Infection Control Update

(For Home Health Aides and Home Attendants)

Satellite Conference and Live Webcast
Wednesday, November 1, 2006
2:00 - 4:00 p.m. (Central Time)

Produced by the Alabama Department of Public Health
Video Communications and Distance Learning Division

Faculty

Sharon Thompson, BSN, RN

Director Infection Control Branch

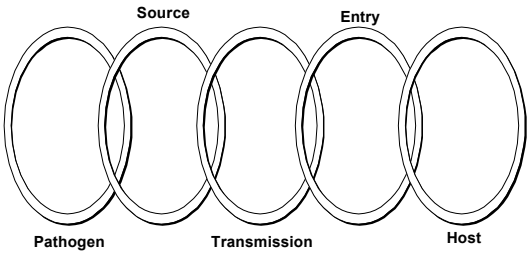
Alabama Department of Public Health

Program Objectives

- Define hand hygiene and its importance in preventing the spread of disease.
- List three products that may be used for disinfection in the home.
- List two of the more common multi-drug resistant organisms.
- Discuss the importance of personal protective equipment to the healthcare worker.

Chain of Infection

Links in the Chain of Infection



IC

- For infection to occur an organism must:
  - Enter the body.
  - Grow and multiply.
  - Cause a response.

Routes of Transmission

- Contact
  - Direct
  - Indirect
  - 3. Droplet (3 feet)

Routes of Transmission

- Vehicle
- Airborne
- Vector

Hand Hygiene

The most important measure you can use to prevent the spread of infection.

Hand Hygiene

- When hands are visibly soiled with blood or other body fluids:
  - Wash hands with either a non-antimicrobial soap and water.
  - An antimicrobial soap and water.

Hand Hygiene

- If hands are not visibly soiled:
  - Use an alcohol-based hand rub for routinely decontaminating your hands.
  - Following manufacturer's instructions.

Hand Hygiene

When to wash:

- Before patient contact.
- After contact with patient's skin.
- Contact with body fluids or excretions, non-intact skin, wound dressings.
- Removing gloves.

Standard Precautions

- Consider all patients to be potentially infectious.
- Use appropriate barrier precautions at all times.

Standard Precautions

OSHA Bloodborne Pathogens

- **Be knowledgeable about the three most common bloodborne pathogens encountered as a healthcare worker:**
  - **Hepatitis B**
  - **Hepatitis C**
  - **HIV**

Transmission of Bloodborne Pathogens

- **Transmission of bloodborne pathogens occurs when blood or body fluids from an infected person enters the body of a person who is not immune.**
- **Routes of transmission:**
  - **Sexually.**
  - **Mother to newborn at birth.**
  - **Sharing hypodermic needles.**

Occupational Transmission

- **Injuries involving needles or sharps.**
- **Mucous membrane exposures (eyes, nose or mouth).**
- **Contact with non-intact skin.**

Personal Protective Equipment

- **Use of PPE creates a barrier between the worker and the infectious material, thus improving personal safety.**
- **Use of PPE plays a major role in improving safe work practices to decrease disease transmission.**
- **Healthcare workers should know when and how to use PPE.**

Key Points About PPE

- **Put on equipment before contact with patient.**
- **Use equipment carefully – do not spread contamination.**
- **Always remove and discard PPE carefully.**

More Key Points

- Immediately perform hand hygiene. (wash your hands)
- Clean re-usable goggles or safety glasses by washing with warm soapy water or wiping with alcohol.

Gloves

- Wear gloves:
  - When touching blood, body fluids, secretions.
  - When touching mucous membranes and non-intact skin.
  - When touching contaminated items.

Do's and Don'ts of Glove Use

- Do work from "clean to dirty."
- Don't touch your face or adjust PPE with contaminated gloves.
- Don't touch environmental surfaces except as necessary during patient care.

Do's and Don'ts of Glove Use

- Do change gloves if torn or heavily soiled.
- Do change gloves when moving from one site of care to another site on the same patient.
- Never wash or reuse disposable gloves.
- Always discard in appropriate receptacle.

PPE

- Wear apron:
  - With every patient. The apron worn over your uniform provides a basic barrier to protect you and also to protect your patient.

PPE

- Wear Gown:
  - During patient-care activities when you anticipate your uniform and apron may have contact with blood or body fluids.

PPE

- Wear mask and/or eye protection:
  - During patient-care activities likely to generate splashes or sprays of blood, body fluids, or secretions.

