Outbreaks in Outpatient Oncology Settings: Lessons Learned and Key Considerations for Handling Sterile Medications

Thursday, August 9, 2018

The findings and conclusions in this presentation are those of the author and do not necessarily represent official position of the Centers for Disease Control and Prevention.
Program Objectives

PROGRAM DESCRIPTION:
- This webinar will discuss infectious outbreaks in outpatient oncology settings that have been linked to breaches in safe injection practices and sterile compounding standards. Key considerations for safe handling of sterile medications during compounding and administration will also be discussed.

OBJECTIVES:
- Identify unsafe injection and compounding practices that have been linked to healthcare-associated infection (HAI) outbreaks in outpatient oncology and other clinic settings.
- Identify the minimum standards for safe injection practices and when standards for sterile compounding are applicable.
- Describe the importance of early recognition and notification of potential HAI outbreaks to public health authorities.
Speakers

Nadine Shehab, PharmD, MPH
Senior Scientist, Division of Healthcare Quality Promotion, CDC

Lisa Richardson, MD, MPH
Director, Division of Cancer Prevention and Control, CDC

Joseph W. Coyne, RPh
Director of Field Operations, Clinical IQ LLC

Martha Polovich, PhD, RN, AOCN
Assistant Professor, Georgia State University College of Nursing and Health Professions
Outpatient Oncology Settings are Important for Ensuring Patient Access to Care

- >1.7 million people are diagnosed with cancer each year

- >1 million cancer patients receive outpatient chemotherapy or radiation

- Outpatient oncology settings provide several benefits:
  - avoid hospitalization and costs of inpatient stays,
  - treatment administered at patient convenience, familiar facility,
  - drug administration under close supervision of oncologist.
Infection Prevention in Oncology Settings is Critical for Patient Safety

- Attention to infection prevention in oncology settings is especially important due to patients’ heightened risk of infection:
  - underlying malignancy and chemotherapy,
  - frequent contact with healthcare settings,
  - placement of indwelling intravascular access devices or undergo surgical procedures.

- Many outpatient oncology facilities lack infection control policies and procedures to ensure patient protection
Outbreaks in Outpatient Oncology Clinics Linked to Sterile Compounding and Unsafe Injection Practices
Infection Prevention in Oncology Settings is Critical for Patient Safety

It is important for outpatient oncology settings to:

- Recognize that failure to adhere to safe injection practices and sterile compounding standards places patients at risk for healthcare-associated infections (HAIs) and other adverse events.
- Become familiar and implement standards for basic infection control and safe injection practices.
- Know when medication preparation practices are subject to sterile compounding standards and apply the appropriate standards for those practices.
- Identify and report suspected HAI outbreaks to public health authorities as soon as they are identified.
Two Concepts Addressed Throughout

- Sterile compounding (focus of today’s presentation)
- Safe injection practices
What are Safe Injection Practices?

- Set of measures taken to perform injections in an optimally safe manner for patients, healthcare personnel, and others.
- Part of CDC’s Standard Precautions, reflect **minimum standards** that healthcare personnel should follow to prevent transmission of infections in healthcare settings.

<table>
<thead>
<tr>
<th>Never</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not</td>
<td>enter a medication vial, bag, or bottle with a used syringe or needle.</td>
</tr>
<tr>
<td>Never</td>
<td>use medications packaged as single-dose or single-use for more than one patient. This includes ampoules, bags, and bottles of intravenous solutions.</td>
</tr>
<tr>
<td>Always</td>
<td>use aseptic technique when preparing and administering injections.</td>
</tr>
</tbody>
</table>

**Failure to adhere to Standard Precautions, including safe injection practices, has resulted in serious patient harm, including disease transmission and patient notifications.**

[Standard Precautions for All Patient Care](https://www.cdc.gov/infectioncontrol/basics/standard-precautions.html)
[FAQs regarding Safe Practices for Medical Injections](https://www.cdc.gov/injectionsafety/providers/provider_faqs.html)
What is Drug Compounding?

