Tiers of Interventions to Prevent CDI

# Detailed Tier 1 Interventions

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| **Tier 1** | **Implement the Following Tier Interventions** |
| Implement antibiotic stewardship interventions specific to *Clostridium difficile* infection (CDI). | * Monitor use of antibiotics that are high-risk for CDI and use strategies to reduce their unnecessary use. 1,2,3,4   + Fluoroquinolones   + Third and fourth generation cephalosporins * Review appropriateness of antibiotics prescribed for treatment of other conditions (e.g., urinary tract infection) for patients with new or recent CDI diagnosis. * Educate providers, patients and family members about the risk of CDI with antibiotics.5 * Provide feedback to providers on antibiotic prescribing practices (e.g., antibiotic report cards).4 * Engage executive, physician and nurse leaders in antibiotic stewardship and CDI prevention efforts.5   Resources: [CDC Checklist for Core Elements of Hospital Antibiotic Stewardship Programs](https://www.cdc.gov/getsmart/healthcare/implementation/checklist.html); [CDC Antibiotic Stewardship Implementation Resources](https://www.cdc.gov/getsmart/healthcare/implementation.html) |
| Conduct early, appropriate testing and alert health care personnel and Infection Preventionists of patients’ CDI status. | * Implement a process for early detection of CDI (e.g., ensure patients with clinically significant diarrhea on admission are tested promptly).6 * Educate health care personnel on clinical features, transmission and epidemiology of CDI and processes for appropriate testing.7,8 * Test only unformed stools from patients with clinically significant diarrhea with no other recognized cause for their diarrhea (e.g., laxative use).9 * Do not repeat test if the patient had a recent positive test. * Do not automatically repeat a test if the prior test was negative unless the clinical situation indicates at least a medium pre-test probability (high suspicion) for CDI. * Do not order multiple tests simultaneously. * Do not test for cure. * Use automated laboratory alerts to notify staff and isolate patients immediately upon positive results.10 * Use electronic health record best-practice alerts or algorithms to support clinical decision-making. * Improve hand-off communication across levels of care and upon movement of patients for diagnostic testing for patients with CDI.   Resource: [C. difficile Infection Change Package: Preventing *C. difficile* Transmission and Infection](http://www.hret-hiin.org/Resources/cdi/16/HRETHEN_ChangePackage_CDI.pdf) |
| Prevent transmission of CDI through strict glove use and hand hygiene. | * Prior to entry to patient room, if hands are not visibly soiled, perform hand hygiene with an alcohol- based handrub (ABHR); if hands are visibly soiled, perform hand hygiene with soap and water.11 * Don personal protective equipment (PPE), including clean gloves upon entry to a patient’s room. 1 * Gloves should be changed immediately if visibly soiled, after touching or handling surfaces or materials contaminated with feces, or after moving from a dirty to a clean intervention.1 * Care should be taken not to contaminate hands during PPE removal prior to exiting a patient’s room. Perform hand hygiene after glove removal per facility policy. ABHR is preferred as a basic measure, unless hands are visibly soiled or during outbreaks or high endemic rates of CDI. 12   + If a hospital has chosen to implement soap and water as the preferred method of hand hygiene after caring for CDI patients, ensure that adherence to hand hygiene is not compromised, that proper technique when using soap and water is used and that staff have access to sinks immediately upon exit from patient room. * Provide routine, competency-based training to staff for proper hand hygiene and Contact Precautions procedures and proper technique for both, with an emphasis on proper donning and doffing of PPE.13 * Perform routine audits of hand hygiene and Contact Precautions adherence.12 * Provide real-time feedback to frontline staff and unit and facility leadership of audit results.14 * Implement a system to ensure that patients routinely perform hand hygiene before eating and after using bathroom.   Resources: [CDC Hand Hygiene Training Video](https://www.cdc.gov/handhygiene/training/interactiveEducation/frame.htm), [WHO Hand Hygiene Observation Form](http://www.who.int/entity/gpsc/5may/Observation_Form.doc?ua=1), [Clean Care is Safe Care –Tools for Training and Education](http://www.who.int/gpsc/5may/tools/training_education/en/) |
| Initiate Contact Precautions promptly when patients test positive for CDI and maintain for duration of CDI illness. | * Initiate Contact Precautions promptly when patients test positive for CDI and maintain for duration of CDI illness.1 * Place patients in single rooms, or cohort patients with CDI when single rooms are not available. * Ensure availability of dedicated or single patient use, disposable patient equipment and supplies. Always use an isolation stethoscope and ensure one is provided immediately if not available when seeing a patient.1 * Create a plan to clean and disinfect any items or equipment that must be shared between patients.1 * Avoid use of rectal thermometers. * Use full barrier PPE (gown and gloves) for patient care and ensure availability of PPE supplies at the point of care. * Provide routine competency-based training to staff on proper use of PPE and dedicated equipment.13 * Perform routine audits of adherence to Contact Precautions and PPE practices.1 * Provide real-time feedback to frontline staff and unit and facility leadership of audit results. 10,14   Resource: [Contact Isolation Skills Competency Checklist](http://www.aanac.org/docs/2015-ltc-leader/n-coley_capstonefinal.pdf?sfvrsn=2) |
| Ensure cleaning and disinfection of equipment and environment. | * Cleaning processes should be clearly defined to address potentially contaminated surfaces to emphasize:1   + High touch surfaces in the room, such as over-bed tables, bedrails, chairs, sinks, commodes and toilets.   + Patient care equipment that directly touches patients, such as thermometers, stethoscopes and blood pressure cuffs.   + Surfaces touched by health care personnel such as doorknobs, intravenous infusion pumps, computers and other mobile equipment. * Ensure the manufacturers’ instructions for cleaning and disinfection products are available and are followed by health care personnel. * Delineate clearly which items are cleaned and disinfected by either the environmental services (EVS) personnel versus unit-level personnel in the hospital policy. * Provide routine competency-based training to EVS and other relevant staff on CDI and proper cleaning and disinfection practices. * Perform routine audits of adherence to environmental cleaning and disinfection practices. Ensure all mobile equipment and devices that come in contact with health care providers and/or patients are accounted for in the audit process. * Provide real-time feedback from audits to EVS staff and other relevant staff regarding their adherence to recommended environmental cleaning practices.10 * Engage staff in identifying and addressing barriers to proper cleaning and disinfection of equipment and environment.   Resources: [Not Just a Maid Service](https://www.youtube.com/watch?v=nfZftqBELsA), [Options for Evaluating Environmental Cleaning](https://www.cdc.gov/hai/toolkits/evaluating-environmental-cleaning.html) |
| Monitor health care onset-CDI rates and share with staff and leadership. | * At a minimum, conduct surveillance for health care facility-onset CDI at the facility-wide level. Identify units with high burden of CDI to target prevention strategies.1 * Routinely provide CDI data and other CDI prevention process and outcome measures to key stakeholders, senior leadership, physicians, nursing staff and other health care personnel. |
|  | Review and audit compliance with Tier 1 measures before moving to Tier 2 |

