Clostridioides difficile Infection
Tier 2 Interventions

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STRIVE
States Targeting Reduction in Infections via Engagement

Presenter

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Objectives

- Outline the Tier 2 enhanced interventions to prevent *Clostridioides difficile* infection (CDI)
- Describe when implementation of Tier 2 CDI interventions is necessary
- Identify strategies to overcome barriers associated with the additional CDI interventions

Tier 2 Overview

TIER 1 Standardize Supplies, Procedures and Processes

(*complete all interventions: review and audit compliance with Tier 1 measures prior to moving to Tier 2*)

Implement antibiotic stewardship interventions specific to CDI	Conduct early, appropriate CDI testing and alert staff of CDI status	Prevent transmission of CDI through strict glove use and hand hygiene	Initiate Contact Precautions promptly when patients test positive for CDI and maintain for duration of CDI illness	Ensure cleaning and disinfection of equipment and environment	Monitor health care onset-CDI rates and share with staff and leadership

(if CDI rates remain elevated, start with CDI Guide to Patient Safety (GPS) and Target Assessment for Prevention (TAP) Strategy and then proceed with additional interventions)

Perform needs assessment with Guide to Patient Safety (GPS) and TAP Strategy

Tier 2 Enhanced Practices

Initiate Contact Precautions while CDI results are pending (for symptomatic patients) and prolong until discharge after patient becomes asymptomatic	Implement environmental cleaning process tools (audit checklists) and use of an EPA sporicidal agent	Implement hand hygiene with soap and water as preferred method on exit of room with targeted training and monitoring of staff compliance

AND/OR AND/OR

*Environmental Protection Agency (EPA) list of sporicidal agents: https://www.epa.gov/pesticide-registration/list-k-epas-registered-antimicrobial-products-effective-against-clostridium

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Getting Started

	YES	NO
Antibiotic stewardship program implemented	✓	
Early appropriate testing and notification	✓	
Correct use of gowns, gloves and hand hygiene	✓	
Prompt initiation of Contact Precautions when patients test positive and continued until asymptomatic	✓	
Ensure cleaning and disinfection of the environment and equipment	✓	
Monitor healthcare onset rates and adherence to processes; feedback communicated to staff and administration	✓	

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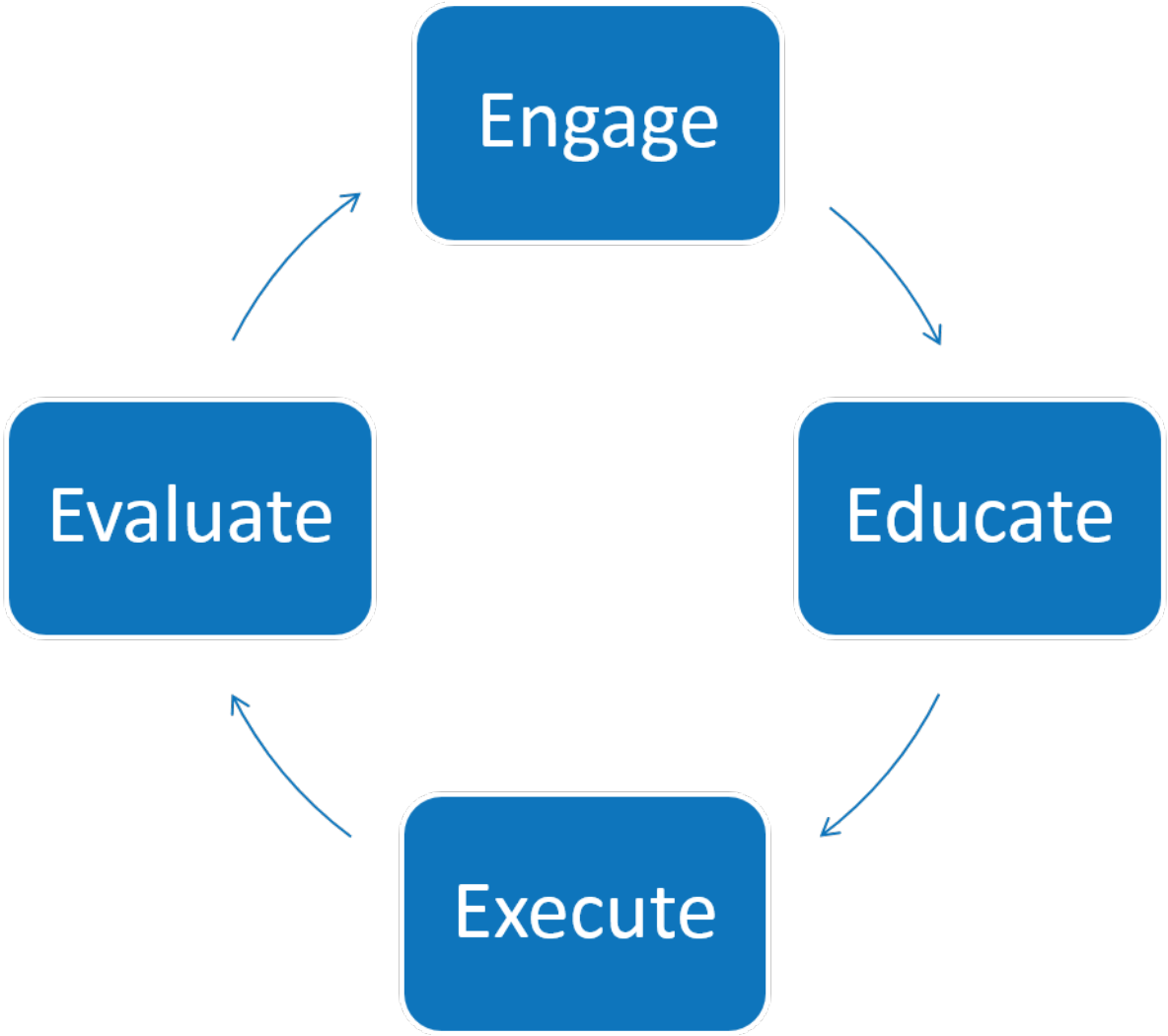
Moving the Needle



