A 360 Degree Approach to Infection Prevention in Post Acute Care Settings

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Objectives

- Understand how healthcare associated infections effect resident’s lives
- Describe common infections seen in Long Term Care
- Discuss the importance of breaking the chain of transmission with contaminated hands, environmental surfaces, and skin

Healthcare-Associated Infections (HAIs)

- 1 out of 25 hospitalized patients affected
- Associated with increased mortality
- Attributed costs: $26-33 billion annually
- HAIs occur in all types of facilities, including:
  - Long-term care facilities
  - Dialysis facilities
  - Ambulatory surgical centers
  - Hospitals

Health reform

- Congress
  - Bills proposing mandatory national public reporting
  - HAI prevention tied to Medicare/Medicaid payment
- Affordable Care Act
  - Section 3001 – Hospital Value Based Purchasing Program “…value-based incentive payments are made in a fiscal year to hospitals that meet the performance standards.”
Changing Landscape of Healthcare

- Organizational factors affect HAI prevention
  - Administrative policies
  - Antimicrobial utilization
  - Staffing
  - Education
- Increasing prevalence of antimicrobial-resistant pathogens

Healthcare has moved beyond hospitals

- Hospitals
- Dialysis Facilities
- Ambulatory Facilities
- Long-term Care
States with legislation for public HAI reporting

Why Be Concerned?

- Infections have a significant negative influence on health status and function of residents
- Defense mechanisms against infection decline with age
- Infections cause 26% - 50% of transfers to hospitals
- 25% - 70% of antibiotic use in LTC is inappropriate

Common Infections
Goals of an Effective Infection Prevention Program

• Decrease morbidity/mortality attributed to infections
• Prevent and control outbreaks
• Prevent acquisition of infection by staff
• Limit costs of care attributable to infections
• Maintain resident functional status
• Maintain optimal social environment for residents


Terminology

• The Joint Commission
• National Patient Safety Goals
• Centers for Disease Control and Prevention
• World Health Organization
• Institute for Healthcare Improvement
• Centers for Medicare and Medicaid Services
• State and Local Health Departments
• Public Reporting
• Policy and Procedures

Isolation History

• Universal Precautions (1985) designed to protect healthcare workers from bloodborne pathogens
• Body Substance Isolation (1987) focus on isolation from all blood and body fluids
• OSHA Bloodborne Pathogen Rule (1989) focus on protecting healthcare workers
• Standard Precautions (1997) focus on all body fluids potential to transmit disease/infection. Protects both healthcare worker and resident

**Chain of Infection**

- **Susceptible Host**
- **Portal of Entry**
- **Infectious Agent**
- **Mode of Transmission**
- **Portal of Exit**
- **Reservoir**


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**How Does Transmission Occur?**

- Resident
- Environmental Surfaces
- Patient Care Equipment and Hands
- Healthcare Worker

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**Pathogens of Particular Concern**

- Norovirus
- Clostridium difficile
- VRE
- MRSA
- Acinetobacter

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Colonized or Infected: What is the Difference?

- People who carry bacteria without evidence of infection (fever, increased white blood cell count) are **colonized**
  
  ~ Bacteria can be transmitted even if the resident is not infected ~

The Iceberg Effect

Infected

Colonized

Standard Precautions

**USED FOR ALL RESIDENTS EVERY DAY!**

- Applies to liquid or semi-liquid blood or other potentially infectious materials (OPIM)
- OPIM includes the following human body fluids
  - Any body fluid visibly contaminated with blood
  - Semen
  - Vaginal secretions
  - Cerebrospinal fluid
  - Synovial fluid
  - Pleural fluid
  - Pericardial fluid
  - Peritoneal fluid
  - Amniotic fluid
  - Blood, urine, respiratory secretions, fecal material
**Standard Precautions**

- Consists of:
  - Hand Hygiene
  - Proper Use of Personal Protective Equipment
    - Gowns
    - Mask
    - Gloves
    - Eye Protection
  - Safe Injection Practices
  - Safe Handling of Patient Care Equipment
    - Cleaning, disinfection, sterilization
  - Respiratory Hygiene / Cough Etiquette

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**Respiratory Hygiene / Cough Etiquette**

