

Reducing the Risk of Healthcare Associated Clostridium difficile Infection by Focusing On Environmental Interventions

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Background/Objective

- difficile is of growing concern in many healthcare facilities as it presents a risk to patients in the development of healthcare associated infections.
- Clostridium difficile infection rates have been increasing in our 214 bed tertiary care teaching hospital.
- In 2008, the Healthcare Associated Infection Prevention Team (HAIP) was created to develop and implement processes to eliminate healthcare associated infections.
- Daily disinfection with bleach solution may reduce the environmental bioburden of Clostridium difficile and decrease the risk of transmission to subsequent patients.
- The objective of this study was to determine if a collaborative disinfection program is associated with decreased transmission of Clostridium difficile and infection rates.

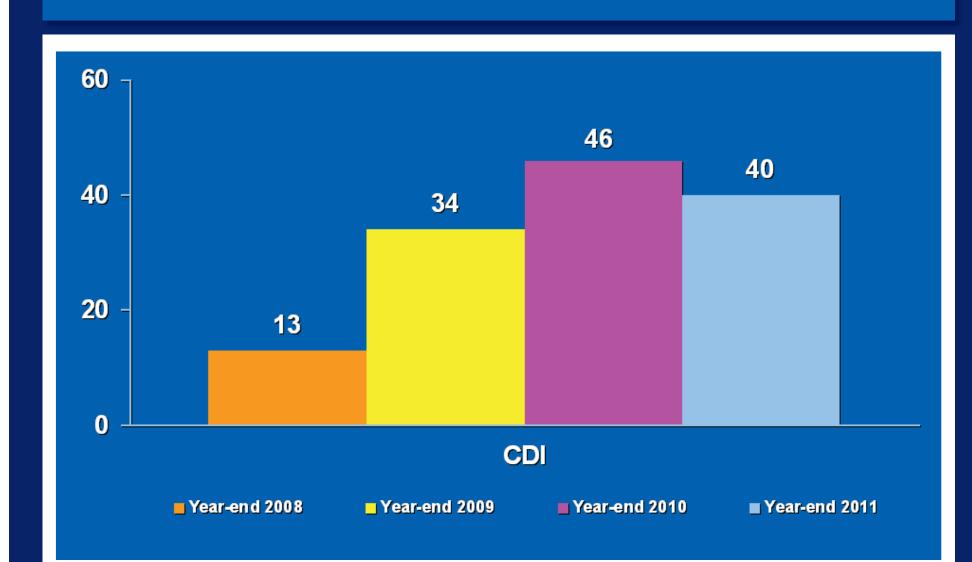
Clostridium difficile

- What exactly are we dealing with?
 - It is a spore forming gram positive bacteria
 - Encapsulated spores are more difficult to eradicate
 - Remains the most important cause of healthcare associated diarrheal infection
 - A more virulent strain now exists (NAP 1 strain)
 - North American pulsed-field gel electrophoresis
 - Transmission of C difficile is via person to person, most commonly from contaminated health care worker hands, medical equipment, or the environment. All surrounding the patient.

