



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

Siegel, Jane MD, and the Healthcare Infection Control Practices Advisory Committee. Management of Multidrug-Resistant Organisms In Healthcare Settings, 2006

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.



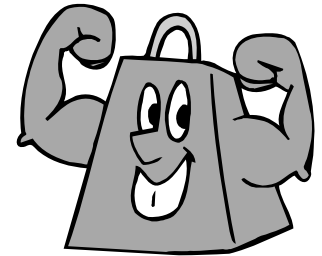
Vancomycin Resistant Enterococcus (VRE)

- ❑ 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.



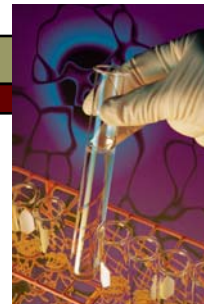
1. Siegel JD, Rhinehart E, Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee, 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, **June 2007** <http://www.cdc.gov/ncidod/dhqp/pdf/isolation2007.pdf>

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

1. Siegel JD, Rhinehart E, Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee, 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, **June 2007**
<http://www.cdc.gov/ncidod/dhqp/pdf/isolation2007.pdf>



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 recurrence¹
- ❑ 20% may have recurrent diarrhea after resolution of the initial episode²

1. Pepin J, et al. Clin Infect Dis. 2005;40:1591-1597.
2. McFarland LV, et al. AM J Gastroentero 2002;97:1769-1775.



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. w/ 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 β -lactamase producing organism
 - Resistant *Pseudomonas aeruginosa*
 - CRE/KPC = Carbapenem Resistant Enterobacteriaceae /*Klebsiella 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



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



Use Antimicrobials Wisely

Practice antimicrobial control

- Engage in local antimicrobial control efforts

Use local data

- Know your antibiogram
- Know your patient population



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 experts

Break the chain of contagion

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



Appropriate Antimicrobial Stewardship

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

Prevents or slows the emergence of resistance
among microorganisms