Infection Prevention and Control: Ambulatory Surgical Center (ASC)

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Objectives:

1. Define the components of an effective hand hygiene program.
2. List performance measures related to environmental infection control.
3. Identify safe practices related to the administration of injectable medications.
4. Describe the requirements for reprocessing single-use devices.
5. Compare the different applications of sterilization and high-level disinfection.

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Impact of Healthcare Associated Infections (HAI)

As a result of HAI, approximately 100,000 people die each year, making this "preventable" complication the sixth leading cause of death following heart disease, cancer, stroke, chronic lower respiratory diseases, and accidents.

-CDC

Hand Hygiene

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Why Monitor Hand Hygiene?

- Establishes a safe environment for patients
- Provides attention to reinforce and maintain behavior
- Opportunity to provide feedback on performance

Transmission Sequence

1. Organism transfer
2. Organism survival
3. Poor hand hygiene
4. Patient contamination

Boyce JM, Pittet D. Guideline for hand hygiene in health-care settings. MMWR Recomm Rep. 2002;51(RR16): 1-44. http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5116A1.htm.

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Contamination of Healthcare Worker (HCW) hands

- Direct contact with a patient colonized or infected with a pathogenic organism
- Contact with a medical device contaminated with a patient's secretions or excretions
- Contact with an environmental surface in the room of a patient colonized or infected with a pathogenic organism

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Poor hand hygiene compliance:

- Heavy workloads/too busy
- Skin irritation/dryness
- Hands do not appear soiled/contaminated
- Poor availability/location of hand hygiene supplies
- Not thinking about it/forgetfulness

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Expectation of when to perform hand hygiene:

- Before any direct patient contact, even if gloves will be worn
- Before performing invasive procedures like starting an IV
- After contact with blood, body fluids, or contaminated surfaces even if gloves are worn
- After any direct patient contact
- After removing gloves

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Hand hygiene with soap and water

- Hands are visibly soiled/contaminated
- Before eating
- After using the restroom
- Consider after providing care to a patient with *C. diff*

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- Soap and water availability
- Alcohol-based hand rubs available and installed appropriately
- Hand hygiene expectations
- Use of gloves

Practicing Hand Hygiene

- Helps prevent disease transmission
- Remove jewelry from hands and wrists, and free of artificial nails and enhancements
- Handwashing with soap and water uses agent, friction and time
- Apply the amount of alcohol-based hand rub recommended by the manufacturer to cover all surfaces of the hand
- Rub hands together, covering all surfaces of the hands and fingers until dry.

Environmental Infection Control

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Mitigation of Risk

- Unrestricted
- Semi-restricted
  - Surgical attire and limited access
- Restricted
  - Surgical attire, mask use, and limited access

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- Operating rooms are cleaned and disinfected after each surgical or invasive procedure with an EPA-registered disinfectant
- Operating rooms are terminally cleaned daily
- High-touch surfaces in patient care areas are cleaned and disinfected with an EPA-registered disinfectant
- ASC has a procedure in place to decontaminate gross spills of blood

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Policies and Procedures

- Approved environmental cleaning and disinfection agents
- Labeling of secondary containers if cleaning/disinfections agents require mixing and dilution
- Procedures including the use of PPE
- Frequency for cleaning and disinfecting surfaces
- Cleaning and maintenance of employee kitchen and equipment
- Cleaning and maintenance of refrigerators and ice machines
- Infection Control Risk Assessment (ICRA) during construction or renovation
- Pest control

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Environmental Surface Cleaning & Disinfection Agents

- 3 levels of effectiveness
  - High
  - Medium (intermediate)
  - Low
- EPA requirements for “hospital disinfectant” means effective against
  - Pseudomonas aeruginosa
  - Staphylococcus aureus
  - Salmonella choleraesuis
- Hospital disinfectants with demonstrated potency against mycobacteria may list tuberculocidal

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Patient Care Equipment

- Follow manufacturer's guidelines
  - Compatibility
  - Water-resistant/immersible
  - Decontamination requirements after servicing

