

# C. difficile Infection Reduction in Long-Term Care: Environmental Cleaning and Disinfection



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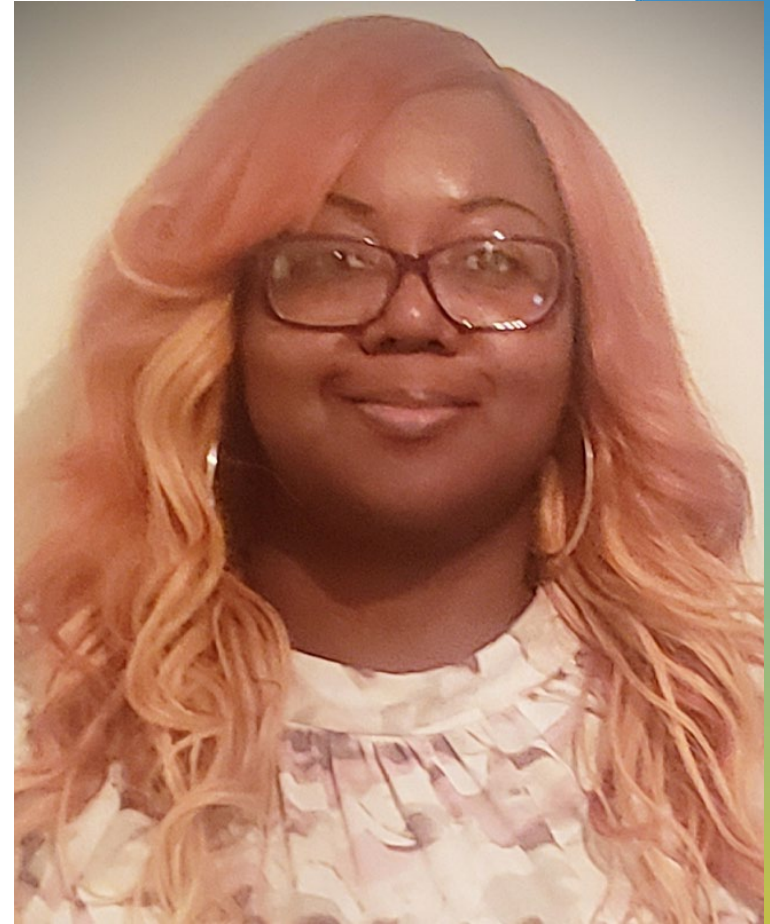
# Paula St. Hill, MPH, a-IPC