Facial Protection

- Masks/facial shields:
  - Should protect nose and mouth.
  - Should fully cover nose and mouth and prevent fluid penetration.
- Goggles or safety glasses:
  - Should fit snugly over and around eyes or eyeglasses.
  - Personal glasses are not a substitute for goggles.

PPE

- Sequence for putting on and removing PPE:
- Donning:
  - Gown
  - Mask
  - Goggles
  - Gloves
- Removing:
  - Gloves
  - Goggles
  - Gown
  - Mask

PPE

- PPE safe work practices – always remember to:
  - Keep hands away from face.
  - Limit surfaces touched.
  - Change equipment when torn or heavily contaminated.
  - Perform hand hygiene immediately after removing all PPE.

Patient Care Equipment

- Same principles of cleaning and disinfecting apply.
- All items must be cleaned first to remove blood or body fluids before disinfecting.
- Most noncritical items can be cleaned with a detergent.

Disinfection

- Products suitable for disinfection in the home:
  - Bleach.
  - Hydrogen peroxide.
  - Boiling water.
  - Phenolics (e.g. Lysol, Pinesol).
  - Isopropyl alcohol (70%).

Disinfection

- Acetic acid (vinegar) is often used for disinfection, but since vinegar may not contain a standard concentration of acetic acid it is not recommended.
- Vinegar is not effective against Staphylococcus aureus.

Principles of Cleaning, Disinfecting and Sterilization

- Clean all items thoroughly to remove soil and organic material.
- Read manufacturer's recommendations or department's procedure.
- Leave disinfectant on items for recommended contact time.
- Thoroughly rinse items and allow to dry (take care not to recontaminate).

Principles of Cleaning, Disinfecting and Sterilization

- Rinse with fresh tap water or sterile water.
- Use appropriate PPE when cleaning and disinfecting.
- Always store items properly.

Waste Disposal

- ADEM does not regulate home medical waste.
- Waste can be disposed with other home waste in correct containers.
- Pamphlet "Handling and Disposal of Home Medical Waste: A Household Guide for Alabamians"

Medical Waste

- Medical waste is not transported from patient's home to home health office for disposal.
- Disposable supplies should be double bagged in plastic trash bags, securely fastened and placed with other household trash.

Soiled Linen

- Soiled linen and clothing can be safely laundered in the family washer using:
  - Detergent.
  - Hot water setting.
  - Bleach may be used if it will not ruin the fabric.
  - A dryer will also boost the antibacterial activity.

Linen

- Never hold clean nor soiled linen against your clothing.
- If soiled with fecal material, dispose in the toilet and wash separately.
- Keep off the floor and upholstered furniture.
- Never shake linen, clean or soiled.

Food Preparation

- Wash hands before and after food preparation.
- Store cooked and uncooked separately.
- Do not thaw and refreeze.
- Persons with diarrhea should not assist with food preparation.
- Dishes need no special treatment.
- Refrigerate leftovers.

Food

- Keep all food prep areas clean.
- Do not use cracked eggs.
- Heat leftovers thoroughly.
- If in doubt throw it out!
- CDC reports that 85% of all foodborne illness is preventable.

Pets

- Man's best friend.
- Pets can speed recovery.
- Should not be in the area when any treatments are being done.
- Problems with reptiles.

Viral Hepatitis

- Signs and symptoms:
  - Jaundice.
  - Dark urine.
  - Pale colored stools.
  - Flu-like symptoms.
  - Pruritus (generalized itching).
  - Anorexia (loss of appetite).

Hepatitis A

- Transmission:
  - Close personal contact – fecal/oral route (household, sexual, daycare).
  - Contaminated food or water (infected food handler, raw seafood).
  - Blood exposure (very rare).

Hepatitis A

- Present vaccine is 99% effective.
- Two dose schedule (given 6 months apart).
- Recommended for children two years or older, homosexual and bisexual men, IV drug users, and travelers to endemic countries.

Hepatitis B

- Transmission:
  - Sexual
  - Parenteral
  - Perinatal
  - Other

Hepatitis B

- Approximately 30 – 60% of young children and 2-10% of adults who are infected, will develop chronic disease.
- Persons with chronic HBV infection are often asymptomatic.
- Approximately 15-25% of these may die prematurely from either cirrhosis or liver cancer.