Definition
“Compounding is generally a practice in which a licensed pharmacist, [or] a licensed physician ...combines, mixes, or alters ingredients of a drug to create a medication tailored to the needs of an individual patient.” *

* Human Drug Compounding (http://www.fda.gov/Drugs/GuidanceComplianceRegulatoryInformation/PharmacyCompounding/default.htm)
Compounding Standards (http://www.usp.org/compounding)

Laws, Standards & Guidance
- Federal Food, Drug, and Cosmetic Act (Sections 503A and 503B)
- FDA guidance (e.g., Insanitary Conditions)
- Individual state pharmacy practice laws
- Minimum practice standards:
  - USP General Chapter <795> Pharmaceutical Compounding—Non-sterile Preparations
  - USP General Chapter <797> Pharmaceutical Compounding—Sterile Preparations
  - USP General Chapter <800> Hazardous Drugs—Handling in Healthcare Settings

Oversight & Enforcement
- Primarily: FDA, state boards of pharmacy
- Accreditors, certifiers also play a role

Failure to adhere to laws and minimum standards applicable to sterile compounding in healthcare settings (pharmacies, hospitals, and clinics) has resulted in serious patient harm, including disease transmission and patient notifications
Sterile Drug Compounding – Examples

- Preparing multiple chemotherapy infusion bags for administration later in the day

- Combining multiple medications (e.g., antibiotics, heparin) in a saline bag

- Re-packaging contents of a saline or heparin bag into multiple syringes
Outbreaks linked to Compounded Drugs from Pharmacy Settings
CDC and State Health Departments Are Increasingly Responding to Outbreaks in Outpatient Settings

The following table includes selected examples of recent outbreaks and patient notification events. These events occurred in a variety of outpatient settings including primary care clinics, pediatric offices, cosmetic surgery centers, pain remediation clinics, imaging facilities, cancer (oncology) clinics, dental clinics, and health fairs. This is not an exhaustive list but it serves as a reminder of the serious consequences that can result when healthcare personnel fail to follow basic principles of infection control. Such consequences include: infection transmission to patients, notification of thousands of patients of possible exposure to bloodborne pathogens, referral of providers to licensing boards for disciplinary action, and malpractice suits filed by patients.

These events are preventable, yet they continue to occur. Facilities and healthcare personnel are urged to review the Guide to Infection Prevention for Outpatient Settings: Minimum Expectations for Safe Care. This document is accompanied by an Infection Prevention Checklist (Appendix A) a tool to help outpatient facilities assess their policies and procedures. In order to prevent patient harm, facilities and healthcare staff members are encouraged to review practices to assure they are in accordance with CDC’s evidence-based guidelines.

The table below provides updated information to the Outbreaks and Patient Notifications in Outpatient Settings, 2007 – 2009 (Archived).
Outbreaks in Outpatient Settings (Selected Examples)

Where Are Outbreaks Occurring?

- Ambulatory Surgical Centers (ASCs)
- Chiropractic clinics
- Cosmetic surgery clinics
- Dental / oral surgery clinics
- Orthopedic clinics
- Oncology clinics
- Pain management clinics
- Physician offices
- Plastic surgery centers
- Radiology clinics
- Rheumatology clinics
- Urology clinics
Outbreaks in Outpatient Settings

Why Are Outbreaks Occurring?

- Shift in healthcare delivery from inpatient settings to outpatient settings
- Breaches in **sterile compounding and safe injection practices** identified in outpatient settings

**Consequences:**

- Infection transmission to patients
- Notification of thousands of patients of possible exposure to bloodborne pathogens
- Disciplinary action, referral of providers to licensing boards
- Malpractice suits filed by patients
Outbreaks in Outpatient Settings

What are the Medication Handling Breaches?