## **TECHNICAL ADVISOR, INFECTION PREVENTION**

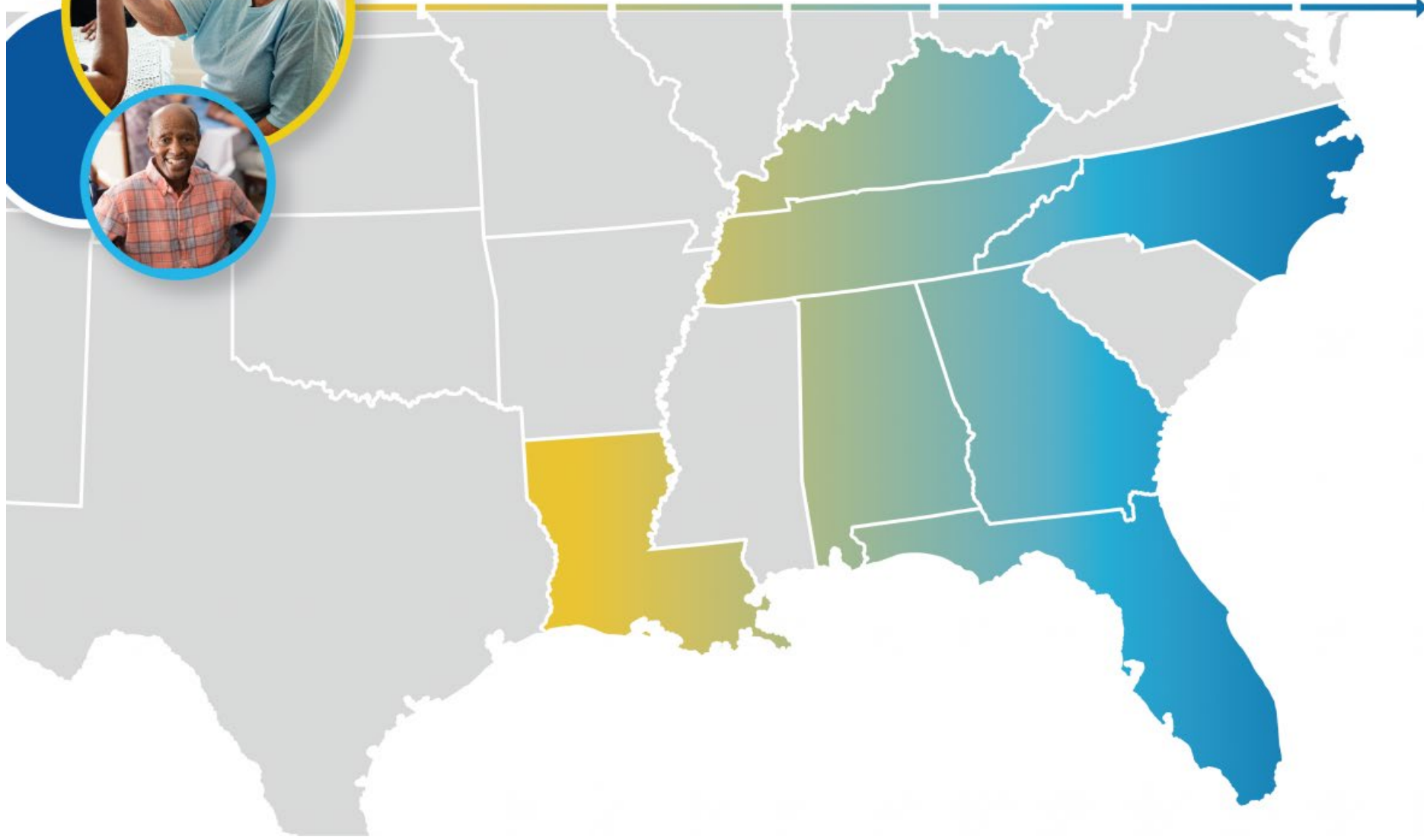
Paula is a doctoral student with a diverse background in public health, infection control, epidemiology and microbiology. She has always enjoyed public health and identifying ways to improve health outcomes, specifically those related to healthcare-associated infections. She has 10 years of health care experience.

*Paula enjoys spending time with her friends and family. In her spare time, she loves watching a good horror or thriller movie.*

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# Making Health Care Better *Together*



About Alliant Health Solutions



# Hello, My Name Is...

Type into chat:

- Name
- Role
- Facility
- State
- What are you excited to learn today?