Duration of Contact Precautions

Initiate Contact Precautions while C. *difficile* tests are pending (for symptomatic patients) and prolong until discharge after patient becomes asymptomatic.

Audit and Training

Perform additional, targeted competency-based training for Contact Precautions

- Unit targeted training
- Target training based upon need
- Intensify audits of adherence to Contact Precautions procedures

Provide real-time feedback on adherence to frontline staff, unit leadership and facility leadership

(Dubberke ER, Infect Control Hosp Epidemiol, 2014; Carrico RM, APIC, 2013)

Monitoring

Isolation: Observation of Area Exterior to Contact Isolation Rooms — TB-1

Instructions: Observe areas outside of isolation rooms. Observe each practice and record the observation. In the column on the right, sum (across) the total number of "Yes" and the total number of observations ("Yes" + "No"). Sum all categories (down) for overall performance. Disregard not applicable categories. For example, cover gowns should be outside contact precautions rooms, but may not be required outside a room with airborne isolation precautions only.

	Isolation room: Observation Categories	Room 1	Room 2	Room 3	Summary of Observations: Yes	Summary of Observations: Total "Yes"& "No"
1	Is an isolation sign at the patient's door?	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No		
2	Are gloves available outside of each patient room or treatment area?	❑ Yes ❑ No ❑ N/A	❑ Yes ❑ No ❑ N/A	❑ Yes ❑ No ❑ N/A		
3	Are cover gowns available near each patient room or treatment area?	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No		
4	Is other PPE for standard precautions (e.g., eye protection, face masks) available near each patient room or treatment area?	❑ Yes ❑ No ❑ N/A	❑ Yes ❑ No ❑ N/A	❑ Yes ❑ No ❑ N/A		
5	Are surgical face masks or face shields or N95 respirators available near patient room?	❑ Yes ❑ No ❑ N/A	❑ Yes ❑ No ❑ N/A	❑ Yes ❑ No ❑ N/A		
6	Is dedicated patient equipment, such as stethoscopes or blood pressure cuffs, available?	❑ Yes ❑ No	❑ Yes ❑ No	❑ Yes ❑ No		
TOTAL (Do not include N/A in totals)						

(CDC, Quick Observations Tools for Infection Prevention, https://www.cdc.gov/infectioncontrol/tools/quots.html, 2019)

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Barriers to Continuing Contact Precautions until Discharge