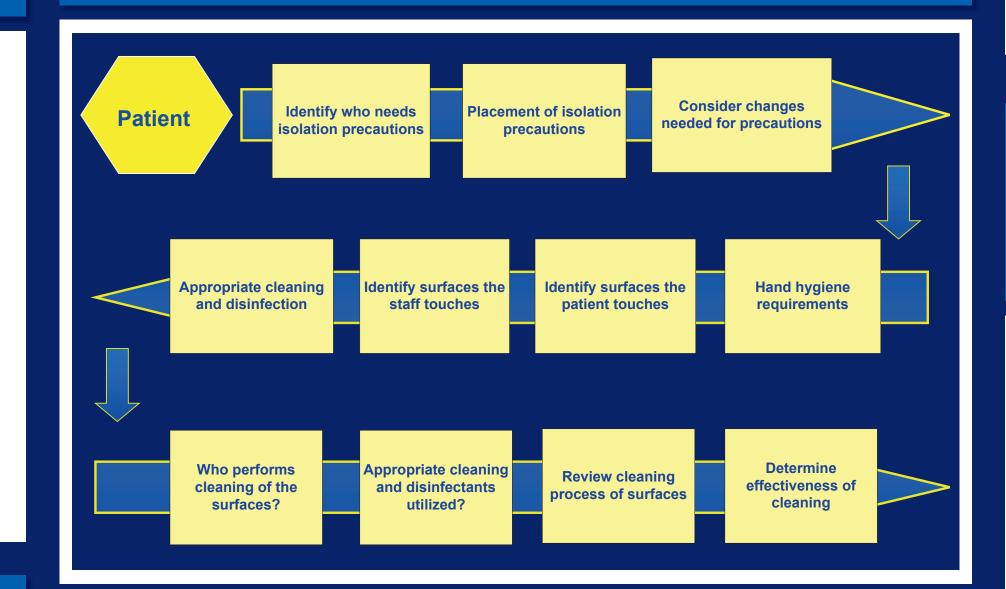
Method

- We conducted an interventional study in our 214 bed tertiary teaching hospital in Jacksonville Florida from September 1, 2010 through December 31, 2011.
- In this study we evaluated the existing practice of isolation needs, appropriate cleaning and disinfection of environmental surfaces, reusable patient care equipment and hand hygiene practices.
- We implemented innovative strategies and interventions using a PDSA approach.
- The effectiveness of our environmental cleaning was measured by testing identified high touch surfaces using a swab based adenosine triphosphate (ATP) surface test (3M Clean Trace) for 10% of all discharged patient
- The outcome of Clostridium difficile infection rates were analyzed by our facility Infection Preventionists utilizing ICHE 2007 Surveillance of Clostridium difficile.