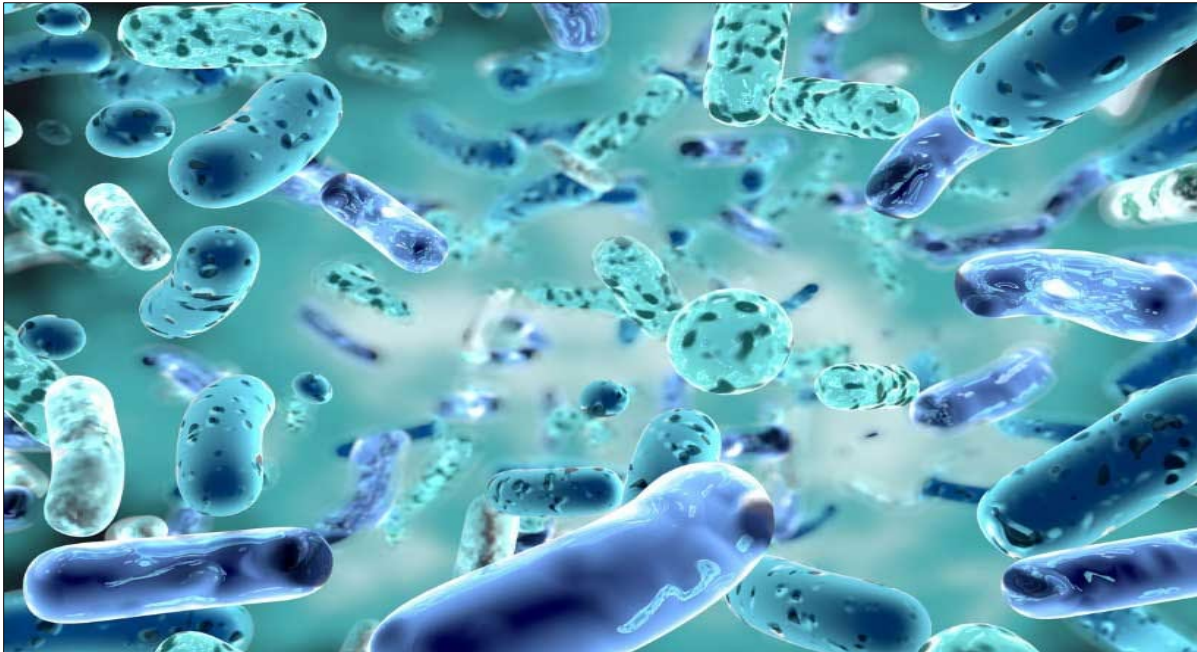
# Learning Objectives

By the end of the session, the learner will:

1. Understand the difference between cleaning and disinfecting
2. Identify the EPA List K cleaning agents effective against *C. difficile*
3. Develop a guideline to describe who cleans what in the nursing facility

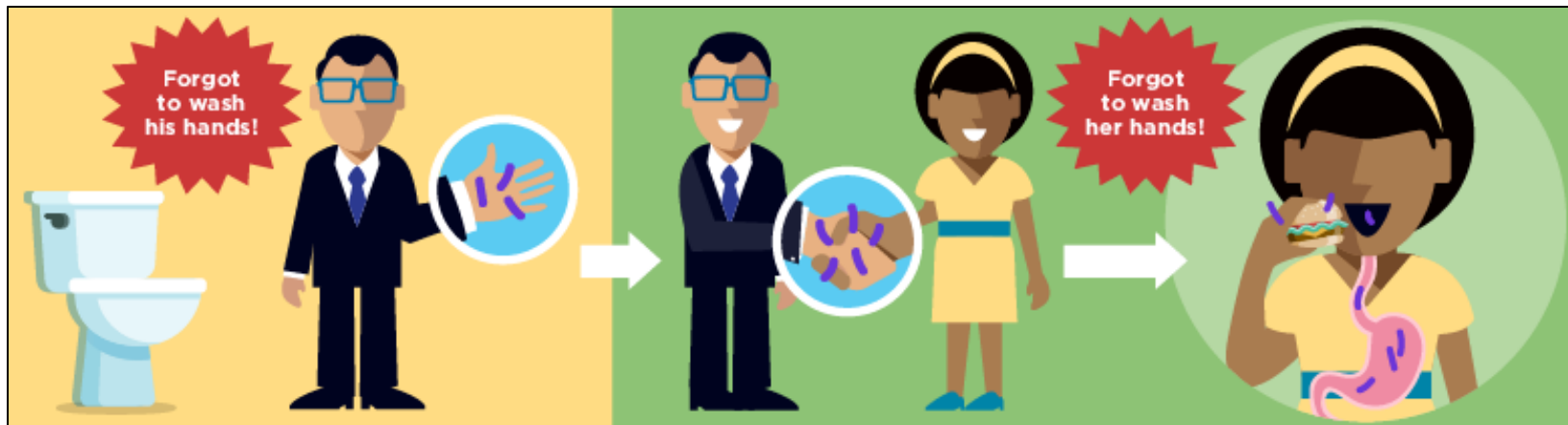
# What Is *C. diff*?

*C. diff* is a spore-forming, Gram-positive anaerobic bacillus that produces two exotoxins: toxin A and toxin B. It is a common cause of antibiotic-associated diarrhea (AAD) and accounts for 15% to 25% of all episodes of AAD.



# How Is *C. diff* Transmitted?

*C. diff* is shed in feces. Any surface, device or material (such as commodes, bathtubs and electronic rectal thermometers) that becomes contaminated with feces could serve as a reservoir for *C. diff* spores. *C. diff* spores can also be transferred to patients via the hands of health care personnel who touched a contaminated surface or item.



