
Injection Safety for Outpatient Oncology Settings

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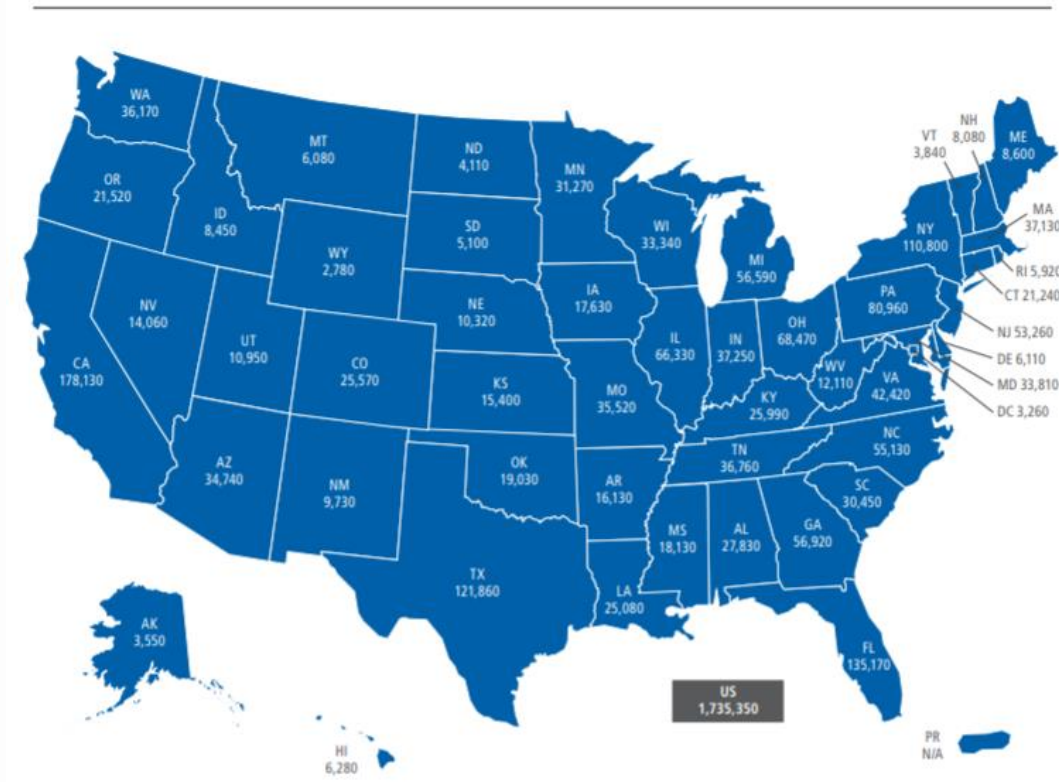
Polls

- Thank you for your answers!

Cancer in the US

- Estimated over 1.7 million new cancer diagnoses in 2018
 - 21,000 in Oregon
- Total number of persons living with cancer will continue to increase
 - Increase number of oncology related visits

