Provincial Lab-Event Surveillance of *Clostridium difficile* Infection in Continuing Care (CC) Protocol

Approved by Provincial IPC Surveillance Committee: January 2016
Revised: April 2024

Alberta Health Services
Infection Prevention & Control

Contents

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Introduction

Clostridium difficile infection (CDI) is typically considered a healthcare-associated infection with outbreaks reported in hospitals in various provinces in Canada, including Alberta. In 2008, CDI was added to the list of diseases under national surveillance (notifiable diseases) by the Public Health Agency of Canada. The overall rate of CDI in Canada peaked in 2011 but has since decreased (Public Health Agency of Canada [PHAC], 2015).

Surveillance for CDI began at all acute and acute rehabilitation facilities in Alberta Health Services (AHS) and Covenant Health in April 2011. In continuing care (CC) facilities, CDI is the most common cause of acute infectious diarrhea (PHAC, 2013). CC residents' advanced age, frequent hospitalizations, longer hospital stays, comorbidities, and exposure to antibiotics make them vulnerable to *Clostridium difficile* acquisition and infection (Simor, 2010). The incidence of CDI in CC facilities is variable with higher rates reported in sub-acute units and lower rates reported in traditional nursing home units (PHAC, 2013; Chopra & Goldstein, 2015). A study conducted in New York state long-term care (LTC) facilities reported 18% of CDI cases in acute care were from LTC residents (Pawar et al., 2012). In addition, 52% of residents were positive for *Clostridium difficile* within 30 days of an acute care discharge; therefore, CDI surveillance in CC becomes an important post-discharge surveillance for on-going CDI surveillance in acute care settings in AHS/Covenant Health.

The National Healthcare Surveillance Network (NHSN) has proposed lab-event definitions to measure CDI in LTC facilities (Centers for Disease Control and Prevention, 2022). In that definition, CDI is related to hospital admission if it occurs in the first four weeks following discharge to LTC from acute care. CDI is considered LTC-related if it occurs more than four weeks following discharge to LTC from acute care.

Goals

1. Report CC CDI surveillance data to relevant local/zone/provincial stakeholders
    - Establish baseline rates in CC and specific CC sites;
    - Detect clusters/outbreaks within/across sites and within zones.
2. Determine the burden of CDI in Alberta CC facilities
    - Describe the epidemiology of CDI in CC and describe the contribution of acute care admission vs acquisition/transmission in CC;
    - Characterize the role of CC CDI in the provincial CDI picture;
    - Enhance post-discharge (from acute care) surveillance of CDI and related adverse outcomes.
3. Use CDI surveillance results to prevent infection and reduce patient morbidity, mortality and cost of care. Specific identified goals include:
    - Decrease burden of disease due to CDI and related complications in/arising in CC.
    - Identify opportunities for IPC intervention, including liaising with lab and/or antimicrobial stewardship committees and/or Public Health (through the Medical Officers of Health).

Surveillance population

All residents of AHS/Covenant Health CC facilities and their wholly owned subsidiaries are included in this surveillance, regardless of the care level of service they receive in these settings as long as they are recipients of continuing care programs.

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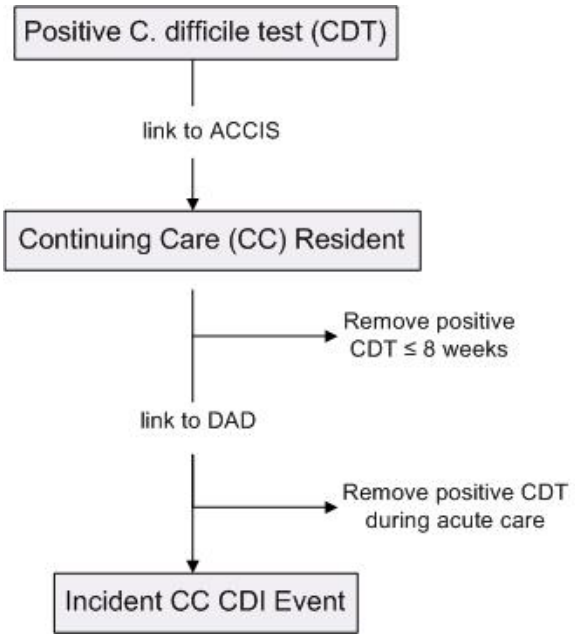
Methodology

Annually, the AHS IPC Surveillance and Standards team will be responsible to obtain all laboratory positive *Clostridium difficile* tests (CDT) collected during the reporting fiscal year from the AHS Laboratory Process Excellence Department. These data are linked to Alberta Continuing Care Information System (ACCIS) by Alberta Health to identify CC residents. CC residents with a positive CDT that meet case definition are included as a surveillance case (Incident CC CDI Event). Incident CC CDI events will be counted at maximum every eight weeks.