# Cleaning vs. Disinfecting: What Is Cleaning?

- Cleaning is the process of physically removing germs, dirt and other impurities from surfaces.
- To clean a surface, use an all-purpose cleaning agent and a microfiber cloth or terry rag to lift soils away.
- Cleaning only removes germs and soils from the surface. It does not kill them. Germs that were not removed will continue reproducing and spreading.



# Cleaning vs. Disinfecting: What Is disinfecting?

- Disinfection describes the process of eliminating many or all pathogenic microorganisms, except bacterial spores, on inanimate objects.
- Disinfectants do not clean soils from surfaces.
- Disinfectants must be used after cleaning agents because they can not break through the soil on surfaces.
- To kill germs, most disinfectants contain either quaternary ammonium chloride (QUATS), peroxide (Hydrogen-Peroxide-based), or hypochlorite (bleach-based).

# Cleaning and Disinfecting Continued

- Thorough cleaning is essential before high-level disinfection because inorganic and organic materials that remain on the surfaces of instruments interfere with the effectiveness of the process.
- Terms with the suffix *-cide* or *-cidal* for killing action are also commonly used. For example, a germicide is an agent that can kill microorganisms, particularly pathogenic organisms (“germs”). The term *germicide* includes both antiseptics and disinfectants. *Disinfectants* are antimicrobials applied to only inanimate objects; they are not used for the skin because they can injure the skin and other tissues.
- *Virucide*, *fungicide*, *bactericide*, *sporicide*, and *tuberculocide* can kill the type of microorganism identified by the prefix. For example, a bactericide is an agent that kills bacteria.

# Terminal Cleaning and Disinfecting

- Terminal cleaning of rooms occupied by patients with CDI should include ready-to-use products rather than creating or mixing solutions due to the risk of error.
  - Perform terminal cleaning after CDI patient transfer/discharge with a *C. diff* sporicidal agent (EPA List K agent)
- Clean additional areas that are contaminated during transient visits by patients with suspected or confirmed CDI (e.g., Physical Therapy) with a *C. diff* sporicidal agent (EPA List K agent).

# EPA List K

## ***Products on List K:***

- Products on list K are registered for use against Clostridium difficile spores (C. diff). EPA has reviewed required laboratory testing data demonstrating that these products kill Clostridium difficile spores (C. diff).

## ***How to Check if a Product is on List K:***

- First, find the EPA registration number on the product label. Look for “EPA Reg. No.” followed by two or three sets of numbers (ex. 1234-12 or 1234-12-123).
- On the Disinfectant list, search the registration number exactly as it appears on the label.
- Once you see the results on the disinfectant list, make sure to check that the product's label includes directions for use against C. diff.
- Regardless of whether you are using a primary registration product or a supplemental distributor product, always check the label has the corresponding directions for use for the relevant pathogen.

# EPA List K Continued

List K: Antimicrobial Products Registered with EPA for Claims Against *Clostridium difficile* Spores

Registration Number	Active Ingredients/s	Product Name	Company	Contact time (time surface should remain wet)	Formulation Type	Surface Types	Use sites (Hospital, Institutional, Residential)
10324-214	Hydrogen Peroxide and Paracetic Acid	Maguard 5626	Mason Chemical Company	2	Dilutable	Hard Nonporous (HN)	Institutional; Residential
11346-3	Sodium Hypochlorite	Clorox HW	The Clorox Company	5	Ready to Use/Wipe	Hard Nonporous (HN)	Institutional
12120-4	Hydrogen Peroxide; Peroxyacetic Acid (Peracetic Acid)	SSS Sporicidal Disinfectant Cleaner	Standard Sanitation Systems, Inc.	2	Dilutable	Hard Nonporous (HN)	Hospital; Institutional; Residential
1672-65	Sodium Hypochlorite	Austin A-1 Ultra Disinfecting Bleach	James Austin Company	10	Dilutable	Hard Nonporous (HN)	Hospital; Institutional; Residential
1672-67	Sodium Hypochlorite	Austin A-1 Concentrated Bleach 8.25%	James Austin Company	10	Dilutable	Hard Nonporous (HN)	Hospital; Institutional; Residential
1677-129	Hydrogen Peroxide; Peroxyacetic Acid (Peracetic Acid)	Oxonia Active	Ecolab Inc.	5	Dilutable	Hard Nonporous (HN)	Hospital; Institutional; Residential





