

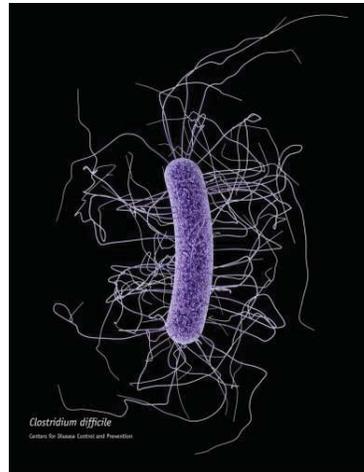
***Clostridium difficile* Infection (CDI) Surveillance: Application of the Case Definition in a Regional Health Authority in BC**

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Disclosures

The presenters have nothing to disclose.



Objectives

- To provide an overview of Fraser Health's (FH) *Clostridium difficile* infection (CDI) surveillance system; and
- To review the evaluation findings of adherence to the surveillance case definition for quality assurance purposes following the implementation of a new surveillance system.

***Clostridium difficile* (C. difficile)**

- Spore-forming bacteria
- Normal intestinal flora in 3-7% of healthy adults
 - 15-50% in admitted patients
- Only toxigenic *C. difficile* strains are pathogenic
- Clinical presentations range from mild episodes of diarrhea to severe outcomes such as colitis, toxic megacolon, and death.



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Risk Factors for Healthcare-associated CDI

- Advanced age and prolonged duration of hospitalization
- Use of antibiotics (in particular broad-spectrum antibiotics)
- Chemotherapy and Immunosuppressive therapy
- Gastrointestinal surgery or manipulation of the GI tract (i.e., tube feeding)
- Acid-suppressing medications (e.g., proton pump inhibitors)



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Challenges with CDI Surveillance

- CDI diagnosis is challenging due to a higher number of people with asymptomatic *C. difficile* colonization
- Risk of over-diagnosis if only testing with PCR
- Gold standard for CDI surveillance is a chart review to match clinical symptoms with laboratory results



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Fraser Health

- Covering an area that stretches from Burnaby to White Rock to Boston Bar
- Fraser Health serves 1.6 million people



Fraser Health (FH) CDI Surveillance System Objectives

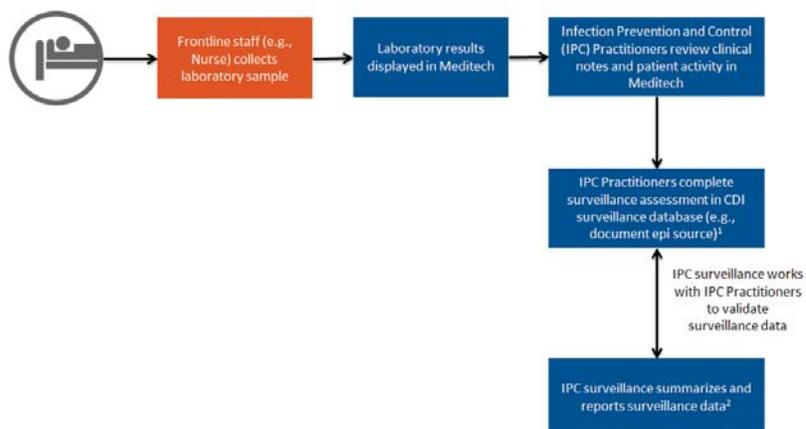
- To describe the contribution of CDI to the overall incidence of healthcare-associated infections (HAI) among admitted patients in Fraser Health acute care facilities according to the surveillance case definition;

AND

- To determine the rate and trend of CDI in Fraser Health acute care facilities in order to implement and evaluate preventative measures to reduce CDI and improve patient outcomes



CDI Surveillance Data Flow



¹ IPC Practitioners may need to follow-up with frontline staff
² IPC surveillance and IPC Practitioners communicate surveillance findings

Fraser Health's CDI Case Definition

The case definition of *Clostridium difficile* infection is met when **one** of the following criteria is met:

1. Laboratory confirmation by positive toxin and any one of the following:
 - a. Acute onset of diarrhea* above what is normal for the individual and cannot be attributed to another cause (e.g. laxatives, medication side effect, diet, or medical condition), **OR**
 - b. Diagnosis of toxic megacolon.