Hepatitis B Vaccine

- Vaccine is a yeast product (not blood)
- 96% effective
- 3 – dose series, given IM in the deltoid (arm):
  - (0, 3 and 6 months intervals)

Hepatitis C "The Silent Epidemic"

- A major healthcare problem worldwide.
- Many people who are infected do not have symptoms for many years, but their blood and body fluids could be infectious to others.

Hepatitis C

- 50 million people infected worldwide; of these 4 million are in the U.S.
- 70 – 90% of those infected will develop chronic infection.
- Contributes to over 12,000 deaths annually.

Hepatitis C Transmission

- Injecting drugs.
- Sexually.
- Blood transfusions (prior to blood donation screening).
- Perinatally.
- Household: sharing razors, toothbrushes, etc.
- Other.

Hepatitis C Treatment

- There is no vaccine for Hepatitis C.
- There are some anti-viral medications available for treatment of some Hepatitis C patients, but treatment is usually only effective in 10 – 40% of those treated.

Hepatitis E

- The major cause of fecal/oral transmitted non-A, non-B Hepatitis worldwide.
- Rarely seen in the U.S.
- Case fatality rate for pregnant women is 15 – 25%.
- No vaccine is available.

HIV/AIDS

- Routes of transmission are very similar to Hepatitis B.
- AIDS is the last stage of an infection caused by the HIV virus.
- HIV weakens the immune system, the body's natural defense against illness.

HIV/AIDS

- Infection with HIV can last for years.
- By the AIDS stage, the immune system is very weak and cannot protect against illness.
- There are antiviral meds, which can prolong life and boost the immune system.

2006 Respiratory Illnesses of Concern

- Avian Flu
- Seasonal Flu
- Pandemic Flu
- Pertussis in teenagers and adults
- RSV
- Meningitis

Seasonal Flu

- A respiratory illness that can be transmitted, easily, person to person. Most people have some immunity, and a vaccine is available.
- Everyone is encouraged to get yearly flu shots.

Avian Influenza

- Avian (bird) flu is caused by influenza viruses that occur naturally among wild birds. The H5N1 variant is deadly to domestic fowl (chickens, ducks, etc.).
- It can be transmitted from birds to humans.
- There is no human immunity and no vaccine available.

Pandemic Flu

- A virulent (strong) human flu that can cause a global or worldwide outbreak or pandemic of serious illness.
- Because there is little natural immunity, the disease can spread easily from person to person.
- There is no pandemic flu currently.

Pertussis

- Seeing more teenage/adult cases.
- Most infectious during catarrhal (runny nose) stage.
- Incubation period is seven to ten days.

Routes of Transmission

- For all respiratory illnesses:
  - Coughing or sneezing.
  - Unclean hands.
  - Inanimate objects.

Respiratory Etiquette

- When cough or sneeze, cover nose and mouth with a tissue.
- Dispose in a waste basket.
- If do not have a tissue, sneeze into your sleeve.
- Avoid touching eyes, nose or mouth.

Prevention

- After coughing or sneezing, always clean your hands with soap and water or an alcohol based hand cleaner.
- Stay home when you are sick.
- Do not share eating utensils, drinking glasses, towels or other personal items.

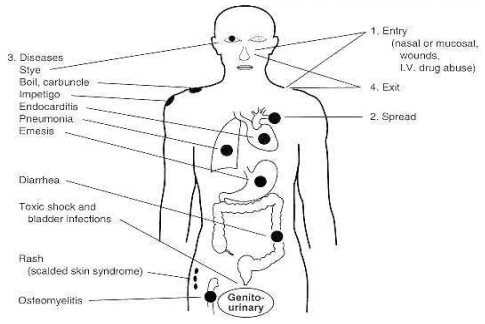
Staphylococcus Aureus

- One of the most common causes of skin infections in the U.S.
- One of the major causes of hospital-acquired infections in the U.S.
- 40% of adults are colonized with this bacteria.
- 50-90% of healthcare workers are colonized with it.

Colonization vs. Infection

- Colonization:
  - The organism is present in or on the body.
  - Usually requires no treatment and does not spread to others.
- Infection:
  - The organism is present in or on the body.
  - Causing illness there will be signs and symptoms and requires treatment.

Staph Infections



Antibiotic Resistance

- Antibiotic resistance can develop in any type of bacteria.
- Bacteria can develop resistance to specific medicines.
- It is the bacteria, not the people that become resistant to the antibiotics.