CC residents with laboratory positive CDTs will be linked to Discharge Abstract Database (DAD) by AHS Analytics to identify positive CDTs that occur during an acute care inpatient admission or within four weeks of discharge of an acute care admission. Incident CC CDI Events will be case classified as hospital-onset (HO), acute care-associated continuing care facility-onset (ACT-CCO), continuing care facility-onset (CCO), or community-onset (CO).

Provincial, zone, and operator level rates will be calculated and reported for Incident CC CDI Events.

Figure 1: Data linkage flowchart



Case definition

Incident CC CDI event

- Laboratory positive CDT obtained while receiving care as a CC resident;

and

- The first laboratory positive CDT captured for the CC resident or subsequent positive CDTs for the CC resident captured > 8 weeks after the most recent laboratory positive CDT.

Note: Laboratory positive CDTs obtained from outside facilities before a resident's admission or during an acute care admission should not be captured as Incident CC CDI Event.

Incident CC CDI case classification

All incident CC CDI Events will be case classified based on date of current admission to CC facility and specimen collection date. Calendar days are used to categorize incident CC CDI Events.

Hospital-onset (HO)

- Positive CDT collected ≤ 3 calendar days after discharge from AHS/Covenant Health acute care or acute tertiary rehab admission (i.e., days 1, 2, or 3 of admission).

Acute care-associated continuing care facility-onset (ACA-CCO)

- Positive CDT collected > 3 calendar days AND ≤ 4 weeks after discharge from an AHS/Covenant Health acute care or acute tertiary rehab admission.

Continuing care facility-onset (CCO-CDI)

- No AHS/Covenant Health acute care or acute tertiary rehab admissions in the four weeks prior to the positive CDT;

and

- Positive CDT collected > 3 calendar days from date of current admission to the CC facility (i.e., on or after day 4).

Community-onset (CO-CDI)

- No AHS/Covenant Health acute care or acute tertiary rehab admissions in the four weeks prior to the positive CDT;

and

- Positive CDT collected ≤ 3 calendar days from date of current admission to the CC facility (i.e., days 1, 2, or 3 of admission).

Adverse outcomes

All Incident CC CDI Events will be linked to vital statistics and DAD for adverse outcome follow-up.

- **30-day all-cause mortality:** All cases of death within 30 days of Incident CC CDI Event.
- **Admission to acute care facility:** Cases of acute care admission within 30 days of incident CC CDI Event.

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Data elements

AHS Laboratory Process Excellence Department

- Name (first, middle, last)
- Date of birth
- Gender
- PHN (or other ULI)
- Patient type
- Specimen collection date
- Specimen collection time
- Accession number
- Test result

Alberta Health, ACCIS

- Admit date(s)
- Discharge date(s)
- Name of CC facility

AHS Analytics, DAD

- Admit date*
- Discharge date*
- Name of facility

*Admit and discharge date for those positive CDTs that occurred during an acute care admission, prior admits that occurred within 4 weeks of positive CDT and admits that occur in the four weeks post positive CDT.

Alberta Health, Vital Statistics

- Death date

Denominator data

Numbers of resident-days are obtained from the AHS Analytics group. The data is abstracted from Admission, Discharge and Transfer (ADT) Data using a standard methodology and is provided to IPC.

Rate calculation

All incident CC CDI Events, regardless of case classification will be calculated as:	$\frac{\text{Number of incident CC CDI Events}}{\text{Number of resident-days}} \times 100{,}000 \text{ resident days}$

Reporting

Communication and dissemination of surveillance reports is an integral part of surveillance, to inform IPC practice within AHS/Covenant Health and provide support for interventions that improve the quality of patient care delivered. Responsibility for compiling, reporting, and disseminating data and reports is shared between AHS/Covenant Health IPC Surveillance and Standards and the AHS/Covenant Health IPC Program. AHS/Covenant Health IPC surveillance formal reports are distributed to local, zone and provincial clinical, IPC and administrative decision-makers following approval by the provincial IPC Surveillance, Evaluation, Quality Improvement and Research committee membership.

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Protocol revision history

Date	Details
January 2018	Protocol approved by Surveillance Committee.
June 2020	Updated to new template and reposted to web page.
April 2021	Updated references.
April 2022	Updated references.
April 2024	Updated references.