Clostridium difficile Healthcare **Associated Infections**



Integrate Flow Chart

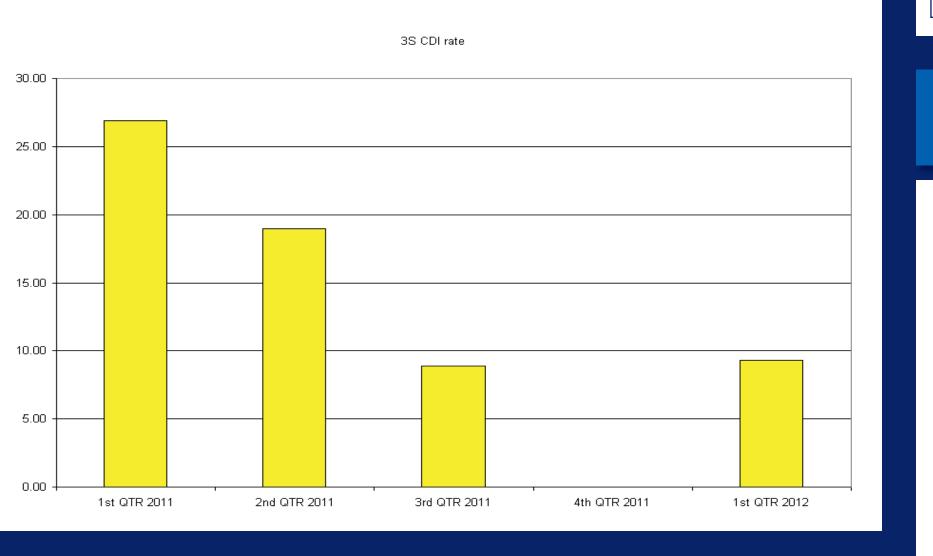


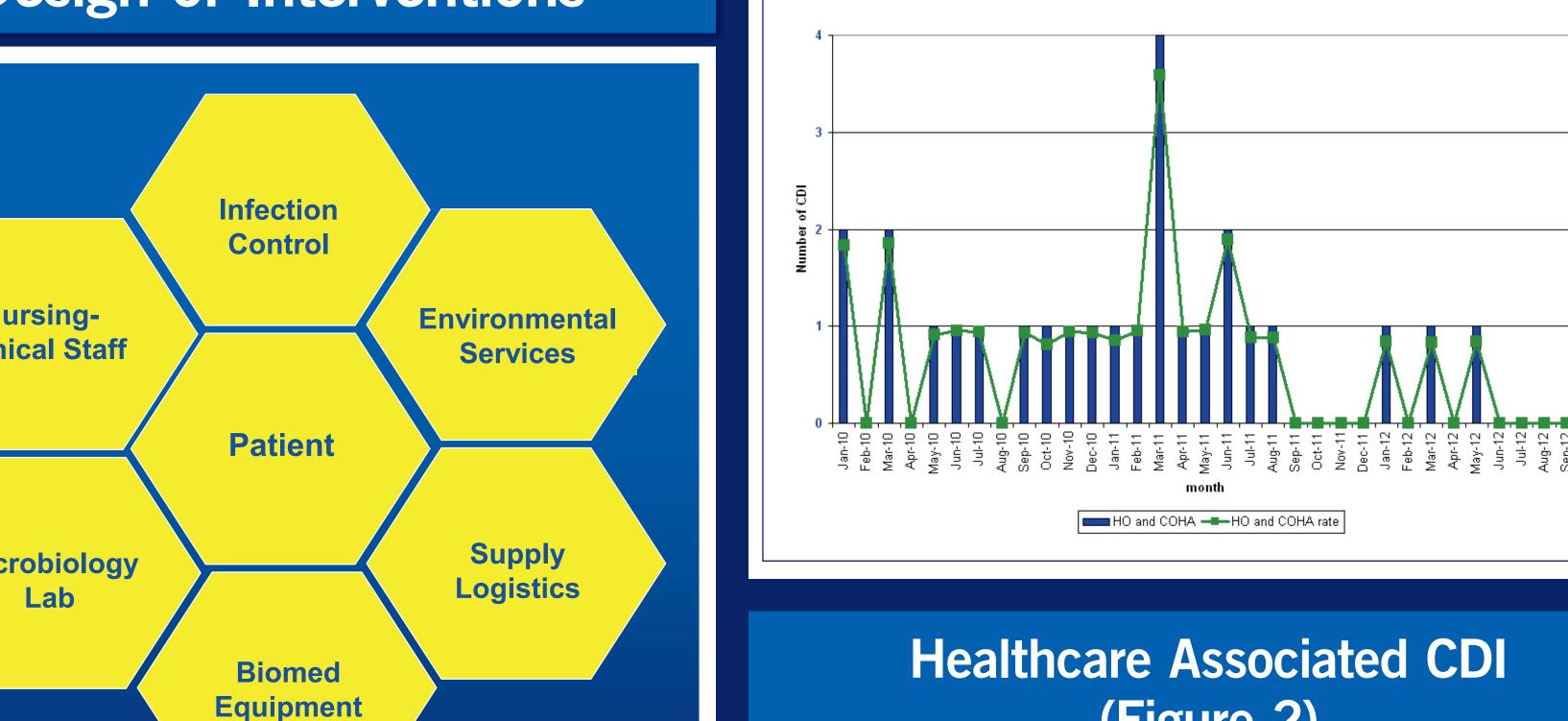
Design of Interventions



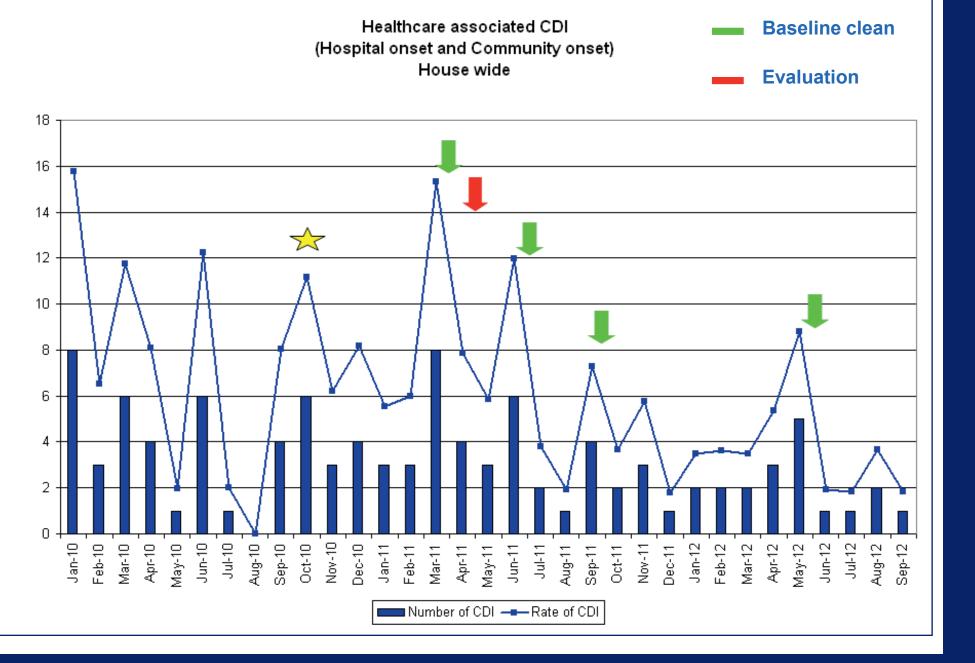
Results for Transplant Surgical Inpatient Unit (Figure 1)