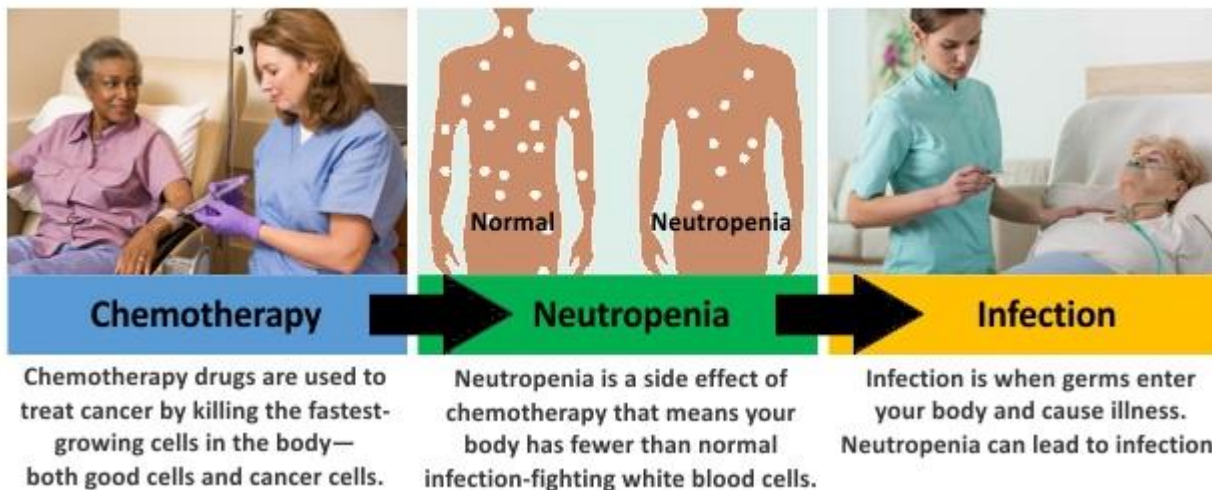
Cancer Facts & Figures 2018



Oncology Patients

- Infections still major cause of morbidity and mortality
- Immunosuppression due to disease and therapies
- Frequent contact with healthcare system
- Frequent use of indwelling devices
- Frequent surgery

How Chemotherapy Increases Risk for Infections



Outpatient Oncology Settings

- Increasing amount of care performed at outpatient setting
 - Infusion centers
 - Hospital based outpatient clinics
 - Non hospital-based outpatient clinics
- Infection control adherence at outpatient clinics vary greatly

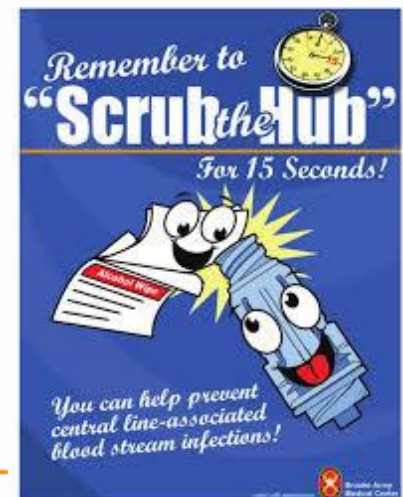


Infection control issues—outpatient clinics

- Similar infection control issues across all outpatient clinics
 - Hand Hygiene
 - Proper personnel protective equipment
 - Improper injection safety techniques
 - Lack of environmental disinfection

General Injection Safety Guidelines—aseptic technique

- Refers to use of various barriers and precautions to prevent transfer of organisms
- Perform hand hygiene prior to handling medication and injection supplies
- Use a sterile syringe and needle
 - Never store unwrapped needs and syringe
- Disinfect the rubber septum prior to piercing it
- Never pool leftover parenteral medications for later administrations



General Injection Safety Guidelines—needle, syringe, and vial use

- Never reuse syringes or needles
 - Syringes and needles are contaminated after use even if they are not visibly soiled
- Do not reuse a syringe and/or needle to re-enter a medication vial for the same patient
- Use a single dose vial whenever possible
- Do not use a single dose vial for multiple patients
- Multidose vials should be dedicated to one patient whenever possible
- Discard vials if sterility is compromised or questionable

**REUSED NEEDLES?
SYRINGES?
CONTAMINATED VIALS?**

YES, IT HAPPENS. EVEN TODAY.

**MAYBE IN
YOUR PRACTICE.**



1 NEEDLE + 1 SYRINGE + 1 TIME = 0 INFECTIONS



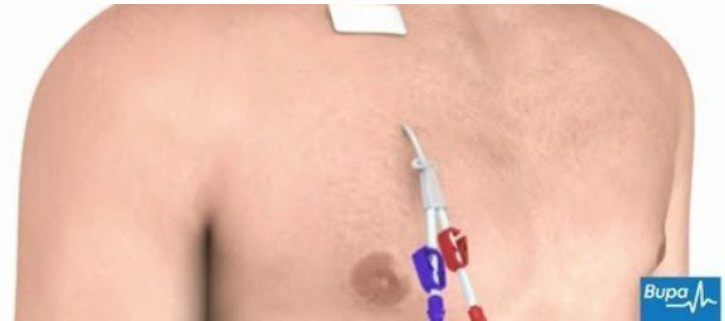
General Injection Safety—medication management

- Draw up medications in a designated clean medication area
 - Away from contaminated items (used syringes and needles, sinks)
 - Away from soiled equipment (procedure equipment)
- Do not leave a needle inserted in the septum of a medication vial