References

Centers for Disease Control and Prevention. (2022). National Healthcare Safety Network: Laboratory-identified Event Surveillance Protocol for *Clostridioides difficile* Infection and Multidrug-resistant Organism Events for Long-term Care Facilities. Retrieved April 2024, from http://www.cdc.gov/nhsn/pdfs/ltc/ltcf-labid-event-protocol_current.pdf

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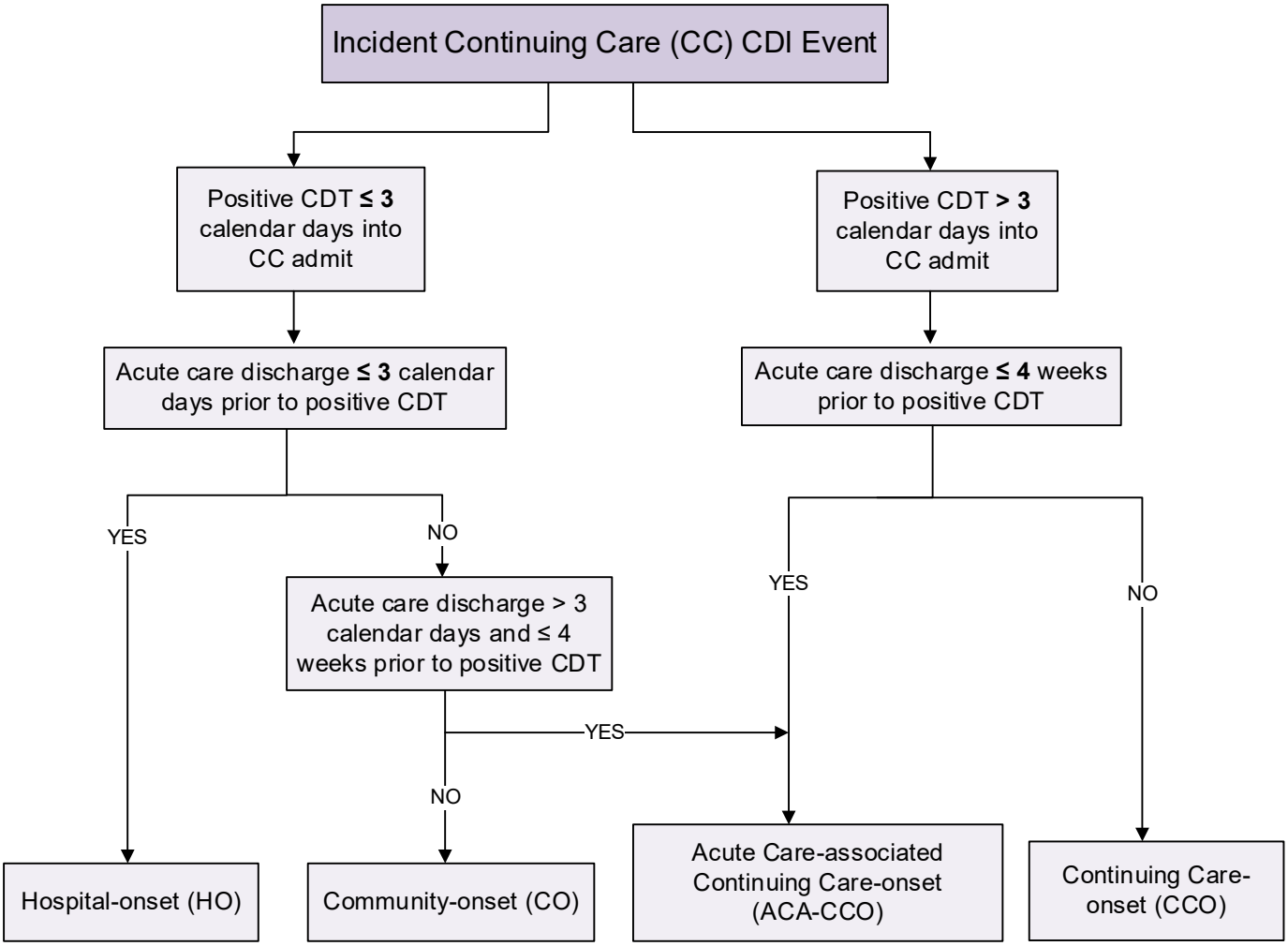
Appendix A: Incident CC CDI case classification algorithm



***CDT: *C. difficile* test**

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