Infection Control

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Objectives

• Infection prevention measures
  – What works

• Multiple drug resistant organisms
  – MRSA in health care settings

• Blood-borne infections
  – rates, prevention, treatment
Overview: Healthcare –associated infections

- 1.7 x 10^6 infections/year
- 99,000 deaths
- 32% UTI
- 22% SSI
- 15% pneumonia
- 14% blood
Standard Precaution - Infection Control

- Hand hygiene
- Use of gloves
- Masks
- Gowns
- Boots
- Environmental Control
Standard Practices

• Variable adherence
• Increase in years of experience – negative predictor
Hand Hygiene

• Single most important practice
• Transient versus resident flora
• Antiseptic handwashing
Hand washing solutions

• Alcohol-based products are more effective than
  – Antimicrobial soaps
  – Soaps
• Efficacy is influenced by volume and time
Adherence to hand-hygiene guidelines

- Influenced by ward type
- High intensity of patient care
- staff:patient ratio
- Easy access to hygiene supplies
- Alcohol-based rub
Fingernails and artificial nails

- Fresh nail polish versus chipped nail polish
- Increase in pathogens associated with artificial nails
Jewelry

• Increase in bacteria on skin under rings
• Risk factor for carrying gram-negative bacilli, S. aureus
Surgical Hand Antisepsis

• Preoperative scrubbing with antiseptic is preferential over regular soap
• Persistent antimicrobial activity is desirable
• 5 minute scrub is sufficient
Use of gloves

- Recommendation for use when coming in contact with blood, non-intact skin, mucous membranes, MRO
- Effective at preventing HCW hand contamination
- Types of gloves
Protective Clothing

• One small study – cover gowns and shoe covers provided no significant reduction in time to antibiotic treatment.

• Oncol. Nurs. Forum 26:1319
Environmental Contamination

- Patient gowns, bed linen, bedside furniture – contaminated with patient’s flora
- Source of HCW hand/glove contamination
- Markers labeling surgical site
Surgical Site Infections

- Infectious countermeasures – beneficial
- Absorbable sutures
- Antibiotic prophalaxis
- Optimize host defenses
Surgical Site Infections – Risk Factors

• Bacterial factors – virulence, resistance
• Host factors
• Surgical Site factors
Host factors – Surgical site infections

- Ages
- Concurrent illness
- Length of stay
- Appropriate use of antibiotics
- Nutritional status
- Preexisting infection
Venous Catheters

• Best Practices
  – Hand hygiene
  – Maximal barrier precautions
  – Chlorhexidine skin antisepsis
  – Optimal Placement
  – Daily review for need
Central Catheters

• 5.3 catheter-related infections/1000 catheter days
• 18% mortality rate
• Cost of $3,700-$29,000
Multiple Drug-resistant Organisms

- MRSA
- VRE
MRSA

• Community-acquired MRSA
  – Single isolate, readily transmitted

“Relax – MRSA will get you before the Asian Flu”
Reduction of MRSA

Hand hygiene

Colored isolation gowns
Separate supplies
Surveillance
Pre-admission MRSA screening
Blood borne infections

- Pathogens
  - HBV
  - HCV
  - HIV
Factors influencing infection

• The pathogen involved
• The type of exposure
• The amount of blood involved in the exposure
• The amount of virus in the patient's blood at the time of exposure
Prevention

- Safe practices
- Barrier protection
HBV infection

• If vaccinated, little chance of infection
• Unvaccinated
  – 6-30%
    • Dependent on HBeAg status of individual
• Prevention
  – Immunization, testing to verify immune status
HCV infection

- 1.8%
- No treatment, no immunization available
HIV infection

- Needlestick or cut – 0.3%
- Eye, nose or mouth blood splash, non-intact skin – 0.1%
- Treatment if exposed