Infection Prevention & Control

Prevention Strategies

Objectives

- Review standard and transmission-based precautions
  - Discuss hand hygiene strategies and how to measure compliance
  - Review respiratory etiquette and safe injection practices
- Review the OSHA Bloodborne Pathogens Standard and best practices for blood glucose monitoring
- Discuss the role of environmental cleaning in infection prevention and how to measure compliance
- Describe the importance of vaccination
Isolation Precautions

• Used to reduce transmission of microorganisms

• Designed to protect both staff and residents from contact with infectious agents

• Includes:
  • Standard precautions
  • Transmission-based precautions

Standard Precautions

Because it is not always possible to tell who is infected, these practices should be the approach for the care of all residents all the time

Formerly known as “universal precautions”
Standard Precautions: Virginia

Nursing homes and assisted living facilities in Virginia are required to address standard precautions in their facility policies, annual training and training upon employment.

Needs Assessment Results: Percent of facilities addressing standard precautions through facility policies or training by type of facility.
Hand Hygiene: How and When

<table>
<thead>
<tr>
<th>Soap and water</th>
<th>Alcohol-based hand rub</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>When to use</strong></td>
<td>Use when hands are visibly dirty, contaminated, or soiled</td>
</tr>
<tr>
<td><strong>How to use (properly)</strong></td>
<td>Use for routinely decontaminating hands if hands are <em>not</em> visibly soiled</td>
</tr>
<tr>
<td>1. Wet hands with water, apply soap, rub hands together for at least 15 seconds</td>
<td>1. Apply to palm of one hand, rub hands together covering all surfaces until dry</td>
</tr>
<tr>
<td>2. Rinse and dry with disposable towel</td>
<td>2. Manufacturer will instruct how much to use</td>
</tr>
<tr>
<td>3. Use towel to turn off faucet</td>
<td></td>
</tr>
</tbody>
</table>


Hand Hygiene: Why and When

- Clean hands are the most important factor in preventing the spread of disease and antibiotic resistance in settings across the continuum of health care.

- Before and after:
  - Contact with a resident
  - Treating a cut or wound (Ex: changing dressings or bandages)

Hand Hygiene: When

• Before:
  ◦ Putting on gloves
  ◦ Preparing or eating food*
  ◦ Touching your eyes, nose, or mouth
  ◦ Handling/administering medication
  ◦ Insertion of invasive devices

• After:
  ◦ Contact with blood, body fluids, mucous membranes, secretions, excretions, or non-intact skin
  ◦ Removing gloves
  ◦ Touching surfaces or objects in the resident's environment that may be contaminated (bed rails, bedside tables, light switches, etc.)
  ◦ Handling garbage
  ◦ Using the restroom*
  ◦ Blowing your nose, coughing, or sneezing

* Wash hands with soap and water

Needs Assessment Results:
Percent of facilities addressing hand hygiene through facility policies or training by type of facility

[Bar chart showing the percentage of NH and ALF facilities addressing hand hygiene through policies or training]
Hand Hygiene: Monitoring Compliance

Date/Time: __________________ Day of the Week: ___________ Time: ___________ to ___________
Observer’s initials: __________________

<table>
<thead>
<tr>
<th>Unit/Ward</th>
<th>Person</th>
<th>Precaution type*</th>
<th>Role of Observed Person**</th>
<th>HH before***</th>
<th>PPE before****</th>
<th>HH after***</th>
<th>PPE after****</th>
<th>Compliant</th>
</tr>
</thead>
</table>

* Precaution type: S = Standard, C = Contact, D = Droplet, A = Airborne

** Facility role of observed person: 1 = Nursing, 2 = Physician, 3 = Physical/Occupational Therapist, 4 = Respiratory Therapist, 5 = Environmental Services, 6 = Food Services, 7 = Patient/resident transporter, 8 = IV team, 9 = Lab, 10 = Dietitian, 11 = Other Staff, 12 = Student, 13 = Volunteer, 14 = Visitor

*** HH before resident contact, HH after resident contact, HH after contact with objects in the patient/resident’s immediate vicinity, and HH after removing gloves if wearing Standard Precautions

**** PPE before - put on appropriate PPE before entering area of patient/resident. PPE after - remove PPE before leaving the area of patient/resident. PPE = Personal Protective Equipment. GL = Gloves, GN = Gown, M = Mask, N = None.

Precaution type determines applicable PPE.