# Detailed Tier 2 Interventions

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| **Tier 2** | **Implement the Following Tier 2 Interventions if CDI Incidence Remains Elevated** |
| Perform CDI needs assessment with Guide to Patient Safety (GPS). | * Perform needs assessment using the CDI Guide to Patient Safety. Adapted from the validated CAUTI [Guide to Patient Safety](https://catheterout.org/?q=gps) (GPS), the CDI GPS is a brief troubleshooting guide for hospitals, designed to identify the key reasons why hospitals may not be successful in preventing infections.15,16 * Use GPS results to engage health care personnel in the process of developing next steps to prevent CDI. * CDI GPS questions:  1. Do you have a well-functioning team (or work group) focusing on CDI prevention? 2. Do you have a project manager with dedicated time to coordinate your CDI prevention activities? 3. Do you have an effective physician champion for your CDI prevention activities? 4. Is senior leadership supportive of CDI prevention activities? 5. Do you routinely collect CDI-related data (e.g., incidence, prevalence, compliance with prevention practices, etc.) in the unit(s) or populations in which you are intervening to reduce infection? 6. Do you routinely feedback CDI-related data to frontline staff and physicians (e.g., incidence, prevalence, compliance with prevention practices, etc.)? 7. Is staff empowered to speak up and remind colleagues about proper hand hygiene and personal protective equipment use? 8. Do you conduct audits and provide feedback on the effectiveness of environmental cleaning? 9. Do you have an antibiotic stewardship team that includes at least one physician and one pharmacist? 10. Does your laboratory reject formed stools if submitted for CDI testing? 11. Are clinicians educated as to when to order CDI testing?   Resource: Visit <https://catheterout.org/?q=gps> to access the online CAUTI GPS tool. |
| Initiate Contact Precautions while CDI results are pending (for symptomatic patients) and prolong until discharge after patient becomes asymptomatic. | * Initiate Contact Precautions for symptomatic patients while test results are pending (e.g., pair the order for testing with the order for Contact Precautions).1 * Prolong duration of Contact Precautions until after patients become asymptomatic to discharge.1 * Perform additional, targeted (unit and/or discipline specific) competency-based training for Contact Precautions. * Intensify audits of adherence to Contact Precautions procedures.1 * Provide real-time feedback on adherence to Contact Precautions to frontline staff and unit and facility leadership.10 |
| Implement environmental cleaning process tools (audit checklists and team rounding) and use of an Environmental Protection Agency (EPA) approved sporicidal agent. | * Intensify adherence to environmental cleaning and disinfection procedures using process tools like audit checklists, team rounding and other methods (e.g., fluorescent marker, etc). 10 * If indicated, use an EPA approved sporicidal for environmental disinfection, particularly in units with high rates of CDI.1   Resource: [EPA Registered Antimicrobial Products Effective Against *Clostridium difficile* Spores](http://www2.epa.gov/pesticide-registration/list-k-epas-registered-antimicrobial-products-effective-against-clostridium) |
| Implement hand hygiene with soap and water as the preferred method on exit of the patient room with targeted training and monitoring of staff compliance. | * Implement hand hygiene with soap and water as the preferred method for hand hygiene after caring for CDI patients (with cautions and requirements as outlined in Tier 1). * Meet with leadership and staff in the affected areas to identify potential opportunities to improve the CDI Contact Precautions program with a focus on glove donning and doffing and compliance with hand hygiene.1 * Work with physician and nursing champions to engage frontline staff in improving hand hygiene efforts. * Perform additional, targeted (unit and/or discipline specific) competency-based training for hand hygiene. * Intensify the assessment of adherence with recommended hand hygiene practices. * Provide real-time feedback on adherence to hand hygiene practices to frontline staff and unit and facility leadership. * Intensify procedures to ensure that patients routinely perform hand hygiene, preferably with soap and water, prior to eating and after using the bathroom.   + Soap and water should be used after using the bathroom. |

