Survey Issues in Infection Control

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Topics

- C. difficile
- Linen and Laundry
- Surveillance
- F441

Clostridium difficile
(C. difficile)
Background: Pathogenesis of C. difficile

1. Ingestion of spores transmitted from other patients onto hands of healthcare personnel and environment
2. Germination into growing (vegetative) form
3. Altered lower intestine flora (due to antibiotic use) allows proliferation of C. difficile in colon
4. Toxin A & B production leads to colon damage +/- pseudomembrane

Clostridium difficile (C. difficile)

- Antibiotic induced diarrhea
- Can cause colitis
- Most common cause of acute infectious diarrhea in nursing homes
- Disease may be a nuisance or cause life threatening colitis
- Increasing numbers of cases
- Increasing disease severity and mortality

Background: Impact

Age-Adjusted Death Rate* for Enterocolitis Due to C. difficile, 1999–2006

*Per 100,000 US standard population

Risk Factors

- Antimicrobial exposure
- Length of stay in a healthcare facility
- Advancing age
- Serious underlying illness
- History of non-surgical GI procedures
- Presence of a nasogastric tube
- Suppressed immune system

Antibiotics most often associated with Clostridium difficile

- Clindamycin
- Ampicillin
- Amoxicillin
- Cephalosporins
- Fluoroquinolones

Summary of Prevention Measures from the CDC Toolkit

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<th>Core Measures</th>
<th>Supplemental Measures</th>
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<td><strong>High levels of scientific evidence</strong></td>
<td><strong>Some scientific evidence</strong></td>
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<td>Contact Precautions for the duration of illness</td>
<td>Prolonged duration of</td>
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<td>Hand hygiene in compliance with CDC/WHO</td>
<td>Contact Precautions</td>
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<td>Cleaning and disinfection of equipment and environment</td>
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<td>Laboratory-based alert system</td>
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<td>CDI surveillance</td>
<td>Soap and water for hand hygiene upon exiting the CDI room</td>
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<td>Education</td>
<td>Universal glove use on units with high CDI rates</td>
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<td></td>
<td>Bleach for environmental disinfection</td>
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<td>Antimicrobial stewardship program</td>
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</table>
Prevention Strategies: Core

- Implement an antimicrobial stewardship program
- Contact Precautions for duration of diarrhea
- Hand hygiene in compliance with CDC/WHO
- Cleaning and disinfection of equipment and environment
- Laboratory-based alert system for immediate notification of positive test results
- Educate about C. diff: HCP, housekeeping, administration, patients, families

http://www.cdc.gov/ncidod/dhqp/id_CdiffFAQ_HCP.html

Prevention Strategies: Supplemental

- Extend use of Contact Precautions beyond duration of diarrhea (e.g., 48 hours)*
- Presumptive isolation for symptomatic patients pending confirmation of C. diff
- Evaluate and optimize testing for C. diff
- Implement soap and water for hand hygiene before exiting room of a patient with C. diff
- Implement universal glove use on units with high C. diff rates*
- Use sodium hypochlorite (bleach) – containing agents for environmental cleaning

* Not included in CDC/HICPAC 2007 Guideline for Isolation Precautions

History

- Prior to March 2003, CDC guidelines for Environmental Infection Control in Healthcare Facilities, there was no EPA registered product that had been identified specific for inactivating C diff.
- CDC recommended to use a hydrochloride (bleach) product for disinfection of environmental surfaces in accordance with guidance from the scientific literature in patient care areas where surveillance and epidemiology indicated ongoing transmission of C diff.
- Only for obvious cross transmission of C diff, not just for one case or two cases, but where there was ongoing transmissions as evidenced by the cases in the facility.
New CDC Recommendation

March 2012

- Use of an EPA approved spore-killing disinfectant in rooms where C.diff residents are treated.

Sodium Hypochlorite (Bleach)

- 1:10 concentration
- Fresh daily
- Not good cleaning agent. For visible soiling, the area needs to be cleaned first, then disinfected
- Contact time – 10 min for C. diff spores
- Drying time

CDC

Clostridium difficile (CDI) Infections Toolkit

Activity C: ELC Prevention Collaboratives
Carolyn Gould, MD MSCR
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Centers for Disease Control and Prevention
Linens

Personnel must handle, store, process and transport linen so as to prevent the spread of infection.

Linen and Laundry Reprocessing

- 483.65 (c) Linens

Personnel must handle, store, process and transport linen so as to prevent the spread of infection.

Laundry

CDC recommends common sense hygienic practices be followed for soiled linen:
- Handled as little as possible and with minimal agitation
- Bagged or placed in containers at the location where it was used and not sorted or rinsed in the location used
- Linen heavily contaminated with blood or other body fluids should be bagged and transported in a manner to prevent leakage
- Gloves and other appropriate protective apparel should be worn by laundry personnel while sorting
Detergent and water physically remove many microorganisms from the linen through dilution during the wash cycle. An effective way to destroy microorganisms in laundry items is through hot water washing at temperatures above 160 F (71 C) for 25 minutes. Alternately, low temperature washing at 71 to 77 degrees F (22-25 degrees C) plus a 125 part-per-million (ppm) chlorine bleach rinse has been found to be effective and comparable to high temperature wash cycles.

