# Recurrent Clostridioides difficile infection in Canadian acute-care hospitals, 2015-2021

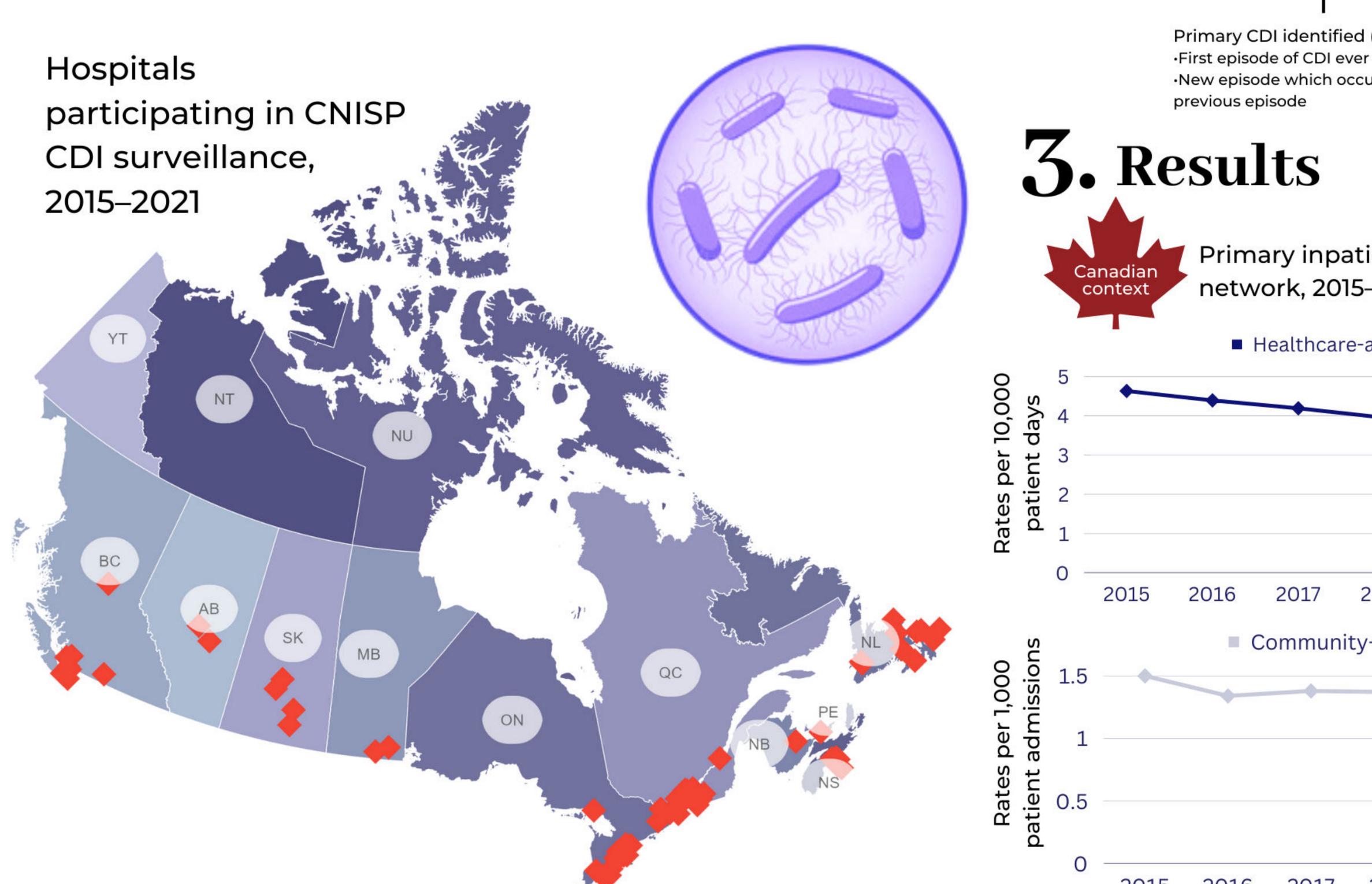
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### 1. Background

Recurrent Clostridioides difficile infection (rCDI) presents unique treatment challenges as up to 25% of all cases may result in a relapse, with more than half of these patients experiencing multiple recurrences

In this study, we describe the epidemiology and molecular characteristics of rCDI in hospitals participating in Canadian Nosocomial Infection Surveillance Program (CNISP) from 2015 to 2021