---

Personal Protective Equipment: Standard Precautions

** Gloves:** If contact with blood or body fluids may occur

** Face mask / eye protection:** If contact with blood or body fluids may occur

** Gown:** If contact with blood or body fluids may occur
Sequence of Putting on PPE ("Donning")

1. GOWN
   - Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
   - Fasten in back of neck and waist

2. MASK OR RESPIRATOR
   - Secure ties or elastic bands at middle of head and neck
   - Fit flexible band to nose bridge
   - Fit snug to face and below chin
   - File check respirator

3. GOGGLES OR FACE SHIELD
   - Place over face and eyes and adjust to fit

4. GLOVES
   - Extend to cover wrist of isolation gown

Sequence of Taking off PPE ("Doffing")

1. GLOVES
   - Outside of gloves is contaminated!
   - Grasp outside of glove with opposite gloved hand; peel off
   - Hold removed glove in gloved hand
   - Slide fingers of ungloved hand under remaining glove of wrist
   - Peel glove off over first glove
   - Discard gloves in waste container

2. GOGGLES OR FACE SHIELD
   - Outside of goggles or face shield is contaminated!
   - To remove, handle by head band or ear pieces
   - Place in designated receptacle for reprocessing or in waste container

3. GOWN
   - Gown front and sleeves are contaminated!
   - Unfasten ties
   - Pull away from neck and shoulders, touching inside of gown only
   - Turn gown inside out
   - Fold or roll into a bundle and discard

4. MASK OR RESPIRATOR
   - Front of mask/respirator is contaminated — DO NOT TOUCH!
   - Grasp bottom, then top ties or elastics and remove
   - Discard in waste container
Safe Injection Practices: Why

Safe injection practices are intended to prevent transmission of infectious diseases between individuals AND to prevent injuries such as needlesticks.

Safe Injection Practices Include:

- Aseptic technique
- Using a single syringe and fluid infusion sets ONLY once (changing the needle is not sufficient)
- Using single-dose vials when possible
- If multi-dose vials must be used, then use & store them according to manufacturer's recommendation
Safe Injection Practices: Fingerstick Devices

Single-use devices
• Disposable
• Prevent reuse through an auto-disabling feature
• Appropriate for settings where assisted monitoring of blood glucose is performed

Reusable devices
• Often resemble a pen ("penlet")
• Use not recommended due to problems that have been observed, including:
  • Failure to change disposable pieces
  • Failure to clean and disinfect properly
  • Links to multiple outbreaks of hepatitis B
  • Risk for occupational needlestick
• Only appropriate for people who do not require assistance with blood glucose monitoring (BGM)

Blood Glucose Monitoring Best Practices
• Fingerstick devices should never be used for more than one person
  ▪ Select single-use devices that permanently retract upon puncture
• Dedicate blood glucose meters to a single resident, one person, if possible
  ▪ If shared, the device should be cleaned and disinfected after every use, per manufacturer’s instructions
• Insulin pens and other medication cartridges and syringes are for single-use only and should never be used for more than one person
OSHA Bloodborne Pathogens Standard

The Occupational Safety and Health Administration (OSHA) Bloodborne Pathogens (BBP) Standard describes important strategies that can reduce the risk of infection on the job.

- Exposure Control Plan
- Engineering Controls
- Work Practice Controls
- Standard Precautions / Personal Protective Equipment
- Housekeeping
- Hepatitis B Vaccine
- Occupational Exposure Follow-up
- Training and Recordkeeping
Engineering Controls: Handling Sharps

- Use needles with safety devices
- **Never** recap, break, or bend needles
- **Never** leave needles unattended
- **Never** reuse disposable sharps
- Dispose of all needles in a regulated, color-coded, labeled sharps container
- Sharps containers should be changed when 1/2-3/4 full.

Needs Assessment Results:
Percent of responding facilities aware of and addressing OSHA BBP Standard by facility type

![Bar chart showing the percentage of facilities aware of and addressing OSHA BBP Standard by facility type, including Awareness, Policy, Training annually, Training upon employment, and Hepatitis vaccine strongly encouraged for staff. The chart includes bars for NH and ALF.]
Respiratory Hygiene/ Cough Etiquette

Is used to decrease the transmission of respiratory illness such as influenza & colds by:
1. Education regarding how respiratory illnesses spread and prevention practices including how to “cover your cough” and proper hand hygiene methods
2. Availability and use of tissues and hand hygiene products
3. Use of mask for person who is coughing
4. Spatial separation of the person with a respiratory illness

Respiratory Hygiene Fact Sheet

Cover Your Cough Poster
Hand Hygiene Poster
Protect Our Residents Poster
Transmission-Based Precautions Include:

- Contact
- Droplet
- Airborne

- Needs Assessment Results: Percent of facilities addressing transmission-based precautions through facility policies or training by type of facility

Contact Precautions

- Are used in addition to standard precautions
- Designed to reduce the risk of transmission of microorganisms by direct or indirect contact
  - Examples: Clostridium difficile, scabies, multidrug-resistant organisms
- Utilize wearing of gown and gloves for all activities that may involve contact with the resident or potentially contaminated areas/objects in the resident’s environment
- Dedicate use of noncritical care equipment (e.g., blood pressure cuffs) to a single resident or use single-use disposable noncritical care equipment
- Recommend private room or cohorting of residents with same bacteria or virus
Contact Precautions Comments

1. Socialization is important for residents.

2. If a resident is “colonized” with an organism (such as MRSA), then usually no special precautions are necessary, as long as good hand hygiene is maintained.*

3. If a resident has a sore or wound that can be contained, then the resident can usually move around freely, as long as good hand hygiene is maintained.*

* Each resident is unique and decision-making regarding placement and precautions should be made on a case-by-case basis by a trained professional.
Droplet Precautions

- Are used in addition to standard precautions.

- Used for illnesses that can be spread to others by speaking, sneezing, or coughing.
  - Examples: influenza, the common cold

- These germs may through the air for approximately 3-6 feet and can be breathed into the nose or mouth of another person.

- A mask is used by staff or visitors upon entering the room of a resident on droplet precautions.

- Hand hygiene is essential to avoid the spreading of germs.
Airborne Precautions

• Are used in addition to standard precautions.

• Used for illnesses that can be transmitted by small particles in the air.
  ◦ Example: tuberculosis

• An airborne infection isolation (AI) room with negative pressure is preferred.
  ◦ If AI room not available, place in private room with door closed.

• Use N95 respirator (or higher) when entering room.

Cleaning of the Environment

Our environment contains microorganisms that can cause infection.

Cleaning and disinfecting surfaces and objects such as medical equipment can decrease the spread of these organisms to people.
Common Terms

• **Clean** = remove all visible dust, soil, and any other foreign material
• **Decontaminate** = remove disease-producing microbes to make safe for handling
• **Disinfect** = kill or destroy nearly all disease-producing organisms, except spores using a chemical or physical agent
• **Sterilize** = destroy microorganisms and spores

Adapted from the APIC, 2009 Infection Prevention Manual for Long-Term Care Facilities

Breakdown of Cleaning

• Cleaning is the physical removal of all visible soil and other foreign material (such as dirt, dust bunnies, and body fluids) so you can get to the microbes underneath. You can’t kill microbes if you don’t clean first.

• One can clean without disinfecting, but one can not disinfect without cleaning, therefore, one must clean first to remove the materials.

• Transmission of infection may not be a failure of the cleaning and disinfecting agents but rather a failure to completely follow the cleaning and disinfecting process.
Cleaning Process

- Environmental Services should approach cleaning in an orderly, regularly scheduled method.
  - Clockwise or counter-clockwise
  - Working from top to bottom
  - Cleanest to the dirtiest

Sample Cleaning Schedule

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Who is Responsible</th>
<th>Frequency</th>
<th>Cleaning Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood pressure cuff</td>
<td>Nursing</td>
<td>Between residents</td>
<td>EPA-registered disinfectant</td>
</tr>
<tr>
<td>Call button</td>
<td>Environmental Services</td>
<td>Between residents</td>
<td>EPA-registered disinfectant</td>
</tr>
<tr>
<td>Bed rails</td>
<td>Environmental Services</td>
<td>Daily</td>
<td>EPA-registered disinfectant</td>
</tr>
</tbody>
</table>

Disinfecting Agents

- Only use disinfectants registered with the U.S. Environmental Protection Agency (EPA)

- Cleaners and disinfectants should be reviewed for use, dilution, contact time, and shelf life
  - **Contact time**: amount of time needed for the chemical to come in contact with the microorganism so that a significant number of organisms are killed.

- Use appropriate disinfectant for situation
  - For example: *C. difficile* and norovirus contaminated areas may need different cleaners and disinfectants

---

**Classification Chart**

<table>
<thead>
<tr>
<th>Critical items</th>
<th>Semicritical items</th>
<th>Noncritical items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter sterile body tissues, sterile body fluids, or vascular system</td>
<td>Contact with mucous membranes or non-intact skin</td>
<td>Contact with intact skin, not mucous membranes</td>
</tr>
<tr>
<td>Sterilization</td>
<td>High-level disinfectant</td>
<td>Low-level disinfectant</td>
</tr>
</tbody>
</table>
Preparing a Bleach Solution

- **1:10 Dilution**
  - 1 part bleach to 9 parts water
  - 1 ½ cups bleach in 1 gallon water

- **1:100 Dilution**
  - 1 part bleach to 99 parts water
  - 1/4 cup bleach in 1 gallon water

Environmental Cleaning: Measuring Compliance
Vaccinations

• A **vaccine** is a preparation that improves immunity to a particular disease.
  ▫ Examples: influenza, tetanus, or pneumonia

• The vaccine typically contains an agent that resembles a disease-causing microorganism.