# EPA List K Continued

Registration Number	Active Ingredients/s	Product Name	Company	Contact time (time surface should remain wet)	Formulation Type	Surface Types	Use sites (Hospital, Institutional, Residential)
1677-193	Hydrogen Peroxide; Peroxyacetic Acid (Peracetic Acid)	AdvaCare 120 Sanitizer/SOUR	Ecolab Inc.	6	Dilutable	Laundry (L)	Hospital; Institutional
1677-226	Hydrogen Peroxide; Peroxyacetic Acid (Peracetic Acid); Caprylic Acid	Virasept	Ecolab Inc.	10	Ready to Use	Hard Nonporous (HN)	Hospital; Institutional
1677-235	Sodium Hypochlorite	Bath and TILE Disinfecting Cleaner	Ecolab Inc.	3	Ready to Use	Hard Nonporous (HN)	Hospital; Institutional
1677-237	Hydrogen Peroxide; Peroxyacetic Acid (Peracetic Acid); Caprylic Acid	Oxycide Daily Disinfectant Cleaner	Ecolab Inc.	5	Ready to Use	Hard Nonporous (HN)	Hospital; Institutional; Residential
3573-77	Sodium Hypochlorite	CSP-3002-3	The Proctor & Gamble Company	10	Ready to Use	Hard Nonporous (HN)	Hospital; Institutional; Residential
37549-1	Sodium Hypochlorite	Micro-Kill Bleach Germicidal Bleach Wipes	Medline Industries, LP	3	Ready to Use/Wipe	Hard Nonporous (HN)	Institutional
37549-2	Sodium Hypochlorite	Micro-Kill Bleach Germicidal Bleach Solution	Medline Industries Inc.	5	Ready to Use	Hard Nonporous (HN)	Hospital; Institutional

# EPA List K Continued

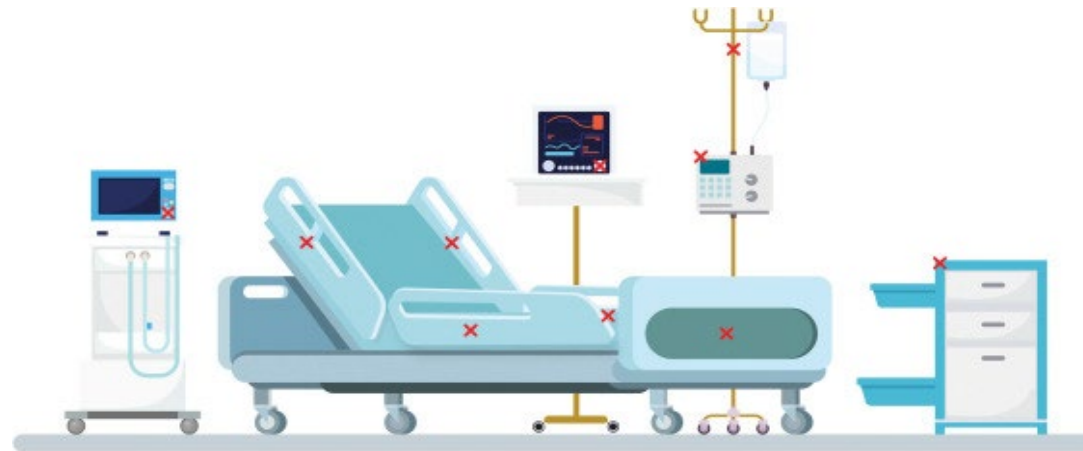
Registration Number	Active Ingredients/s	Product Name	Company	Contact time (time surface should remain wet)	Formulation Type	Surface Types	Use sites (Hospital, Institutional, Residential)
75266-1	Sodium Hypochlorite	Activate 5.25% Institutional Bleach	Deardorff Fitzsimmons Corporation	4	Dilutable	Hard Nonporous (HN)	Hospital; Institutional
777-83	Sodium Hypochlorite	Lysol Brand Disinfectant Bleach Plus	Reckitt Benckiser	5	Ready to Use	Hard Nonporous (HN)	Hospital; Institutional; Residential
84526-6	Hydrogen Peroxide; Silver Nitrate	Halomist	Halosil International, Inc.	10	Ready to Use	Hard Nonporous (HN)	Hospital; Institutional; Residential
84697-2	Sodium Hypochlorite	Regular Scent Concentrated Bleach	GS Liquid Technologies, Inc.	10	Dilutable	Hard Nonporous (HN)	Hospital; Institutional; Residential
87518-6	Sodium Hypochlorite	Sporex	HSP USA, LLC	3	Ready to Use	Hard Nonporous (HN)	
88089-2	Hydrogen Peroxide; Peroxyacetic Acid (Peracetic Acid)	Peridox	Contec, Inc.	3	Ready to Use	Hard Nonporous (HN)	Hospital; Institutional; Residential
88089-4	Hydrogen Peroxide; Peroxyacetic Acid (Peracetic Acid)	Peridox RTU	Contec, Inc.	3	Ready to Use	Hard Nonporous (HN)	Hospital; Institutional; Residential