#### 2. Methods

- We included 350 rCDI cases from 4,023 primary CDI cases collected from 67 CNISP hospitals whose primary CDI occurred between March 1 to April 30 from 2015–2021
- C. difficile isolation was performed for primary cases using ethanol shock treatment, antimicrobial susceptibility using E-test, and molecular characterization using capillary gel-based electrophoresis ribotyping
- We compared epidemiological characteristics between recurrent and non-recurrent CDI with two-tailed differences considered significant at  $p \le 0.05$

From 2015 to

2021, HA-CDI

rates have

significantly

decreased by

23.5% (p=0.004)

while CA-CDI

rates have

remained stable

facility ≥72 hours (>3 calendar days) after

acility and discharged within the previous 4

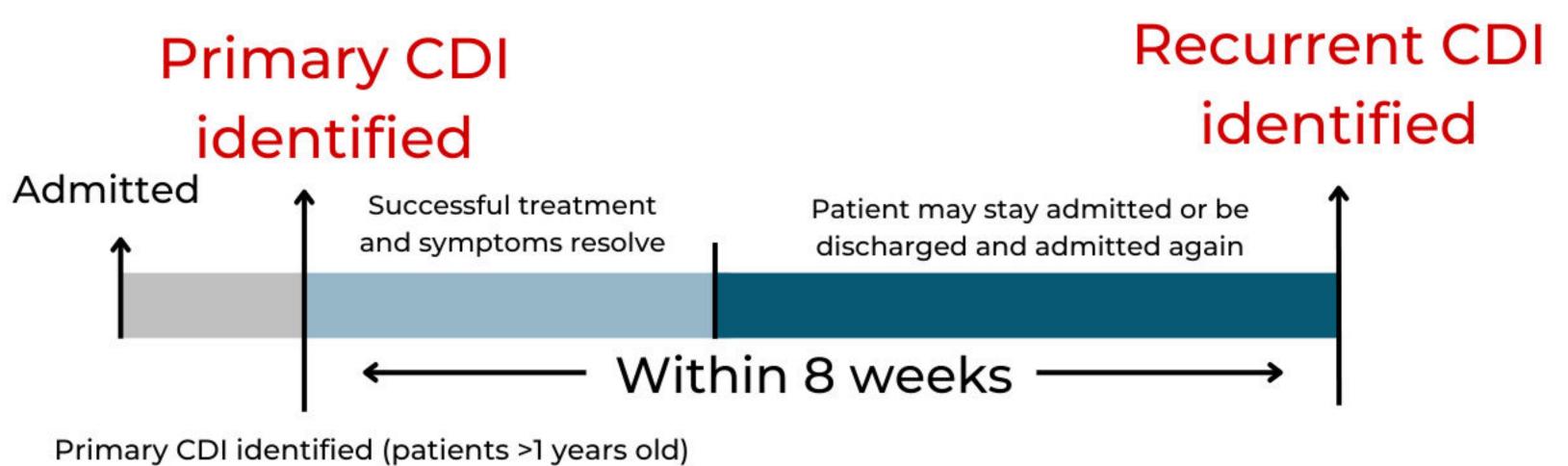
CDI symptoms occur <72 hours (<=3

calendar days) after admission, with no

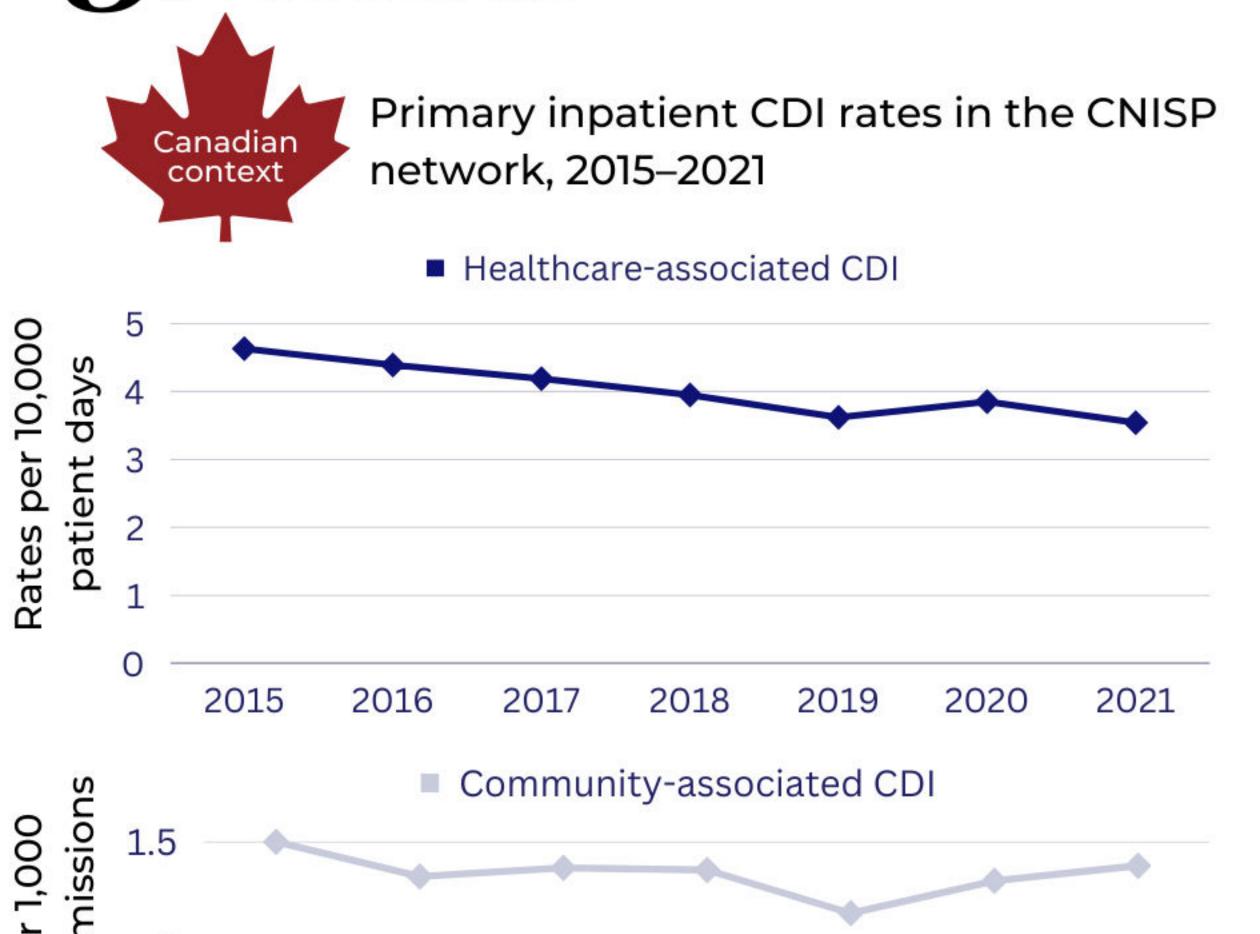
history of hospitalization or any other

healthcare exposure within the previous 12

#### Recurrent CDI case definition



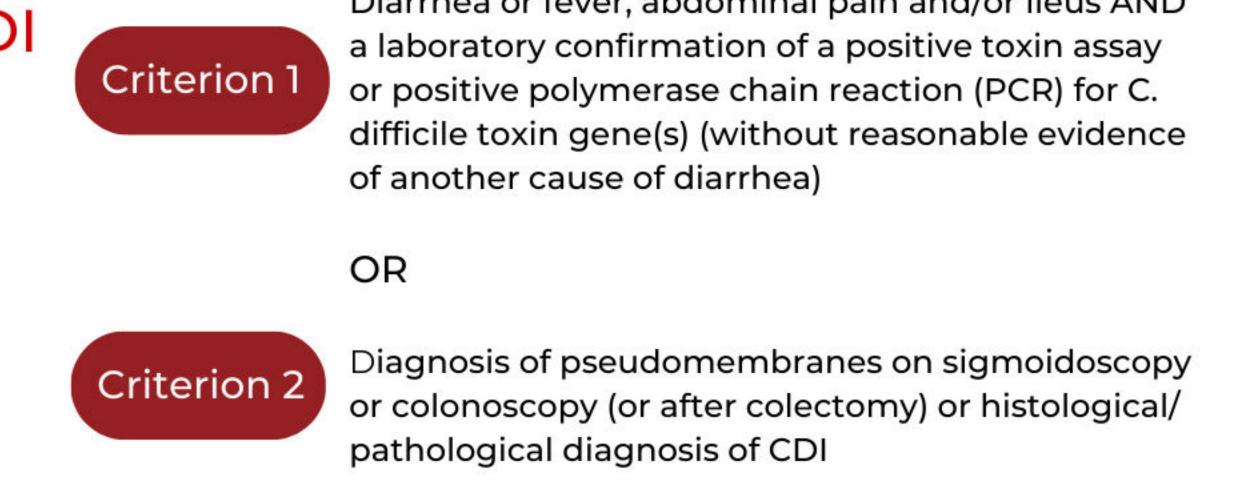
First episode of CDI ever experienced; or ·New episode which occurs >8 weeks after diagnosis of

