

Presentation Type:

Poster Presentation

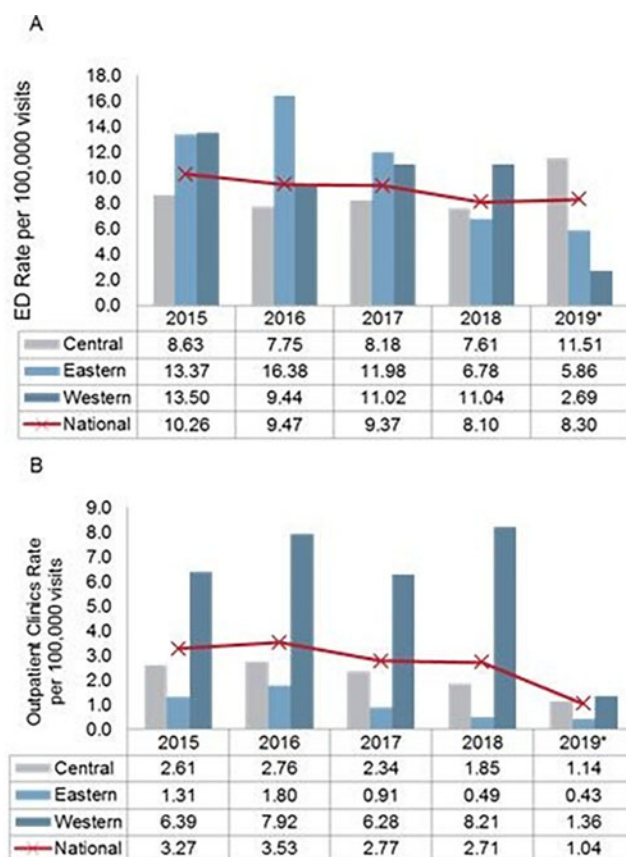
Epidemiological and Molecular Characterization of *Clostridioides difficile* Infection in Canadian Outpatient Settings, 2015–2019

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Women's Hospitals; Ghada Al-Rawahi, BC Children's Hospital; Paula Stagg, Western Memorial Regional Hospital; Jessica Minion, Regina Qu'Appelle Health Region, Regina, SK; Guanghong Han, Infection Prevention and Control Canada

Background: Healthcare services are increasingly shifting from inpatient to outpatient settings. Outpatient settings such as emergency departments (EDs), oncology clinics, dialysis clinics, and day surgery often involve invasive procedures with the risk of acquiring healthcare-associated infections (HAIs). As a leading cause of HAI, *Clostridioides difficile* infection (CDI) in outpatient settings has not been sufficiently described in Canada. The Canadian Nosocomial Infection Surveillance Program (CNISP) aims to describe the epidemiology, molecular characterization, and antimicrobial susceptibility of outpatient CDI across Canada. **Methods:** Epidemiologic data were collected from patients diagnosed with CDI from a network of 47 adult and pediatric CNISP hospitals. Patients presenting to an outpatient setting such as the ED or outpatient clinics were considered as outpatient CDI. Cases were considered HAIs if the patient had had a healthcare intervention within the previous 4 weeks, and they were considered community-associated if there was no history of hospitalization within the previous 12 weeks. *Clostridioides difficile* isolates were submitted to the National Microbiology Laboratory for testing during an annual 2-month targeted surveillance period.



*Data from Jan-Jun only.

Figure 1. Outpatient CDI rates by outpatient location, Canada, 2015–2019. **Panel A:** Emergency Department (ED), Rate per 100,000 visits; **Panel B:** Outpatient clinics, Rate per 100,000 visits.

