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C. DIFFICILE PREVENTION: AN EFFECTIVE TREATMENT METHODOLOGY AND BUNDLE
WE KNOW CLOSTRIDIUM DIFFICILE (C. DIFF) INFECTION

- Antibiotic-resistant, spore-forming bacterium that colonizes the intestines
- Produces toxins in the gut that can lead to gastrointestinal illness
WE KNOW THE RISK FACTORS FOR *C. difficile* INFECTION

- Antimicrobial exposure
- **Acquisition of *C. difficile***
- Advanced age
- Underlying illness
- Immunosuppression
- Tube feeds
- ? Gastric acid suppression

Main modifiable risk factor
WHO IS AT RISK FOR C. DIFF INFECTION

- Elderly – 80% of patients are over 65
- Hospitalized and/or immunocompromised patients
- Patients on *repeated antibiotic therapy*
- Patients undergoing gut surgery
- Patients undergoing repeated enemas
BUT – DO WE KNOW HOW EASILY C. DIFF SPREADS?

- Spores spread via the fecal-oral route and can survive for years outside of the gut
  - Common reservoirs for spores include toilets, washrooms, toothbrushes, mugs, utensils, and patient’s own contaminated hands

- Once ingested, spores pass through the stomach and germinate in the small intestine

- C. diff colonizes the gut and may cause infection if space is “available”
  - Ex: lack of resident flora due to an antibiotic treatment
BUT – DO WE KNOW HOW EASILY *C. diff* KILLS?

- Infection reoccurs in about 20% of patients

- *C. diff* is linked to around 14,000 American deaths each year

- Patients may develop associated diseases such as:
  - Pseudomembrane colitis
  - Toxic megacolon
  - Sepsis
  - Ulcerative colitis
  - Perforation of colon
**Bundles for Prevention of C. difficile Infection (CDI)**

**Antimicrobial and Drug Management Bundle**
- Evidence-based management and treatment
- Judicious use of all antibiotics
- Robust A.S. program led by pharmacy and physician champion (ex, hospitalist)
- Assess use of probiotics
- Assess use of proton pump inhibitors
- Educate providers and patients

**Detection Bundle**
- Early Recognition: Simple Diagnosis
- Testing criteria
- Proper collection and handling of specimens (timeframe and temperature)
- Appropriate testing
  - PCR
  - Antigen/toxin assay
- Retesting criteria
  - No testing for cure

**Practice Bundle**
- Early isolation
- Contact Precautions
  - Gowns
  - Gloves
  - Signage
  - Meticulous hand hygiene
- Equipment
  - Available
  - Dedicated
  - Disposable
  - Disinfected if reusable

**Cleaning Bundle**
- Environment
- Equipment
  - ID C. diff contaminated equipment for cleaning
- Daily cleaning
- Terminal cleaning
- Use of checklist
- Appropriate dwell time for cleaning solutions
- Consider use of bleach solution or wipes for cleaning daily and terminal
- Competency assessment

**People Bundle**
- Administrative support
- Competency
- Compliance
- Coach
- Communicate
- Involve and educate patients/families
- Educate all staff
- Collaborative efforts beyond the hospital
5 - Elements of the Bundle

- Antimicrobial and Drug Management Bundle
  - Detection Bundle
  - Cleaning Bundle
  - Practice Bundle
  - People Bundle

Preventing *C. diff* infection requires the concerted efforts of all stakeholders – from frontline clinicians to the C-Suite.
ELEMENTS OF THE _C. difficile_ INFECTION PREVENTION BUNDLE

- **Antimicrobial and Drug Management Bundle**
  - Pharmacist-led Antibiotic Stewardship Team
  - Infections Disease Physician Champion
  - Pharmacist reviews list of antibiotics daily for:
    - Possible discontinuation of therapy
    - Conversion of IV to PO
    - Streamlining or de-escalation of multiple antibiotics
    - Renal dosing
  - Antibiogram updated yearly to follow resistant patterns when choosing antibiotics and posted on EMR system yearly for physician view
  - Probiotic protocol used for specific antibiotics known for high risk of _C. difficile_
  - Assess use for continuation of proton pump inhibitors

- **Evidence-based management and treatment**
- **Judicious use of all antibiotics**
- **Robust Antibiotic Stewardship program led by pharmacy and physician champion (ex: hospitalist)**
- **Assess use of probiotics**
- **Assess use of proton pump inhibitors**
- **Educate providers and patients**
ELEMENTS OF THE C. DIFFICILE INFECTION PREVENTION BUNDLE (CONT.)