Not practical in long-term acute hospitals

May impede patient flow

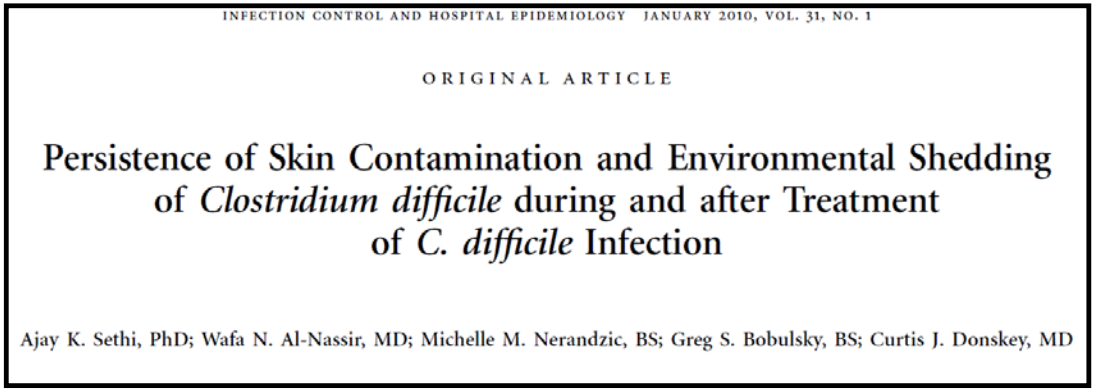
Patient may suffer depression from feelings of isolation and less caregiver contact

May interfere with nursing home placement

(Perencevich E, Am J Infect Control, 2009)

Strategies to Overcome Contact Precaution Barriers

- Share supporting evidence to engage key stakeholders



INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY JANUARY 2010, VOL. 31, NO. 1

ORIGINAL ARTICLE

Persistence of Skin Contamination and Environmental Shedding of *Clostridium difficile* during and after Treatment of *C. difficile* Infection

Ajay K. Sethi, PhD; Wafa N. Al-Nassir, MD; Michelle M. Nerandzic, BS; Greg S. Bobulsky, BS; Curtis J. Donskey, MD

- Consider keeping patients on Contact Precaution as long as possible, but modify the approach for patients with a long length of stay

- When Contact Precautions are discontinued consider moving the patient to a clean room

(Sethi A, Infect Control Hosp Epidemiol, 2010; Dubberke ER, Infect Control Hosp Epidemiol, 2014)

Use EPA Sporicidal Agent

If indicated, use an Environmental Protection Agency (EPA) sporicidal agent*

(Dubberke ER, Infect Control Hosp Epidemiol, 2014)

**EPA List K:* https://www.epa.gov/pesticide-registration/list-k-epas-registered-antimicrobial-products-effective-against-clostridium

Issues to Consider when Using Sporicidal Agents

- Potential toxicity to patients and health care personnel
- Damage to equipment and furniture; manufacturer's instruction for use may not support use of a sporicidal
- Changes in contact time or dilution

Strategies to Overcome Barriers

- Trial the product and conduct small tests of change

- Work collaboratively with environmental services staff to implement
- Obtain feedback from health care personnel
- Develop consensus on where, when and how the sporicidal agent will be used

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Sporicidal Agent Checklist

Sporicidal Agent	Comments
Will the agent be used for all cleaning or limited to rooms with patients who are known or suspected to have *C. difficile*?	Y/N
Is the product suitable for use on both equipment that goes between patients and daily cleaning by environmental services staff?	Y/N
Are there any concerns regarding integrity of equipment, etc.?	Y/N
Is the contact time short enough for effective implementation?	Y/N
Are there any safety issues?	Y/N
What PPE is needed?	Describe:
Any other concerns?	Describe:

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Monitoring for Adherence

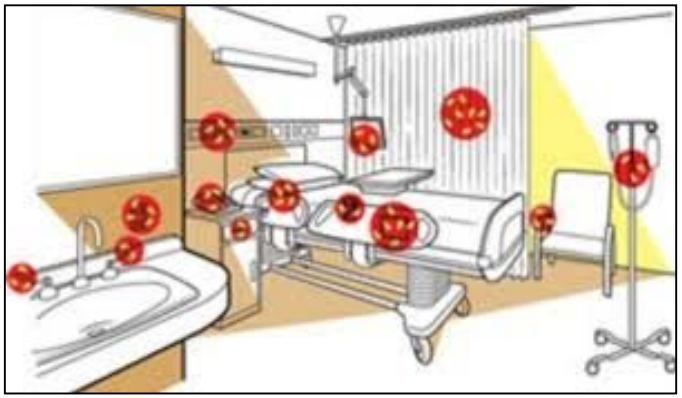
Monitor both health care personnel and environmental services staff for adherence