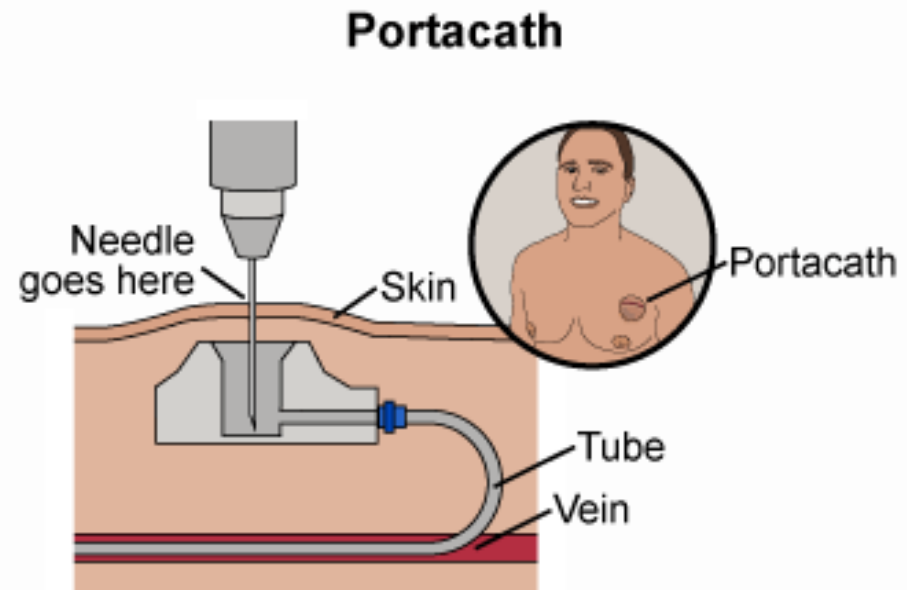
Central Venous Catheters

- Oncology patients frequently have central venous catheters (CVCs)
- CVCs are frequently accessed for chemotherapy and other infusions
- Increase risk of infection
 - Central line associated blood stream infection (CLABSI)
- Infection prevention and safe injection practices are necessary to minimize risk



General Infection Control Guidelines: CVCs

- Maintain aseptic technique
- Perform hand hygiene
- Scrub the hub
- Access the injection cap with syringe or IV tubing
- Ensure environment of care is cleaned and disinfected
- Ports
 - Sterile field should be utilized
 - Hand hygiene is important!
 - Before and after palpating or touching the port



Case Studies

Case study: Unsafe injections in a Nebraska Oncology Clinic—2002

- A gastroenterologist reported 4 patients with recently diagnosed hepatitis C virus (HCV) infection
- All 4 patients received chemotherapy from the same clinic
- A preliminary investigation identified 10 cases of recently diagnosed HCV
- Six patient had HCV genotyped—genotype 3a
 - Rare in the United States

<https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5238a1.htm>

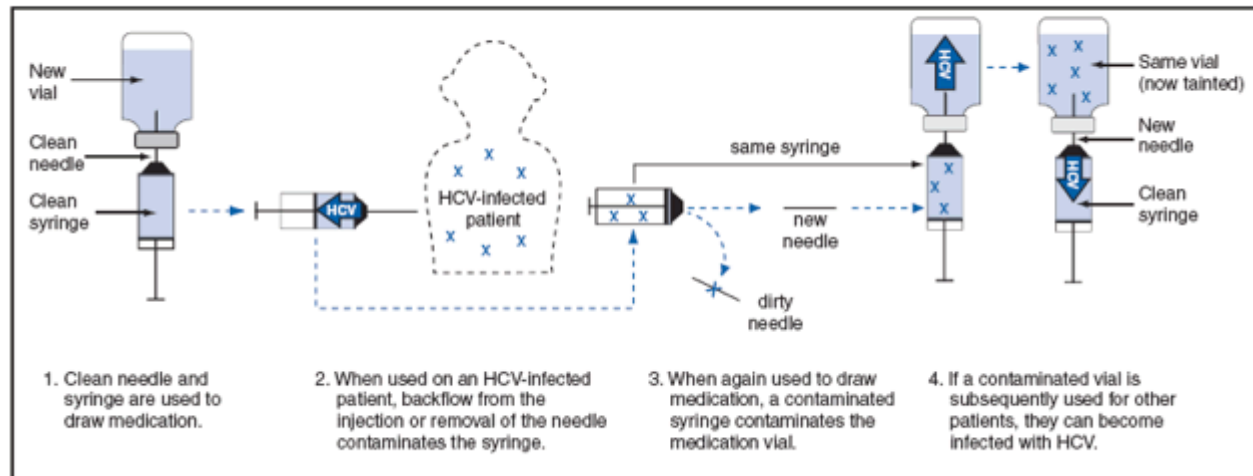
Case study: Unsafe injections in a Nebraska Oncology Clinic—2002

