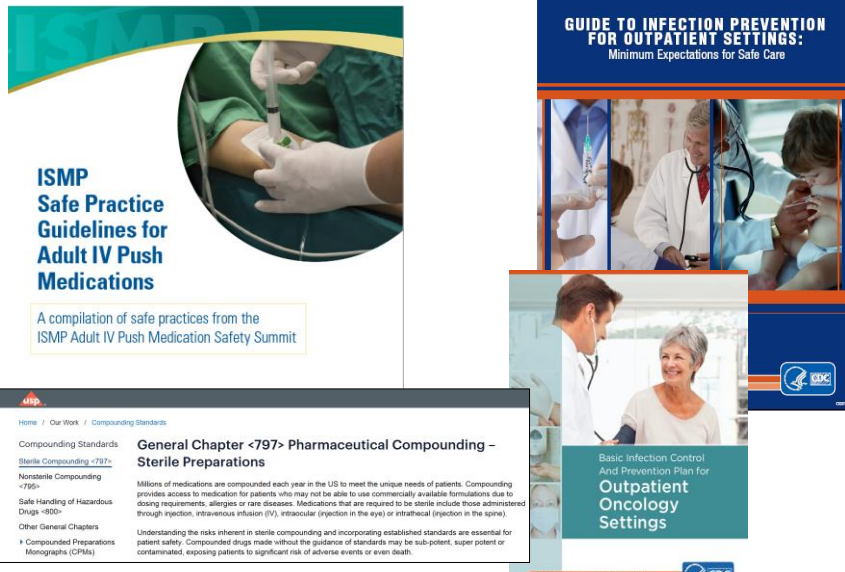
## DRUG DIVERSION RELATED OUTBREAKS

- **1985:** There were 3 cases of *Pseudomonas pickettii* bacteremia associated with a pharmacy technician at a Wisconsin hospital.
- **1992:** There were 45 cases of HCV infection associated with a surgical technician at a Texas ambulatory surgical center.
- **1999:** There were 26 cases of *Serratia marcescens* bacteremia associated with a respiratory therapist at a Pennsylvania hospital.
- **2004:** There were 16 cases of HCV infection associated with a certified-registered nurse anesthetist at a Texas hospital.
- **2006:** There were 9 cases of *Achromobacter xylosoxidans* bacteremia associated with a nurse at an Illinois hospital.
- **2008:** There were 5 cases of HCV infection associated with a radiology technician at a Florida hospital.
- **2009:** There were 18 cases of HCV infection associated with a surgical technician at a Colorado hospital.
- **2011:** There were 25 cases of gram-negative bacteremia associated with a nurse at a Minnesota hospital.
- **2012:** There were 45 cases of HCV infection associated with a radiology technician at hospitals in New Hampshire, Kansas, and Maryland.
- **2016:** A surgical tech charged with drug diversion in an Englewood, CO hospital leads to testing of thousands of patients in several other states where he previously worked.

<https://www.reliasmedia.com/articles/137640-cdc-timeline-of-drug-diversion-outbreaks>

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## GUIDELINES and RESOURCES



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## GUIDELINES and RESOURCES

### NICN Recommended Links

- Immunization Action Coalition
- Nebraska State Health Department
- Nebraska Hospital Association (NHA)
- Nebraska Health Care Association (NHCA)
- National Health Care Safety Network (NHSN)
- Greater Omaha Area Chapter of the Association for Professionals in Infection Control and Epidemiology (APIC)
- APIC National Home Page
- Certification Board in Infection Control and Epidemiology
- CDC Guidelines (searchable)

### Printed Resources / Apps

- CDC Pink Book on Immunizations - choose "download" to order a copy

### Other Organizations

- American Hospital Association
- CDC National Immunization Program
- Food and Drug Administration
- Centers for Medicare and Medicaid Services
- The Hospital Infection Society (UK)
- Joint Commission for Accreditation of Healthcare Organizations
- Sentinel Events in JCAHQ accredited organizations
- National Institute of Health
- Great Plains Quality
- Nebraska Medical Association
- U.S. Centers for Disease Control and Prevention
- World Health Organization
- Occupational Safety & Health Administration (OSHA)

### Publications/Information Searches

- Federal Register
- Morbidity and Mortality Weekly Report (MMWR)
- National Library of Medicine- Medline
- New England Journal of Medicine
- CDC Patient Information Disease index
- Vaccine Information Sheets

<http://www.nicn.org/Resources>

## PROJECT FIRSTLINE

CDC's National Training Collaborative for Healthcare Infection Prevention & Control

<https://www.cdc.gov/infectioncontrol/projectfirstline/index.html>



<http://www.goapic.org>

<https://icap.nebraskamed.com>

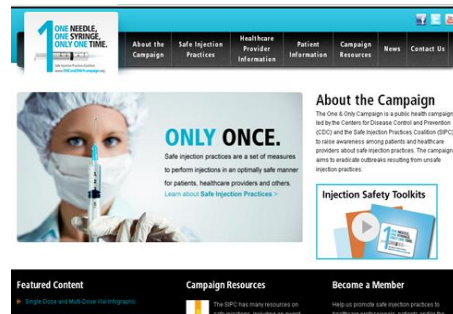
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## CDC's ONE and ONLY CAMPAIGN

- National CDC-led coalition made up of healthcare related organizations
  - NE is one of 10 funded "partner" states
- Goal is to promote safe injection practices in all US healthcare settings
- Multi-media resources available
  - Includes social media: Facebook and Twitter

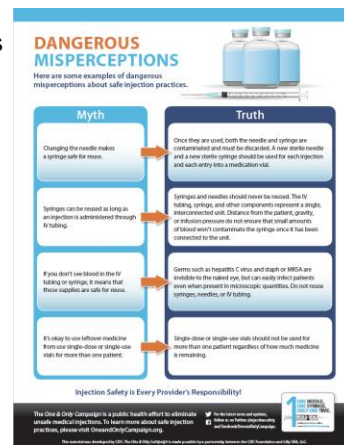
[www.oneandonlycampaign.org](http://www.oneandonlycampaign.org)



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## ONE & ONLY CAMPAIGN TOOLKIT

- One & Only Campaign* Posters
- One & Only Campaign* Provider/Patient Brochures
- Injection Safety Guidelines Pocket Card
- Injection Safety Frequently Asked Questions
- Injection Safety Myths & Truths
- Injection Safety Check List
- Injection Safety Communication Documents
- Multimedia Materials:
  - Injection Safety PowerPoint
  - Injection Safety Education Video
  - "How to do it right" Video
  - Bloodborne Pathogen Training
  - Injection Safety Podcast
- Guidelines
- Position Statements
- Peer-Reviewed Published Articles
- Downloadable brochures/posters



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## CONTACT

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