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A 360 Degree Approach to Infection Prevention in Long Term Care: Demystifying the Tag F-441

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September 8, 2011

Las Vegas, NV

9/9/2011

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Course Objectives

- Understand how healthcare associated infections effect resident's lives
- Describe common infections seen in Long Term Care
- Interpret the use of Standard Precautions to protect employees, residents and visitors
- Discuss the importance of Hand Hygiene and proper equipment disinfection
- Apply Transmission Based Precautions when appropriate

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If you can read this

Infection Prevention and Control applies to YOU!

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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

Chilton, L. Infections and Antimicrobial Resistance in the Elderly Living in Long-Term Cares Settings. Available at http://www.medscape/com/viewarticle/493678

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Common Infections

Infection	Prevalence %	Incidence/1,000 Patient-Days
All Infections	1.6 - 32.7	1.8 - 13.5
Respiratory	0.3 - 3.7	0.3 - 4.7
Urinary	0.6 - 21.8	0.19 - 2.2
Skin and Soft Tissue	1.1 - 8.8	0.1 - 2.1
Gastrointestinal	------	0.1 - 2.5
Bloodstream	------	0.2 - 0.4

Chilton, L. Infections and Antimicrobial Resistance in the Elderly Living in Long-Term Cares Settings. Available at http://www.medscape/com/viewarticle/493678

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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

SHEA/APIC Guideline: Infection Prevention and Control in the Long-Term Care Facility. (2008). Available at http://www.journals.uchicago.edu/doi/pdf/10.1086/592416

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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

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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

SHEA/APIC Guideline: Infection Prevention and Control in the Long-Term Care Facility. (2008). Available at http://www.journals.uchicago.edu/doi/pdf/10.1086/592416

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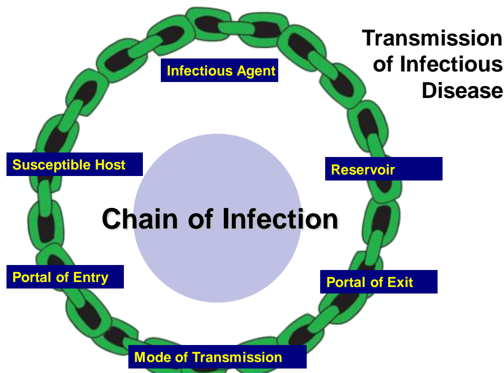
Transmission of Infectious Disease



Centers for Disease Control and Prevention (2003). Available at http://www.cdc.gov/Oralhealth/InfectionControl/guidelines/slides/008.htm

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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 ~

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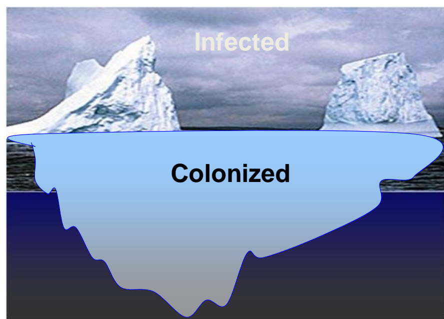
The Iceberg Effect



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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

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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

Centers for Disease Control and Prevention. (2007). Guidelines for isolation precautions: Preventing transmission of infectious agents in healthcare settings 2007. Retrieved January 5, 2010 from http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Isolation2007.pdf

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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.