 The effectiveness of the innovative strategies was shown by a 2011 1st QTR baseline rate of 26.9, 2nd QTR rate of 18.98, 3rd QTR rate of 8.83 and a 4th QTR rate of 0.00 per 10,000 patient days. The 2012 1st QTR rate was 8.34, showing a 69% rate decrease for a 12 month period.



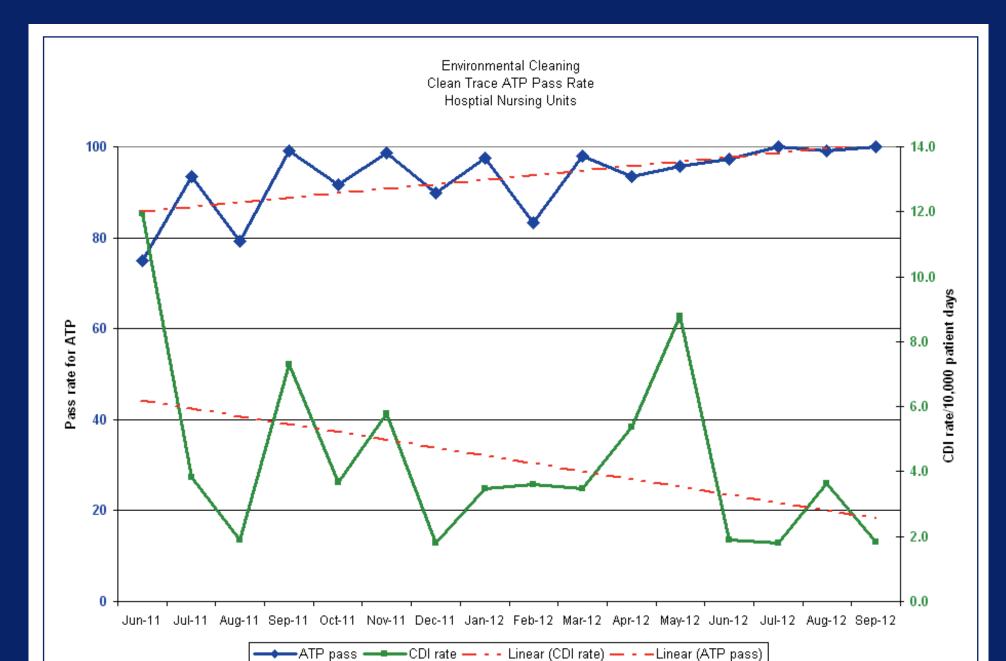


(Figure 2)