• The vaccine stimulates the body’s immune response to recognize the foreign invader, destroy it, and "remember" it, so that the immune system can more easily recognize and destroy any of these microorganisms that may be encountered later.

---

Why Vaccinate?

• Vaccines can help prevent some diseases
  ▫ Save costs (resource reallocation)
    ◦ Lost time from work
    ◦ Treatment expenses
  ▫ Save lives

• Long-term protection in the individual

• Help prevent outbreaks from occurring
Vaccinations and the Elderly

- In the elderly population, pneumonia and influenza are the fifth leading cause of death in the United States.

- Residents who live in an assisted living facility or nursing home may be at greater risk for serious infections due to age, decreased immunity, and/or underlying health conditions.

- Living in close quarters and having frequent contact with other residents may increase transmission risk.
Which Vaccinations?

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age 50-65</th>
<th>Age 65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td>You need a dose every fall (or winter) for your protection and for the protection of others around you.</td>
<td></td>
</tr>
<tr>
<td>Pneumococcal</td>
<td>You need 1–2 doses if you smoke cigarettes or if you have certain chronic medical conditions</td>
<td>You need 1 dose at age 65 (or older) if you've never been vaccinated</td>
</tr>
<tr>
<td>Tetanus, diphtheria, pertussis (whooping cough) (Td, Tdap)</td>
<td>1-time dose of &quot;Tdap&quot; vaccine (includes whooping cough vaccine) if you are younger than age 65 years</td>
<td>You need a Td booster dose every 10 years</td>
</tr>
<tr>
<td>Zoster (shingles)</td>
<td>If you are age 60 years or older, you should get this vaccine now.</td>
<td></td>
</tr>
</tbody>
</table>

Adapted from: Immunization Action Coalition http://www.immunize.org/catg.d/p4030.pdf

Successful Vaccination Strategies

- Stress benefits of vaccination.

- Allay fears and misconceptions.
  - Vaccines are safe!
  - Can’t “catch” the disease from the vaccine
  - Minimal side effects
  - Benefits outweigh the risks

- Find creative ways to increase staff influenza vaccination rates.
Needs Assessment Results:
Percent of **assisted living facilities** addressing vaccinations through facility policy and vaccination

![Bar chart showing vaccination rates for staff and residents in assisted living facilities.]

Needs Assessment Results:
Percent of **nursing homes** addressing vaccinations through facility policy and vaccination

![Bar chart showing vaccination rates for staff and residents in nursing homes.]

- Policy
- Encourage influenza
- Encourage hepatitis
- Encourage pneumonia

- Staff
- Resident

- Percentages range from 0% to 100%
Individual Immunization Record

Tracking Vaccinations in Residents and Staff
Staff Members and Illness

- Staff sick leave policies should allow and encourage those who are ill to stay home
  - Consistent with public health guidance
  - Non-punitive and as flexible as possible

- Keep track of illness in staff via surveillance logs

- After returning to work, remind staff to practice good hand hygiene and respiratory etiquette
Staff Members and Illness

• If sick with a communicable disease or skin lesion, do not report to work.
  ▫ Remain home for at least 24 hours after symptoms resolve, without the use of medicines that treat the symptoms.
  ▫ If you have a skin lesion or weeping dermatitis above the elbow or below the collarbone, you are able to continue to work provided the affected area is bandaged and the drainage is contained.
  ▫ Other communicable diseases may have different work restrictions or recommended lengths of exclusion from work. Your facility should consult with the local health department as necessary to prevent the spread of infection.

• If at work, stop resident care and/or food service activities, promptly notify your supervisor, and leave work as soon as possible.

Education is Prevention!

• Share information and strategies with staff
  ▫ Upon hire
  ▫ Annually
  ▫ As needed

• Use effective teaching tools
  ▫ Address the adult learning principles
  ▫ Engage, involve, interact
    ▪ Case studies
    ▪ Group exercises
    ▪ Role playing
  ▫ Use assessments before and after training to see if training was successful
Thank you!

Questions??