

Healthcare-associated infections surveillance report

Carbapenemase-producing organisms (CPO) update

January 2016

Highlights for Q2 of Fiscal Year 2015/16 (June 19 – September 10, 2015)

- CPOs are an important emerging medical concern in healthcare settings
- 21 new cases of CPO were identified among patients in BC acute care facilities in Q2
- NDM was the most common gene identified (13/21 cases, 61.9%)
- 8 cases (38.1%) reported healthcare exposure outside Canada and 7 cases (33.3%) had contact with known CPO cases

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). The NDM genes were first identified from people who had healthcare exposure in South Asia, and are considered common in some healthcare settings. KPC-producing organisms were first identified in the US, and are now regularly found in many countries.

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 poor clinical outcomes. Good hand hygiene by both healthcare workers and patients, and careful cleaning and disinfection of rooms and medical equipment, can help prevent the spread of CPOs.

CPOs have been identified more frequently in healthcare settings in recent years. Since 2010, the British Columbia Centre for Disease Control's Public Health Laboratory (BCCDC PHL), along with the microbiology laboratories in healthcare facilities and communities, have been working collaboratively on testing for and monitoring CPOs in the province. Following an outbreak of CPOs in a 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 2 (Q2, June 19 – September 10, 2015) of FY 2015/16. Twenty-one new cases of CPO were identified in Q2. Of these, 17 were identified in Fraser Health, 2 in Island Health, and 2 in Vancouver Coastal Health. NDM (13/21, 61.9%) was the most common gene identified. KPC accounted for 5 cases (23.8%) and OXA-48 for 3 cases (14.3%). Eight cases (38.1%) reported healthcare exposure (e.g. overnight hospitalization, certain medical or surgical procedures) outside Canada, and one of them also had hemodialysis outside Canada. Seven cases (33.3%) had close contact with a known CPO patient(s) in the past twelve months. No specific risk factors were identified in five cases (23.8%).

A total of 42 new cases of CPO have been identified in BC acute care facilities from April 1 to September 10, 2015 (Q1 and Q2 2015/16).

Number of new cases of CPO identified in BC acute care facilities by carbapenemase gene
(Q2 - June 19 – September 10, 2015)*

Health authority	NDM	OXA-48	KPC	Other	Total
Fraser Health	11	3	3	0	17
Interior Health	0	0	0	0	0
Island Health	1	0	1	0	2
Northern Health	0	0	0	0	0
Vancouver Coastal Health	1	0	1	0	2
Provincial Health Services Authority	0	0	0	0	0
Subtotal Total in Q2	13	3	5	0	21
Total in 2015/16	24	6	6	6	42

* 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 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>.