

## Nosocomial Infections: *C. difficile*

# Sodium Hypochlorite Bleach for The Control And Prevention of *Clostridium difficile* in Healthcare Facilities

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### Centers for Disease Control and Prevention

*How can Clostridium difficile infection be prevented in hospitals and other healthcare settings?*

*Implement an environmental cleaning and disinfection strategy:*

- *Ensure adequate cleaning and disinfection of environmental surfaces and reusable devices, especially items likely to be contaminated with feces and surfaces that are touched frequently.*
- *Consider using an Environmental Protection Agency (EPA)-registered disinfectant with a sporicidal claim for environmental surface disinfection after cleaning in accordance with label instructions; generic sources of hypochlorite (e.g., household chlorine bleach) also may be appropriately diluted and used. (Note: Standard EPA-registered hospital disinfectants are not effective against Clostridium difficile spores.) Hypochlorite-based disinfectants may be most effective in preventing Clostridium difficile transmission in units with high endemic rates of Clostridium difficile infection.*

*Follow the manufacturer's instructions for disinfection of endoscopes and other devices.*

*Recommended infection control practices in long term care and home health settings are similar to those practices taken in traditional health-care settings.*

CDC Website, Updated **March 22, 2011**, *Frequently Asked Questions about Clostridium difficile for Healthcare Providers*  
[http://www.cdc.gov/HAI/organisms/cdiff/Cdiff\\_faqs\\_HCP.html](http://www.cdc.gov/HAI/organisms/cdiff/Cdiff_faqs_HCP.html)

### American Journal of Infection Control

*A case-only study was conducted over a 24-month period. Interventions used to reduce the incidence of health care-associated C difficile included 10% hypochlorite disinfection, soap and water hand hygiene, contact isolation for suspected and confirmed cases, educational tool for patients and visitors, daily isolation rounds, automated report functions, and standardized nursing unit isolation processes.*

*Conclusion: A combination of automated daily isolation reports, use of a standardized methodology for isolation rounds, as well as development of 1: 10% hypochlorite disinfection protocol resulted in a dramatic decrease in health care associated C. difficile cases. Weekly nursing director reports and daily rounds by nursing leadership keep the direct line supervisors abreast of infection control issues on their respective nursing units. The addition of the dual-chamber bleach container ensured that the proper dilution was achieved when disinfecting reusable equipment.*

*Designing a Protocol That Eliminates Clostridium difficile; A Collaborative Venture, AJIC: June, 2007, Volume 35, Issue 5, Pages 310-4*

<http://www.ncbi.nlm.nih.gov/pubmed/17577477>

### Centers for Medicare & Medicaid Services, DHHS

*The C. difficile can survive in the environment (e.g., on floors, bed rails or around toilet seats) in its spore form for up to 6 months. Rigorously cleaning the environment removes C. difficile spores, and can help prevent transmission of the organism. 106 Cleaning equipment used for residents with C. difficile with a 1:10 dilution of sodium hypochlorite (nine parts water to one part bleach) will also reduce the spread of the organism. Once mixed, the solution is effective for 24 hours.*

*Preventing Spread of Illness Related to MDROs, CMS State Operations Manual 100-07, Appendix PP –Guidance to Surveyors for Long term Care Facilities, (F441) 42CFR483.65 Infection Control, p580, Rev.70, 01/07/11*

[http://cms.gov/manuals/Downloads/som107ap\\_pp\\_guidelines\\_ltcf.pdf](http://cms.gov/manuals/Downloads/som107ap_pp_guidelines_ltcf.pdf)

### Centers for Disease Control and Prevention

*Also, since C. difficile may display increased levels of spore production when exposed to non-chlorine-based cleaning agents, and the spores are more resistant than vegetative cells to commonly used surface disinfectants, some investigators have recommended the use of a 1:10 dilution of 5.25% sodium hypochlorite (household bleach) and water for routine environmental disinfection of rooms of patients with C. difficile when there is continued transmission. In one study, the use of a hypochlorite solution was associated with a decrease in rates of C. difficile infections.*

