

## Hospital-Acquired *Clostridium difficile* Infections

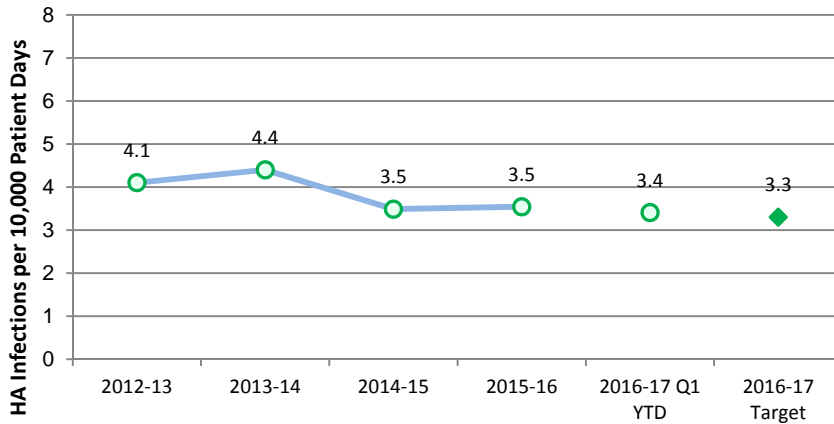
### Measure Definition

The number of *Clostridium difficile* infections (CDI) acquired in hospital for every 10,000 patient days. A rate of 4.0 means approximately 100 patients per month acquire CDI infections in Alberta. CDI infection cases include patients with a new infection or re-infection while in hospital. Patients are considered to have a CDI if they exhibit symptoms and confirmation by a laboratory test or colonoscopy. This measures safety.

### Understanding this Measure

Some individuals carry CDI in their intestines while others may acquire it while in hospital. CDI is the most frequently identified cause of hospital-acquired diarrhea. This infection complicates and prolongs hospital stays and impacts resources and costs in the health care system. Monitoring CDI trends provides important information about effectiveness of infection prevention and control strategies. NOTE: This measure is reported a quarter later due to the requirement to follow up with patients after the end of the reporting quarter.

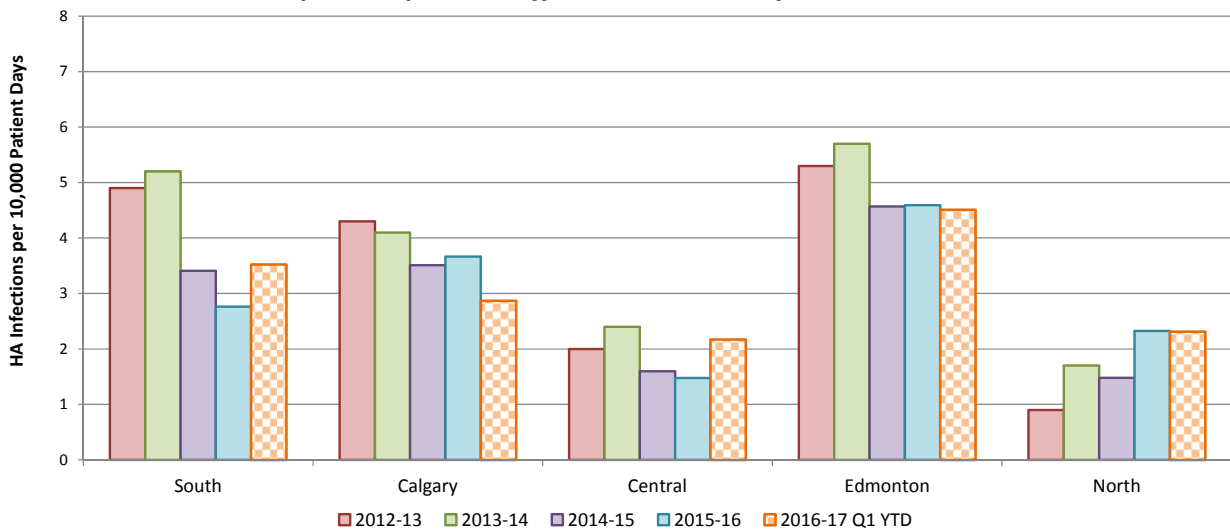
### Hospital-Acquired *C-Difficile* Rate - Annual



### How Do We Compare?

According to the Canadian Nosocomial Infection Surveillance Program based on 62 participating major Canadian hospitals, the Western region which includes Alberta has a lower rate of infections than the country overall. Alberta is performing better than the national average of 4.34 in 2014.