**Medication Preparation**
(Unsafe compounding practices)

- Failure to follow aseptic practices (incl. proper hand hygiene)
- Insanitary medication preparation areas
- Untrained/non-qualified personnel performing sterile compounding
- Absence of proper controls (e.g., ISO-class 5 hoods)
- Improper storage and labeling of sterile medication vials

**Medication Administration**
(Unsafe injection practices)

- Reuse of syringes for >1 patient
- Reuse of syringes to access medication vials for >1 patient
- Reuse of single-dose vials and saline bags for >1 patient
- Failure to wear facemasks when performing spinal injections
- Suboptimal procedures for IV line access and maintenance

Outbreaks and Patient Notifications in Outpatient Settings, Selected Examples, 2010-2014
# Outbreaks in Oncology Settings (Examples)

<table>
<thead>
<tr>
<th>Year (State)</th>
<th>Pathogen(s)</th>
<th>Infection(s), No. of Cases</th>
<th>Infection Control and Sterile Compounding Breaches</th>
<th>Reference</th>
</tr>
</thead>
</table>
| 2004 (GA)   | *Burkholderia cepacia*      | Bloodstream infections, N=10                     | • Lack of adherence to sterile compounding standards in preparing chemotherapy and other medications (e.g., breaches in aseptic technique)  
  • Common needle and syringe to access multiple multi-dose vials                                                                                                                                            | Abe K, et al. ICHE 2007;28:1311-13 |
| 2011 (MS)   | *Pseudomonas aeruginosa* and *Klebsiella pneumoniae* | Bloodstream infections, N=14                     | • Syringe reuse among patients  
  • Reuse of syringes to access medication containers used for >1 patient                                                                                                                                                                                                                                  | Dobbs TE, et al. AJIC 2014;42:731-4 |
| 2011 (WV)   | *Tsukamurella species*      | Bloodstream infections, N=15                     | • Lack of adherence to sterile compounding standards in preparing chemotherapy and repackaging sterile medications  
  • Use of common-source bag of saline to prepare saline flush  
  • Suboptimal procedures for central line access                                                                                                       | See I, et al. ICHE 2014;35:300-6    |
| 2012 (IL)   | *Panotea agglomerans*       | Bloodstream infections, N=12                     | • Lack of adherence to sterile compounding standards in preparing chemotherapy and other medications (e.g., breaches in aseptic technique, hoods located next to sinks)                                                                                                              | Yablun BR, et al. ICHE 2017;38:314-9 |
| 2016 (NY)   | *Exophiala dermatitidis*    | Bloodstream infections, N=17                     | • Lack of adherence to safe injection practices  
  • Lack of adherence to sterile compounding standards in preparing chemotherapy and other medications (e.g., breaches in aseptic technique, hoods located next to sinks)                                                                                                      | Vasquez AM, et al. MMWR 2016;65:1274-5 |
Outbreak of *Tsukamurella* Bloodstream Infections, Oncology Clinic, West Virginia, 2011

Sterile compounding hood adjacent to open window

Compounding hood disinfected with alcohol of insufficient strength

Medication preparation adjacent to sink

Outbreak of *Pantoea* Bloodstream Infections, Oncology Clinic, Illinois, 2012

Breaches in aseptic handling of sterile medications

Medication preparation adjacent to sink

Infusion products adjacent to sink

Outbreak of *Exophiala* Bloodstream Infections, Oncology Clinic, New York, 2016

- Exposure of critical sterile sites of hood to potentially contaminated materials
- Medications improperly stored and labeled, with visible signs of contamination

Outpatient Settings Present Unique Challenges for Oversight and Prevention

- **Lack of oversight and accreditation** of outpatient settings relative to inpatient settings
  - *No clearly established authority for monitoring adherence to infection control and sterile compounding standards in these settings*—state public health departments, boards of medicine, boards of pharmacy, federal authorities?

  *CMS-certified facilities receive some oversight in adherence to infection control practices, but only a minority of outpatient facilities are certified.*

- **Lack of infrastructure and resources** to support infection control and sterile compounding
  - *Sterile compounding is conducted in the absence of pharmacy controls and by inadequately trained personnel*
Outpatient Settings Present Unique Challenges for Oversight and Prevention

- **Highly variable** requirements for provider training, licensure, certification, and continuing education
  - Physicians and allied health professionals may be unaware that the practices they engage in are subject to federal and state sterile compounding laws / standards

