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

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**Background/Objective**
- Environmental contamination with microorganisms such as Clostridium difficile (CD) in multiple areas in our 214 bed tertiary care teaching hospital
- Previous CD studies have focused on environmental contamination in the patient's room
- Our study focuses on risk assessment and intervention on hospital environment

**Clostridium difficile**
- The outcome of CD incidence rates have been increasing in our facility
- In 2008, the Healthcare Associated Infection Prevention Team (HAIP) initiated a review and improvement process to evaluate healthcare-associated infections
- Daily disinfection with bleach solution may reduce the environmental burden of CD and decrease the risk of transmission to subsequent patients
- The objective of this study was to determine if a collaborative disinfection strategy is an effective intervention to reduce the rate of CD infection and infection rates

**What exactly are we dealing with?**
- CD is a spore forming gram-positive bacteria
- Encapsulated spores are more often to infect and replicate
- Remains the most common cause of healthcare associated diarrheal infection
- A more evolved strain now exists (NAP 1 strain)

**Environmental contamination with microorganisms**
- CD is of growing concern in many healthcare facilities as it presents a risk to patients in the development of healthcare associated infections.
- CD is transmitted through the environment. All surrounding the patient.
- Transmission of CD is via person to person, most commonly North American pulsed-field gel electrophoresis

**Infection Control Interventions**
- Staff trained on equipment cleaning
- BLEACH Wipes for mobile phone usage
- Hall pass and CDI stickers in 3S
- Plastic bag covers for foam cans
- Disposable brushes for room cleaning
- Biweekly meeting with ES management
- TV remote covers….looking at Nurse call covers.
- Biomed
- Nursing/Logistics
- Microbiology
- Patient
- Lab
- Equipment
- Infection Control
- Biweekly meeting with ES management
- TV remote covers….looking at Nurse call covers.
- Staff trained on equipment cleaning
- BLEACH Wipes for mobile phone usage
- Hall pass and CDI stickers in 3S
- Plastic bag covers for foam cans
- Disposable brushes for room cleaning
- Change in staging area for equipment to be repaired
- All equipment cleaned with bleach (manufacturer recommendations reviewed)
- Change in staging area for equipment to be repaired
- Dedicated ES staff to retrieve overflow gowns from waste
- Dedicated ES educator
- Baseline cleaning every two months
- Review of current cleaning process
- Environmental Services (ES) Interventions
- Review of Environmental Service (ES) cleaning process
- Initiated Clean Trace ATP audit tool
- Daily list of precaution patients
- Reviewing cleaning with ES assignment
- Review of staff list and ensuring all CDI to receive
- Baseline cleaning for on-call patient rooms
- Dedicated ES to remove overgrown gowns from waste receptacles
- Removal of gown after bathroom clean
- CF rooms b/c clean on each visit
- Bad rooms cleaned daily
- Bad rooms cleaned daily for 3rd and difficult directions
- Disposable transfer for room cleaning
- Tyvek covers, socks, gloves for clean team
- Dedicated ES educator
- Task analysis for Clean Trace ATP audits
- Process review for equipment transfer to supply logistics

**Nursing Interventions**
- Poor leaders for each unit, developed action plan, continued unit education and accountability ongoing
- Patient and Family education
- Baseline cleaning every two months
- Manual BP for OR and other areas for CDI patients
- Hold gates and CDI drains in 3S
- Bleach wipes for mobile phone usage
- Procedures for suspected CDI cases
- Staff education in equipment cleaning

**Microbiology Interventions**
- Polymerase Chain Reaction (PCR) testing
- No repeat testing necessary (incl. 3S)
- Single episode of diarrhea not an indication for testing
- No testing for normal flora

**Biomed and Supply Logistics Interventions**
- Review of current cleaning process
- All equipment cleaned with bleach (manufacturer recommendations reviewed)
- Change in staging area for equipment to be repaired
- Dedicated ES educator
- Process review for equipment transfer to supply logistics

**Conclusion / Control**
- Our study showed the effectiveness of a bleach solution for terminal cleaning and reduced CDI infection rates (Figure 1)
- It also demonstrated the importance of continued monthly baseline surveillance for all patients in these rooms.
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