

Healthcare-associated infections surveillance report

Carbapenemase-producing organisms (CPO) update

September 2016

Highlights for Q4 2015/16 (December 4, 2015 – March 31, 2016)

- 32 new cases of CPO were identified among patients in BC acute care facilities in Q4
- NDM was the most common gene identified (16/32 cases, 50.0%)
- 24 cases (75.0%) reported healthcare exposure outside Canada. No known risk factors were identified among 6 cases (18.9%)

Carbapenems are a class of antibiotic usually reserved to treat serious infections, and are often considered one of the antibiotic treatments of last resort. However, over the last decade, some bacteria have developed resistance to carbapenems by producing an enzyme (carbapenemase) that breaks down the structure of these antibiotics. These antibiotic-resistant bacteria are called carbapenemase-producing organisms (CPO). CPOs can arise through the acquisition of carbapenemase genes from other bacteria. Some common examples of these genes are the New-Delhi Metallo- β -lactamase (NDM) and *Klebsiella pneumoniae* carbapenemase (KPC).

CPOs usually spread person-to-person through contact with infected or colonized people, or via contaminated surfaces or medical equipment. Many people with CPOs have the bacteria in or on their body without causing symptoms (this is called colonization). Others may have infections in various body sites (such as bloodstream, urinary tract, surgical site, etc.), with very limited antibiotic treatment options, and consequently poor clinical outcomes. Actions that can help prevent the spread of CPOs include screening patients for CPO, good hand hygiene by both healthcare workers and patients, and careful cleaning and disinfection of rooms and medical equipment.

Since 2010, the British Columbia Centre for Disease Control's Public Health Laboratory (BCCDC PHL), the microbiology laboratories in healthcare facilities and communities, and infection prevention and control have been working collaboratively on testing for and monitoring CPOs in the province. Following an outbreak of CPOs in a BC hospital in February 2014, a provincially mandated active surveillance program for CPO was established in BC's acute care facilities. Since July 2014, all laboratory isolates recovered from patient specimens that are suspected of harbouring a carbapenemase gene are submitted to BCCDC PHL for confirmatory testing. If an isolate from a patient in an acute care facility is identified with a carbapenemase gene for the first time or with a new carbapenemase gene, it is considered to be a new case of CPO, and is reported to the Provincial Infection Control Network of BC (PICNet).

This report summarizes the new cases of CPO identified in BC acute care facilities during fiscal quarter 4 (Q4, December 4, 2015 – March 31, 2016) of fiscal year 2015/16. Thirty-two new cases of CPO were identified in Q4. Of these, 27 (84.4%) were identified in Fraser Health and 5 (15.6%) in Vancouver Coastal Health.

In terms of carbapenemase genes, NDM accounted for 50.0% (16/32) of new CPO cases, followed by OXA-48 (9, 28.1%), KPC (5, 15.6%), SME (1, 3.1%) and one other gene (3.1%).

New cases were investigated for the risk factors that may contribute to CPO transmission in the past twelve months, including healthcare encounters outside of Canada (e.g. overnight hospitalization, certain medical or surgical procedures), close contact with a CPO patient or the patient's environment, transfer from a unit which was under investigation for CPO transmission, and CPO transmission within the reporting facility. Of the 32 new cases in Q4, 24 (75.0%) reported healthcare exposure outside Canada. Other risk factors were identified among four cases (12.5%, including double counting if multiple risk factors were identified in one case). Six cases (18.9%) had no known risk factors, meaning that the source of their CPO transmission could not be identified.

Number of new cases of CPO identified in BC acute care facilities by carbapenemase gene

(Q4: December 4, 2015 – March 31, 2016)*

Health authority	NDM	OXA-48	KPC	SME	Other	Total
Fraser Health	15	8	3	1	0	27
Interior Health	0	0	0	0	0	0
Island Health	0	0	0	0	0	0
Northern Health	0	0	0	0	0	0
Vancouver Coastal Health	1	1	2	0	1	5
Provincial Health Services Authority	0	0	0	0	0	0
Subtotal Total in Q4	16	9	5	1	1	32
Total in 2015/16	51	19	14	1	9	94

* based on the date of specimen collection from which a CPO gene was identified. The number of CPO cases includes new CPO cases identified among inpatients in acute care facilities or hemodialysis patients only. The isolates recovered from outpatients or residents in residential care facilities, or submitted by community laboratories were excluded.

For more information about CPO and the provincial surveillance program, please visit the PICNet website at <https://www.picnet.ca/surveillance/cpo>.