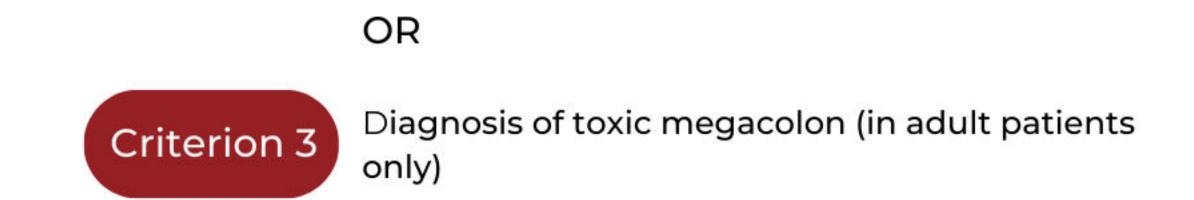




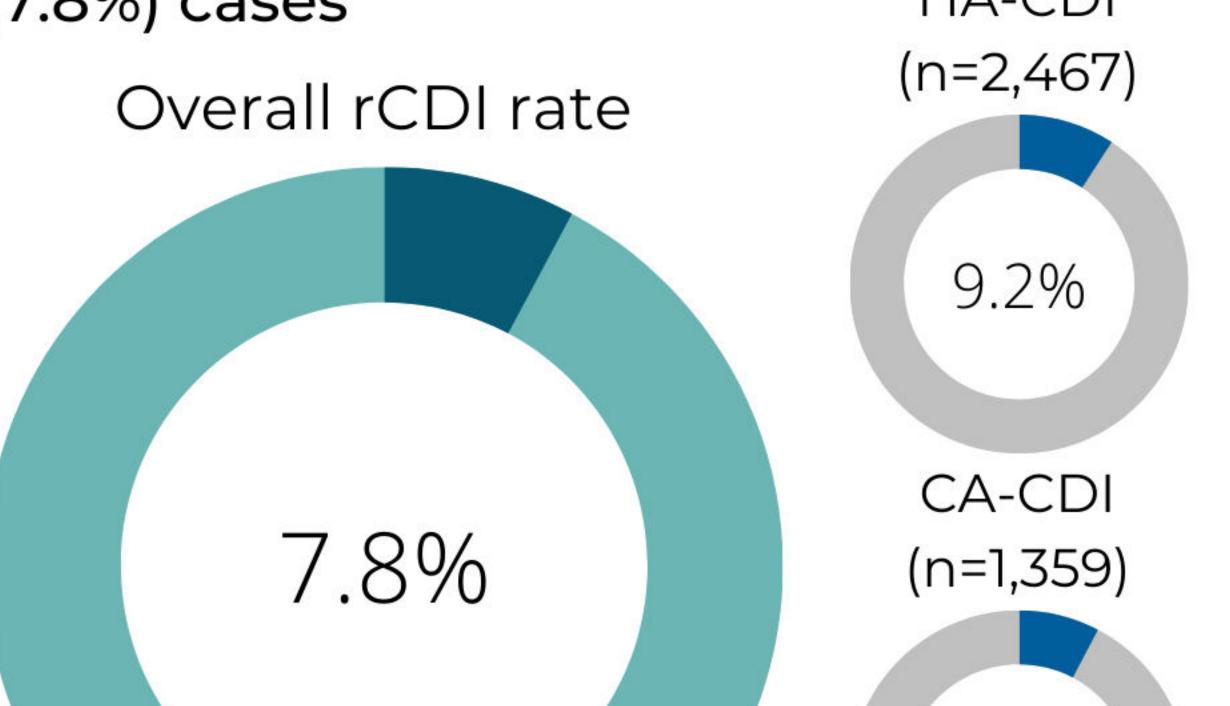
#### Diarrhea or fever, abdominal pain and/or ileus AND

CNISP CDI case criteria









HA vs. CA, p=0.131

healthcare settings

Public Health Agence de la santé Agency of Canada publique du Canada

## 3. Results (cont'd)

Primary CDI patient characteristics stratified by recurrent CDI status

	Characteristic	Recurrent CDI (n=350)	Non-recurrent CDI (n=3,673)	p
	Median age, years (IQR)	73 (57–83)	66 (50–78)	<0.001
	Sex, female, n (%)	188 (54%)	1857 (51%)	0.26
	30 day outcome, alive still in hospital, n (%)*	107 (35%)	542 (17%)	<0.0001
	Fecal microbiota transplant (FMT)*	3 (2%)	4 (0.2%)	0.0002

#### Recurrent CDI patient characteristics (n=350)

Median days from primary to rCDI

29 days (IQR: 22-40 days)

