

# CLOSTRIDIOIDES DIFFICILE TOOLKIT FOR LTCH, RH, CLS RVH IPAC HUB

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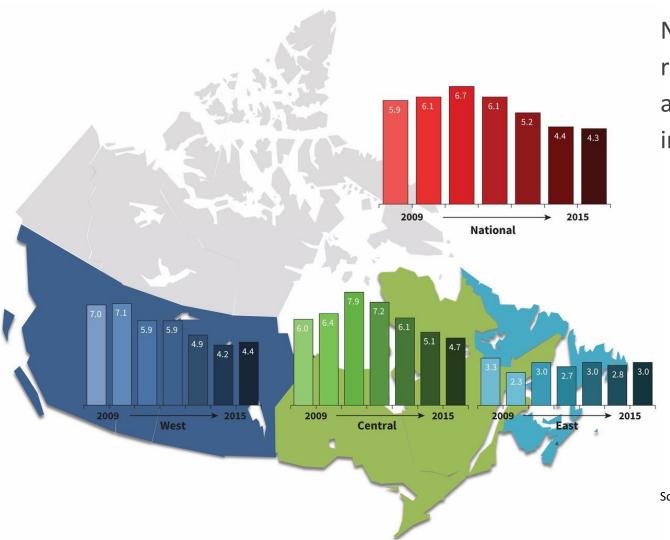


## **CLOSTRIDIOIDES DIFFICILE INFECTION (CDI)**

- Clostridioides (Clostridium) difficile is a gram-positive, spore-forming anaerobic bacterium that causes mild to severe diarrhea and inflammation of the colon via production of toxins.
- It is the most frequent cause of healthcare-associated infectious diarrhea in Canada and other industrialized countries.
- *C. difficile* is widely distributed in the environment and can survive for long periods through production of spores.
- Can be found in animals as well as environmental reservoirs such as drinking water, swimming pools, and soil.
- Strongly associated with high doses or prolonged **usage of antibiotics** due to disruption of normal bacteria found in the gut.



## **BURDEN OF CDI**



National (not including the territories) and regional rates of healthcare-associated CDI in adults per 10,000 patient days from 2009-2015 in Canada

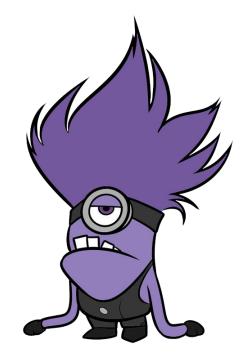
Source: Katz KC et al. CMAJ 2018;190:E758-E765



### **COLONIZATION VS INFECTION**



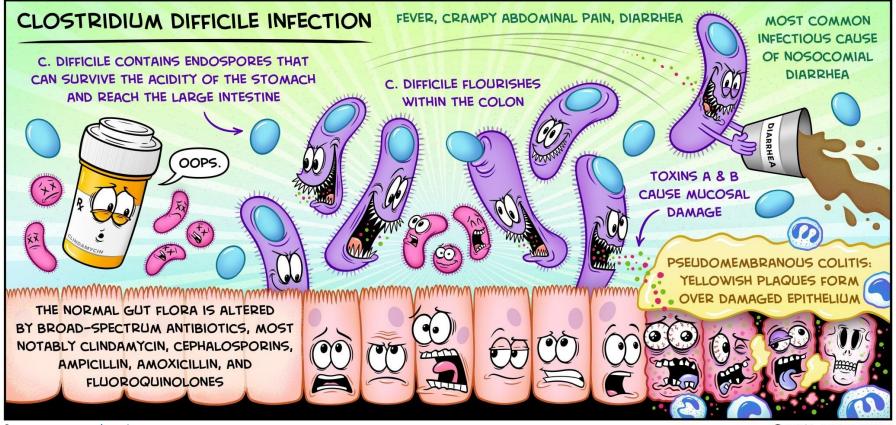
C. difficile can be present in bowel of some people (colonized) but not cause symptoms or produce toxins. It can still be transmitted to others.