- 486 of 613 (79%) of eligible patients tested for HCV
- 99/486 patients with clinic-acquired HCV infections were identified
- 95/99 isolates were genotype 3a
- Those with CVCs had a higher risk of acquiring HCV than those without a CVC
- No HBV or HIV transmission

Case study: Unsafe injections in a Nebraska Oncology Clinic—2002

- Healthcare worker was not using safe injection practices
- Routinely used the same syringe to draw blood from patient's CVC **AND**
- To draw catheter flushing solution from 500-cc saline bags
 - Used for multiple patients

FIGURE 2. Unsafe injection practices and circumstances that likely resulted in transmission of hepatitis C virus (HCV) at clinic A — Nevada, 2007



Lessons Learned

- Do not reuse syringes between patients even if you use a new needle
- Common bags of intravenous solution should not be used
- Use pre-filled manufactured syringes when possible



Case Study: Catheter-Associated Blood Stream Infections in a Chemotherapy Center—2004

- Chicago Department of Public Health notified of cluster of bloodstream infections (BSIs) with *Klebsiella oxytoca* and *Enterobacter cloacae* at chemotherapy center
- Freestanding outpatient multispecialty medical facility
- *E. cloacae* in 10 patients, *K. oxytoca* in 2 patients, both organisms in 1 patient
- All 13 cases had indwelling CVCs and were receiving chemotherapy

Watson, JB, Jones, RC, Siston, AM, et al (2005) Outbreak of Catheter-Associated *Klebsiella oxytoca* and *Enterobacter cloacae* Bloodstream Infection in an Oncology Chemotherapy Center. *Arch Intern Med.* 165 (22): 2639-2643

Case Study: Catheter-Associated Blood Stream Infections in a Chemotherapy Center—2004

- Interviewed staff at clinic
- Collected samples
 - Medications, syringes prefilled with isotonic sodium chloride solution, bag of isotonic sodium chloride solution
 - Tape, soap, antimicrobial ointment, syringes, valves, etc
 - Artificial fingernail
- Environmental samples from clinic

Case Study: Catheter-Associated Blood Stream Infections in a Chemotherapy Center—2004

- Cases
 - 103 patients were evaluated by blood culture
 - 26/103 (26%) were positive
- Unsafe Injection practices
 - At start of each day, clinic nurses pre drew syringes to flush CVCs
 - Syringes filled from 500 mL bags of saline or dextrose
 - Saline—2 way valve; dextrose—drawn directly
 - Dispensing valves on bags were not discarded after 1 use
 - Intravenous administrations sets continuous use for at least 7 days

Case Study: Catheter-Associated Blood Stream Infections in a Chemotherapy Center—2004

- Environmental specimens
 - All prefilled isotonic sodium chloride solution syringes grew bacteria
 - 4 *K. oxytoca*
 - 3 *E. cloacae*
 - 14 both
 - Bag of isotonic sodium chloride solution also positive for both organisms
 - No other specimens positive
- Environmental samples and blood cultures indistinguishable by PFGE

Lessons learned

- Use pre-filled manufactured syringes when possible
- Intravenous administration sets should be replaced every 72 hours
- Do not use bags of intravenous solution as a common source supply for more than 1 patient



Case Study—*Pseudomonas aeruginosa* bloodstream infections—2011

- 4 patients with indwelling ports hospitalized with blood stream infections
 - *P. aeruginosa* with identical resistance patterns
 - 2 also with *K. pneumoniae*
- All received care from same outpatient cancer facility
 - Free standing cancer center with small number of staff

Dobbs TE., Guh AY., Oakes P., Vince MJ., Forbi JC., Jensen B., Moulton-Meissner H., Byers P. 2014. Outbreak of *Pseudomonas aeruginosa* and *Klebsiella pneumoniae* bloodstream infections at an outpatient chemotherapy center. *Am J Infect Control* 42(7): 731-734