- Especially with regards to equipment that is used between patients

Create unit specific checklists and perform observations

During monitoring observe

- Contact time
- Proper dilution
- Changing of rags and mop water
- Moving from clean to dirty areas



(Practice Guidance for Healthcare Environmental Cleaning, 2nd Edition, AHA, 2012; Rutala WA, CDC, 2008)

Use Checklists to Monitor Adherence

Time Started: ____:____ AM/PM		Done	Not Done	N/A
Pre-cleaning Actions	Perform Hand Hygiene			
	Put on Appropriate PPE			
	Empty Trash			
	Empty Linen Hamper			
	High/Low Dust Surfaces			
	Clean Visible Soil on Surfaces			
	Mop Floors			
High Touch I	Bed Rails			
	Overbed Table			
High Touch II	Hand Sanitizer Dispenser			
	Call button & cord			
	TV Remote			
	Light Switches			
	Bedside Table			
	Patient chair – Arms			
	Patient chair – Seat			
	Computer Keyboard			
	Computer Mouse			
	Commode			
High Touch III	Inside Room Doorknob			
	Room Door Inner Surface			
	Countertop or Windowsill			
	Patient Phone			
	Linen Hamper			
	Trash Can			
Bathroom	Bathroom Doorknob			
	Toilet Horizontal Surfaces & Seat			
	Toilet Lever/ Flush			

		Done	Not Done	N/A
Bathroom cont.	Sink Surface			
	Soap Dispenser			
	Toilet Paper Dispenser			
	Paper Towel Dispenser			
	Hand Sanitizer Dispenser			
	Handrails/ Grab Bar			
	Tub/ Shower Surfaces			
	Mirror			
After-Cleaning Actions	Discard Toilet Brush/ Cloth			
	Discard Dust Cloth(s)			
	Change Mop Heads			
	Remove PPE			
	Perform Hand Hygiene			
Item Replacement	Put on new PPE (if precautions room)			
	Glove Boxes			
	Sharps Containers			
	Trash/ Linen Liners			
	Hand Sanitizer			
	Paper Towels			
	Toilet Paper			
Terminal Clean Additional Actions	Replace Privacy Curtains (if precautions room)			
	Bed Mattress – Surfaces			
	Bed – Headboard			
	Bed – Footboard			
	Bed - Frame			
	Patient Pillows			
Comments:				

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Soap and Water for Hand Hygiene

Implement soap and water as the preferred method of hand hygiene, especially on room exit

Ensure targeted training and monitoring of health care personnel

(Dubberke ER, Infect Control Hosp Epidemiol, 2014)

Barriers to Soap and Water

- Hand hygiene adherence may decrease with the use of soap and water
- Possible lack of convenient access to sinks
- Hand hygiene technique may be suboptimal
- Confusion on the part of health care personnel

(Dubberke ER, Infect Control Hosp Epidemiol, 2014)

Strategies to Overcome Barriers to the Use of Soap and Water

- Explain the rationale for soap and water to health care personnel
- Do not tape or cover alcohol dispensers
- Consider allowing alcohol gel, but require the addition rather than the replacement of gel
- Reinforce glove use

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(Dubberke ER, Infect Control Hosp Epidemiol, 2014)

Collaborate with Leadership to Overcome Barriers

Meet with leadership and staff in the affected areas to identify potential opportunities to improve the CDI Contact Precautions program

- Focus on glove donning and doffing and adherence to hand hygiene

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Acquisition of *C. difficile* on Gloved Hands

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Brief report

Acquisition of spores on gloved hands after contact with the skin of patients with *Clostridium difficile* infection and with environmental surfaces in their rooms

Dubert M. Guerrero MD [a], Michelle M. Nerandzic BS [b], Lucy A. Jury RN [c], Sadao Jinno MD [a], Shelley Chang PhD [d], Curtis J. Donskey MD [c,*]

[a] *University Hospitals of Cleveland Case Medical Center, Cleveland, OH*
[b] *Research Service, Louis Stokes Cleveland Veterans Affairs Medical Center, Cleveland, OH*
[c] *Geriatric Research, Education and Clinical Center and Research Service, Louis Stokes Cleveland Veterans Affairs Medical Center, Cleveland, OH*
[d] *Case Western Reserve University School of Medicine, Cleveland, OH*

- Study demonstrated that gloved hands can be easily contaminated
- Education, audit and feedback are essential

(Guerrero D, Am J Infect Control, 2012)

Problems with PPE Removal

Original Investigation

Contamination of Health Care Personnel During Removal of Personal Protective Equipment