### Hospital-Acquired *C-Difficile* Infections - By Zone



## Hospital-Acquired Infections

### ACTIONS

Phase 1 of the Patient Clinical Equipment Program is being implemented at nine sites (Royal Alexandra Hospital, Glenrose Rehabilitation Hospital, University of Alberta Hospital, Sturgeon Community Hospital, Medicine Hat Regional Hospital, Chinook Regional Hospital, QEII Hospital, Northern Lights Regional Hospital, and Red Deer Regional Hospital).

All zones continue to implement the antimicrobial stewardship strategy. Zone Antimicrobial Stewardship working groups will review the defined daily dose/100 patient days for select antibiotics.

South Zone is implementing the *Clostridium difficile* infections (CDI) toolkit.

Calgary Zone is increasing the use of the CDI order set including the use of a CDI smartphone application by physicians to guide physicians when ordering antibiotics. Alberta Children's Hospital is developing and implementing guidelines for antibiotic use in several conditions (e.g. pneumonia, meningitis).

Central Zone is evaluating the use of CDI toolkit components across acute care facilities. They are also using tools to reduce CDI with a focus on equipment cleaning of Personal Protective Equipment and waste management.

Edmonton Zone is targeting units at the Stollery Children's Hospital with high infection rates with antimicrobial stewardship education. The zone is piloting a compact portable disinfection system at Royal Alexandra Hospital to help mitigate physical barriers to improving CDI and is also conducting a trial of enhanced room disinfection on the burn unit.

North Zone will roll out the CDI patient orders and care map across the zone.

In AHS, there are established protocols for the cleaning of patient care areas which include increased cleaning for isolation rooms and focused attention on cleaning of shared patient equipment. Current initiatives in environmental services include: cleanliness audits with real-time reporting to support best practice in cleaning, introduction of designated equipment cleaners with accountability for cleaning of shared patient equipment such as wheelchairs, stretchers, IV poles, vital sign monitors, etc., and a pilot project using room disinfection technology.

### SUMMARY

*The most recent data for this measure is a quarter behind. This analysis is based on Q1 2016-17.* Q1 results indicate that the CDI rate deteriorated in three zones (South, Central and North), and overall provincial rates are slightly higher than target. Calgary and Edmonton Zones showed improvement. In the South Zone, the rate was higher than normal and represents cases of CDI at one of the regional hospitals. Central Zone had a small increase in cases occurring at two rural hospitals. North Zone performance deteriorated due to a new strain of CDI (NAP1) which has created challenges in slowing the spread of CDI. One site experienced a CDI outbreak in 2015-16, resulting in an increase for the zone; however, the other sites showed an overall improvement in 2015-16.

At targeted sites and zones, work is underway by the Antimicrobial Stewardship committees to implement CDI toolkits. These toolkits include pre-printed care orders, environmental cleaning protocols, nursing checklist and a management flow map. Cases of CDI are reviewed by IPC and Pharmacy to ensure proper treatment, order set use, use of precautions, cleaning, and appropriate antibiotic and proton pump inhibitor de-escalation to evaluate the use of the CDI toolkit components.

### DID YOU KNOW

AHS Infection Prevention and Control works collaboratively with physicians, staff and public health by providing *C. difficile* rates and assisting with intervention and control strategies.

**Antimicrobial stewardship** is the practice of minimizing the emergence of antimicrobial resistance by using antibiotics only when necessary and, if needed, by selecting the appropriate antibiotic at the right dose, frequency and duration to optimize outcomes while minimizing adverse effects.

Current Canadian Standards for construction of healthcare facilities advocate for the use of **single-patient rooms** and new acute care facilities in Alberta are being designed in alignment with these standards. However, in our existing healthcare facilities there are predominately multi-patient rooms, with four patients sharing a single bathroom. Clean patient care environments are so important.