- **Highly variable** requirements for monitoring and reporting of HAIs and other adverse events to state and federal authorities
  - Delayed identification of and response to outbreaks, potentially leading to large patient notifications / harm
Infection Prevention in Oncology Settings is Critical for Patient Safety

It is important for outpatient oncology settings to:

- Recognize that failure to adhere to safe injection practices and sterile compounding standards places patients at risk for healthcare-associated infections (HAIs) and other adverse events
- Become familiar and implement standards for basic infection control and safe injection practices
- Know when medication preparation practices are subject to sterile compounding standards and apply the appropriate standards for those practices
- Identify and report suspected HAI outbreaks to public health authorities as soon as they are identified
Key Facility and Personnel Requirements for Handling Sterile & Hazardous Drugs

Joseph W. Coyne RPh
Director of Field Operations
Clinical IQ, LLC
Acknowledgements

• Many of the slides presented in this program come from the CriticalPoint Live Training/Educational Series.

• Thanks to Kate Douglass, Eric Kastango and Jim Wagner for their expertise in putting together the content.

• Permission to use the copyrighted slides/images and materials are provided by CriticalPoint, LLC.

• Use of this educational material by a 3rd party does not constitute endorsement by, CriticalPoint or ClinicalIQ
What Practice Standards Exist?

• American Society of Health-System Pharmacists (ASHP)
  — 1983 - First Hazardous Drug Technical Advisory Bulletin (TAB)
  — 2006 - Current version of ASHP Guidelines on Handling Hazardous Drugs (new version coming soon)

• Oncology Nursing Society (ONS)
  — Founded in 1975
  — 2018 - Safe Handling of Hazardous Drugs, 3rd edition

• American Society of Clinical Oncology (ASCO) / ONS
  — 2009 - Chemotherapy Administration Safety Standards (now 2016 course update)


Toolkit for Safe Handling of Hazardous Drugs for Nurses in Oncology (https://www.ons.org/toolkits/toolkit-safe-handling-hazardous-drugs-nurses-oncology)

What Regulations Exist?

- USP <795> Pharmaceutical Compounding – Nonsterile Preparations
- USP <797> Pharmaceutical Compounding – Sterile Preparations
- OSHA regulations
- CMS Hospital Conditions of Participation
- State regulations

Compounding Standards (http://www.usp.org/compounding)
Hazardous Drugs (https://www.osha.gov/SLTC/hazardousdrugs/index.html)
Identification of Issues

• Recognition that there is no federal standard that protects workers from hazardous drug (HD) exposure

• Professional organizational guidance documents are not regulations

• USP is recognized in the federal Food, Drug, and Cosmetic Act to set drug standards

• USP chapters numbered under <1000> are federally-enforceable standards
USP Chapter <797> Scope

• Describes the **minimum standards** to prevent harm, including death, from:
  – microbial contamination (nonsterility),
  – excessive bacterial endotoxins,
  – variability in strength of correct ingredients,
  – chemical and physical contaminants,
  – ingredients of inappropriate quality in compounded sterile preparations (CSPs).

• Applies to:
  – all persons who prepare compounded sterile preparations
  – all places where CSPs are prepared
  – pre-administration manipulations of CSPs including storage, compounding, and transport

• **Does not apply to administration!**

• Specific chapter language:
  – “shall” is a requirement (must)
  – “should” is a recommendation
USP Chapter <800> Scope

• Promotes patient safety, worker safety, and environmental protection. Handling hazardous drugs (HDs) includes, but is not limited to:

  ➢ receipt, storage, compounding, dispensing, administration, disposal

• Applies to all healthcare personnel who handle HD preparations and all entities which store, prepare, transport, or administer HDs (e.g., pharmacies, hospitals and other healthcare institutions, patient treatment clinics, physicians' practice facilities, or veterinarians' offices).