*defined as 3 or more unexplained liquid stools (that take the shape of the container/Bristol Stool Chart 6 - 7) that continue for a minimum of 24 hours

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Fraser Health's CDI Case Definition (continued)

2. Diagnosis of typical pseudo-membranous colitis on sigmoidoscopy, colonoscopy; **OR**
3. Histological/pathological diagnosis of CDI with or without diarrhea



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CDI Surveillance in Fraser Health

- A chart review and assessment of the case definition is completed for every lab confirmed *C. difficile* result
- ~10-40% of *C. difficile* positive laboratory results are deemed non-case after clinical review
- 80% of *C. difficile* tests are negative



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FH *C. difficile* Surveillance System

- An enhanced electronic system that includes a process to review cases and capture relevant clinical information
- Negative *C. difficile* lab results are stored
- Case definition is applied for all positive lab results



Case Definition Criteria:	Does not meet case definition (select all that apply):	
<input type="checkbox"/> 3+ liquid stools for minimum 24 hrs	<input type="checkbox"/> Medication side effect (excluding antibiotics)	<input type="checkbox"/> Medical condition (Please Specify)
<input type="checkbox"/> Diarrhea is above what is normal for individual	<input type="checkbox"/> Diet / tube feed	<input type="checkbox"/> Other reason case is invalid (Please Specify)
<input type="checkbox"/> Bristol stool chart 6-7 / Nurses Notes	<input type="checkbox"/> Laxative use	
<input type="checkbox"/> Toxic megacolon	<input type="checkbox"/> Collection site is O&O	
<input type="checkbox"/> Pseudomembranous colitis/ Pancolitis		
<input type="checkbox"/> Other Reason (Please Specify)		

Verify Case Save Case Close

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Facility-associated CDI Rates by Fiscal Year (FY), 2007-2017, FH



Data Source: Fraser Health CDI Surveillance Database

Evaluation of the Application of the CDI Case Definition

Objectives

1. To assess the quality of the application of the CDI case definition, and
2. To evaluate the review process of the new CDI surveillance system



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Methodology: Evaluation of the Application of the CDI Case Definition

- Conservative random sample of non-cases selected from fiscal periods 1 to 7, FY 2014/15
- Random sample of cases included to blind reviewer
- Experienced Infection Prevention and Control (IPC) acute care consultant reviewer
- Inter-rater reliability (Kappa statistic) calculated between the reviewer and the practitioners' original responses using Microsoft Excel 2010 and IBM SPSS 21



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CDI Case Review Results

Site	Total Records Sampled	Total Non-Cases	Total Cases	Total Records Assessed	Total Initial Discrepant	Total Non-Cases Changed to Case	% Change
1	18	14	2	16	3	0	0%
2	18	13	5	18	2	0	0%
3	6	6	0	6	0	0	0%
4	4	4	0	4	1	1	25%
5	16	6	8	14	6	0	0%
6	7	6	0	6	1	1	17%
7	13	9	2	11	4	1	9%
8	3	1	0	1	0	0	0%
9	12	10	0	10	1	0	0%
10	3	2	0	2	0	0	0%
11	21	18	0	18	4	2	11%
12	17	10	2	12	6	5	42%
13	29	24	3	27	3	1	4%
	167	123	22	145	31	11	8%

Results

- A portion of sampled records were not assessed by the reviewer (~13%)
- Case reviewer inquired with practitioner about rationale for initial decision
- Non-disclosure of case reviewer's decision
- Final decision established
- Case adjustment completed
 - Kappa: 0.75 (95% confidence interval: 0.59-0.92)



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Discussion

- Two sites experienced the highest number of non-agreement (43% and 50%, respectively)
- Eleven (8%) non-cases were changed to cases



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Challenges Identified by Reviewer

- Poor and unclear documentation of nursing/unit notes
- Bristol Stool Chart delayed; difficult for practitioners to assess patients
- Laxative use or dosages in the nursing notes/MAR missing or unclear for some of the patients



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Opportunities for Improvement: Stakeholders

- More detailed, legible and complete nursing notes
- Complete, accurate, and timely use of Bristol Stool Chart
- Improved documentation of laxative use and dosage



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Opportunities for Improvement: Infection Prevention and Control Practitioners

- Tube feeds make assessment of case definition difficult, however nutrition notes are a great resource for practitioners to review
- Colonized cases may require a follow-up review



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Opportunities for Improvement: Surveillance Actions

- Targeted education where required
- Case review findings were shared with the team
- Emphasis on consistent documentation about case assessment in the CDI database



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Next Steps for the IPC Surveillance Program

- Annual review of cases will continue
- Continued discussion about CDI surveillance with team
- Provision of material and training targeting assessment of case definition for patients with *C. difficile* positive results



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Summary

- Ample literature about *C. difficile* colonization and the potential of over-classifying infections
- Differing evidence about *C. difficile* colonization whether it be statistics, testing methods, protection/risk to a person, environmental impact, etc.
- Chart review is a valuable method to identify symptomatic patients who test positive for *C. difficile*



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Summary (continue)

- Rationale for both use of lab data and chart review for CDI surveillance depends on resources
- *C. difficile* poses a noticeable impact to patients, residents, people in the community
- *C. difficile* is complex and evolving



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THANK YOU! QUESTIONS?



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