

MDRO Transmission & Infection Prevention

Special thanks to the VISN 6 Infection Control Committee and VISN 6's Education Sub council and its Education, Training and Development Workgroup for this education module.

MDRO TRANSMISSION & INFECTION PREVENTION

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MDRO Transmission & Infection Prevention

- This Infection Control Program training covers:
 - Multi-drug resistant organisms (MDROs)
 - Importance of preventing the spread of MDROs
 - How MDROs are transmitted
 - Transmission prevention strategies
 - Importance of Hand Hygiene and cleanliness of reusable medical equipment (RME) in preventing transmissions

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This Infection Control Program training covers (cont):

- Colonization versus Infection
- Survival times of organisms on environmental surfaces
- RME (Reusable Medical Equipment)/surfaces most frequently contaminated

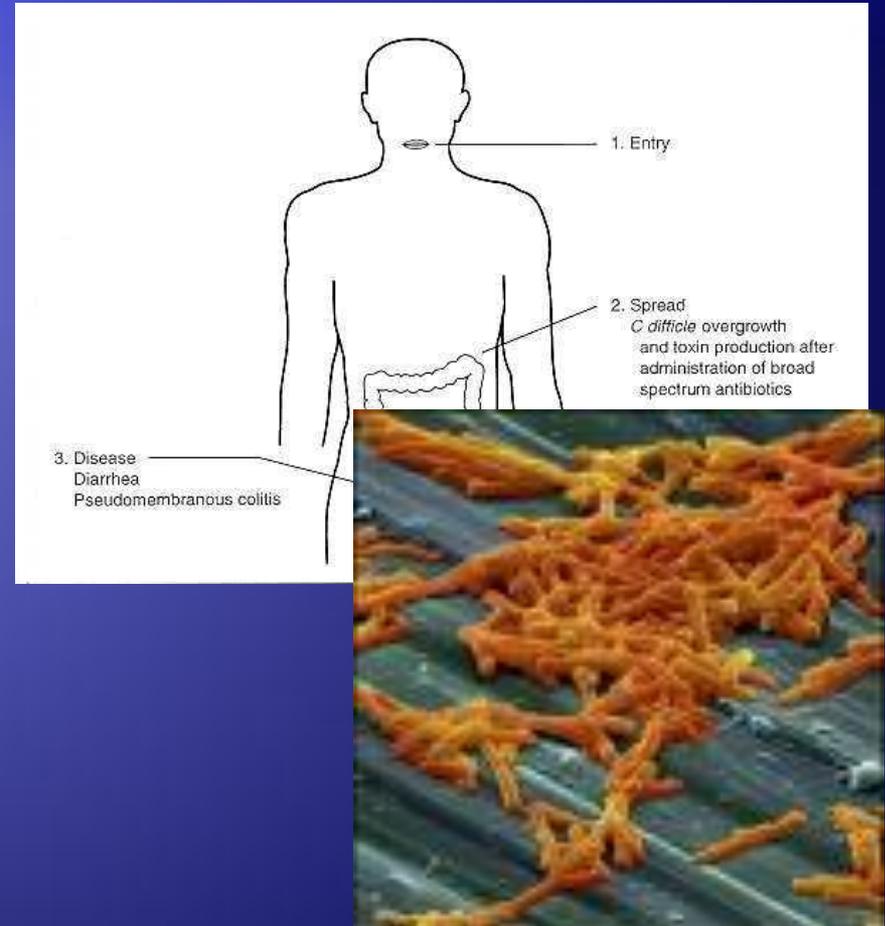
Upon conclusion of this course, if you successfully pass the quiz, you will receive a Certificate of Completion

MDRO Transmission & Infection Prevention

- What are MDROs?
 - **MDRO** = Multi-drug resistant organism
 - Developed resistance to one or more commonly used antibiotics
 - **MRSA** = Methicillin-Resistant Staphylococcus aureus
 - Some other MDROs
 - **VRE** - vancomycin-resistant *Enterococcus*
 - **ESBLs** - extended spectrum beta lactamases (developed enzymes that inactivate penicillin & cephalosporin drugs)
 - *Acinetobacter baumannii* resistant to antibiotics
 - C. diff (Clostridium difficile)
 - Not really resistant to drugs, so not actually a MDRO
 - Treated like a MDRO because transmitted same way

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- *Clostridium difficile* (C. diff)
 - C. diff is generally acquired when people have illness or conditions requiring prolonged use of antibiotics
 - Symptoms include watery diarrhea, fever and abdominal tenderness
 - Only soap and water hand hygiene method effective
 - Disinfect surfaces with bleach products