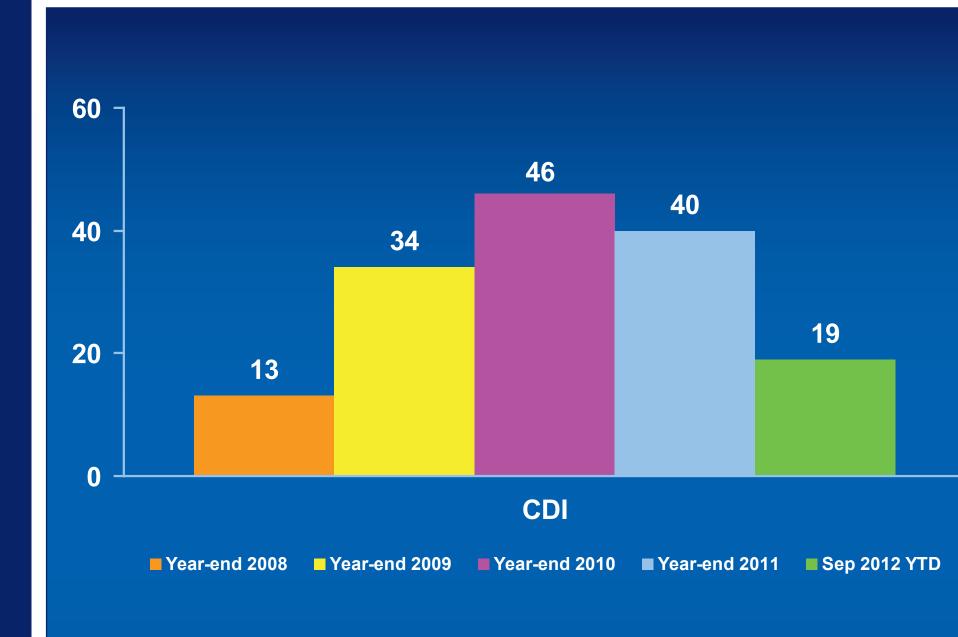


Infection Control Interventions

- Signage change (Contact-Modified)
- CDI education
- Plastic bag covers for foam cans
- Review of Environmental Service (ES) cleaning process
- Initiated Clean Trace ATP audit tool
- Daily list of Precaution patients
- Biweekly meeting with ES management
- Review of daily labs and daily calls to units to ensure precaution status
- Reusable patient care equipment competency



Clostridium difficile Healthcare associated infections Hospital wide



Environmental Services (ES) Interventions

- Bleach cleaning for all CDI patient rooms
- Dedicated ES staff to retrieve overflow gowns from waste
- Removal of gloves after bathroom clean
- CP rooms last to clean on each unit
- Bed rails cleaned daily
- Bleach clean for all 3rd and 4th floor discharges
- Disposable brushes for room cleaning
- TV remote covers....looking at Nurse call covers.
- Dedicated ES educator
- Trend analysis for Clean Trace ATP audits
- Collaborative development with Media Support of training

Nursing Interventions

- Patient and Family education
- Baseline cleaning every two months
- Manual BP for 3S and other areas for CDI patients
- Hall pass and CDI stickers in 3S
- Bleach wipes for mobile phone usage
- Precautions for suspected CDI cases Staff trained on equipment cleaning

Microbiology Interventions

- Polymerase Chain Reaction -PCR testing
- No repeat testing necessary (not 3)
- Single episode of diarrhea not an indication for testing
- No testing for formed stool

Biomed and Supply Logistics Interventions

- Review of current cleaning process
- All equipment cleaned with bleach (manufacturer recommendations)
- Change in staging area for equipment to be repaired
- Training and competency for cleaning
- Clean Trace ATP Audits for equipment
- Notification and education for audit non-compliance
- Process review for equipment transfer to Supply Logistics

Conclusion / Control

- Our study showed the effectiveness of a bleach solution on terminal cleaning and reduced Clostridium difficile infection rates. (Figure 1)
- It also demonstrates the importance of continued monthly baseline
- cleaning with a bleach solution for all patient rooms. (Figure 2) Continue Clean Trace ATP monitoring to determine room cleaning/
- disinfection effectiveness.
- Continue compliance monitoring with hand hygiene, room disinfection, equipment disinfection and appropriate isolation