## Hospital-Acquired Infections

The number of *Clostridium difficile* infections (C-diff) acquired in hospital for every 10,000 patient days. A rate of 4.0 means approximately 100 patients per month acquire C-diff infections in Alberta.

Hospital Acquired <i>C-Difficile</i> Infections	2013-14	2014-15	2015-16	Q1 YTD		Trend	2016-17 Target
				2015-16 Last Year	2016-17 Current		
<b>Trend:</b> ★ Achieved Target, ✓ Stable or better than prior period, ✗ Area requires additional focus							
<b>Provincial</b>	4.4	3.5	3.5	3.3	3.4	✗	3.3
<b>South Zone Total</b>	5.2	3.4	2.8	1.3	3.5	✗	2.8
Chinook Regional Hospital	7.5	5.4	4.4	2.2	6.5	✗	4.4
Medicine Hat Regional Hospital	2.8	1.7	1.3	1.0	1.1	★	1.3
All Other Hospitals	4.3	2.0	1.9	0.0	1.0	★	1.9
<b>Calgary Zone Total</b>	4.1	3.5	3.7	3.6	2.9	★	3.4
Alberta Children's Hospital	3.5	1.4	4.1	3.7	1.8	★	3.5
Foothills Medical Centre	5.4	5.2	4.6	4.7	4.9	✗	4.8
Peter Lougheed Centre	3.4	2.8	3.7	3.4	1.0	★	2.7
Rockyview General Hospital	4.0	3.2	3.4	3.2	2.7	★	3.0
South Health Campus	N/A	2.3	2.6	2.9	1.3	★	2.2
All Other Hospitals	1.5	0.9	1.2	0.9	0.9	★	1.8
<b>Central Zone Total</b>	2.4	1.6	1.5	1.1	2.2	✗	1.5
Red Deer Regional Hospital Centre	3.3	3.1	2.5	1.3	2.8	★	2.8
All Other Hospitals	2.0	1.0	1.0	1.1	1.9	✗	1.0
<b>Edmonton Zone Total</b>	5.7	4.6	4.6	4.8	4.5	✓	4.3
Grey Nuns Community Hospital	5.9	3.5	3.5	3.5	3.8	✗	3.4
Misericordia Community Hospital	6.3	3.9	4.1	3.0	8.2	✗	3.5
Royal Alexandra Hospital	7.3	6.7	6.8	7.2	5.8	★	6.1
Stollery Children's Hospital	3.1	4.0	5.9	6.0	1.0	★	4.0
Sturgeon Community Hospital	9.3	6.0	7.4	12.8	5.9	✓	5.3
University of Alberta Hospital	8.6	7.1	5.9	5.0	6.2	★	6.9
All Other Hospitals	1.9	1.4	1.8	2.2	1.6	✓	1.3
<b>North Zone Total</b>	1.7	1.5	2.3	1.3	2.3	✗	1.4
Northern Lights Regional Health Centre <sup>+</sup>	0.7	2.0	0.7	1.3	0.0	★	1.0
Queen Elizabeth II Hospital	3.0	1.2	2.6	2.2	0.8	★	1.7
All Other Hospitals	1.5	1.5	2.5	1.0	3.0	✗	1.4

N/A: No results available. South Health Campus opened February 2013.

<sup>+</sup> North Zone results have been impacted by the temporary closure of Northern Lights Regional Hospital and displacement in Fort McMurray due to the wildfires in Q1.

Number of Cases	2013-14	2014-15	2015-16	Q1 YTD	
				2015-16 Last Year	2016-17 Current
<b>Provincial</b>	1,265	1,065	1,082	254	256
South Zone	101	69	59	7	18
Calgary Zone	374	353	368	89	71
Central Zone	100	68	63	12	23
Edmonton Zone	650	539	535	138	131
North Zone <sup>+</sup>	40	36	57	8	13

<sup>+</sup> North Zone results have been impacted by the temporary closure of Northern Lights Regional Hospital and displacement in Fort McMurray due to the wildfires in Q1.