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Education and Competency

- Facility-approved cleaning and disinfecting agents
- Safety precautions
- Cleaning schedule
- Proper use of agents

Safe Injection Practices

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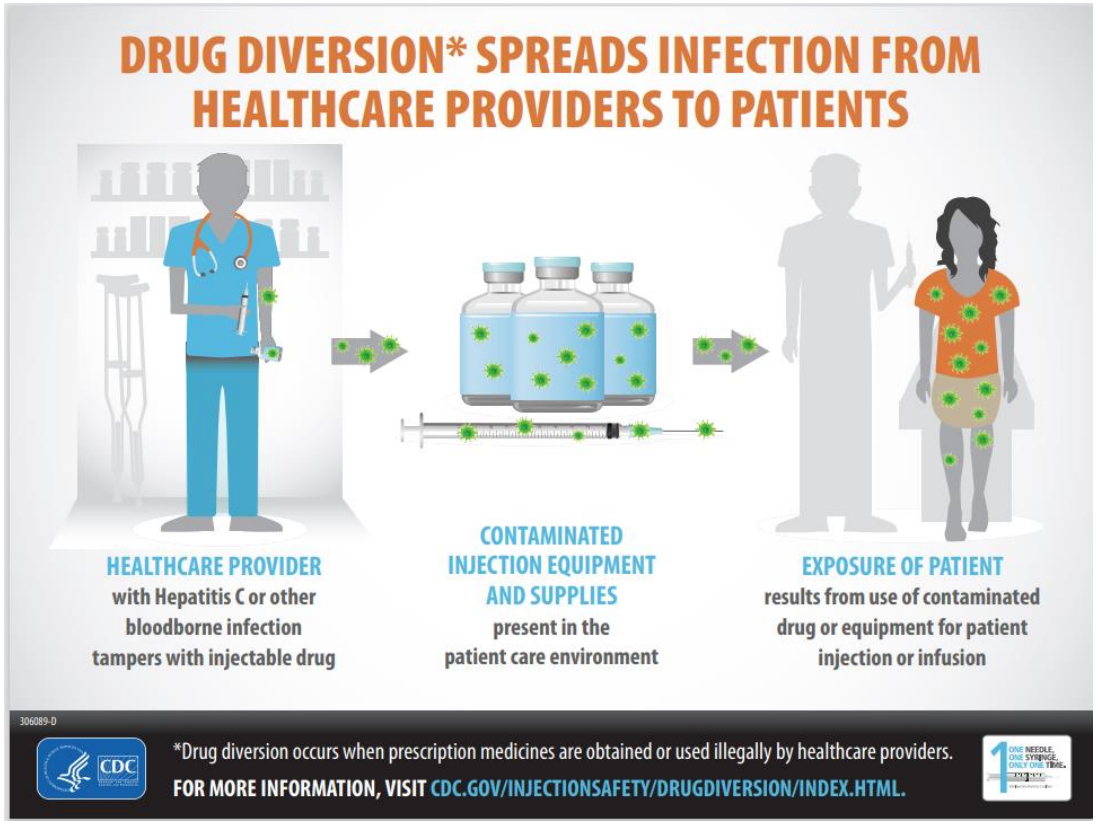
Unsafe Practices & Drug Diversion

- Improper injection practices
- Improper infusion practices
- Improper medication vial practices
- Improper point-of-care testing practices



Patient Safety

Injection Practice Myths

- If there is no blood, there is no risk
- Changing the needle
- Injecting through intervening lengths of intravenous tubing
- Presence of a check valve
- Always maintaining pressure on the plunger to prevent backflow of body fluids

Patient Story

A 2007 hepatitis C outbreak in Las Vegas, Nevada identified unsafe injection practices at an endoscopy center that infected seven patients with hepatitis C.

One patient died from complications related to hepatitis C.