**Detection Bundle**

- **Early Recognition**
  - Simple diagnosis (Surveillance Finding)
  - Loose stool on admission
  - Signs and symptoms of C. diff

- **PCR**
  - Reflex testing of all C. diff cultures
  - No solid stool samples tested
  - No repeat test within 14 days

- **C. diff Test**
  - Nurse-driven protocol for first three days after admittance
  - After that, must have signs and symptoms of C. diff, diarrhea, and doctor’s order

- **Early Recognition: Simple Diagnosis**

- **Testing criteria**

- **Proper collection and handling of specimens (timeframe and temperature)**

- **Appropriate testing**
  - Reflex testing of all C. diff cultures
  - No solid stool samples tested

- **Retesting criteria**
  - No testing for cure
ELEMENTS OF THE C. DIFFICILE INFECTION PREVENTION BUNDLE (CONT.)

• Practice Bundle
  - Contact Precautions: *for ALL diarrhea-causing organism patients*
  
  - Private Room
    - When a private room is not available, cohort with patient(s) with an active infection with the same microorganism but with no other infection
  
  - Everyone **MUST** wear gloves and gown when entering room for any reason
    - Change gloves after contact with infective material
    - Remove gloves and gown before leaving the patient’s room

  ✗ *Use disposable or dedicated equipment* when possible

  ✗ *Disinfect equipment* as it is being removed from the room

• Early isolation
• Contact Precautions
  - Gowns
  - Gloves
  - Signage
  - Hand hygiene with soap and water

• Equipment
  - Available
  - Dedicated
  - Disposable
  - Disinfected, if reusable
Practice Bundle (cont.)

- **WASH** and **DECONTAMINATE HANDS WITH SOAP AND WATER**
  - Ensure that hands do not touch potentially contaminated environmental surfaces or items in the patient’s room
  - *Use alcohol hand rub upon leaving the room*

- **Limit the movement/transport** of patients from room to essential purposes only
  - During transport, ensure that all precautions are maintained at all times

- Special cleaning, waste disposal, or other procedures may be required
  - *Contact Infection Control immediately*

- **Early isolation**

- **Contact Precautions**
  - Gowns
  - Gloves
  - Signage
  - Hand hygiene with soap and water

- **Equipment**
  - Available
  - Dedicated
  - Disposable
  - Disinfected, if reusable
Cleaning Bundle

- All high touch areas cleaned with bleach
- *Tag* all dedicated equipment so that it will be cleaned with bleach wipes
- Rooms cleaned daily with bleach solution and wipes
- Allowed to remain wet for 4-minute dwell time
- Room terminally cleaned with 10% bleach and then *UV disinfection system* used, if available

**Environment**
- Identify *C. diff-* contaminated equipment for cleaning

**Equipment**
- Daily cleaning
- Terminal cleaning
- Use of checklist
- Appropriate dwell time for cleaning solutions
- Competency assessment
Elements of the *C. difficile* Infection Prevention Bundle (CONT.)

- **People Bundle**
  - Buy-in from C-Suite
  - Follow up on staff knowledge done periodically
  - Bulletin boards and reminders up periodically
  - “*C. diff* in the Home” pamphlet for patient families and home health workers
  - FAQ sheets available for patients and staff

- **Administrative support**
- **Competency**
- **Compliance**
- **Coach**
- **Communicate**
- **Involve and educate patients/families**
- **Collaborative efforts beyond the hospital**
- **Educate all staff**
How do we spread the bundle?

- It takes several departments taking lead on these particular tracks.
- Frontline staff must be involved with the small tests of change in the rapid cycle to make this successful in your hospital.

Teamwork, Teamwork, Teamwork

A team-based approach is fundamental to the success of the prevention bundle.
This is an "interdepartmental bundle"

Bundles for Prevention of C. difficile Infection (CDI)

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* SUTIES
LESSONS LEARNED

- This is a team bundle
  - Get your Antibiotic Stewardship part started
    - This is best practice NOW
  - Get your Administration on board!
    - This bundle is the new Standard for the State
  - See how many parts of the bundles you already have in place
  - Get your frontline nursing staff involved with the rapid test of change
  - Get with your LAB – work toward PCR testing, which is the new standard
  - Support your EVS department
any questions, comments, or feedback regarding this presentation