- Education of staff, residents and visitors
- Posted Signs (language appropriate to population served) with instructions
- Source control measures (cover cough, prompt disposal of tissues, surgical mask)
- Hand Hygiene after contact with respiratory secretions
- Spatial Separation (> 3 feet)

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**Safe Injection Practices**

- Aseptic technique for the preparation and administration of parenteral medications
  - Use a sterile, single-use, disposable needle and syringe for each injection
  - Prevention of contamination of injection equipment, medication and patient care equipment
  - Whenever possible, use single-dose vials over multiple-dose vials, especially when medications will be administered to multiple residents
The Inanimate Environment Can Facilitate Transmission

~ Contaminated surfaces increase cross-transmission ~


Masks

- To protect healthcare workers nose and mouth from splashes or sprays of blood, body fluids, secretions and excretions
- To protect healthcare workers from diseases that are transmitted via Airborne (N95) or Droplet modes of transmission
- For residents/visitors who are coughing
Gowns

- May be worn to protect healthcare workers skin and clothing during procedures and resident care activities that are likely to generate splashes or sprays of blood, body fluids, secretions and excretions
- Keep your clothing clean when you are performing wound or incontinence care

Eye Protection

Goggles/Face shields
- To protect eyes during activities or procedures that are likely to generate splashes or sprays of blood or other potentially infectious materials

Safe Handling of Patient Care Equipment
Equipment

Patient care equipment that touches intact skin: handle in a manner that prevents skin and mucous membrane exposure, contamination of clothing and transfer of microorganisms to other residents or environments.

Ensure that reusable equipment is properly disinfected prior to use on another resident (pulse ox, glucometer, scissors, stethoscopes, tape, measures, pens).

Non-Patient care equipment should also be disinfected (Phones, Keyboards).

Sources of contamination

• Inanimate objects
• Hands!

High Touch Surfaces

Bed Rails  Stretchers
Light Switches  Wheelchairs
Doorknobs  Telephones
Blood Pressure Cuffs  IV Poles
Stethoscopes  Feeding Pumps
X-ray Machine Handles  Utility Carts
Cardiac Monitor Knobs  Faucet Handles
Rules & Regulations for Surface Disinfectants

- Environmental Protection Agency (EPA)
- Classifies public health antimicrobials into categories that depend on the stringency of tests the product has passed
- EPA Categories:
  - Disinfectants
  - Sanitizers
  - Sterilants

Terminology – EPA Categories

- **Disinfectant**: an agent that destroys or irreversibly inactivates infectious or other undesirable bacteria, pathogenic, or viruses, but not necessarily bacterial spores, on surfaces or inanimate objects
- EPA registers three types of disinfectant products (based upon submitted and reviewed efficacy data)

CDC Guidelines for environmental infection control in healthcare facilities. MMWR 2003:52(RR 10):1-42. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5210a1.htm

Hospital Disinfectant

- Agent effective against: Gram negative and Gram positive organisms (Staphylococcus aureus; Salmonella choleraesuis) plus Pseudomonas aeruginosa
- Used in hospitals, clinics, dental offices, and other healthcare facilities
- A registrant that wants to market a hospital disinfectant as a virucide must provide data to EPA showing the product is effective against specific virus the company wishes to list on label
- Same for tuberculocide – product effective against a Mycobacterium that EPA accepts as a surrogate for the actual tuberculosis bacterium
Levels of Disinfection

- **Sterilization**
- **High-level disinfection** (expected to destroy all microorganisms except high numbers of bacterial spores)
- **Intermediate-level disinfection** (inactivates *Mycobacterium tuberculosis*, vegetative bacteria, most viruses, most fungi)
- **Low-level disinfection** (can kill most bacteria, some viruses, and some fungi, but cannot be relied on to kill resistant microorganisms such as tubercle bacilli or bacterial spores)

Contact Time

"Disinfect noncritical surfaces with an EPA-registered hospital disinfectant using the label's safety precautions and use directions. By law, the user must follow all applicable label instructions on EPA-registered products. If the user selects exposure conditions that differ from those of EPA-registered products label, the user assumes liability for any injuries resulting from off-label use and is potentially subject to enforcement action under FIFRA.

