Multidrug Resistant Organisms
The Impact on Healthcare

Continuing Education Contact Hours

- Participants must complete the entire presentation/seminar to achieve successful completion and receive contact hour credit. Partial credit will not be given.
- All of the presenters are employees of STERIS Corporation and receive no direct compensation other than their normal salaries for participation in this activity.
- STERIS Corporation is an approved provider of continuing nursing education by the California Board of Registered Nursing, provider number CEP 11681 for 1 contact hour along with IAHCSMM, CBSPD and ABOGN.
- STERIS Corporation is providing the speakers and contact hours for this activity. However, products referred to or seen during this presentation do not constitute a commercial support by the speakers.

Learning Objectives

- Review multidrug resistant organisms
- Describe preventative measures
What are Multidrug Resistant Organisms?

- Bacteria with resistance to one or more antibiotics
- Found in hospitals and long term care facilities
- Lives on the skin and in nasal passages

Causes of MDRO’s

- Antibiotics taken longer than necessary or when not needed
- Direct contact with infected or colonized person
- Indirect contact with contaminated objects

Risk Factors

- Pediatric and elderly population
- Existing health condition or underlying disease
- Previous colonization
- Invasive procedures such as dialysis, urinary catheters
- Repeat visits to hospital
Factors Affecting MDRO’s

- Geography
- Level and type of care
- Healthcare setting
- Patient population

MDRO’s Guidelines

- Management of Multidrug-Resistant Organisms in Healthcare Settings, 2006
- www.cdc.gov

Evolution of Drug Resistance

- Penicillin
  - S. aureus [1950s]
  - Penicillin-resistant S. aureus [1970s]
- Methicillin
  - Methicillin-resistant S. aureus (MRSA) [1990s]
- Vancomycin
  - Vancomycin-resistant enterococci (VRE) [2002]
  - Vancomycin intermediate-resistant S. aureus (VISA) [1997]
Examples of MDRO’s

- MRSA: methicillin resistant staphylococcus aureus
- VRE: vancomycin resistant enterococci
- Acinetobacter baumannii
- Clostridium difficile

Facts About MDRO’s

- MRSA and VRE most commonly diagnosed
- Colonization with multiple MDRO’s can occur
- 2 million people acquire bacterial infections in US hospitals each year
- 100,000 patients die in the US as a result each year

70% of those infections are resistant to at least one antibiotic
$30.5 billion
estimated hospital costs related to these organisms in the US

75% of patient rooms are contaminated with MRSA and VRE (cabinets, counters, bedside rails, and tables)

MRSA: Methicillin resistant staphylococcus aureus
What is MRSA?

- Organism living, without infecting, on the skin or in the nasal passages
- 20-30% of population are "staph carriers"
- Most common cause of staph infections on the skin
- First isolated in US in 1968

MRSA

- Cutaneous Abscess
- Appears as pustule or boil
- Swollen, reddened area
- Drainage

MRSA on the Rise

- 1990's: 20-25% total infections
- 1999: > 50% of MRSA infections isolated in ICU
- 2003: 59.5% ICU infections from MRSA
- Diagnosis: cultures of nasal passages and wounds
CA-MRSA

• Community-Associated (CA)
• Presents as minor skin and soft tissue infections
• Individuals without MRSA risk factors

CA-MRSA Risk Factors

Public facilities
• Health clubs
• Dormitories
• Military barracks
• Correctional facilities
• Daycare centers

Treatment Options for MRSA

• Do not treat on own
• Contact healthcare provider
• Incision and drainage by physician
• Cover the affected area
• Antibiotics taken as prescribed
• Proper hand hygiene
Significance of MRSA

Guide to the Elimination of Methicillin-Resistant Staphylococcus aureus (MRSA) Transmission in Hospital Settings

- Association for Professionals in Infection Control and Epidemiology (APIC)
- Published in 2010

www.apic.org

Intervention to Reduce Incidence of MRSA


Hand Hygiene

- Plain Soap and Water
- Antiseptic Hand Wash
- Antiseptic Hand Rub
- Surgical Hand Antisepsis
VRE: Vancomycin resistant enterococci

VRE Statistics

- 1990’s: Emerged in Eastern United States
- From 1990 – 1997: 15% infection rate
- 1999: 25% ICU infection rate
- 2003: 28.5% ICU infection rate

What is VRE?

- Bacteria living in human intestines and environment
- Spread by direct contact
- Diagnosis: peri-rectal swab cultures
- Treatment: Vancomycin
VRE Guidelines

- Hospital Infection Control Practices Advisory Committee: Recommendations for preventing the spread of vancomycin resistance, CDC 1995
- www.cdc.gov

Acinetobacter baumannii

Acinetobacter baumannii Statistics

- 80% of reported infections
- Increased mortality rate in severely ill
- Occurs in ICU, rarely outside of hospital setting
What is *Acinetobacter baumannii*?

- Found on skin, in soil and water
- Immunocompromised, infected patients
- Diagnosis: tracheal, peri-rectal swabs, wound cultures
- Treatment: antibiotic combinations prescribed by doctor

Guidelines for *Acinetobacter baumannii*

- www.apic.org

*Clostridium difficile*
165,000 hospital acquired infections
9,000 deaths annually

263,000 nursing home acquired infections
18,500 deaths annually

$3.2 billion annual cost in the US
### What is Clostridium difficile?

- Bacteria causes diarrhea, colitis, fever, loss of appetite
- Most common cause of antibiotic-induced diarrhea
- Transmission through fecal-oral route
- Diagnosis: stool cultures
- Treatment options: select group of antibiotics

### Clostridium difficile Guidelines

- Guide to the Elimination of Clostridium difficile in Healthcare Settings, APIC 2008
- www.apic.org

### The Impact of MDRO’s on Healthcare

- Increased length of hospital stay and mortality
- Higher costs for hospitals and insurance companies
Centers for Medicaid and Medicare (CMS)

- Beginning in FY 2009: “If a condition is not present upon admission, but is subsequently acquired during the course of the patient’s hospital stay, Medicare will no longer pay the additional costs of the hospitalization and the patient cannot be held responsible for additional costs.”

Preventative Measures

- Wear appropriate PPE
- Proper hand washing and use of alcohol-based hand cleaners
- Use antibiotics when needed for shortest length of time
- Reference current standards and practices of professional organizations.

Preventative Measures

- Private rooms or share with those having same infection
- Standard and contact precautions: PPE
- Vaccinations to prevent complications
Action Plan

• Monitor hospitals with support from administration
• Provide education and training to healthcare personnel
• Implement effective hand hygiene practices and compliance
• Refer to policies and procedures

Evaluation and Registration

• Thank you for attending this CE activity
• Please complete and submit the evaluation form
• For more information on the CE credentialed programs offered, go to http://university.steris.com
Go to: http://university.steris.com
STERIS University
Playing a part in your professional development today to help you achieve your career vision for tomorrow

References

• Healthcare Purchasing News, June 2009
• AORN: www.aorn.org
• AAMI: www.aami.org
• Guide to the Elimination of Methicillin-Resistant Staphylococcus aureus (MRSA) Transmission in Hospital Settings, March 2007
• cdcinfo@cdc.gov, www.cdc.gov

References

• Guide to the Elimination of Clostridium difficile in Healthcare Settings, APIC 2008
• Management of Multidrug-Resistant Organisms in Healthcare Settings, 2006
References


- Guide to the Elimination of Multidrug-resistant Acinetobacter baumannii Transmission in Healthcare Settings, APIC 2010