# EPA List K Approved Products



# Who Cleans What?

It has been long known that numerous environmental sites and devices can become contaminated with *C. diff*. While the risk of room contamination is highest for patients with CDI, patients with asymptomatic *C. diff* colonization can also contaminate their environment. Routine cleaning and disinfecting of beds, commodes, and other frequently touched surfaces remain important.



# Who Cleans What? Sample Cleaning Assignment

Create a table to identify cleaning and disinfection responsibility, frequency, agent, etc.

Item	Frequency	Cleaning Agent	Person/Staff Responsible	Notes/Resources
Medication cart	Between uses and at the end of each shift prior to locking	Sani-wipe	Nurse/clinical staff	
Glucometer	After each use and before docking	Bleach wipes	Clinical staff	Instructions for use booklet (link)
Hoyer sling	Assigned to resident, laundered after use	Standard Laundry process	Laundry staff	Assign to resident, do not leave on Hoyer lift; clean slings available in clean linen storage
Hoyer lift	After each use	Bleach wipes	Clinical staff/therapy staff	Store cleaned lift in clean equipment area, never store without disinfecting first



# Don't Forget Hand Washing!

Washing with soap and water is the best way to prevent the spread from person to person. *C. diff* spores are resistant to alcohol; therefore, hand washing with soap and water remains important.



# CLOSTRIDIoidES DIFFICILE

(formerly known as *Clostridium difficile*)

*Clostridioides difficile* (also known as *C. diff*) is a bacterium that causes diarrhea and colitis (an inflammation of the colon). *C. diff* infection can be life-threatening.

## IMPACT



*C. diff* infection is estimated to cause almost half a million illnesses in the United States each year, and an estimated 29,300 deaths.<sup>1</sup>



About **1 in 6 patients** who get *C. diff* infection will get it again in the subsequent 2–8 weeks.<sup>1</sup>



One in 11 people over 65 diagnosed with a healthcare-associated *C. diff* infection die within a month.<sup>2</sup>

## RISK



People are 7 to 10 times more likely to get *C. diff* infection while taking an antibiotic and during the month after.<sup>3</sup>



Extended stays in healthcare settings, such as hospitals and nursing homes, also increase their risk.



More than 80% of *C. diff* deaths occur in people 65 and older.

## SPREAD



*C. diff* spreads when people touch surfaces that are contaminated with poop from an infected person.



Or when people don't wash their hands with soap and water.



It can also happen when one healthcare facility fails to notify another when it transfers a patient with *C. diff*.

## Healthcare professionals can help PREVENT *C. diff* by:



Optimizing the way they prescribe antibiotics.



Using the tests that give the most accurate results.



Rapidly identifying and isolating patients with *C. diff*.



Wearing gloves and gowns when treating patients with *C. diff*—and remembering that hand sanitizer doesn't kill *C. diff*.



Cleaning surfaces in rooms where *C. diff* patients are treated with EPA-approved, spore-killing disinfectant (see list K).

