

# Reduction in Possible Healthcare-Acquired Clostridium difficile Infections After Implementing Control Measures

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**Background/Objectives:** Clostridium difficile-associated diarrhea (CDAD) is emerging as a major nosocomial threat worldwide. The incidence of CDAD has increased as well as severity and mortality. In early 2005, at an orthopedic specialty hospital, there was a noticeable increase in the number of Clostridium difficile positive titers reported from the microbiology laboratory. From January through April 2005 there were 28 cases of CDAD identified and 13 (46%) occurred in patients who had been hospitalized for greater than 72 hours, indicating possible healthcare associated infection. Most of the cases were thought to be related to surgical prophylaxis until detailed epidemiologic analysis was completed. A room tracer analysis revealed that the 28 patients had been in 42 rooms This prompted the institution of immediate control measures.

**Methods:** Control measures were implemented on May 1, 2005 which included: 1) All 42 rooms were disinfected by housekeeping and privacy curtains changed over a two week period 2) The disinfectant was changed to a phenolic disinfectant with increased surfactant cleaning properties to enhance room disinfection 3) Housekeeping established a curtain change schedule to include removal and change after each precaution discharge 4) Curtain changes were scheduled for every 3 months in high volume patient care areas such as the ambulatory care unit, pre-op holding area, recovery room and intensive care unit 5) Infection control delivered education to staff and physicians (newsletters, surgical grand rounds, patient education material) 6) A precaution room cleaning checklist was developed and education delivered to housekeeping 7) Precaution Cart rounds were done to check for supplies and deliver onsite education to staff 8) Developed new precaution signs indicating the need for hand washing rather than alcohol rub 9) Reported C.difficile data to monthly meetings of nursing leadership and the Patient Care Assessment Committee 10) When symptoms subsided and treatment was completed the patient was moved to another room so terminal disinfection could be completed 11) Assured that equipment was dedicated to the precaution room and cleaned each day by housekeeping and 12) Used the infection control liaisons as a communication system for staff updates and implementation of control measures.

**Results:** From January through April 2005 there were 28 cases of CDAD identified and 13 (46%) occurred in patients who had been hospitalized for greater than 72 hours, From May 2005 through December 2006 there were 78 cases of CDAD and only 19 occurred after 72 hrs of hospitalization (24%). This represents a 48% reduction since control measures were implemented.

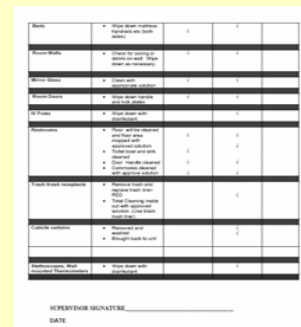
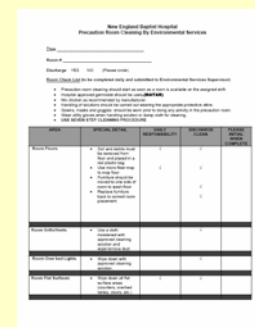
**Conclusions:** The use of infection control liaisons to assist with unit-based educational activities and immediate administrative support was essential in implementing control measures to prevent the spread of C.difficile. Rapid response to surveillance data and the use of a team approach was successful in reducing the number of possible healthcare-associated infections with Clostridium difficile.



C. difficile spores can survive up to 70 days in the environment and can be transported on the hands of health care personnel who have direct contact with infected patients. The spores also contaminate environmental surfaces (floors, bedpans, toilets, stretchers, electronic thermometers, etc.)