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- Why is stopping the spread of MDROs important?
 - The Centers for Disease Control and Prevention (CDC) estimates that there are “**94,000 MRSA cases** a year in the United States associated with **18,650 deaths annually.**”
 - MDRO Infections are associated with:
 - Increased length of stay in hospitals
 - Increased morbidity and mortality
 - Decrease in quality of life
 - Loss of limb or life

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- Emerging Problems & Concerns
 - Increasing proportion of healthcare-associated *S. aureus* infections due to MRSA
 - 2% (1974) 63% !!(2004) 
 - Increased risk of transmission for a patient admitted to a room occupied previously by a MRSA or VRE patient
 - Up to 40%
 - Percentage of newly identified MRSA carriers who develop invasive disease
 - 30% (within 18 months)

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- Associated Patient Safety Goals
 - NPSG.07.01.01: Meeting Hand Hygiene Guidelines
 - NPSG.07.03.01: Preventing Multi-Organism Infections

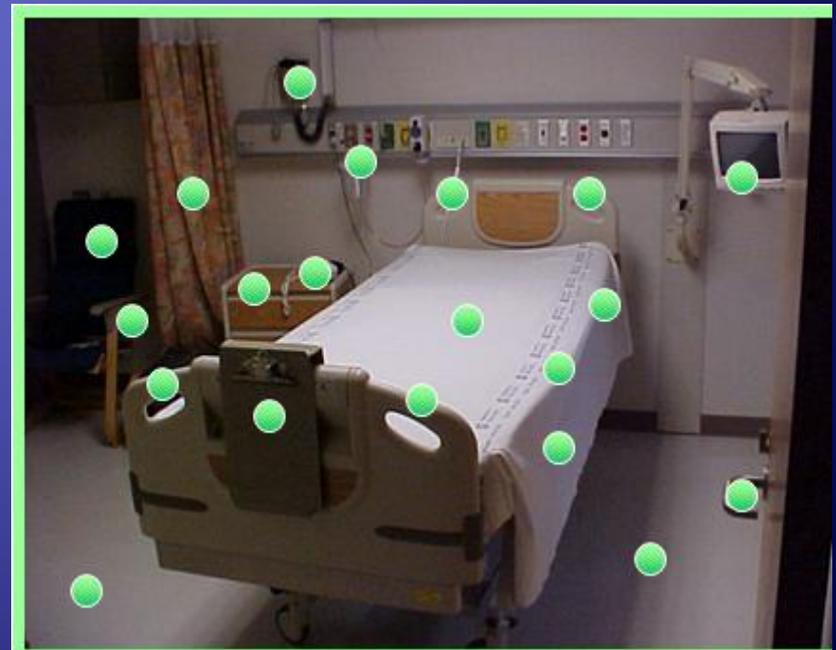
It's in your hands...



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How transmission occurs:

- Transfer from contaminated environment/ reusable medical equipment (RME) to a compromised patient
- By healthcare worker's hands
- By direct contact with the organism (in an open wound)



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- **VHA MRSA Program Components**
 - **Aggressive Hand Hygiene—Goal is 100%**
 - Before and after every patient contact
 - **Active Surveillance Cultures - Nares swabs**
 - Admission to the unit (All patients)
 - Transfer & Discharge
 - All Patients going to the CLC
 - **Contact Precautions – all MRSA positive patients**
 - Hand Hygiene, Gown & Glove on Room Entry
 - Ownership of the Change Process/Everyone is responsible for Infection Control.

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- Isolation for MDROs – Contact precautions
- When transporting a patient, use a wheel chair with a clean disposable pad or clean sheet on the seat and clean gown on the veteran. The veteran should wear a mask if they have a productive cough. Have the veteran wash their hands when exiting the room.

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- **MDRO** : Additional Transmission Prevention Strategies
 - *Enhanced Environmental Cleaning*, includes Reusable Medical Equipment (RME)
 - *Hand-off Communication* – infection precaution status reported between all locations of care
 - medical center
 - nursing home agencies
 - prosthetic contractors
 - home health agencies
 - referring/transferring facilities, etc

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- Colonization
 - Organism present, but not invading cells causing infection (no symptoms)
 - Does not require treatment
- Infection
 - Organism invading cells causing systemic, immune response (fever, redness, swelling, pus)
 - Requires treatment

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- The best way to prevent infections is to *prevent transmissions*
- Each new patient identified as a MRSA transmission has a 30% chance of developing an invasive infection within the next 18 months

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- The two most powerful ways to prevent the spread of MDROs and other infectious agents:
 - Cleaning hands appropriately
 - Before and after each patient contact for patients who are not on isolation
 - Before and after removing gloves for patients on isolation
 - Cleaning reusable medical equipment (RME) before and after each patient
- ***Remember ...Wearing gloves does not substitute for hand hygiene!***