National and regional rates of CDI were stratified by outpatient location. **Results:** Between January 1, 2015, and June 30, 2019, 2,691 cases of outpatient-CDI were reported, and 348 isolates were available for testing. Most cases (1,475 of 2,691, 54.8%) were identified in outpatient clinics, and 72.8% (1,960 of 2,691) were classified as community associated. CDI cases per 100,000 ED visits were highest in 2015, at 10.3, and decreased to 8.1 in 2018. Rates from outpatient clinics decreased from 3.5 in 2016 to 2.7 in 2018 (Fig. 1). Regionally, CDI rates in the ED declined in Central Canada and increased in the West after 2016. Rates in outpatient clinics were >2 times higher in the West compared to other regions. RT027 associated with NAP1 was most common among ED patients (26 of 195, 13.3%), whereas RT106 associated with NAP11 was predominant in outpatient clinics (22 of 189, 11.6%). Overall, 10.4% of isolates were resistant to moxifloxacin, 0.5% were resistant to rifampin, and 24.2% were resistant to clindamycin. No resistance was observed for metronidazole, vancomycin, or tigecycline. Compared to CNISP inpatient CDI data, outpatients with CDI were younger (51.8 ± 23.3 vs 64.2 ± 21.6 ; $P < .001$), included more females (56.4% vs 50.9%; $P < .001$), and were more often treated with metronidazole (63.0% vs 56.1%; $P < .001$). **Conclusions:** For the first time, CDI cases identified in outpatient settings were characterized in a Canadian context. Outpatient CDI rates are decreasing overall, but they vary by region. Predominant ribotypes vary based on outpatient location. Outpatients with CDI are younger and are more likely female than inpatients with CDI.

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Epidemiology of Positive Blood Cultures due to Multidrug-Resistant Organisms From an Academic Center and Community Hospitals

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Background: Multidrug-resistant organisms (MDROs) are a threat to public health. The objective of this study was to define risk factors and outcomes of patients with positive blood

cultures due to MDROs in 2 rural community hospitals as compared to a tertiary-care academic center. **Methods:** Retrospective cohort study with IRB approval from 1 tertiary-care academic center and 2 rural community hospitals (Barnes-Jewish [BJH], Parkland Health Center, and Missouri Baptist Sullivan Hospital) from July 1, 2013, to August 1, 2018. Demographics, comorbidities, procedures, outcomes, and blood and urine culture data were collected from the BJH informatics database for hospitalized patients with positive blood cultures due to MDROs. MDROs were defined according to European and US CDC standards. **Results:** Of the patients with positive blood cultures growing organisms with the potential to be MDR, 1,065 (55%) blood cultures grew MDROs from the academic center and 157 (33%) grew MDROs from the 2 community hospitals ($P < .0001$). Among these, methicillin-resistant *Staphylococcus aureus* (35% at BJH and 37% at community hospitals) and MDR *Enterobacteriaceae* (29% at BJH and 36% at community hospitals) were the most common organisms grown from blood cultures at all hospitals. Among patients with positive MDRO blood cultures, 60% were males and 69% were white, with a mean age of 58 years at BJH. At the community hospitals, 47% were male and 99% were white, with a mean age of 66 years. The most common comorbidity in patients with MDRO bacteremia at BJH was cancer, compared to diabetes at the community hospitals. At all hospitals, >33% of patients with MDRO bacteremia required an ICU stay. Also, 17% of patients with MDRO bacteremia at BJH died during hospitalization compared to 4% at the community hospitals. Among individuals with positive MDRO blood cultures, 9% had a matching isolate from a urine culture at BJH and 46% had a matching urine isolate at the community hospitals. **Conclusions:** At an academic medical center, the most common organisms identified in MDRO-positive blood cultures included MRSA, MDR *Enterobacteriaceae*, and VRE. However, at the community hospitals, MRSA, MDR *Enterobacteriaceae*, and ESBL *Enterobacteriaceae* were most common. Patients with a positive MDRO blood culture were more likely to have a matching isolate from urine culture at a community hospital compared to the academic center. Further research is needed regarding risk factors and interventions to prevent, detect, and treat MDRO infections.

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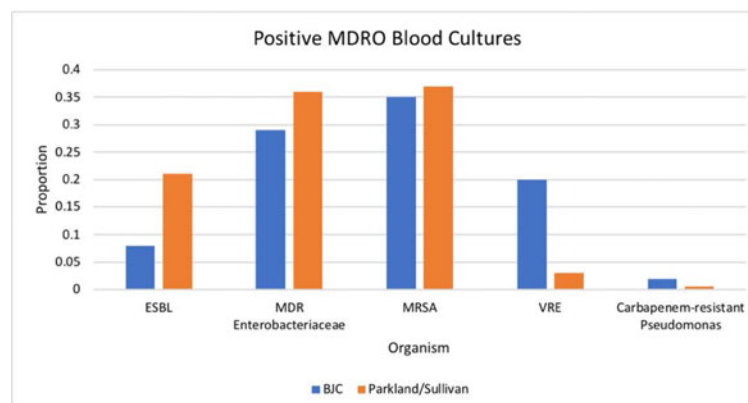


Fig. 1.