To cut costs, employees at the facility:

- Reuse single-use vials of propofol on multiple patients,
- Reuse syringes and other instruments intended for single use
- Limit the use of supplies needed for safe endoscopic procedures, and rush those procedures to enhance facility profit

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- **Single-use**: a vial where a single dose can be removed and then the vial and its remaining contents are discarded
- **Single-dose**: a vial containing a single unit of a parenteral drug product
- **Multi-dose vial**: a bottle of liquid medication (injectable) that contains more than one dose of medication and is approved by the FDA for use on multiple persons
  - Multi-dose vials contain a preservative, but the preservative does not necessarily protect from contamination

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Multi-dose medications should be:

- Dedicated to single patient, whenever possible
- Entered only with sterile needle and sterile syringe
- Rubber septum should be disinfected with alcohol prior to each entry
- Dated upon initial entry and discarded within 28 days of opening or according to manufacturer's guidelines
- Discarded if sterility is compromised

Multi-dose medications should not be:

- Kept in the immediate patient treatment area

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Needle and Syringe Use

- 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 medications packaged as single-dose or single-use for more than one patient.
- Always use aseptic technique when preparing and administering injections.

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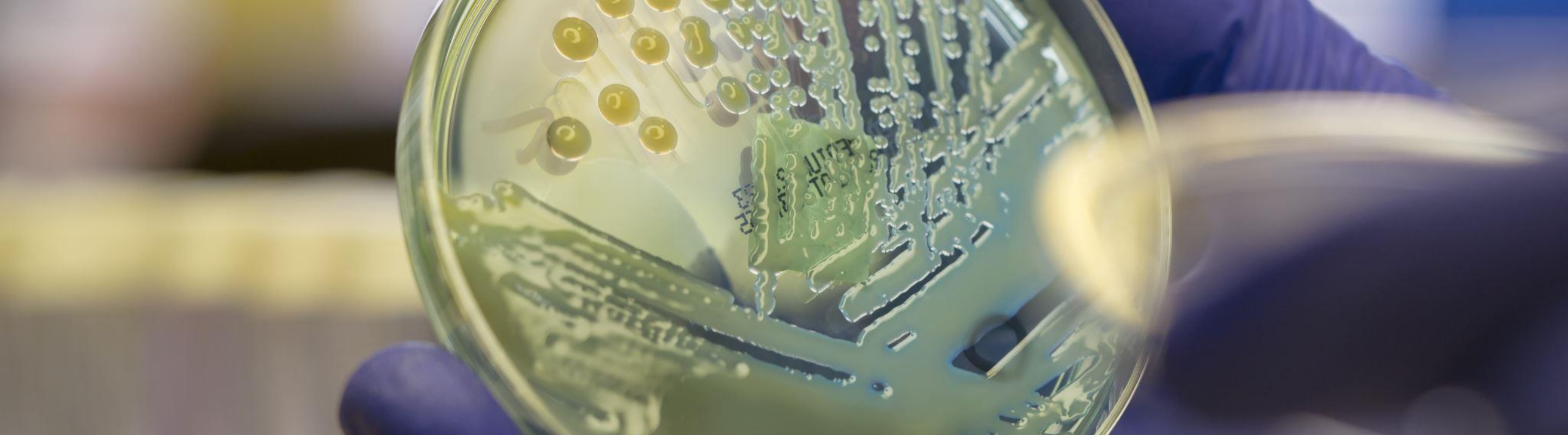
Point of Care (POC) Devices

- Proper hand hygiene prior to donning, and after doffing gloves
- A new, single-use lancing device is used for each patient
- POC device is specified by manufacturer as suitable for multiple patient uses, and comes with the manufacturer's recommended cleaning and care instructions
- POC is cleaned and disinfected after each use following the manufacturer's cleaning instructions



Sterilization and Disinfection

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Spaulding Classification System

- Critical: Items that enter sterile tissue or the vascular system require sterilization
- Semi-critical: Items that come in contact with non-intact skin or mucous membranes require a minimum of high-level disinfection
- Noncritical: Items that contact only intact skin should be cleaned with an intermediate-level disinfectant between each patient use

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- Pre-cleaning must always be performed prior to sterilization and high-level disinfection
- Sterilization must be performed for critical equipment
- High-level disinfection must be performed for semi-critical equipment

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Cleaning

- Removal of gross soil and bioburden

Decontamination

- Process to reduce the number of microorganisms on an object to make the object safe for handling

Keeping instruments moist at the point-of-use prevents biofilm, protects instruments, facilitates cleaning and decontamination.

