

New Study Finds Aerosolized Hydrogen Peroxide Can Significantly Reduce *C. difficile* Infections in Hospital Settings

- Findings published today in *AJIC* provide the first long-term assessment of novel disinfection approach -

Arlington, Va., March 17, 2022 – New [data](#) published today suggest that adding aerosolized hydrogen peroxide (aHP) to hospital infection prevention protocols can effectively reduce *Clostridioides difficile* infections (CDI), one of the most common healthcare-associated infections (HAIs), among patients in large, acute-care facilities. The findings, which offer the first, long-term evaluation of an aHP disinfection system for reducing CDI in a clinical setting, appear in the *American Journal of Infection Control* (*AJIC*), the journal of the Association for Professionals in Infection Control and Epidemiology ([APIC](#)).

“Our [study](#) showed that persistence in utilizing an aerosolized hydrogen peroxide system had a significant impact on reducing *C. difficile* infections hospital-wide,” said Christopher L. Truitt, Ph.D., Wayland Baptist University, and the paper’s lead author.

Individuals infected with *C. difficile* can be asymptomatic or have symptoms ranging from mild diarrhea to severe and life-threatening inflammation of the colon. According to the Centers for Disease Control and Prevention and The Joint Commission, *C. difficile* is responsible for 223,000 HAIs resulting in more than 12,000 deaths and \$6.3 billion in costs in the United States annually.^{1,2} *C. diff* spores can be transmitted by environmental surfaces in hospital rooms, including bed handrails, equipment controls, and doorknobs, and are resistant to hand sanitizers and most disinfectants. Enhanced protocols for hand hygiene and environmental cleaning, along with improved antibiotic prescribing, are required to prevent *C. diff* spread and infection, but even with consistent implementation of these measures, the microbe is difficult to eradicate from hospital surfaces.

aHP disinfection systems offer a touchless, whole-room approach to enhance standard environmental cleaning protocols. Once placed in a room, the systems generate an aerosolized dry-mist fog that

¹ Centers for Disease Control and Prevention. *Clostridioides difficile* Infection. https://www.cdc.gov/HAI/organisms/cdiff/Cdiff_infect.html. Published 2019. Accessed November 19, 2020.

² The Joint Commission Center for Transforming Healthcare. (2016). Reducing Clostridium Difficile Infections Project. Oakbrook Terrace: The Joint Commission.

contains a specified percentage of hydrogen peroxide. The fog covers all exposed surfaces to kill any *C. diff* spores that remain after physical cleaning. To date, there is no long-term data evaluating the use of these systems.

Dr. Truitt and his colleagues retrospectively analyzed CDI rates at a large, acute-care facility in Philadelphia, Pennsylvania, over a 10-year period, to evaluate the effectiveness of an aHP disinfection system for reducing CDI. The researchers compared the incidence of healthcare-associated CDI (HA-CDI) at the facility prior to and following implementation of the system as an addition to standard CDI patient room-cleaning procedures following the discharge or transfer of patients with CDI.

Findings suggest that consistent use of an aHP disinfection system contributed to a significant and sustained reduction in HA-CDI rates. Over a 27-month period prior to implementation of the system, the facility recorded 120 HA-CDI. Following implementation, 72 cases were observed over a 33-month interval. This reflects a significant, 41% decrease in the facility's HA-CDI rate - from 4.6 per 10,000 patient days to 2.7 per 10,000 patient days ($p < 0.001$).

Over an additional five-year period during which the aHP system was consistently utilized along with an environmental cleaning program and other measures including antibiotic stewardship, researchers observed a 74% reduction in hospital-onset CDI.* Between January 2015 and December 2019, CDI rates consistently decreased from 5.4 per 10,000 patient days to 1.4 per 10,000 patient days.

"CDI is difficult to prevent because it is so hard to eliminate from the environment. The study conducted by Dr. Truitt and colleagues provides valuable insight about the benefits of supplementing prevention efforts with aHP to help meaningfully decrease rates of this often-deadly disease," said Linda Dickey, RN, MPH, CIC, FAPIC, and 2022 APIC president.

**Reflects a January 2015 change in CDI classification and reporting from "healthcare-acquired" to "hospital-onset" per the National Healthcare Safety Network.*

About APIC

Founded in 1972, the Association for Professionals in Infection Control and Epidemiology (APIC) is the leading association for infection preventionists and epidemiologists. With more than 15,000 members, APIC advances the science and practice of infection prevention and control. APIC carries out its mission through research, advocacy, and patient safety; education, credentialing, and certification; and fostering development of the infection prevention and control workforce of the future. Together with our members and partners, we are working toward a safer world through the prevention of infection. Join us and learn more at [apic.org](https://www.apic.org).

About AJIC

As the official peer-reviewed journal of APIC, The American Journal of Infection Control ([AJIC](https://www.elsevier.com/locate/jamcp)) is the foremost resource on infection control, epidemiology, infectious diseases, quality management, occupational health, and disease prevention. Published by [Elsevier](https://www.elsevier.com), AJIC also publishes infection control

guidelines from APIC and the CDC. AJIC is included in Index Medicus and CINAHL. Visit AJIC at ajicjournal.org.

NOTES FOR EDITORS

“Evaluation of an Aerosolized Hydrogen Peroxide Disinfection System for the Reduction of Clostridioides difficile Hospital Infection Rates Over a 10 Year Period,” by Christopher Truitt, Ph.D.; Debra Runyan, MT (ASCP), CIC; John Stern, M.D.; Carolyn Tobin; Wesley Goldwater, MBA; and Rodney Madsen, MBA, MPH, was published online in *AJIC* on March 17, 2022. The article may be found online at: <https://doi.org/10.1016/j.ajic.2021.11.021>

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