[cdc.gov/cdiff](http://cdc.gov/cdiff)

<sup>1</sup> Guh AY, Mu Y, Winston LG et al. N Engl J Med 2020;382:1320–30. DOI: 10.1056/NEJMoa1910215

<sup>2</sup> Lessa FC, Mu Y, Bamberg WM et al. N Engl J Med 2015;372:825–34. DOI: 10.1056/NEJMoa1408913

<sup>3</sup> Hensgens MPM, Goorhuis A, Dekkers OM, Kuijper EJ. J Antimicrob Chemother 2011. DOI: 10.1093/jac/dkr508

CS316107-A



U.S. Department of  
Health and Human Services  
Centers for Disease  
Control and Prevention

# CDC *C. diff* Fact Sheet

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# Summary

CDI is one of the most common and costly HAIs. The best available *C. diff* epidemiology data suggest that most transmission in health care settings is a result of patient-to-patient transfer of *C. diff* from health care personnel or equipment and not from persistent contamination of the environment. Health care professionals' hands can become contaminated with *C. diff* spores after caring for a patient colonized with *C. diff* (especially if gloves are not worn), and thus it is presumed that health care personnel hands are an important source of transmission.

# References

APIC Text. (2018). Chapter 73. Clostridium difficile Infection and Pseudomembranous Colitis.

CDC. (2016). *Introduction Disinfection & Sterilization Guidelines*. Centers for Disease Control and Prevention. <https://www.cdc.gov/infectioncontrol/guidelines/disinfection/introduction.html>

CDC. (2021). *CDI Prevention Strategies*. Centers for Disease Control and Prevention. <https://www.cdc.gov/cdiff/clinicians/cdi-prevention-strategies.html>

EPA. (2022). *List K: Antimicrobial Products Registered with EPA for Claims Against Clostridium difficile Spores*. Environmental Protection Agency. <https://www.epa.gov/pesticide-registration/list-k-antimicrobial-products-registered-epa-claims-against-clostridium>

# Questions?






# Scan the QR codes or Click the Links to Complete the Assessments!

CMS requested Alliant Health Solutions, your QIN-QIO, to work with select nursing homes to understand emerging healthcare needs in nursing homes. Alliant Health Solutions is engaging nursing home leadership on each of these key areas to ensure plans are in place to achieve and maintain health quality and equity!

Please scan the QR codes below and complete the assessments.




**COVID-19**

- Support nursing homes by establishing a safe visitor policy and cohort plan
- Provide virtual events to support infection control and prevention
- Support nursing homes and community coalitions with emergency preparedness plans

## Nursing Home Emergency Preparedness Program (NH EPP) Self-Assessment



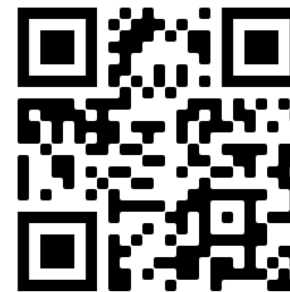
[https://bit.ly/AHS\\_NHEPPAssessment](https://bit.ly/AHS_NHEPPAssessment)




**TRAINING**

Encourage completion of infection control and prevention trainings by front line clinical and management staff

## Nursing Home Infection Prevention (NHIP) Initiative Training Assessment



<https://bit.ly/NHIPAssessment>



**COVID-19**

- Support nursing homes by establishing a safe visitor policy and cohort plan
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## Nursing Home Safe Visitor Policy and Cohorting Plan Verification



<https://bit.ly/SafeVisitorVerification>

# Nursing Home and Partnership for Community Health: CMS 12th SOW GOALS



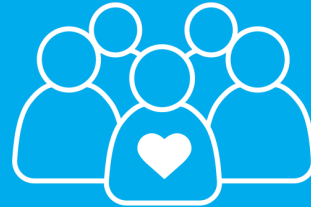
## OPIOID UTILIZATION AND MISUSE

- Promote opioid best practices
- Reduce opioid adverse drug events in all settings



## PATIENT SAFETY

- Reduce hospitalizations due to c. diff
- Reduce adverse drug events
- Reduce facility acquired infections



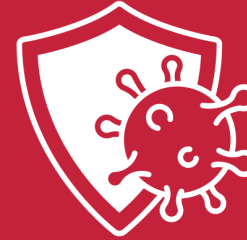
## CHRONIC DISEASE SELF- MANAGEMENT

- Increase instances of adequately diagnosed and controlled hypertension
- Increase use of cardiac rehabilitation programs
- Reduce instances of uncontrolled diabetes
- Identify patients at high-risk for kidney disease and improve outcomes



## CARE COORDINATION

- Convene community coalitions
- Reduce avoidable readmissions, admissions to hospitals and preventable emergency department visits
- Identify and promote optimal care for super utilizers