Case Study—*Pseudomonas aeruginosa* bloodstream infections—2011

- Cases
 - 14/84 active clinic patients identified
- Unsafe injection practices
 - Overt syringe reuse among patients
 - Reused syringe throughout the day for same patient
 - Used common source saline bag to flush ports
 - Prepared syringes prefilled and kept for multiple days
 - Decision to reuse heparin and saline syringes as a cost saving measure
 - Directly reused syringes between patients and only discarded with visible blood

Lessons learned

- Use pre-filled manufactured syringes whenever possible
- Do not reuse syringes on multiple patients
- Do not reuse syringes on the same patient
- CDC recommends drawing up and administering as soon as possible (minutes, not hours)
- Creating batches of multiple syringes drawn up in the clinic setting (outside a pharmacy) is risky
 - Not recommended unless anticipate near term demand/need

In the news now

- Recent outbreak in Arkansas
- 52 patients, mostly oncology, from a cancer institute ill with novel mycobacterium, Mycobacterium sp. FVL 201832
 - 3 died
- Investigation identified saline flushes as source of outbreak
- Facility pre-filled syringes with saline and stored for up to 7 days for later use
- 4 out of 5 pre-drawn saline syringes tested positive for mycobacterium
- Lawsuit in place—“negligent” behavior on the part of the clinic in areas of sanitation, education, training, adherence to CDC infection control plan, and compliance with manufacturer’s instructions

<https://www.arkansasonline.com/news/2018/oct/30/bacteria-outbreak-confirmed-20181030-1/>

Unsafe Injections: Causes and Best Practices

- Syringe reuse (direct and indirect)
 - Never administer medications from the same syringe to multiple patients
 - Do not reuse a syringe to enter a medication vial or solution
- Misuse of multi-dose vials
 - Intravenous bags are not considered multi-dose vials
 - Limit the use of multi-dose vials and dedicate them to a single patient whenever possible
- Maintain aseptic technique
 - Draw medications in a designated clean medication area

Resources

DO YOU PROVIDE TREATMENT FOR PATIENTS WITH CANCER?

PROTECT YOUR PATIENTS, YOURSELF, AND YOUR BUSINESS

Since 2002, at least nine serious infectious disease outbreaks have occurred in cancer clinics. These outbreaks involved unsafe injection practices, including the reuse of syringes. As a result, hundreds of patients became infected and thousands more required notification and testing for bloodborne pathogens.



REMEMBER! WHEN PREPARING MEDICATIONS AND INJECTIONS...

NEVER reuse these items:



Needles or syringes that have been used for any purpose



Vials with "single-dose vial" printed on the label



Saline bags



Intravenous tubing

ALWAYS follow aseptic technique* when:



Preparing any medication



Disinfecting a vial's septum



Accessing a central line



Injecting any medications

*Aseptic technique is used by health care workers to prevent the contamination of clean areas, equipment, and sterile medications. This will help prevent the spread of infection. Please refer to [CDC's Basic Infection Control and Prevention Plan for Outpatient Oncology Settings](#) for more information.

LEARN MORE ABOUT WAYS YOU CAN KEEP YOUR PATIENTS SAFE BY VISITING ONEANDONLYCAMPAIGN.ORG AND PREVENTCANCERINFECTIONS.ORG.



One and Only Campaign

- More information on general safe injection practices can be found on our One and Only Campaign website:
<http://www.oneandonlycampaign.org/partner/oregon>
- Injection and Needle Safety Toolkit:
<https://www.oregon.gov/oha/PH/DISEASESCONDITIONS/COMMUNICABLEDISEASE/HAI/PREVENTION/Pages/one-and-only.aspx>

Toolkit Contents

For the Public

- [What to know about receiving healthcare involving needles](#)
- [At-home injections and needle use](#)

For Health Professionals

- [Guidelines and Recommendations](#)
- [Aseptic Technique](#)
- [Needle Safety](#)
- [Medication and Treatment Management](#)
- [Diabetes Care](#)
- [Reports of Disease Transmission](#)
- [Specialty Specific Resources](#)
- [Additional Resources](#)
- [References](#)

