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Alternative Precautionary Measures Yielding Lower C. diff Infection Rates in Healthcare Facilities

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Abstract

Background: An international healthcare concern is the persistent spread of *Clostridium difficile*, a Gram-positive spore forming bacterium that is responsible for the most common hospital-acquired infection, amongst patients.

Objective: A systematic review was performed to summarize evidence that the interventions utilized in healthcare facilities which indicate a patient's precautionary status are insufficient, outdated, and commonly lead to infection in neighboring patient rooms. Databases such as PubMed, SCOPUS, EBSCOHost, NCBI, Google Scholar, and APHA's Medical Care were searched, covering the period from 2017-2022. Studies were included if their focus concentrated on *C. diff* and the precautionary measures taken by employees at healthcare organizations pertaining to patients with diagnosed *C. diff*, infection and recurrence rates at given healthcare facilities, the utilization of PPE and appropriate sanitization protocols, and potential consequences involving patient outcomes and the contraction of *C. diff* infections. It was found that the status quo precautionary measures were not sufficient in decreasing *C. diff* infection rates within healthcare facilities, and an alternative is needed. An automatic hand hygiene compliance monitoring (HHCM) system, stimulated by motion-detection upon the entry and exit of patient rooms, that gives audio messages aloud indicating the patient's precautionary status, the type of PPE required, and the form of sanitization required, was proposed.

Methods: This new precaution protocol was implemented at a sample of healthcare facilities and was not utilized with a sample of other healthcare facilities. Data pertaining to *C. diff* infections and recurrences between patients and staff, as well as patient outcomes/wellness were evaluated between the experimental and control group.

Results: It was found that healthcare facilities utilizing the automatic HHCM system showed a dramatic decrease in the spread of *C. diff* between patients and staff, and staff reported more frequent hand hygiene after providing patient care.