

Clostridium *difficile*

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Outline

- What is clostridium *difficile* infection (CDI)?
- Symptoms & Complications
- Risk Factors
- Transmission
- Prevention and Control Measures
- Surveillance in Saskatchewan



What is *Clostridium difficile*?

- ❑ *Clostridium difficile* (*C. diff*) is a bacteria found in feces and can cause mild to severe diarrhea and other serious intestinal illness.
- ❑ *C. diff* transmission occurs mainly through the fecal-oral route (people touch items or surfaces that are contaminated with feces and then touch their mouth or nose).
- ❑ The bacteria are capable of forming spores which are very difficult to eliminate in the environment.



Symptoms of *C. diff*

- ❑ Watery diarrhea (often 5-10 times/day)
- ❑ Fever
- ❑ Loss of appetite
- ❑ Nausea
- ❑ Abdominal pain or tenderness



Complications of CDI

- ❑ Pseudomembranous colitis
- ❑ Toxic megacolon
- ❑ Perforation of the colon
- ❑ Sepsis
- ❑ Death (rare)



Risk Factors for CDI:

- The greatest risk factor thought to be associated with developing *C. diff* is the administration of antibiotics.
- Antibiotics suppress the normal bowel flora, thus provide an environment for *C. diff* to thrive.
 - An increased risk of *C. diff* has been associated with the administration of antibiotics such as cephalosporins, clindamycin, and fluoroquinolones.



Additional Risk Factors

- ❑ Chemotherapy;
- ❑ Bowel disease and bowel surgery;
- ❑ Immunosuppressive therapy;
- ❑ Prolonged hospital admissions;
- ❑ Increased age;
- ❑ Treatment with proton pump inhibitors; and,
- ❑ Transmission links.



Epidemiology:

- Over recent years there has been an increase in the incidence and severity of disease and the number of outbreaks associated with healthcare facilities.
- This in large part is due to the emergence of a new hypervirulent strain of *C. difficile*.



Statistics in Canada

- In 2009, the Canadian Nosocomial Infection Surveillance Program (CNISP) reported CDI in Canada was 4.70 per 1000 admissions and 5.75 per 10,000 patient care days.
- Saskatchewan and Manitoba region reported 2.27 per 1000 admissions and 3.24 per 10,000 patient care days.



Transmission

- Environmental contamination
 - Patients occupying rooms previously occupied by **VRE, MRSA** and C. difficile positive patients have an increased risk of 73% of acquiring the same pathogen than patients not occupying such rooms.

- Main transmission occurs via the hands of health care workers
 - Frequent hand hygiene is the most effective measure to prevent the transmission of infection.



Treatment

- ❑ Patients with mild diarrhea, no fever and mild abdominal pain- Discontinuation of antibiotics usually alleviates symptoms.
- ❑ For severe diarrhea- Antibiotics (Flagyl or Vancomycin) are usually ordered.
- ❑ In severe cases, surgery may be necessary.



Prevention and Control Measures

- Contact precautions (gown and gloves) should be initiated immediately at the onset of diarrhea.
 - **Do Not Delay** placement of a patient or resident on contact precautions while awaiting the results of *C. difficile* testing.
- Single room with dedicated toilet or commode. A disposable toilet brush is used for toilet cleaning.
- All patients/residents are to remain in their room while symptomatic with CDI.

Contact Precautions



Private Room

- ✓ Door may stay open



Hand Cleansing

- ✓ After removing gloves and gown
- ✓ When leaving room
- ✓ Using soap and water or alcohol gel



Gloves

- ✓ If in contact with patient or environment
- ✓ Remove before leaving room



Gown

- ✓ If in contact with patient or environment
- ✓ Remove gown before leaving room



Dedicate Patient Care Equipment

- ✓ Disinfect all equipment removed from room
- ✓ Do not take patient chart into room



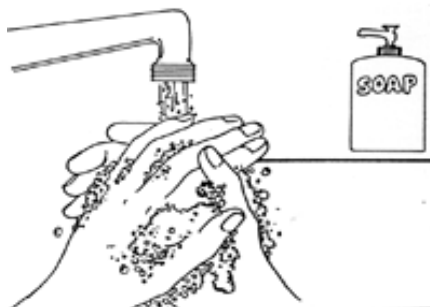
Patient Transport

- ✓ Only when essential
- ✓ Continue precautions
- ✓ Inform receiving department



REMINDER

**WASH
YOUR
HANDS
WITH
SOAP
AND
WATER**





Prevention and Control Measures

- Hand hygiene- Alcohol based hand rubs are not effective in killing the spores. Hands must be washed with soap and water. Sign should be placed on the door along with the precaution sign stating this information.
- Environmental cleaning- Accelerated hydrogen peroxide (Percept.)