• Personnel who may potentially be exposed to HDs include, but are not limited to: pharmacists, pharmacy technicians, nurses, physicians, physician assistants, home healthcare workers, veterinarians, and veterinary technicians.
General Facility Elements

• Ceiling – epoxy-coated gypsum board or anodized aluminum T grids
  – Tiles must be caulked in place
• Walls – epoxy-coated gypsum board or interlocking panels
• Floors – wide-sheet vinyl or poured epoxy
• Sink – deep enough to perform hand hygiene to the elbows
• Lighting – sealed, flush mounted, easily cleanable
Engineering Controls
# Engineering Controls for Containment: Definitions

## Containment Primary Engineering Control (C-PEC)
- Ventilated device to minimize worker and environmental exposure
- For sterile compounding, also provides product protection

## Containment Secondary Engineering Control (C-SEC)
- The room in which the C-PEC is placed

## Containment Supplemental Engineering Controls
- Adjunct controls to offer additional levels of protection
- Closed System Drug-Transfer Devices (CSTDs)
Primary Engineering Controls

- Laminar Air Flow Workbench (LAFW)
- Biological Safety Cabinet (BSC)
- Compounding Aseptic Isolator (CAI & CACI)
Secondary Engineering Controls

- Secondary Engineering Control is facility design
  - Positive Pressure - Net displacement of air *out* of the space
  - Negative Pressure - Net displacement of air *into* the space

Traditional ISO Class 7
(Laminar Airflow Work hood) LAFW
Supplemental Engineering Controls

- These devices are adjunct controls that may be used with C-PEC or C-SECs to offer additional levels of protection (containment)
- Facilitate enhanced occupational protection especially during administration
- Closed System Drug-Transfer Devices (CSTDs) are the only kind of Containment Supplemental Engineering Control available at this time

Remember:
- CSTDs still can’t prevent damage or spills from poor handling or transport!
- CSTDs are intended for use in an ISO Class 5 or better environment
Use of Dispensing Devices Outside of Engineering Controls

• Spiking a bag, vial, or bottle of sterile fluid with a dispensing device and leaving that device in place to withdraw medication for multiple patients increases the risk for microbial contamination. When performed outside of an ISO Class 5 environment, the device and subsequently the fluid can become contaminated. For this reason, using a dispensing device to spike parenteral solutions outside of an ISO Class 5 environment and leaving it in place to dispense medication for multiple patients puts patients at risk for infection and must be prohibited.
Cleanroom Suite

Hazardous applications: Anteroom must achieve at least ISO class 7 & be positive to uncontrolled spaces ➪ Positive to the HD compounding room
Containment Segregated Compounding Area (C-SCA)

• A type of Secondary Engineering Control
  – Unclassified room with fixed walls dedicated to preparation of low to medium risk level HD CSPs
  – Defined perimeter to separate functions
  – **Limited to 12 hour BUD** (proposed 797 is 12 hour room/24 hour refrigerated)
  – PEC must be externally vented
  – Minimum 12 ACPH
  – 0.01” w.c. to 0.03” w.c. negative pressure
  – Hand washing sink at least 1 meter from C-PEC
    • Can be either inside or directly outside the C-SCA

USP General Chapter <800> Hazardous Drugs—Handling in Healthcare Settings (http://www.usp.org/compounding/general-chapter-hazardous-drugs-handling-healthcare)
Containment Segregated Compounding Area (C-SCA) – Example

HD C-SCA with a CACI
<table>
<thead>
<tr>
<th>Configuration</th>
<th>C-PEC</th>
<th>C-SEC</th>
<th>Maximum BUD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO Class 7 Buffer Room</td>
<td>• Externally Vented</td>
<td>• 30 ACPH</td>
<td>As described in &lt;797&gt;</td>
</tr>
<tr>
<td></td>
<td>• Examples:</td>
<td>• Externally vented</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Class II BSC</td>
<td>• Externally vented</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• CACI</td>
<td>• Negative pressure between 0.01 and 0.03” w.c.</td>
<td></td>
</tr>
<tr>
<td>C-SCA</td>
<td>• Externally Vented</td>
<td>• 12 ACPH</td>
<td>12 hours</td>
</tr>
<tr>
<td></td>
<td>• Examples:</td>
<td>• Externally vented</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Class II BSC</td>
<td>• Externally vented</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• CACI</td>
<td>• Negative pressure between 0.01 and 0.03” w.c.</td>
<td></td>
</tr>
</tbody>
</table>
Storage and Handling
Requirements for Storing HD Inventory

• HDs that may be stored with other inventory:
  – Non-antineoplastic
  – Reproductive risk only
  – Final dosage forms

• Antineoplastic HDs (requiring manipulation other than counting) and all HD APIs must be stored per all USP Chapter <800> requirements
Storage Requirements

- Hazardous drugs shall be stored separately from other inventory in a manner to prevent contamination and personnel exposure.
  - Minimum of 12 ACPH from exhaust
  - Negative pressure of 0.01 to 0.03” w.c.