Myreen E. Tomas, MD; Sirisha Kundrapu, MD; Priyaleela Thota, MD; Venkata C. K. Sunkesula, MD; Jennifer L. Cadnum, BS; Thriveen Sankar Chittoor Mana, MS; Annette Jencson, BS, CIC; Marguerite O'Donnell, RN; Trina F. Zabarsky, RN; Michelle T. Hecker, MD; Amy J. Ray, MD; Brigid M. Wilson, PhD; Curtis J. Donskey, MD

- Most healthcare personnel have little or no training in using PPE
- Highlights the need to develop effective strategies to minimize risk of contamination during PPE removal
- Educational interventions should include practice
  - Immediate visual feedback on skin and clothing can significantly reduce risk

(Tomas M, JAMA Intern Med, 2015)

Hand Hygiene Competency

https://www.cdc.gov/handhygiene/training/interactiveEducation/

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Summary

Engage

- Meet with leadership and staff in the affected areas to identify potential opportunities to improve the CDI Contact Precautions program
- Work with physician and nursing champions to engage frontline staff in improving hand hygiene efforts

Educate

- Re-educate health care personnel on PPE and Contact Precautions
- Provide competency-based hand hygiene training

Execute

- If indicated, use an EPA approved sporicidal for environmental disinfection
- Prolong duration of Contact Precautions after patient becomes asymptomatic to discharge
- Implement hand hygiene with soap and water as the preferred method for hand hygiene after caring for CDI patients

Evaluate

- Provide real-time feedback on adherence to frontline staff and unit/facility leadership
- Intensify adherence to environmental cleaning and disinfection procedures using process tools like audit checklists, team rounding and other methods

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References

- Dubberke ER, Carling P, Carrico R, et al. Strategies to Prevent *Clostridium difficile* Infections in Acute Care Hospitals: 2014 Update. *Infect Control Hosp Epidemiol.* 2014; 35(6): 628- 45.
- Guerrero D, Nerandzic M, Jury L, et al. Acquisition of spores on gloved hands after contact with the skin of patients with *Clostridium difficile* infection and with environmental surfaces in their rooms. *Am J Infect Control*. 2012; 40(6): 556-8.
- Perencevich E, Morgan D, Diekma D. Adverse outcomes associated with contact precautions: a review of the literature. *Am J Infect Control*. 2009; 37(2): 85–93.
- Practice guidance for healthcare environmental cleaning, second edition. Association for Healthcare Environment. Chicago: American Hospital Association, 2012.
- Quick Observation Tools. Centers for Disease Control and Prevention, CDC. Available at: https://www.cdc.gov/infectioncontrol/tools/quots.html
- Seithi A, Al-Nassir W, Nerandzic M, et al. Persistence of Skin Contamination and Environmental Shedding of *Clostridium difficile* during and after treatment of *C. difficile* infection. *Infect Control Hosp Epidemiol*. 2010; 31(1): 21-7.

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References

- Rutala WA, Weber DJ, Healthcare Infection Control Practices Advisory Committee (HICPAC). Guideline for disinfection and sterilization in healthcare facilities, 2008. Centers for Disease Control and Prevention, CDC. 2008. Available at https://www.cdc.gov/hicpac/pdf/guidelines/Disinfection_Nov_2008.pdf.
- Tomas M, PriyaleelaT, Sunkelsula K, et al. Contamination of health care personnel during removal of personal protective equipment. *JAMA Internal Medicine*. 2015; 175(12): 1904-10.
- Visitor Information About Contact Precautions. University of Rochester. Accessed 01/11/2017. Available at https://www.urmc.rochester.edu/MediaLibraries/URMCMedia/strong-memorial/patients-families/hospital-stay/documents/contact-precautions-visitors.pdf

Speaker Notes

Speaker Notes: Slide 1

This module will discuss other interventions, in addition to the CDI GPS tool and CDI Targeted Assessment for Prevention (TAP) Strategy, that may be necessary to implement if *Clostridioides difficile* infection, or CDI, rates remain high after consistent application of Tier 1 interventions.

Speaker Notes: Slide 2

This module was developed by national infection prevention experts devoted to improving patient safety and infection prevention efforts.

Speaker Notes: Slide 3

After completing this module you will be able to:

- Outline the Tier 2 enhanced interventions to prevent CDI;
- Describe when implementation of Tier 2 CDI interventions is necessary; and
- Identify strategies to overcome barriers associated with these additional interventions.