# Resources

* APIC Guide to Preventing *Clostridium difficile* infections. APIC Implementation Guide. Association for Professional in Infection Prevention and Control, APIC. 2013. Available at <https://apic.org/Resource_/EliminationGuideForm/59397fc6-3f90-43d1-9325-e8be75d86888/File/2013CDiffFinal.pdf>
* CDC Hand Hygiene Training Video. Available at <https://www.cdc.gov/handhygiene/training/interactiveEducation/frame.htm>
* Checklist for Core Elements of Hospital Antibiotic Stewardship Programs. Centers for Disease Control and Prevention, CDC. Last Updated February 23, 2017. Available at <https://www.cdc.gov/getsmart/healthcare/implementation/checklist.html>
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* Contact Isolation Skills Competency Checklist. Available at <http://www.aanac.org/docs/2015-ltc-leader/n-coley_capstonefinal.pdf?sfvrsn=2>
* EPA Registered Antimicrobial Products Effective against *Clostridium difficile* Spores. Available at <https://www.epa.gov/pesticide-registration/list-k-epas-registered-antimicrobial-products-effective-against-clostridium>
* Get Smart for Healthcare in Hospitals and Long-Term Care. Implementation Resources. Centers for Disease Control and Prevention, CDC. Last Updated May 15, 2017. Available at <https://www.cdc.gov/getsmart/healthcare/implementation.html>
* Guide to Patient Safety (GPS) Tool. catheterout.org. Available at <https://catheterout.org/?q=gps>.
* Learn from Defects Tool. Content last reviewed December 2012. Agency for Healthcare Quality and Research, Rockville MD. Available at <http://www.ahrq.gov/professionals/education/curriculum-tools/cusptoolkit/toolkit/learndefects.html>
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* SHEA Strategies to Prevent *Clostridium difficile* Infections in Acute Care Hospitals: 2014 Update. Society of Healthcare Epidemiology of America. Available at <http://www.jstor.org/stable/pdf/10.1086/676023.pdf?refreqid=excelsior:c85b804df8e6358e31893356c52eb502>
* TAP Clostridium difficile infection (CDI) Implementation Guide: Links to Example Resources. Centers for Disease Control and Prevention, CDC. Available at <https://www.cdc.gov/hai/prevent/tap/cdiff.html>
* WHO Hand Hygiene Observation Form. Available at <http://www.who.int/entity/gpsc/5may/Observation_Form.doc?ua=1>

# References

1. Dubberke ER, Carling P, Carrico R, et al. Strategies to Prevent *Clostridium difficle* Infections in Acute Care Hospitals: 2014 Update. *Infect Control Hosp Epidemiol*. 2014; 35(6):628-45.
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