USP General Chapter <800> Hazardous Drugs—Handling in Healthcare Settings
(http://www.usp.org/compounding/general-chapter-hazardous-drugs-handling-healthcare)
Personnel Training – Sterile Compounding

• All personnel who handle HDs must be trained based on their job functions
• Personnel competency must be reassessed at least every 12 months
• Personnel must be trained prior to the introduction of a new HD or new equipment and prior to a new or significant change in process or SOP
• All training and competency assessment must be documented
Personnel Training – Hazardous Drugs

• The training must include at least the following:
  – Overview of entity's list of HDs and their risks
  – Review of the entity's SOPs related to handling of HDs
  – Proper use of PPE
  – Proper use of equipment and devices (e.g., engineering controls)
  – Response to known or suspected HD exposure
  – Spill management
  – Proper disposal of HDs and trace-contaminated materials
Thank You

Joseph W. Coyne RPh
Director of Field Operations
Clinical IQ LLC

Office (224) 360-6926

joe.coyne@clinicaliq.com
www.clinicaliq.com
Oncology Nursing Perspectives

Martha Polovich, PhD, RN, AOCN
Georgia State University
Atlanta, GA
Preparation of Sterile Drugs

- Are you compounding?
  - Combining, mixing, or altering ingredients to create medication to meet unique needs of an individual patient

- USP Chapter <797> standards for sterile compounding
  - Clean room conditions
  - Competent personnel
  - Monitoring the environment

- Immediate use sterile compounding
  - Emergencies ONLY
  - Limited number of manipulations
  - Only non-hazardous drugs

USP, 2012
Prevention of Infections

- Aseptic technique for medication preparation and administration
- Minimize frequency of IV catheter manipulations
- Catheter care bundle to prevent CLABSI
  - Hand hygiene before insertion
  - Maximal sterile barrier precautions for insertion
  - Cleanse insertion site with >0.5% chlorhexidine with alcohol
  - Avoid femoral / jugular sites
  - Remove unnecessary catheters
  - “Scrub the hub”

Camp Sorrel & Matey, 2017; O’Grady et. al., 2011
Safe Injection Practices

- Perform drug preparation in a dedicated medication preparation area
- Scrub medication vial diaphragms with 70% alcohol and allow to dry
- Do not use single-dose vials for more than one patient
- Dedicate multi-dose vials to a single patient whenever possible
- Do not open syringe packages until needed
- Do not “batch” prepare syringes for later use outside of controlled environment
- Use commercially manufactured or pharmacy-prepared prefilled syringes (e.g., saline & heparin)

CDC, 2011
Resources from ONS

Safe Handling of Hazardous Drugs (Third Edition)

The third edition of Safe Handling of Hazardous Drugs provides nurses with the latest details and procedures needed to keep safe in the workplace. You’ll find new chapters on post-administration issues, linen handling, disposal of hazardous drugs and hazardous drug waste, and the hazardous drug handling policy landscape. In addition to these new sections, each chapter includes key points to help highlight the most important information for nurses dealing with hazardous drugs.

Safe Handling of Hazardous Drugs is based on the recommendations of NIOSH, OSHA, ONS, the American Society of Health System Pharmacists (ASHP), and USP. This essential guide is designed to help you translate safe handling recommendations into your daily practice as you handle HDs in the delivery of care to patients.