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Decontamination area

- Transport Container
  - Bins with lids, impermeable color bags, closed/covered carts, closed sterilization container systems, biohazard label
- Decontamination Area
  - Traffic flow, physical separation, negative pressure, temperature and humidity monitoring
- Designated Sink
  - Prevents cross-contamination

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Visual inspection

- Cleanliness
- Proper function and alignment
- Corrosion, pitting, burrs, nicks, and cracks
- Sharpness of cutting edges
- Looseness of set pins
- Wear and chipping of inserts and plated surfaces
- Removal of moisture
- Any other defects

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Packaging

- Allow for penetration and release of the sterilant so that sterilization can take place
- Maintain sterility until the package is opened or the integrity of the package is compromised
- Provide for aseptic delivery of the contents onto the sterile field
- Be compatible with the sterilization process
- Be used according to the manufacturer's written instructions
- Be labeled according to the policies and procedures of the practice setting and according to manufacturer's instructions
- Permit identification of package contents
- Provide a barrier to microorganisms, particles, and fluids
- Non-linting

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Types of Sterilization Techniques

- Saturated Steam
- Peracetic Acid
- Hydrogen Peroxide Gas Plasma
- Immediate-Use Steam Sterilization
- Ethylene Oxide
- Ozone
- Hydrogen Peroxide

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Monitoring the Process

- Class 1 – Process Indicator
- Class 2 – Bowie-Dick Test
- Class 3 – Single Variable Indicator
- Class 4 – Multiple Variable Indicator
- Class 5 – Integrating Indicator
- Class 6 – Emulating Indicator

Chemical and Biological Indicators Summary

- Objective monitoring, separate from the sterilizer controls
- Different classes of chemical indicators are used to test different sterilization methods
- Biological indicators available in a variety of forms and can provide fast results

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- A chemical indicator (process indicator) is placed correctly, as described in manufacturer's instructions for use, in the instrument packs in every load
- A biologic indicator is used at least weekly for each sterilizer and with every load containing implantable items as evidenced by ASC documentation (e.g., log)
- Each load is monitored with mechanical indicators (e.g., time, temperature, pressure)
- Documentation for each piece of sterilization equipment is maintained and up-to-date and includes results from each load

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Two types of high-level disinfection

- Pasteurization (automated)
  - Heat-automated process (wash, rinse, and pasteurization) using time and heat for HLD of heat sensitive semi-critical instruments
- Chemical (manual and automated)
  - Chemical HLD is achieved by immersing an item for specified period in a chemical agent that has been cleared by the FDA as a disinfectant/sterilant

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Chemical Disinfection Guidelines

- Immersed for the appropriate length of time and appropriate temperature per manufacturer's instructions or evidence-based guidelines
- Items are allowed to dry before use and stored in a designated clean area in a manner to protect from damage and prevent contamination

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Storage, Handling, and Transport

- Proper rotation of sterilized packages is achieved by First In, First Out.
- Storage conditions and handling are two primary factors that determine shelf life.
- Closed cabinet that does not crush, bend, compress, or puncture package.
  - If no cabinet: covered plastic container
- Open storage: lowest shelf 12 inches from floor and highest shelf 18 inches below the sprinkler heads.
- All carts used to carry sterile items and supplies are to be covered and cleaned routinely

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- Single-Use Devices
  - A device that is intended for one use or on a single patient during a single procedure
- Immediate-Use Steam Sterilization
  - Should not be routine practice but should be used only for an urgent and unpredicted need for a specific device
- Loaner Equipment
  - Have a policy

Resources

- Ambulatory Surgical Center (ASC) Infection Control Surveyor Worksheet
- Hand Hygiene Guidance | Hand Hygiene | CDC
- Injection Safety | CDC
- One and Only Campaign | Injection Safety | CDC

Thank You!

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