Resident Placement Concerns

**Room Selection, Private Rooms for:**

- Resident with known or suspected disease that is transmitted by Airborne, Droplet or Contact route. (Cohort)
- Residents diagnosis or isolation precautions jeopardize resident's privacy
- Residents with gastrointestinal disease causing diarrhea to avoid sharing a bathroom
Transmission Based Precautions

*Used in addition to Standard Precautions*
Focus on the route of transmission
- Airborne
- Droplet
- Contact


Airborne Precautions
Diseases spread by droplet nuclei (tiny particles) that remain suspended in the air for long periods of time or dust particles containing the infectious agent carried on air currents.

- Requires Negative Pressure Room
- Requires N95 respiratory protection
- Not usually used in the Long-Term Setting
- Not usually used in the Long-Term Setting

Droplet Precautions
Droplets contacting the conjunctivae or mucous membranes of the nose or mouth

Droplets are generated when the person coughs, sneezes, speaks or during suctioning or bronchoscopy

- Requires close contact, usually 3 feet or less, droplets do not stay suspended for long periods of time. (Pertussis, Mumps, Influenza)
Contact Precautions

**Direct Contact** includes hand or skin to skin contact (vitals, positioning)

**Indirect Contact** occurs when touching environmental surfaces or patient care items (linen, tubing, bed rails, over-bed table, sink)

Actions of **ALL** People - People have varying abilities to apply social filters and perform these actions in private.

May be used for organism specific isolation such as:

- MRSA
- VRE
- MDRO (multiple drug resistant organism)

Everything in the room should be considered contaminated:

- Appropriate Barrier PPE for activities
- Remove PPE prior to leaving
- Hand Hygiene
- Leave Clean
**PPE 101**

**Order Matters:**
- **On:**
  - Gown (tie behind back),
  - Mask, Gloves.
- **Off:**
  - Gloves, Mask, Gown

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**Resident Health Program**

- **Immunization program**
  - Pneumococcal vaccine
  - Influenza vaccine
  - Tetanus vaccine
  - Shingles
  - Others
    - Hepatitis B
    - Hepatitis A
- **TB Skin Test**


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**Resident Health Program**

- **Resident Care Practices**
  - Resident Hand Hygiene
  - Oral Hygiene
  - Prevention of Aspiration
  - Skin Care
  - Prevention of UTI’s

Employee Health Program

- Employees at risk of exposure to residents with herpes zoster, scabies, conjunctivitis, influenza, TB and viral gastroenteritis in addition to bloodborne pathogens
- Program should address post-exposure follow-up and prophylaxis for certain infections


Employee Health Program

Vaccinations

- Influenza
- Hepatitis B
- Tetanus / Diphtheria / Pertussis
- Varicella
- Measles / Mumps / Rubella
- Consider Hepatitis A for certain settings
- Education and signed declination forms improve vaccination rates. Each employee should receive a Vaccination Information Sheet (VIS)

Antibiotic Stewardship

- Failure to distinguish between colonization and infection.
- Treatment of colonization
- Antimicrobials are among the most frequently prescribed medications (2.9 – 13.9 antibiotic courses per 1,000 resident days)
- Significant variability in antibiotic prescribing patterns in LTC


IP’s are RESOURCES

Healthcare Associated-HAI’s
- Pneumonia
- Catheter associated UTI’s - CAUTI’s
- Central Line associated Blood Stream Infections - CLAB’s
- MDRO’s - MRSA, VRE
- Unusual Organisms or Outbreaks
- Employee/Visitor Safety
- Products & Practices - Improve resident outcomes or employee safety & compliance

QUESTIONS FROM EMPLOYEES, PHYSICIANS, RESIDENTS, VISITORS

Formula for Success

HAI Prevention

Clean Hands
Clean & Sanitary Environment
Clean Skin

Infection Prevention

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References


CDC Guidelines for environmental infection control in healthcare facilities. MMWR 2003;52(RR10):1-42. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5210a1.htm


Questions and Answers

• Whose infection will you prevent when you return to your institution?
• How will you approach HAI prevention differently in LTCFs?

• Contact Information:
  – Email: Hudson.garrett@nadona.org
  – Visit: www.nadona.org for more information