Speaker Notes: Slide 4

You may be a hospital that has worked hard to implement all of the recommended guidelines described in the Tier 1 modules. You may have an active antibiotic stewardship program, you may have standardized supplies, processes and procedures, you have audited adherence to hand hygiene and isolation practices, you initiate Contact Precautions promptly and continue them for the duration of the illness and you share your process observations and outcomes data with key stakeholders – but you still have high rates! So, what do you do now? Assessment using the CDI Guide to Patient Safety and the TAP Strategy–discussed previously–can guide implementation Tier 2 recommendations. We will discuss these interventions in detail in this module.

Speaker Notes: Slide 5

Before you move on to Tier 2 strategies, it is important to assess adherence to Tier 1 recommendations. This can be done using the CDI GPS or through a simple gap analysis or checklist to ensure that you are already compliant with all of the Tier 1 recommendations.

Speaker Notes: Slide 5 Continued

As you can see from this slide, the hospital in question has assessed all of the Tier 1 recommendations and concluded that they had fully implemented them. These include:

- Implementation of an antibiotic stewardship program,
- Early and appropriate testing of symptomatic patients,
- Correct of gown and gloves as indicated,
- Prompt initiation of Contact Precautions for CDI positive patients until symptoms have resolved,
- Appropriate cleaning and disinfection of the environment, and
- Monitoring healthcare onset (HO) rates and adherence to processes and policies and providing feedback to key stakeholders.

Speaker Notes: Slide 6

If you are having difficulties and need to implement the Tier 2 interventions, it might be helpful to step back and develop a strategy to ensure successful adoption of the Tier 2 measures. One model to try is the 4 E's model.

Speaker Notes: Slide 6 Continued

You might think of it from this perspective:

1. Engage – Who are the stakeholders that need to be engaged? How can we ensure that they understand the importance of these issues? How can we make it meaningful for different groups? Engagement approaches may be a different for different categories of staff.
2. Educate – How are we going to educate everyone on these new strategies? What methods work best for different groups? Consider just in time training in addition to formal communication.

Speaker Notes: Slide 6 Continued

4. Execute – How are we going to implement these measures? Is there a time line for implementation? Can we leverage the electronic health record or other processes to assist? What implementation strategies have been successful in our organization in the past?
5. And finally, Evaluate – How will we know if we have been successful? What are the outcome and process measures that we can judge success by?

With this strategy and these questions in mind, we'll now discuss the Tier 2 interventions along with barriers and strategies for successful implementation.

Speaker Notes: Slide 7

Tier 1 recommends to continue isolation until the patient is asymptomatic. To decrease transmission, it is essential to place symptomatic patients in Contact Precautions as soon as diarrhea symptoms are recognized. This is the period of greatest shedding and contamination. However, if rates remain elevated it may be necessary to initiate Contact Precautions while *C. difficile* tests are pending for symptomatic patients and to prolong isolation until discharge, even when the patient becomes asymptomatic.

Speaker Notes: Slide 8

First, it is important that staff are compliant with Contact Precautions. As part of the Tier 2 interventions, revisit training for Contact Precautions and ensure competency. With real-time feedback, health care personnel are immediately alerted to issues as they happen and can correct issues as they occur. This type of feedback helps clarify expected performance and allows leaders to set behavioral expectations.

Speaker Notes: Slide 9

Adherence to isolation practices is a basic core strategy and was reviewed in the Tier 1 modules. However, it is important to intensify efforts and to revisit strategies for monitoring and feedback. CDC Quick Observation Tools is one example of a tool which can be used to monitor Contact Precautions.

Speaker Notes: Slide 10

However, there are some barriers.

First of all, it may not be practical in a long-term care acute hospital where the patient room is their home or when the patient might share the room with a roommate. Secondly, many busy hospitals run near 100 percent capacity. Leaving patients on isolation for indefinite periods of time may slow throughput in hospitals that have limited numbers of private rooms.

Speaker Notes: Slide 10 Continued

Second, patients who have a long length of stay may experience adverse consequences from prolonged isolation. A meta-analysis published in 2009 in the American Journal of Infection Control, or AJIC, identified four major adverse outcomes related to Contact Precautions:

- First, patients receive less patient-healthcare personnel contact;
- Second, patients may experience delays in care and more noninfectious adverse events;
- Third, patients have increased symptoms of depression and anxiety; and
- Fourth, patients report decreased satisfaction with their care.

