

# The Effect of Wearable Electronic Hand Washing Monitoring Systems on ICU Patients with *Clostridium difficile* Infections

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## Background

In 2012-2018 *Clostridium difficile* (*C. Difficile*) infection rates have more than doubled. Using the hand washing monitoring systems may enforce safe hand hygiene for nursing staff and other hospital personnel. Compliance using the badge monitoring system has increased incidence of hand-washing and decreased infection rates including *C. difficile* in the ICU. The prevalence of *C. difficile* in the United States has been decreasing since wearable electronic hand washing monitoring systems have been put into practice.

## PICOT Question

For ICU patients (P) does the use of electronic hand washing monitoring systems (I) reduce the risk of *C. difficile* infections (O) compared with alternative current hospital methods without the wearable badges (C) over the course of a six month period (T) .

## Literature Search

Databases used:

- Google Scholar
- CINAHL Complete
- EMBASE

Key Terms:

- ICU patients
- Handwashing surveillance
- Clostridium difficile
- Electronic wearable badges

Article Selection Criteria:

- Published 2019-2022
- Published in scholarly journal or peer-reviewed journal



## Synthesis of Findings

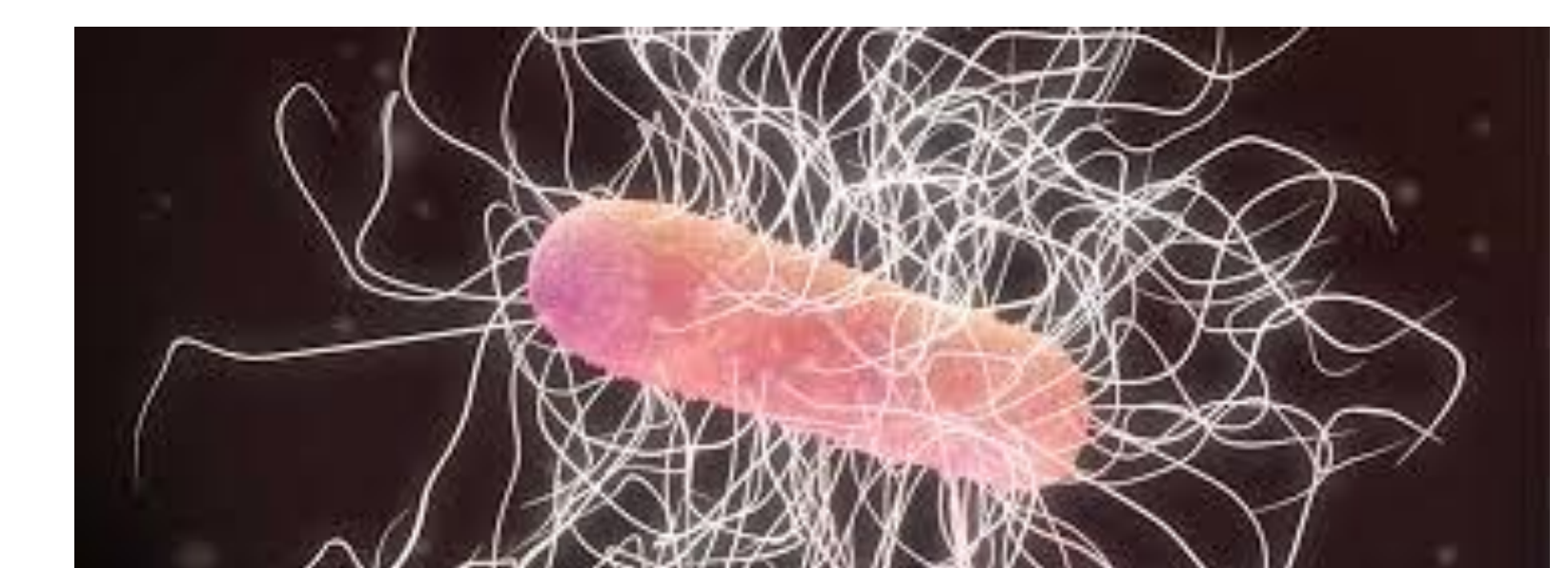
- The implementation of this technology has had a significant impact on HAI with periods of zero infections recorded, especially in patients with *C. difficile*.<sup>1-3</sup>
- Proper hand hygiene is one of the most effective interventions in reducing prevalence of HAIs especially *C. difficile*, which is responsible for about 12% of infections.<sup>2,3</sup>
- With the adoption of sensors being placed in hand washing stations, badges, and patient rooms it has increased compliance rates from 65.4% to 89.9%.<sup>1,4,5</sup>
- Health care acquired infections remain a large problem with 1 in 31 hospitalized patients acquiring a HAI annually, representing over \$30 billion in economic costs and around 100,000 deaths.<sup>1,2,6</sup>
- With the badge system, there has been fewer rates of infection in the ICU, less spread from patient to patient, and shorter ICU stays.<sup>2,4</sup>

## Decision to Change

- The addition of the electronic handwashing badge system on hospital systems will have shown to be cost effective and decrease hospital acquired infections, increase handwashing in staff, and decrease length of stay in the ICU.
- The implementation of this system will decrease the spread of infections in the hospital by using the Hawthorne effect. This is the alteration of behavior of the nurses due to their awareness that handwashing is being watched and tracked
- The implementation of electronic hand washing monitoring system using a badge system into practice reduced cases of *C. difficile* infections.

## Evaluation

By the end of the 6-month implementation period, the electronic handwashing badge system will decrease the incidence of *C. difficile* acquired infections in the ICU patients by 15%. The *C. difficile* infection rate in the ICU patients will be evaluated before and after the implementation period.



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