C. difficile can grow out of control when gut microbiota is affected and produce toxins that cause clinical symptoms and disease.



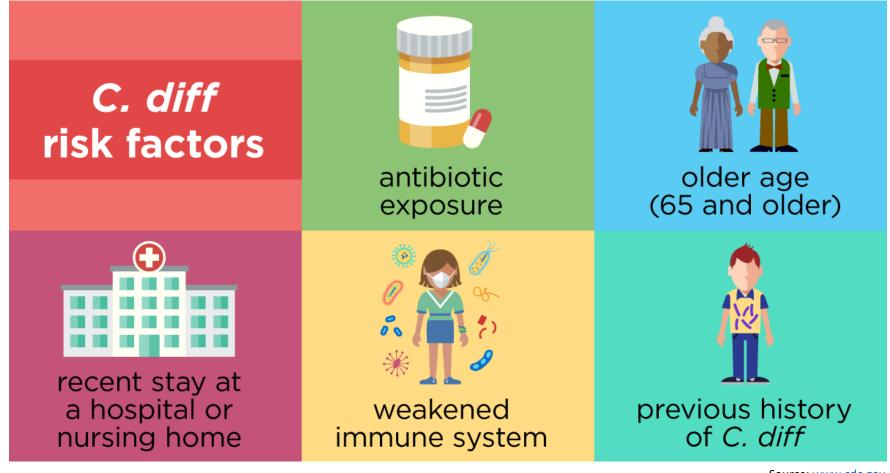
#### PATHOGENESIS OF C. DIFFICILE INFECTION



Source: www.medcomic.com © 2017 JORGE MUNIZ



#### WHAT ARE THE RISK FACTORS FOR CDI?







## ACQUISITION OF CDI IN HEALTH CARE SETTING

Residents/clients are exposed to *C. difficile* via **contact** with **Asymptomatically** colonized contaminated hands of healthcare workers (HCWs), medical equipment, or environmental surfaces. Non-toxigenic *C. difficile* **Asymptomatically** colonized Toxigenic C. difficile; IgG response to ToxA C. difficile negative **Symptomatic** CDI Toxigenic C. difficile; no IgG response to Source: Rupnik M et al. Nat Rev Microbiol 2009;7:526-536 ToxA



#### **MODE OF TRANSMISSION**

- Transmission of *C. difficile* in healthcare settings, including long-term care homes (LTCH), is spread from person-to-person through the fecal-oral route.
- Can be acquired in both, hospital and community settings.
- One of the primary routes of transmission is contact with HCWs who do not practice good hand hygiene.
- Can also be transmitted to residents through contact with surfaces contaminated with bacterial vegetative cells and spores.
- Onset of infection can occur within 48 hours after exposure and up to 3 months post exposure.
- Period of communicability/duration of isolation is usually for at least 48 hours after the last episode of diarrhea/resolution of symptoms.



#### SIGNS AND SYMPTOMS OF CDI

- Watery diarrhea is the cardinal symptom of CDI
- ≥3 loose stools in less than 24 hours
- Possible low-grade fever, loss of appetite, nausea, and abdominal pain/tenderness
- Dehydration
- If blood is present in stool, other etiologies should be considered.



#### SURVEILLANCE AND CONFIRMED CASE DEFINITION

- Three or more episodes of diarrhea\* within a 24-hour period with laboratory confirmation of toxin A or B for *C. difficile*.
- OR visualization of pseudomembranes on sigmoidoscopy or colonoscopy
- OR histological/pathological diagnosis of pseudomembranous colitis
- OR diagnosis of toxic megacolon
- Asymptomatic residents/clients should not be tested for *C. difficile*

\*the bowel movements are unusual or different for the resident, and there is no other recognized etiology for the diarrhea, such as laxative use.







Source: www.publichealthontario.ca

For *Clostridioides difficile* testing, the stool specimen should be loose or watery, with a Bristol score of ≥6.