Methicillin

- The antibiotic routinely used to treat Staph infections.
- If the Staph has become resistant, other more expensive antibiotic must be used to treat the infection.
- These generally must be given by IV in the hospital.

MRSA

- Hospitalized patients:
  - The elderly or very sick.
  - Open wounds.
  - Invasive devices (catheters).
  - Prolonged hospital stay.
  - Receiving antibiotics.
  - Intensive care units.

MRSA

- Underlying diseases:
  - Chronic renal disease.
  - Insulin-dependent diabetes.
  - Peripheral vascular disease.
  - Dermatitis or skin lesions.

CA-MRSA

- Outbreaks reported:
  - Athletic teams.
  - Correctional facilities.
  - Injecting drug users.
  - Day care facilities.
  - College campuses.
  - Schools.
  - Etc.

CA-MRSA

- In U.S. 10% of all MRSA infections are CA-MRSA.
- Hospitalization is required in approximately one out of five cases.
- Usually in persons with no medical history of MRSA infection or colonization.
- No permanent indwelling catheters or other medical devices.

CA-MRSA

- Persons with no medical history in the past year of:
  - Hospitalization.
  - Admission to a nursing home, skilled nursing facility, or hospice.
  - Dialysis.
  - Surgery.

"C" Factors

- Compromised skin: abrasions from scrapes or existing skin disease (acne).
- Contact: frequent and very often vigorous skin-to-skin contact.

"C" Factors

- Contaminated surfaces and shared items:
  - Sports and weight-lifting equipment.
  - Shared towels and uniforms.
  - Changing tables and toys.

"C" Factors

- Crowding: when people are very close to one another, it increases the likelihood of skin-to-skin contact and contamination of the environment.
- Cleanliness: often less than optimal showering conditions, lack of soap usage, and cleaning of equipment.

Is there an increase in MRSA disease in the community?

OR

Is there an increased awareness and recognition of MRSA disease?

Transmission Prevention

- Follow healthcare provider's (doctor's) instructions.
- Keep draining lesions covered with clean, dry dressings or bandages.
- Proper disposal of bandages.

Transmission Prevention

Handwashing

Handwashing

Handwashing

Transmission Prevention

- Avoid sharing personal items that may have contact with the infected wound and potentially infectious material.
- Clean the environment with a commercial disinfectant or a fresh (mixed daily) 1:100 solution of bleach and water (One tablespoon bleach in one quart of water).

Education

- Education is most important prevention measure.
- Educate:
  - Healthcare workers.
  - The lay public.
  - Those at high risk of acquiring infection.

Contact Precautions for MRSA

- Wear gloves for patient contact.
- Wear gown/apron if anticipate substantial patient contact, or contact with environmental surfaces or items in patient's home.
- Wear gown/apron if patient is incontinent or has diarrhea, or an "ostomy" or draining wounds which cannot be contained by a dressing.

VRE

- Enterococcus: normal inhabitant of the human G.I. tract (gut).
- Most VRE infections occur in hospitals.
- Causes urinary tract infections, blood stream infections and wound infections.
- Not reportable, do not know how many cases occur in Alabama every year.

Risk Groups

- Who's at risk:
  - Persons previously treated with vancomycin.
  - Persons who are hospitalized.
  - Persons with a weakened immune system.

Risk Groups

- Persons who have had abdominal or chest surgery.
- Persons with medical devices such as urinary catheters or central intravenous lines.

Spread

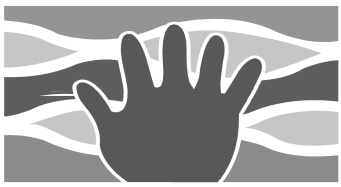
- Direct contact with stool, urine or blood from patients with VRE.
- Hands of healthcare workers.
- Environmental surfaces.
- Not spread by casual contact.
- Not spread by air.

Precautions

- **Use proper barriers: gloves and gowns.**
- **Change gloves between body sites.**
- **Dedicated equipment for VRE.**
- **Wash hands after glove removal.**
- **Good housekeeping practices.**

Handwashing

Infection Prevention



Lend Healthcare A Hand
By Washing Yours™

Upcoming Program

Weapons of Mass Destruction: Disaster Planning and Operations
Tuesday, November 28, 2006
12:00 noon - 1:30 p.m. (Central Time)

Fundamentals of HIV Counseling: Level One
Wednesday, November 29, 2006
2:00 - 4:00 p.m. (Central Time)

For complete list of upcoming programs visit: www.adph.org/alphtn