Taking Action to Prevent and Manage Multidrug-resistant Organisms and C. difficile in the Nursing Home: 
*Part 3 – Strategies to prevent*

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Presentation Objectives

- Brief review of multidrug-resistant organisms (MDROs) and *C. difficile*
- Understand the emergence and spread of MDROs and *C. difficile* in healthcare settings
- Outline the actions that caregivers should take to minimize the spread of MDROs and *C. difficile*
- Describe national programs developed to support nursing home infection prevention programs in tracking and preventing MDROs and *C. difficile*.
Prevention strategies for MDRO/ C. diff

- Consistent performance of hand hygiene (HH)
- Appropriate use of gowns and gloves
- Consider resident risk factors when selecting room placement
- Cleaning and disinfection of shared equipment, rooms/surfaces
- Assessment of antibiotic use in the facility
- Awareness of use and management of medical devices
Barriers to HH adherence in NHs

- Belief that CDC 2002 HH guidelines aren’t applicable
  - 30% wouldn’t change current practices; 20% guidelines impractical

- Lack of access to appropriate HH supplies
  - 16.2% lack of available sink; 27.5% lack of alcohol-based hand rub

- No HH because of glove use
  - 23% nurses, 17% CNAs, 26% other HCWs

- Forgot HH because of workload
  - 35% of nurses, 22% CNAs, 44% other HCWs

- Lack of access to HH feedback and/or education
  - 55% never to rarely received personal feedback on HH practices
  - Other HCWs less often received periodic education on HH (86.8% vs. 92% of nurses and CNAs, p=0.03)

Ashraf MS et al. ICHE 2010; 31(7):758-762
Teach and reinforce the moments for HH

- Before and after physical contact with a resident
- Before donning gloves and after removing gloves
- After handling soiled or contaminated items and equipment, including linens
- Before performing an invasive procedures
- Before handling sterile or clean supplies
- When hands are visibly dirty or soiled with blood and/or bodily fluids*
- After care of a resident with known or suspected infectious diarrhea*
- Before and after eating or handling food*
- After personal use of bathroom*

*Situations where soap and water preferred over alcohol-based hand rub
Hand Hygiene and C. difficile

- Hand hygiene is the primary means of preventing transmission of infections...
- However, confusion exists about when soap and water are preferred over alcohol hand rubs

VS.
Have clear messaging and policies for hand hygiene practices

Address confusion related to HH and *C. diff*

- Most effective intervention is glove use because spores may be hard to remove even with soap and water
  - Glove use is NEVER a surrogate for hand hygiene
- Alcohol-based hand rubs (AHBR) may not be effective against *C. diff* spores, but they are very effective against all other MDROs
  - Avoid discouraging all use of alcohol-based products even during of residents with *C. diff*
  - Recommend AHBR before care; soap and water after care of residents with acute diarrhea
  - Promote appropriate use of gowns/gloves during care of residents with incontinence

Ellingson K, McDonald C. Infect Control Hosp Epidemiol 2010;31:571-3
Promoting and monitoring HH practices

Efforts to improve hand hygiene efforts should be multidisciplinary and multimodal, including:

- Ensuring accessibility of hand hygiene products
- Trial of hand hygiene products before implementation to increase staff buy-in
- Promote healthcare worker skin care for hands
- Reminders and cues to action for appropriate hand hygiene
- Provide feedback on performance data
- Engaging HCW in a hand hygiene practice reviews to identify knowledge gaps and barriers to adherence
- Develop a culture of safety and teamwork

Challenges with Transmission-based precautions in nursing homes

- Staff concerns about negative impact of personal protective equipment and isolation on residents
  - Unlikely to change practices if aware of an MDRO
  - Negative impact on resident’s psychosocial well-being
- Lack of private rooms / limited ability to move residents
  - Moving rooms is disrupting to residents and staff
  - Ability to identify carriers to cohort is limited (no active surveillance in most facilities)
- Determining duration of contact precautions
  - Unable to restrict resident mobility and participation in social events/therapy for prolonged periods
  - Unlikely to document clearance of carriage

Furuno, JP et al. AJIC. 2011; 1-5 epub
Contact Precautions

- Involves use of gown and gloves for direct resident care
  - Don equipment prior to room entry
  - Remove prior to room exit
- Use of dedicated non-essential items may help decrease transmission due to contamination
  - Blood pressure cuffs; Stethoscopes; IV poles and pumps
- Private rooms or cohorting residents if possible
  - Separate toileting equipment for roommates who can’t be cohorted
- Observe adherence to practices - particularly high-risk situations – and provide feedback
Resident placement principles