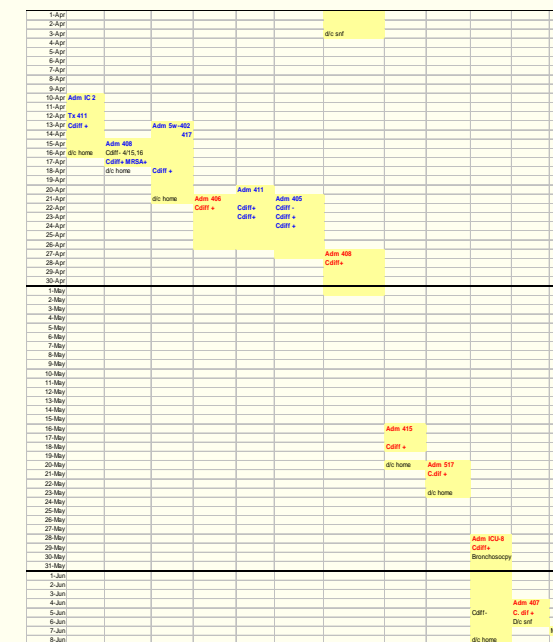
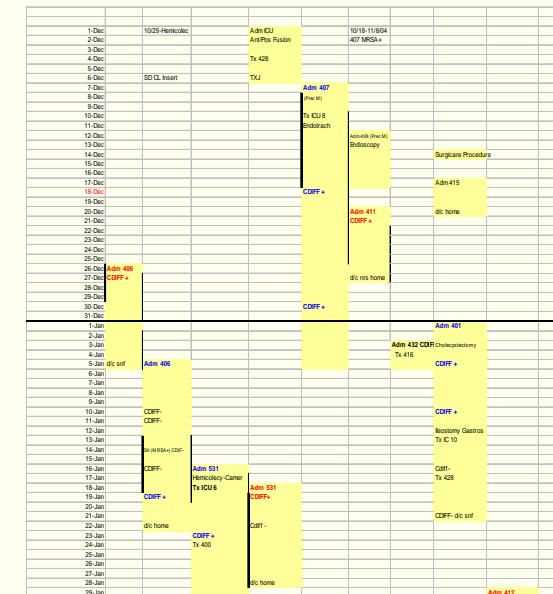
**Control Measures:** We traced all the rooms where the 28 healthcare associated cases were admitted. This resulted in 42 rooms which were thoroughly cleaned over the first weekend in May 2005. In addition, we implemented other measures to reduce cross-contamination from the handling of liquid stool:

- Implemented the use of a temporary containment device, indicated for incontinent patients with liquid or semi-liquid stool. It contains a silicone catheter, syringe, and collection bag
- Infection Control monitored cases to assure a C.diff patient was moved to another room if precautions were discontinued so the room could be terminally disinfected.
- Implemented a new precaution sign which highlighted the need for handwashing versus alcohol hand rub, since alcohol will not kill spores.
- Implemented a precaution room cleaning checklist for housekeeping.



Examples of room tracing conducted to identify the contaminated rooms for thorough environmental disinfection

Red = Community-acquired Blue = >72 hrs



**Results:**

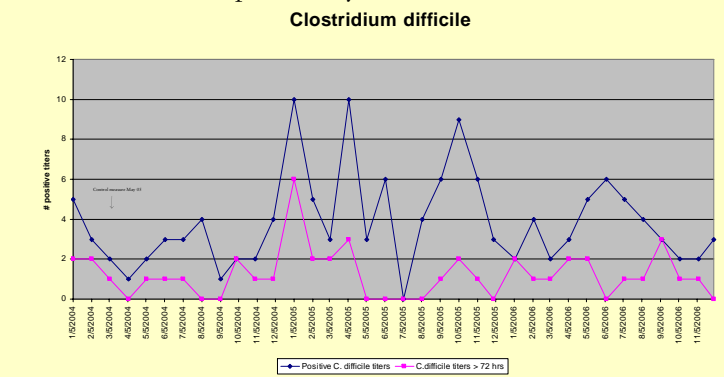
NEBH is a 168 bed hospital with 75% of service in orthopedic surgery. Over 10,000 orthopedic procedures are done a year.

**January-April 2005**

13 HA CDAD of 9542 patient days 1.4

**May 2005-December 2006**

18 HA CDAD of 44523 patient days 0.4



**Conclusions:** The use of infection control liaisons to assist with unit-based educational activities and immediate administrative support was essential in implementing control measures to prevent the spread of C.difficile. Rapid response to surveillance data and the use of a team approach was successful in reducing the number of possible healthcare-associated infections with Clostridium difficile.

**References:** 1. Kramer A, Schwebke I, Kampf G. How long do nosocomial pathogens persist on inanimate surfaces? A systematic review. BMC Infect Dis 2006 Aug 16;6:130

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