> rCDI 30-day all cause mortality

7.7% (n=21/274)\*

\*Seven deaths attributable to rCDI

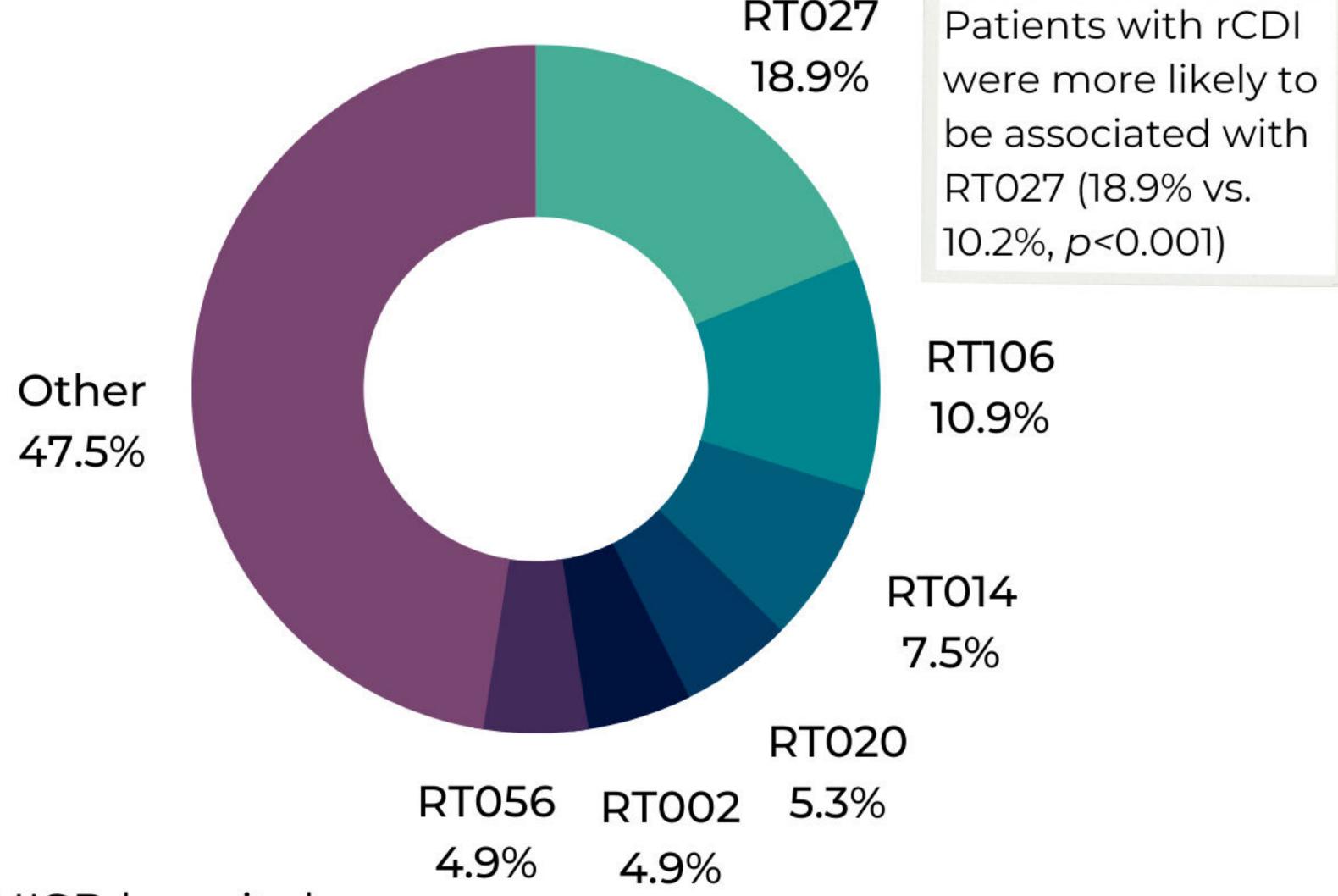
## 4. Laboratory results

Ribotyping and susceptibility data were available for 2,939 samples

- Reported moxifloxacin resistance (24.3% vs. 14.8%; p=0.0002) was significantly more common among rCDI cases
- All isolates were susceptible to metronidazole, tigecycline, and vancomycin

# resulting in recurrence (n=265)

Most common primary CDI ribotypes



#### 5. Conclusions

- The rCDI rate of 7.8% observed in CNISP hospitals were lower than previously published data
- Patients with rCDI were more likely to remain in hospital 30 days post primary infection
- FMT usage was scarce and represents a potential for increased utilization
- Understanding the epidemiology and molecular characteristic of rCDI is essential to assess and mitigate the incidence of rCDI in Canadian

#### Acknowledgements

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