Prevention and Control Measures

- ❑ Twice daily cleaning of high touch areas including items likely contaminated with feces.
- ❑ Important to change your cleaning cloths frequently (a minimum of 5 clothes or more is needed) while cleaning the room otherwise you are just moving the spores from one place to another.
- ❑ Dedicate patient care equipment (stethoscope, BP, laundry hamper etc.)



Prevention and Control Measures

- ❑ Linen hamper in the room. Linen does not have to be double bagged unless leakage may occur.
- ❑ Disposable dishes are NOT required.
- ❑ Visitors are instructed on washing their hands with soap and water when leaving the room. If visitors are having significant contact with patient/residents or their environment they need to gown and glove.
- ❑ Visitors should not use the patient/resident's washroom or sit on the patient/resident bed.
- ❑ Visitors should visit only their loved one and not visit other patient/resident's rooms. Leave directly out of the facility after visiting.



Prevention and Control Measures

- If the patient is transferred for diagnostic procedures, the referring ward is notified. Contact Precautions are followed during the diagnostic procedure.



Removal of Precautions

- Contact Precautions should be discontinued **ONLY** on the advice of Infection Control.
- Typically when the resident has been asymptomatic for > 48 hours and is producing formed stool or stool normal for the individual, precautions are removed. Retesting is not necessary if formed stools are present.
- A terminal clean is preformed on the room before the resident is removed off precautions. Environmental cleaning is extremely important.



What initiatives are currently being performed?

□ Surveillance

- April 1, 2012, the Ministry of Health has a surveillance program in place to standardize the method for counting and reporting C. diff infections.
- Infection Control fills out a standardized CDI Electronic Report form and submits the reports quarterly to the Ministry of Health. The Provincial Infection Control Coordinator calculates the surveillance rates and interprets the data to be shared with the Infection Control practitioners in Saskatchewan.



Inclusion Criteria

- ❑ To be included in surveillance, a patient must meet the following criteria:
 - ❑ One year of age and older;
 - ❑ Have been admitted to an acute care unit. This includes patients admitted to your facility but who remain in the ER once admitted;
 - ❑ Residents that are admitted in dedicated long-term care units, alternate level of care units and transitional care;
 - ❑ Residents in long-term care facilities;
 - ❑ Patients in psychiatry wards/units.



Inclusion Criteria

- Only patients admitted at the time the positive CDI diagnosis is made are included for surveillance.
- Patients who are discharged after the date of diagnosis, but before the lab results are included.
- Patients who were discharged in the previous 4 weeks and return to the ER or outpatient unit with a new onset of CDI, but are not admitted are NOT included.
 - In these instances, Infection Control will followup and record these cases for our internal statistics.

Case definitions for Surveillance and Reporting of C. diff

- A patient is identified as a C. diff case if:
 - S/he has diarrhea, or fever, abdominal pain and/or ileus, AND lab confirmation of a positive toxin assay for C. difficile;
 - OR**
 - S/he has a diagnosis of pseudomembranes on sigmoidoscopy or colonoscopy or histological/pathological diagnosis of C. difficile
 - OR**
 - S/he has a diagnosis of toxic megacolon



Definition

- Diarrhea (watery or unformed stool that takes the shape of the specimen collection container) is defined as one of the following:
 - 3 or more unformed stools in a 24-hour period for at least 1 day and new or unusual for the patient;
 - 6 or more water stools in a 36-hour period; **or**
 - 8 or more unformed stools over 48 hours.
 - Note: If the information about the frequency and consistency of diarrhea is not available, a toxin-positive stool will be considered a case.



Definition

- A healthcare-associated C. diff infection in the hospital setting meets the following criteria:
 - Symptoms occur in the hospital facility >72 hours after admission
 - OR**
 - C. diff is seen in a patient who has symptom onset in the community or is admitted to your hospital <72 hours provided that the patient was discharged from your hospital in the previous 4 weeks.



Definition

- A healthcare-associated C. diff infection in the long-term care setting meets the following criteria:
 - Symptoms occur in the long-term care facility >72 hours after admission



For More Information

- Policies that are found in your facilities
Infection Control Manual:
 - Acute Care- #E5-10-25-60
 - Long Term Care- #E5-10-25-65

Questions?