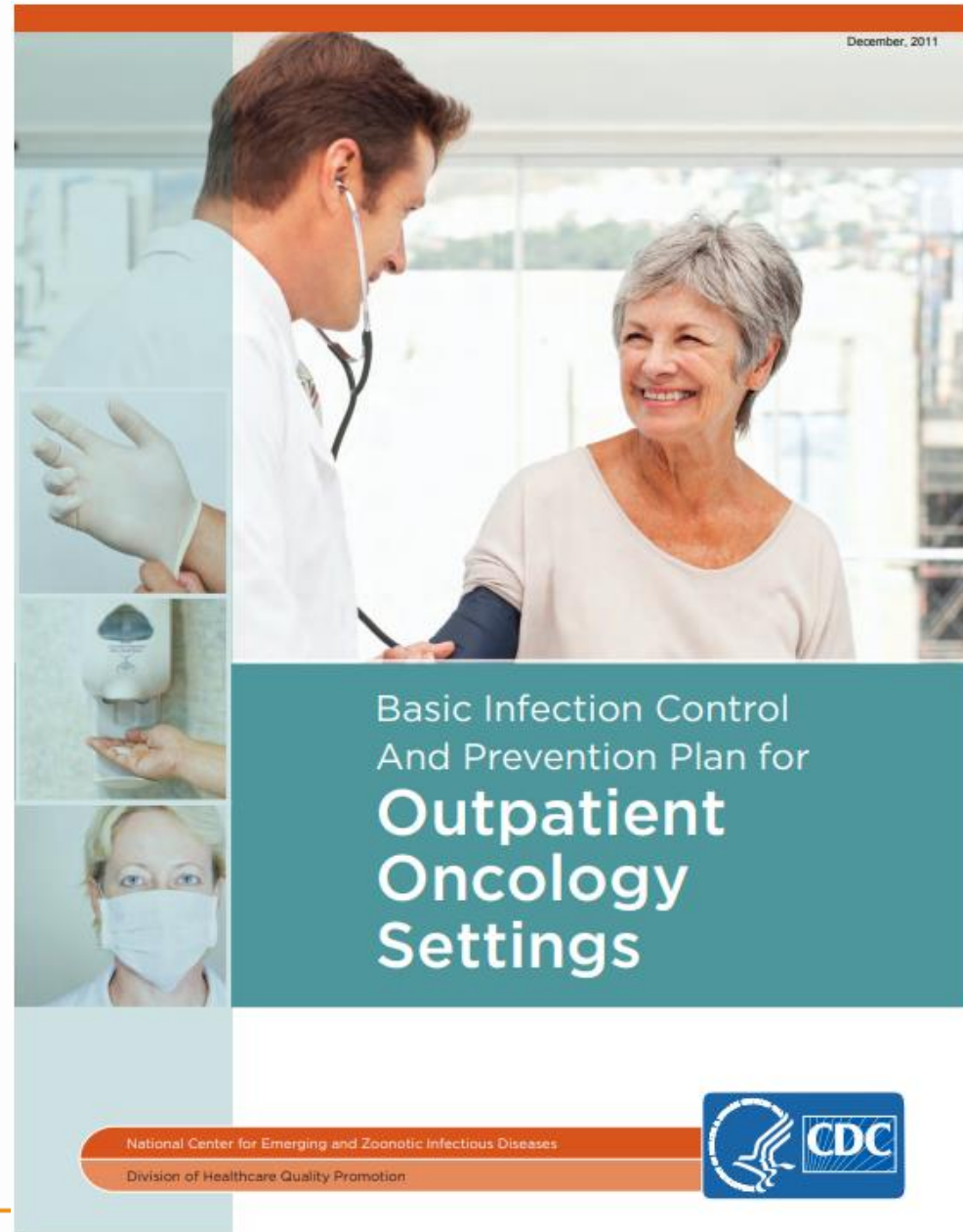
Feedback

- [We want to hear from you! Let us know what you think about this toolkit by completing this quick feedback form.](#)

<https://www.oregon.gov/oha/PH/DISEASES/CONDITIONS/COMMUNICABLEDISEASE/HAI/PREVENTION/Pages/one-and-only.aspx>

Infection Control Resources

- Basic Infection Control and Prevention Plan for Outpatient Oncology Settings
 - Model for basic infection control and prevention plan
 - Policies and procedures
 - Use plan as starting point
- <https://www.cdc.gov/hai/pdfs/guidelines/basic-infection-control-prevention-plan-2011.pdf>



Questions?

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