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Hand Hygiene

Wash hands with soap and water:

- If visibly soiled with blood or other body fluids
- Before eating
- After using the restroom
- For residents with C. difficile infection

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Hand Hygiene

Use alcohol based instant hand sanitizer to decontaminate hands:

- Before direct resident contact
- After contact with residents intact skin (i.e., vitals, repositioning)
- After contact with objects in the resident's environment
- After removing gloves

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Hand Hygiene Technique

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Hand Hygiene

- Washing
- Moisturizing
- Artificial Nails
- Jewelry
- Intact Skin
- Things your hands touch

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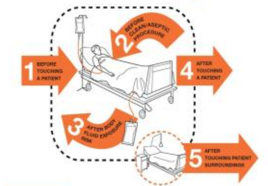

WHO Save Lives; Clean Your Hands http://www.who.int/gpsc/5may/background/5moments/en

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Gloving

- Wear gloves when contact with blood or other potentially infectious materials is possible
- Change gloves if you touch a contaminated area but need to perform a procedure during the same care episode
- Remove gloves after caring for a resident
- Change gloves when contaminated and in between residents
- Do not wash gloves
- Do not contaminate the environment with soiled gloves

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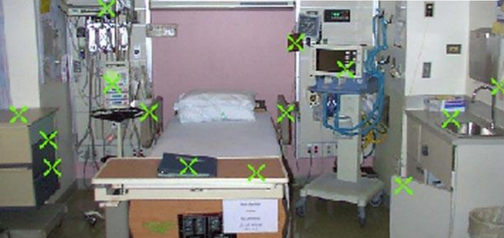
The Inanimate Environment Can Facilitate Transmission

X represents VRE culture positive sites



~ Contaminated surfaces increase cross-transmission ~

Abstract: The Risk of Hand and Glove Contamination after Contact with a VRE (+) Patient Environment. Hayden M, ICAAC, 2001, Chicago, IL.

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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

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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

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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

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Safe Handling of Patient Care Equipment

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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)

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Sources of contamination

- Inanimate objects
- Hands!

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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**

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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

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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

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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

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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)

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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"

Rutala, W. Disinfection, Sterilization and Antisepsis Principles, Practices, Current Issues and New Research. APIC Conference Proceedings, 2006. Page 103.

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Key Information to Look for on Disinfectant Labels

- Germicidal as Bacterialcidal, Tuberculocidal, Virucidal (May list pathogens)
- Active ingredients
- Cautions
- Areas of Use
- Directions for Use
- Contact time
- Special Instructions
- Disposal, Storage
- Precautionary/Safety statements
- First Aid
- EPA registration number

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Supplies

- **Linen: should be handled in a manner that will prevent personal contamination or transfer of microorganisms to residents, personnel or environments**
- **Infectious waste / sharps**
- **Dishes**
- **Specimens**

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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

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Transmission Based Precautions

Used in addition to Standard Precautions

Focus on the route of transmission

- Airborne
- Droplet
- Contact

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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**
  - Tuberculosis/Varicella/Measles/Smallpox
- **Not usually used in the Long-Term Setting**

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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)

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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)

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Direct or Indirect?

- Skin to skin is direct contact

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Direct or Indirect?

- Reusing a tissue or disposing of a used tissue is a form of indirect contact.

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

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Contact Precautions

- 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

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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**

Centers for Disease and Control. (2010) Vaccination for Adults. Available at http://www.immunize.org/catg.d/p4030.pdf

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Resident Health Program

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

SHEA/APIC Guideline: Infection Prevention and Control in the Long-Term Care Facility. (2008). Available at http://www.journals.uchicago.edu/doi/pdf/10.1086/592416

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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**

Centers for Disease and Control. (2010) Vaccination for Adults. Available at http://www.immunize.org/catg.d/p4030.pdf

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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 get a Vaccination Information Sheet (VIS)

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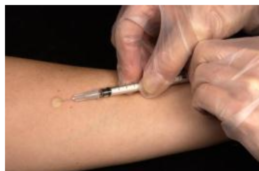
Employee Health Program

- **TB skin test**
- **Initial Assessment**
- **Reasonable sick-leave policy**



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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

SHEA/APIC Guideline: Infection Prevention and Control in the Long-Term Care Facility. (2008). Available at http://www.journals.uchicago.edu/doi/pdf/10.1086/592416

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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, PHYSICIAN'S, RESIDENT'S, VISITORS

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Are You Ready to Make a Difference?

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