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Speaker Notes: Slide 10 Continued

Finally, in some cases if a patient is waiting for nursing home placement, the nursing home may not have an available room for Contact Precautions, thus delaying placement and prolonging their stay in the hospital.

Speaker Notes: Slide 11

So what can you do about these barriers? One method to engage stakeholders and overcome barriers is to share relevant data and evidence. The article by Sethi and colleagues highlights the fact that shedding of *C. difficile* spores can occur up to six weeks after therapy; supporting the need for prolonged Contact Precautions.

Speaker Notes: Slide 11 Continued

Another strategy to overcome these barriers in patients with a long length of stay is to keep patients in Contact Precautions as long as feasible and to carefully consider discontinuing Contact Precautions when the patient has been asymptomatic for a defined period of time and has completed therapy. For example, the study by Sethi and colleagues highlights that shedding commonly occurs one to two weeks after therapy completion. This suggests for long-stay patients, precautions could be discontinued two weeks after therapy has ended.

Speaker Notes: Slide 11 Continued

An additional strategy is to move the patient to a clean room when precautions are ended. Since *C. difficile* can live in the environment for long periods of time, it is important to ensure that the room is terminally disinfected before discontinuing the precautions. Some organizations have had success moving the patient to another bed and another room to ensure that the isolation room is thoroughly cleaned and terminally disinfected.

Speaker Notes: Slide 12

Now, we'll look at the next Tier 2 strategy. The recommendations are to add an Environmental Protection Agency, or EPA registered agent with *C. difficile* spore label claims to the environmental cleaning process in units with high CDI rates. Some hospitals may have already implemented wide use of a sporicidal cleaner. However, if this process is not already in use, there are several issues to think about, which we'll highlight in the next slide.

Speaker Notes: Slide 13

The following are some potential issues to consider as you begin to implement the use of a sporicidal agent:

- Your hospital may opt to use a sodium hypochlorite sporicidal agent, which can be irritating to patients and health care personnel, especially to environmental service staff (EVS), who may frequently come in to contact with the agent.

Speaker Notes: Slide 13 Continued

- Similarly, when making changes to products, it is important to look at potential damage to equipment and furniture. Remember to check the manufacturer's instruction for use to ensure that the product is safe to use on patient care equipment.
- Changes to personal protective equipment (PPE), contact time or dilution of the cleaning product from what staff are used to with existing might require additional training and changes in work flow.

Speaker Notes: Slide 14

It is important to trial a new product prior to use. Consider using the PDSA cycle, or Plan-Do-Study-Act, to conduct small tests of change. Plan where and when you want implementation to occur, implement it for a designated period of time in a specific area. Study and review the results, paying special attention to feedback from health care personnel and environmental services staff. Finally, act on these results, either by spreading to a larger population or deciding to try a new product.

Speaker Notes: Slide 15

As you are implementing your PDSA cycle for a new product, consider using a checklist to make sure you cover the key issues. The checklist on the slide highlights some issues to include and consider prior to changing cleaning products. Successful implementation requires that staff be comfortable with the product, that it is easy to implement, that it has a short enough contact time for effective implementations and that there are not safety issues associated with it. It is also important that the organization decide if the sporicidal agent will be used for all cleaning or limited to rooms with patients who are known or suspected to have *C. difficile*? Making sure to answer these questions will help you select a sporicidal agent that is right for your needs.

Speaker Notes: Slide 16

Monitoring for sporicidal use adherence is extremely important. When CDI rates remain elevated, it is essential that the organization focus on adequacy of cleaning, especially high touch surfaces. In addition, it is important to look at dilution of the product, how it's applied, if the surface remains wet for the appropriate contact time and how often cloths, wipes, mop heads and mop water are changed.

Speaker Notes: Slide 17

Once again, the use of a checklist can be extremely useful when monitoring sporicidal use adherence. The use of checklists and audit tools have been discussed in detail in the Tier 1 module on Monitoring for adherence and Improvement. However, this slide provides a detailed extensive cleaning checklist. This checklist was adapted from the CDC checklists.

Speaker Notes: Slide 18

Another strategy to implement when CDI rates remain elevated is to use soap and water as the preferred method of hand hygiene. It is important to monitor adherence and ensure appropriate technique is being used. It may be helpful to review the foundational module on hand hygiene, which presents tools to assist with audits and monitoring of hand hygiene practices.

