Preventing Multi-Drug Resistant Organism (MDRO) Infections

For National Patient Safety Goal 07.03.01 2009
Methicillin Resistant Staphylococcus aureus (MRSA)

- About 3-8% of the population at large is a carrier of MRSA with no apparent ill effect.

- MRSA-colonized and infected patients readily contaminate their environment, and healthcare personnel coming into contact with patients or their environment readily become contaminated.

Transmission

- MRSA can live for hours, up to days on surfaces such as cotton and polyester (our scrubs for instance).
- It spreads most commonly on HCW’s hands.
MRSA Prevention

- Contact Precautions for patients who are infected or colonized with MRSA.
- Hand hygiene – preferably with hand sanitizer
- Handouts for patients and their families are available.
- Surveillance to monitor and measure control efforts
- Judicious use of antibiotics

MRSA Prevention cont’d:

- We identify patients who have had MRSA previously cultured.

- Patients that are identified will be automatically placed on Contact Precautions and screened to determine the need for continued Contact Precautions.
Vancomycin Resistant Enterococcus (VRE)

- Enterococcus resides in our intestines as normal flora. It concerns us when it develops resistance to Vancomycin.
- It has the potential to cause urinary tract infection, bloodstream infection or surgical site infection.
VRE Transmission:

- VRE can live for hours, up to days on surfaces such as cotton and polyester (scrubs and privacy curtains for instance).
- It can be carried on our hands or contaminated equipment.

VRE Prevention:

- Contact Precautions for patients who are infected or colonized with VRE. Hand hygiene – preferably with hand sanitizer
- Handouts for patients and their families are available.
- Surveillance to monitor and measure control efforts

VRE Prevention cont’d:

- Processes identify patients who have had VRE previously cultured and this flags the patient on subsequent admissions to be screened.

- To screen a patient for VRE a **rectal swab or stool sample** must be obtained.

- Judicious antibiotic use

Clostridium difficile (C. diff):

- C. diff is a bacteria that causes the most common infectious healthcare-associated gastrointestinal illness.¹

¹ Dubberke E, ICHE 2009 30:57-66
C. diff Associated Disease

- Usually presents with diarrhea, but may occur without diarrhea and mimic other abdominal syndromes.
- Complications (shock, colectomy, perforation, megacolon, death) developed in 11% with first recurrence\(^1\)
- 20% may have recurrent diarrhea after resolution of the initial episode\(^2\)

C. diff Transmission:

- C. diff can form into a spore, which makes it very hardy and difficult to kill. It can live for months in the environment.
- Hands or equipment come in contact with the spores that are then carried to the patient who becomes colonized with it in their gut.
- If the patient then is exposed to antibiotics, chemotherapy, or gastrointestinal surgery they are at risk for developing a C. diff infection w/ toxin production, especially older patients.

Changing Epidemiology

- Recent statistics show a doubling of hospital discharges in the U.S. with C. diff listed as a diagnosis
- Also increasing severity of complications and mortality related to C. diff

C. diff Prevention

Contact Precautions for infected patients for the duration of their admission:

1. Private room
2. Limit movement out of the patient’s room
3. Dedicated patient care equipment
4. Wear gloves when entering the patients room and a gown if contact with the bed is anticipated
C. diff Prevention cont’d:

- Ensure cleaning and disinfection of equipment and the environment. Bleach is currently the only FDA approved disinfectant.
- Educate patients and their families/visitors
- Measure compliance of hand hygiene and isolation precautions
- Soap and water hand hygiene is most effective method
- Judicious use of antibiotics
Other MDROs

- Gram-negative bacteria to include:
  - Resistant Acinetobacter species
  - ESBLs = extended-spectrum $\beta$-lactamase producing organism
  - Resistant Pseudomonas aeruginosa
  - CRE/KPC = Carbapenem Resistant Enterobacteriaceae /Klebsiella \textit{pneumoniae} carbapenemase producing organism
Diagnose & Treat Infections Effectively

Target the Pathogen
- Culture the patient
- Target empiric therapy to likely pathogens and local antibiogram
- Target definitive therapy to known pathogens and antimicrobial susceptibility test results

Access the experts
- Consult ID experts for patients with serious infections

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Prevent Infection

Vaccinate

- Give influenza/ pneumococcal vaccine to at risk patients before discharge

Get the catheters out

- Use catheters only when essential
- Use correct catheter
- Use proper insertion & catheter-care protocols
- Remove catheters when no longer essential

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Use Antimicrobials Wisely

Practice antimicrobial control
- Engage in local antimicrobial control efforts

Use local data
- Know your antibiogram
- Know your patient population

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Use Antimicrobials Wisely

- Treat infection, not colonization
- Use proper antisepsis for blood and other cultures
- Culture the blood, not the skin or catheter hub
- Use proper methods to obtain & process all cultures
- Treat pneumonia, not tracheal aspirate
- Treat bacteremia, not catheter tip or hub
- Treat urinary tract infection, not the catheter
Use Antimicrobials Wisely

Stop antimicrobial treatment
- When the infection is cured
- When cultures are negative & infection is unlikely
- When infection is not diagnosed
Prevent Transmission

Isolate the pathogen

- Use standard infection control precautions
- Contain infectious body fluids (Follow airborne, droplet and contact precautions)
- When in doubt consult infection control control experts

Break the chain of contagion

- Stay home when you are sick
- Keep your hands clean
- Set the example

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Appropriate Antimicrobial Stewardship

- Optimal choice of antibiotic
- Dose
- Duration of treatment
- Control of antibiotic use

Prevents or slows the emergence of resistance among microorganisms