Determine resident placement based on the following principles:

- Route(s) of transmission of the known or suspected infectious pathogen
- Risk factors for transmission in the infected resident (e.g. draining wounds, diarrhea, uncontrolled secretions)
- Risk factors for adverse outcomes resulting from an infection in other residents in the room
- Duration of time in the facility and stability of current roommate
- Consider availability of single rooms, and options for room-sharing (e.g. cohorting, placement with a resident at lower risk of infection)
Strategic placement of residents based on risk factors

- Focus on resident risk factors for MDRO carriage
  - High risk: Antibiotic use; presence of medical devices or wounds; bowel/bladder incontinence; lack of mobility

- New roommate assignments based on resident characteristics and history of MDRO carriage
  - Try to avoid placing two high risk residents together

- Don’t change stable room assignments just because of a culture result unless it poses new risk
  - Roommates who’ve been together for a long time have already had opportunity to share organisms in the past (even if you only learned about it recently)
Resident placement (con’t)

- Establish strategies for movement of residents outside of the room based on level of risk for spread of infection
- Consider the following issues:
  - Presence of active signs/symptoms of infection (e.g., new vomiting or diarrhea, undiagnosed cough, and/or new fever
  - Inability to contain excretions or secretions
  - Challenges with maintaining personal hygiene
- Only restrict resident movements and participation in group activities for as long as needed
  - Discontinue as soon as high risk diagnosis ruled out; active signs/symptoms resolve; risk of transmission is low

Other considerations for use of contact precautions

- Implement gown/glove use protocols which align with the care needs of the residents served in your facility
- Decisions and rationale about gown/glove use during care and room placement should be clearly documented
- Communication to caregivers, families and residents about approach to MDRO management is key
- Cues to action, monitoring and feedback on gown/glove use are critical to engage staff and improve performance
  - Practices at the bedside must align with policies
Discontinuing Contact Precautions

- There is no single ‘best’ strategy for discontinuation of contact precautions for MDRO carriers (in any setting)
- Generally, resume standard precautions once high risk exposures or active symptoms have discontinued
- Some studies advocate extending gown/glove use for care of residents with recent *C. difficile* infection
  - Individuals can shed spores for several days after diarrhea has resolved
- **Communication to caregivers about policies and clear documentation of rationale is key**
Cleaning and disinfection

- Contaminated surfaces and equipment can contribute to spread of MDROs and C. diff
  - Organisms have been cultured from bed rails, bedside tables, blood pressure cuffs, toilets, call buttons, door knobs, IV poles
- Room contamination rates for infected/colonized individuals vary by pathogen
  - Up to 30% by MRSA; up to 60% by VRE; up to 75% by C. diff; up to 50% by gram-negatives like Acinetobacter
- Individuals have acquired MDROs from being admitted into rooms occupied by known carriers

Boyce J. J. Hosp Infect. 2007;65(S2): 50–54
Weber et al. Curr Opin Infect Dis 2013, 26:338–344
Frequency of *C. difficile* Culture Positive Sites in Study Areas

Environmental cleaning

- Ensure that environmental cleaning is adequate and high-touch surfaces are not being overlooked
- One study using a fluorescent environmental marker to assess cleaning showed:
  - Only 47% of high-touch surfaces were adequately cleaned
  - Sustained improvement in cleaning of all objects, especially in previously poorly cleaned objects, following educational interventions with the environmental services staff
- The use of environmental markers to audit practices is a promising method to improve cleaning.
- Assess efficacy of cleaning products being used – *C. diff* spores need sporicidal products for removal

Equipment cleaning

- Ensure that all shared equipment is being cleaned and disinfected between resident use
  - Some equipment, like glucose meters must be designed for multi-person use, otherwise frequent cleaning may affect the functioning of the device
- Make sure nursing staff and environmental services agree to which pieces of equipment they are assigned to clean
- Maintain log books of cleaning/disinfection for large equipment like wheel-chairs, transport stretchers, etc.
- Dedicate single use, disposable equipment for residents with MDRO/C. diff when possible
  - Make sure these items aren’t re-used by other residents
Summary Points

- Evaluate staff perceptions and barriers to implementing hand hygiene and transmission-based precautions
  - Ensure adequate supplies are available and accessible

- In addition to education, verify staff adherence to policies by auditing practices and providing feedback; this can be successful in engaging staff and sustaining improvements

- Identify one or two strategies that you can implement to improve these basic infection prevention practices in your facility
Thank you!!

Email: nstone@cdc.gov with questions/comments

For more information please contact Centers for Disease Control and Prevention

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