## COVID-19

- Support nursing homes by establishing a safe visitor policy and cohort plan
- Provide virtual events to support infection control and prevention
- Support nursing homes and community coalitions with emergency preparedness plans



## IMMUNIZATION

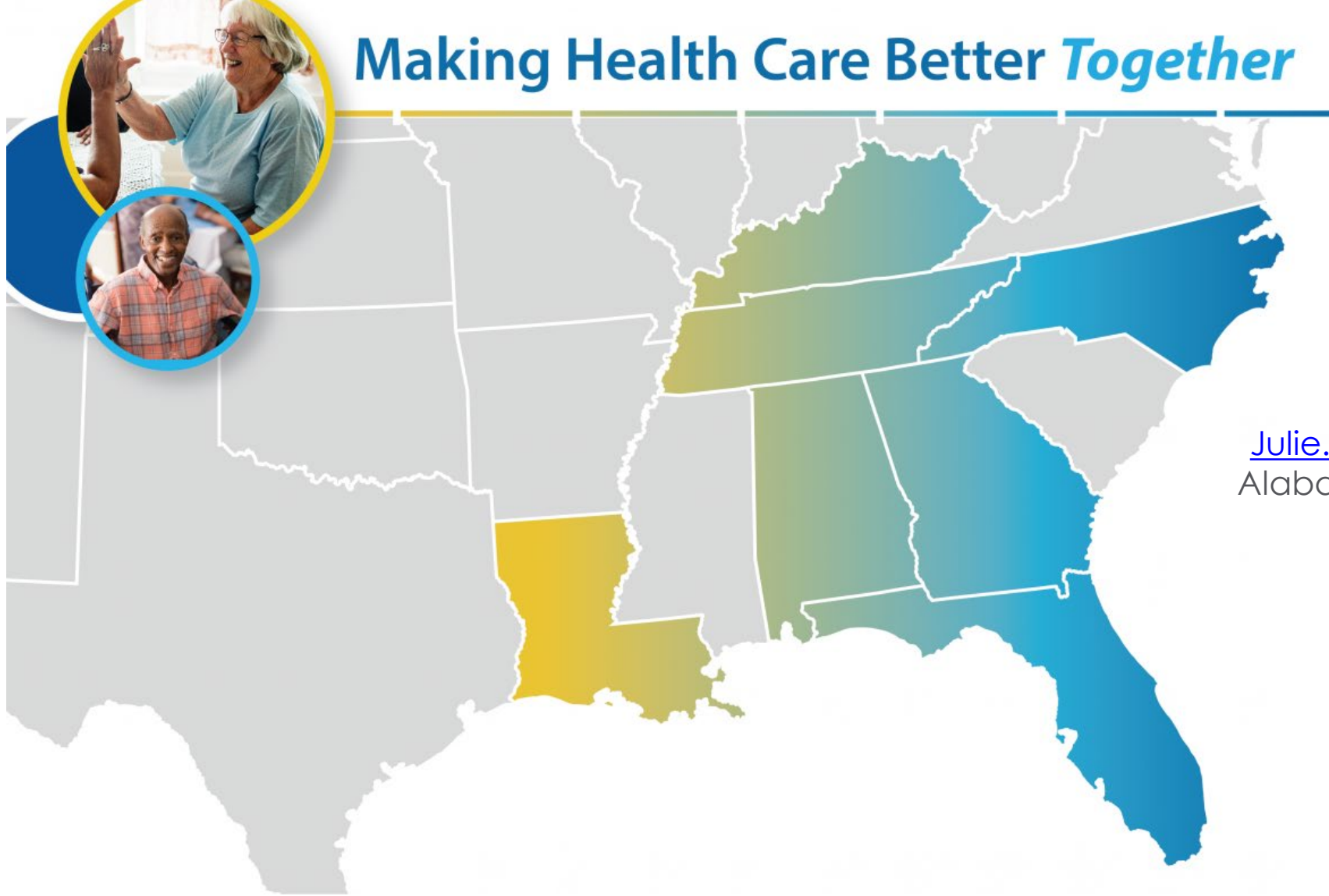
- Increase influenza, pneumococcal, and COVID-19 vaccination rates



## TRAINING

- Encourage completion of infection control and prevention trainings by front line clinical and management staff

# Making Health Care Better *Together*



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