Toolkit for Safe Handling of Hazardous Drugs for Nurses in Oncology (https://www.ons.org/toolkits/toolkit-safe-handling-hazardous-drugs-nurses-oncology)

Additional Information and Resources
CDC Resources: Infection Control

- Basic Infection Control and Prevention Plan for Outpatient Oncology Settings [PDF - 32 pages]

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

- Outpatient Settings Policy Options for Improving Infection Prevention [PDF - 37 pages]
  https://www.cdc.gov/hai/pdfs/prevent/Outpatient-Settings-Policy-Options.pdf

- Injection Safety
  http://www.cdc.gov/injectionsafety/providers/provider_faqs.html
CDC Resources: Infection Control

- Basic Infection Control and Prevention Plan for Outpatient Oncology Settings

I. Fundamental Principles of Infection Prevention
II. Education and Training
III. Surveillance and Reporting
IV. Standard Precautions
   A. Hand Hygiene
   B. Personal Protective
   C. Respiratory Hygiene and Cough Etiquette
   D. Injection Safety
   E. Medication Storage and Handling
   F. Cleaning and Disinfection of Devices and Environmental Surfaces
V. Transmission-Based
VI. Central Venous Catheters

Basic Infection Control and Prevention Plan for Outpatient Oncology Settings
(https://www.cdc.gov/HAI/settings/outpatient/basic-infection-control-prevention-plan-2011/)
Injected medicines are commonly used in healthcare settings for the prevention, diagnosis, and treatment of various illnesses. Unsafe injection practices put patients and healthcare providers at risk of infectious and non-infectious adverse events and have been associated with a wide variety of procedures and settings. This harm is preventable. Safe injection practices are part of Standard Precautions and are aimed at maintaining basic levels of patient safety and provider protections. As defined by the World Health Organization, a safe injection does not harm the recipient, does not expose the provider to any avoidable risks and does not result in waste that is dangerous for the community. Visit the page on CDC’s role in safe injection practices.

Frequently Asked Questions (FAQs) regarding Safe Practices for Medical Injections

Pages in this Report

1. Background
2. General
3. Medication Preparation
4. Medication Administration
5. Single-dose/Single-use vials
6. Multi-dose vials
7. References
FDA & USP Resources: Sterile Compounding

- **FDA: Human Drug Compounding**
  
  http://www.fda.gov/drugs/guidancecomplianceregulatoryinformation/pharmacycompounding/default.htm

- **USP: Compounding Standards**
  
  http://www.usp.org/compounding
CDC’s Preventing Infections in Cancer Patients Program

Lisa C. Richardson, MD, MPH
Director, Division of Cancer Prevention and Control
Preventing Infections in Cancer Patients (PICP) Program

Three websites for patients, caregivers & HCPs

30+ Campaign Materials
Fact sheets, posters, infographics, postcards, patient care totes, etc.
Preventing Infections in Cancer Patients (PICP) Program

- >300 million potential people exposed to PICP content

- PICP resources have been downloaded, received, or viewed more than 2 million times since program was launched

- 40% increase in PreventCancerInfections.org visitors from 2016 to 2017

- 47% improvement in cancer patients indicating they received infection prevention education from their provider

- 25% increase in patients and caregivers’ understanding of neutropenia after visiting PCI.org
What’s Next? Virtual Simulation Tools

An interactive role-play simulation featuring Tina and Joe...our virtual patient and provider
What’s Next? Special Resources

PreventCancerInfections.org/es

Educational Materials
Please visit PreventCancerInfections.org and cdc.gov/cancer/preventinfections

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.
Infection Prevention in Oncology Settings is Critical for Patient Safety

*It is important for outpatient oncology settings to:*

- Recognize that **failure to adhere to safe injection practices and sterile compounding standards places patients at risk** for healthcare-associated infections (HAIs) and other adverse events
- Become familiar and **implement standards for basic infection control and safe injection practices**
- Know when medication preparation practices are subject to **sterile compounding standards** and apply the appropriate standards for those practices
- **Identify and report** suspected HAI outbreaks to public health authorities as soon as they are identified
Thank You

For more information, contact CDC
1-800-CDC-INFO (232-4636)

Outbreak inquiries and guidance:
haioutbreak@cdc.gov

Injection safety inquires and guidance:
injectionsafety@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.