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Hand Hygiene is key to preventing the spread

ALCOHOL HANDRUB

For Frequent Disinfecting

- Nickel sized serving
- Rub into nail beds, between fingers and over hands and wrists
- Let air dry (No water or towels)
- Perform on Room entry & exit AND between procedures on the same patient AND between patients in the same room

WASHING

When hands are soiled

- Warm water
- Soap
- Rub all surfaces vigorously for at least 15 seconds
- Towel dry
- Turn off faucet with paper towel
- Must Use for Patients on Contact Precautions with Special Enteric
 - C. difficile
 - VRE

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- **Environment = Reservoir for infectious organisms**
- May survive (even thrive) on environmental surfaces for months if surfaces not cleaned & disinfected
 - *E. coli* & *Pseudomonas aeruginosa* – up to 16 months
 - MRSA – up to 9 - 10 months
 - TB & *C. diff* – up to 5 months
 - VRE – up to 4 months
 - Norovirus – up to 1 month
- ***Proper cleaning & disinfecting is essential to reduce transmissions/ infections !!!***

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- Most frequently contaminated RME
 - Pulse oximeters,
 - EKG leads/ wires
 - Glucometers
 - Blood pressure cuffs
- It is *vitally important* that all RME are cleaned before and after each patient to prevent MDRO transmissions

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- Smooth surfaces require less friction to adequately clean

- Faucets
- Toilet seat
- Table top
- Telephone
- Vital sign monitor
- IV pole

- Rough surfaces require more friction to adequately clean

- Bathroom Grab bars
- Bed rails
- Recliner/chairs
- Call bell
- Glucometer
- EKG leads/ wires
- Pulse oximeters

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- Cleaning has two main functions:
 - To improve and restore the appearance, maintain function, and prevent deterioration
 - To reduce the numbers of microbes present and any substances that support their growth or interfere with disinfection or sterilization
- ***Just because a surface looks clean, does not mean it is really clean and safe enough for patient use!***
 - ALL RME must be cleaned between patients

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- Are you part of the problem?
- Studies have shown the following:
 - Lab coats are contaminated 69% of the time during care of patients colonized with MRSA
 - The pathogen is transferred from the lab coat to the healthcare workers' hands 27% of the time¹
 - Gloves become contaminated with MRSA 42% of the time in the room of a patient with MRSA even when there is no contact with the patient²

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- Are you part of the problem?
- Studies have shown the following (Continued):
 - Staphylococci was isolated from 85.4% of doctors' stethoscopes; 54.5% was MRSA³
 - Pagers, Palm PC/palm pilots, pens, medical charts and other equipment used routinely everyday can be contaminated with antimicrobial-resistant pathogens³
 - MRSA can survive more than 38 weeks on environmental surfaces such as door knobs, faucets, keyboards, telephones, even sterile goods packaging⁴

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- **Be part of the solution!**
 - Observe appropriate isolation precautions
 - *In the RJDVAMC, isolation signs are posted outside the room by the patient's name plate, listing procedures to follow*
 - Clean your hands on room entry and exit
 - Wear gloves and gown when entering the room, removing before exiting
 - Disinfect reusable medical equipment between patients

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- YOU can help to reduce and eliminate the spread of infection!
 - By cleaning the right way
 - At the right time
 - With every patient, every time!!!



Everyone has a role in Infection Control!

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□ Summary

- That concludes this course. Here's what you should now know:
 - Multi-drug resistant organisms (MDROs)
 - How MDROs are transmitted
 - Best ways to prevent transmissions of MDROs
 - Importance of Hand Hygiene and cleanliness of reusable medical equipment (RME)
 - Colonization versus Infection
 - Survival times of organisms in the environment
 - Environmental Monitoring
 - RME (reusable medical equipment)/surfaces most frequently contaminated

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□ References

1. Devine J, et al. Is MRSA contamination of ward based terminals a surrogate marker for nosocomial MRSA transmission and handwashing compliance. J Hosp Infection 2001;48Z:72-75
2. Boyce Jm, et al. Environmental contamination due to MRSA: possible infection control implications. Infect Control Hosp Epidem 1997;18:622-627
3. Bernard L, et al. Bacterial contamination of hospital physicians' stethoscopes. Infect Control Hosp Epidem 1999;20:626-628
4. Dietz B, et al. Survival of MRSA on sterile goods packaging. J Hosp Infect 2001;49:255-281

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- And remember, if you have any questions about any policies, procedures or practices related to infection control, contact your Infection Control department.
- Congratulations! You have completed this course.