#### THE BRISTOL STOOL FORM SCALE Separate hard lumps, Type 1 like nuts (hard to pass) Sausage-shaped Type 2 but lumpy Like a sausage but with Type 3 cracks on its surface Like a sausage or snake, Type 4 smooth and soft Soft blobs with clear-cut Type 5 edges (passed easily) Fluffy pieces with ragged edges, a mushy stool Watery, no solid pieces Type 7 **ENTIRELY LIQUID**



#### **IPAC CONSIDERATIONS**

- Strong adherence to hand hygiene by HCWs and residents, with preference to using soap and water to wash hands is a key prevention measure.
- ABHR with alcohol concentration between 70-90% should be used when hand washing sink is not available. Hand hygiene with soap and water should be performed as soon as staff hand washing sink is available.
- In addition to Routine Practices, Enhanced Contact Precautions should be implemented at the onset of symptoms for suspected or confirmed cases.
- Residents/clients with CDI should be placed in a single room with a dedicated washroom when possible.
- If room is shared, a dedicated toilet or commode should be assigned to each individual resident with diarrhea.



## **IPAC CONSIDERATIONS (CONT.)**

- Facility should have a policy in place to appropriately clean and disinfect commode as it can be a common cause of transmission.
- Signages should be placed at the entrance of the room or other visible location of the resident to identify enhance contact precautions.
- Cleaning and disinfecting environmental surfaces and shared equipment with a Health Canada approved sporicidal agent, or with household bleach in dilution of 1:10.
- Hand hygiene should **not** be performed in a resident/client's washroom sink as this may re-contaminate the hands of the HCW.
- On-going education for all staff, residents/clients, and families on CDI
- Implement an antimicrobial stewardship program.



#### ADDITIONAL PRECAUTIONS SIGNAGE FOR CDI





Source: www.simcoemuskokahealth.org

## **ANTIMICROBIAL STEWARDSHIP PROGRAM (ASP)**

- CDI is strongly associated with previous antibiotic use.
- ASP has demonstrated success in decreasing hospital-associated CDI, primarily through antibiotic restrictive strategies.
- Inappropriate or unnecessary use of all antibiotics should be targeted and minimized, especially empiric antibiotics.
- Implementation requires a multidisciplinary approach and collaboration.



## PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Gown and gloves should be worn when
  - Direct personal care is provided to a resident with CDI
  - o Direct contact with frequently touched environmental surfaces is expected
  - Handling contaminated objects/equipment
  - Handling soiled linen
- Same PPE **should not** be worn for more than one resident/client even when caring for more than one resident/client in a shared room.



## **ENVIRONMENTAL CLEANING**

- 1:10 dilution of freshly-mixed household bleach or approved sporicidal product should be used for *C. difficile* spores. Alcohol and common hospital disinfectants **are not** effective against spores.
- All horizontal and high-touch surfaces should be cleaned at least twice daily and when soiled.
- For LTCH, terminal cleaning of the room (or designated bedspace) and bathroom should be done.
- No special precautions are required for linen and routine practices are sufficient.



BLEACH

#### PROVINCIAL NOTIFICATION THRESHOLDS

- Confirmed outbreaks and outbreak-associated cases are designated as reportable in the province of Ontario.
- For wards/units with ≥20 beds: Three news cases of healthcare-related CDI identified on one ward/unit within a seven-day period, **OR** five new cases within a four-week period should trigger reporting to the local public health unit (PHU).
- For wards/units with <20 beds: Two cases of healthcare-related CDI identified on one ward/unit within a seven day period, or four cases within a four week period should be reported to local PHU.



## PROVINCIAL NOTIFICATION THRESHOLDS (CONT.)

#### OR

• Facilities that have a facility nosocomial CDI rate that exceeds their annual nosocomial baseline rate for a period of two consecutive months.



## **QUESTIONS?**

Please contact your RVH IPAC Hub liaison.

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