Laundry
- Laundry processed appropriately for routine use must be hygienically clean
- Hygienically clean - free of pathogenic organisms in numbers sufficient to cause human illness, not sterile
- The antimicrobial action of the laundry process is affected by chemical and physical factors
- Hot water (160 F for 25 minutes) – common recommendation
- Drying provides significant microbial action

NEW – Low Temperature Washing
- Laundry detergents and additives used must have instructions appropriate for the selected water temperature
- Use of EPA-registered laundry sanitizer is optional
- EPA-registered sanitizer with specific microbial label claims are not required.
(individual states may have different regulations)
Bleach Rinses for Low Temperature Washing

NEW

- No longer recommended
- Damages newer fabrics and leaves residues
- Difficult to control
- Disinfection not industry standard

Surveillance

F441

- The facility must establish an infection control program under which it –
  1) Investigates, controls, and prevents infections in the facility
  2) Decides what procedures, such as isolation, should be applied to an individual resident
  3) Maintains a record of incidents and corrective actions related to infections
Intent of the Regulation

- Assure facility **develops, implements, and maintains** an infection Prevention and Control Program in order to **prevent, recognize, and control**, to the extent possible, the onset and spread of infection within the facility.

Components of an Infection Control Program

- Program Development and Oversight
- Monitoring
- Infection Preventionist
- Data Analysis
- Policies and Procedures
- Communicable Disease Reporting
- Surveillance
- Education
- Documentation
- Antibiotic Review

Surveillance

- Surveillance is a systematic method of collecting, consolidating, and analyzing data concerning the distribution and determinants of a given disease or event followed by dissemination of that information to those who can improve the outcome.
Why do surveillance?

- Improves rates of infections
- Establish baseline data
- Identification of problems
- Provides information to clinical and administrative staff
- Establishes priorities
- Evaluates infection control measures, polices and procedures
- Staff education

Surveillance Systems in Nursing Homes

Each facility should develop a system for surveillance that includes:
- Goals of surveillance
- Definitions of common infections
- Surveillance procedure
- Analysis of surveillance data to plan infection control efforts

Definitions of Infections

- Healthcare-associated infections (HAIs) – (formerly known as nosocomial) any infection that develop after admission to the Nursing Home.

- Community-acquired infections are incubating at the time of admission or develop within 48 to 72 hours of admission or transfer from another facility of community.
### Common HAIs in Nursing Homes

<table>
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<tr>
<th>Most Frequently Occurring</th>
<th>Other Commonly Occurring</th>
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<tr>
<td>URINARY TRACT</td>
<td>GASTROENTERITIS</td>
</tr>
<tr>
<td>• Catheter associated</td>
<td>• Conjunctivitis</td>
</tr>
<tr>
<td>RESPIRATORY</td>
<td></td>
</tr>
<tr>
<td>• PNEUMONIA</td>
<td></td>
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<tr>
<td>• BRONCHITIS</td>
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<tr>
<td>SKIN AND SOFT TISSUE</td>
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<tr>
<td>• Pressure Ulcers</td>
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### Surveillance

<table>
<thead>
<tr>
<th>Outcome based</th>
<th>Processed based</th>
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</thead>
<tbody>
<tr>
<td>Total (facility wide) surveillance</td>
<td>Procedure related surveillance</td>
</tr>
<tr>
<td>Targeted or focused</td>
<td>Measures compliance with established procedures</td>
</tr>
<tr>
<td>• Infection rates</td>
<td>• Dressing changes</td>
</tr>
<tr>
<td>• UTI</td>
<td>• Hand hygiene</td>
</tr>
<tr>
<td>• Pneumonia</td>
<td>• Environmental surveillance</td>
</tr>
<tr>
<td>• Influenza</td>
<td></td>
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</tbody>
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### Surveillance in Nursing Homes

CMS mandates:
- A program that maintains a record of incidents and corrective actions related to infections and
- A program to investigate, control and prevent infections
  - No national data collection
  - No standard definitions
  - Data limited
Infection Criteria

- CDC definition of nosocomial infection (CDC, 1988)

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Investigative Protocol

Surveyor(s) shall determine if:

- The facility has an Infection Prevention and Control Program that prevents, investigates and controls infections; and
- The facility has an Infection Prevention and Control program that collects and analyzes data regarding infections acquired in the facility.
### Investigative Protocol

**Surveyor(s) shall determine if (cont’d):**

- Staff practices are consistent with current infection control principles, and
- Staff with communicable diseases are prohibited from direct contact with residents.

### Investigative Protocol

- Observations
- Interviews
- Record Reviews
- Review of Facility Practices

### Infection Control Questions

1. Do you have an infection control program?
2. How often does your committee meet?
3. Who is on the committee?
4. What systems do you have in place to monitor and investigate the cause(s) of infection (facility and community acquired)?
5. What systems do you have in place to determine what procedures such as isolation should be applied to an individual resident?
Infection Control Questions

6) What system do you have in place to maintain records of incidents and corrective actions related to infections?

7) What types of infections are you currently monitoring?

8) Briefly explain your process on residents with continued infections or positive cultures?

References

Karen Hoffman, RN, MS, CIC, Infection Prevention Specialist: Infection Control Update For Nursing Homes, Survey and Certification Group, CMS

SHEA: Clostridium difficile in Long Term Care Facilities for the Elderly
http://www.sheaonline.org/Assets/files/position_papers/SHEA_Cdiff.pdf

APIC Guide to the Elimination of Clostridium difficile Infections in Healthcare Settings.

http://www.cdc.gov/HAI/recoveryact/stateResources/toolkits.html

Spotlight on Clostridium difficile Infection: An Educational Resource for Pharmacists

David P. Nicolau , PharmD, FCCP, FIDSA
https://secure.pharmacytimes.com/lessons/200908-02.asp