*CDC Preventing Transmission of Infectious Agents in Healthcare Settings 2007, Pages 60 & 61; Pages 21 & 22)*

<http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Isolation2007.pdf>

## The Society for Healthcare Epidemiology of America

*Facilities should consider using a 1:10 dilution of sodium hypochlorite (household bleach) for environmental disinfection in outbreak settings and settings of hyperendemicity in conjunction with other infection prevention and control measures. The bleach solution should have a contact time of at least 10 minutes.*

*Strategies to Prevent Clostridium difficile Infections in Acute Care Hospitals, Infection Control And Hospital Epidemiology, Oct 2008, Vol. 29, Spp. 1 (See Pages S84, S86, S88)*

<http://www.journals.uchicago.edu/doi/pdf/10.1086/591065>

## American Journal of Infection Control

*BACKGROUND/OBJECTIVES: This medical center (MC) is a 400-bed community-based hospital in suburban St. Louis County. There was concern that the incidence of C. difficile was increasing. Therefore, an intervention study was initiated to improve C difficile rates. Daily and discharge cleaning of the C. difficile patient room with a 1:10 bleach solution was initiated. Rooms were to be cleaned daily with a 1:10 solution of bleach and water, using a different wiping cloth for each room. Staff was instructed to wipe down bedside rails, which is not usually done until discharge. Education on C. difficile, transmission, and prevention was delivered. The bleach intervention was piloted in two areas from August 2003 through January 2004, and disseminated housewide in February 2004.*

*RESULTS: From February 2002 to January 2004, the C. difficile rate was 2.2 per 1000 patient days. Post bleach and education intervention, the rates decreased to 1.5 per 1000 patient days. The rate decline was statistically significant. CONCLUSIONS:*

*The routine use of bleach cleaning in C. difficile rooms and education on preventing the transmission of C. difficile significantly decreased the C. difficile rate at MC.*

*Reduction of Clostridium difficile Infection in a Community-based Hospital Using Hypochlorite Solution AJIC: June 2005, Volume 33, Issue 5, Pages e43-e44*

[http://www.ajicjournal.org/article/S0196-6553\(05\)00225-7/abstract](http://www.ajicjournal.org/article/S0196-6553(05)00225-7/abstract)

## Infection Control And Hospital Epidemiology

A study conducted at Barnes Jewish Hospital, a 1,400-bed, university-affiliated tertiary care facility involved switching from the daily use of a quaternary ammonium cleaner in the MICU and the SICU to a 1:10 solution of household bleach to water (approximately 5,000 ppm available chlorine). Additionally, the nursing station, staff restroom, staff conference room, and waiting room were cleaned daily with the same sodium hypochlorite solution. The study's conclusion: *The results presented herein show the effectiveness of environmental cleaning with a bleach solution in both a MICU and SICU during an outbreak of CDAD.*

*Infection Control And Hospital Epidemiology, (February 2007, Vol. 28, No. 2),*

[www.journals.uchicago.edu/doi/abs/10.1086/511791](http://www.journals.uchicago.edu/doi/abs/10.1086/511791)

## Medscape

Hospital epidemiologist Gonzalo Bearman vouches for the efficacy of sodium hypochlorite over quaternary ammonium against C. difficile: *The importance of environmental contamination with C. difficile spores cannot be overlooked. All touchable surfaces and all equipment in the room should be cleaned thoroughly at the time of patient discharge using a hospital-approved disinfectant. Sodium hypochlorite is preferred over quaternary ammonium products.*

Medscape Education, April 30, 2008, *The Changing Epidemiology of Clostridium difficile Infection: An Interview with Gonzalo M. Bearman, MD, MPH,*

[www.medscape.com/viewarticle/573464](http://www.medscape.com/viewarticle/573464)