Speaker Notes: Slide 19

Just like the other Tier 2 recommendations, there can also be barriers to using soap and water as the preferred method of hand hygiene. Because alcohol hand gels are usually very efficient and convenient, there may be a lack of adherence to handwashing when the use of soap and water is required. Health care organizations may have limited or difficult access to sinks. Some health care personnel may not be aware of or may not follow the appropriate process for hand hygiene. Similarly, some health care personnel may be confused when soap and water is substituted for hand gel when caring for CDI patients.

Speaker Notes: Slide 20

As with the other Tier 2 recommendations, it is important to anticipate potential barriers at the outset. First, it is important that healthcare personnel understand the rationale for the use of soap and water. Especially, because it is not generally recommended in non hyper-endemic or non-outbreak settings; the change in practice may be confusing. The reason soap and water is not generally recommended is because several studies have identified that there is a decrease in Methicillin-Resistant *Staphylococcus aureus*, or MRSA and vancomycin-resistant enterococci, VRE, associated with the use of alcohol-based hand hygiene products.

Speaker Notes: Slide 20 Continued

However, because of the theoretical risk of transmission in high endemic or epidemic CDI settings, experts feel it is prudent to use soap and water in these circumstances.

One strategy to overcome barriers is to allow healthcare personnel to use gel and follow with soap and water or vice versa. It is important though, that gel dispensers not be taped or covered since this may detract from any hand hygiene, especially when a sink is not immediately available. Glove use should be strictly maintained and promoted. Glove use when caring for patients or touching surfaces in patient rooms has been shown to reduce CDI transmission.

Speaker Notes: Slide 21

It is essential to collaborate with leadership and to identify opportunities to improve Contact Precautions and hand hygiene programs. Leadership needs to set expectations for performance and hold staff accountable. It is also essential that there be an increased focus on glove donning and doffing as well as adherence to hand hygiene.

Speaker Notes: Slide 22

Although the hands of healthcare personnel considered the primary means of transmission of *C. diff* spores, the study highlighted on this slide by Guerrero and colleagues demonstrated that gloved hands can also be easily contaminated with spores. Thus, it is vitally important that leadership place an increased focus on glove donning and doffing. The next slide will review some highlights of the risks and strategies related to proper removal of PPE.

Speaker Notes: Slide 23

A 2015 study in JAMA Internal Medicine noted that most healthcare personnel receive little or no training in correctly applying and removing PPE, leading to contamination, highlighting the need for effective educational strategies along with audit and feedback. In this study, immediate visual feedback led to 41.1 percent, statistically significant (< P.001) reduction of skin and clothing contamination during PPE removal. Clearly, education, audit and feedback can play a key role in reducing contamination and preventing infection.

Speaker Notes: Slide 24

Hand hygiene competency is also important for overcoming barriers. It is not enough to know when to perform hand hygiene, but also how to do it correctly. The CDC has an interactive educational program on hand hygiene, that can be accessed at the link on your screen. This program is a very good starting point for staff, which can be followed up with return demonstrations.

Speaker Notes: Slide 25

While improving CDI prevention may not always be easy, by planning and anticipating barriers hospitals can reduce *C. difficile* infection rates.

For hospitals that continue to have high CDI rates despite adherence to Tier 1 recommendations, intensive efforts need to be focused especially in high burden areas. Using the 4 E's framework, these include:

- Engage Stakeholders: Meet with leadership and staff in the affected areas to identify potential opportunities to improve the CDI Contact Precautions program. Work with physician and nursing champions to engage frontline staff in improving hand hygiene and PPE efforts.

Speaker Notes: Slide 25 Continued

- Educate: Health care personnel. They may need re-education on PPE and Contact Precautions. It is also essential to ensure competency-based hand hygiene.
- Execute: Execution is important. Executing interventions successfully will require a variety of strategies, and to some extent, will depend on the organizational culture. Some of the key strategies include:
  - If indicated, use an EPA registered disinfectant labeled for C. diff for environmental disinfection;
  - Prolong the duration of Contact Precautions until discharge, even after the patient becomes asymptomatic;

Speaker Notes: Slide 25 Continued

- Implement hand hygiene with soap and water as the preferred method for hand hygiene when caring for patients with CDI.

- And finally, Evaluate: it is important to continually evaluate your efforts. Provide real-time feedback on adherence to frontline staff and leadership.

As you and your hospital work towards reducing CDI rates, remember that it is usually a combination of strategies that will lead to improved results. Standardization, consistency and accountability are key to decreasing CDI.

Speaker Notes: Slide 26

No notes.

Speaker Notes: Slide 27

No notes.