

# Healthcare-associated infections surveillance report

## Carbapenemase-producing organisms (CPO)

December 2015

### Highlights for Q1 of Fiscal Year 2015/2016 (April 1 – June 18, 2015)

- CPOs are an important emerging medical concern in healthcare settings
- 21 new cases of CPO were identified among patients in Q1 in BC acute care facilities
- NDM was the most common gene identified (11/21 cases, 52.4%)
- 17 cases (81.0%) reported healthcare exposure outside Canada

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- $\beta$ -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 BC Public Health Laboratory (BCPHL), 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 BCPHL 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 (PICNet).

This report summarizes the new cases of CPO identified in BC acute care facilities during fiscal quarter 1 (Q1, April 1 – June 18, 2015). A total of 21 new cases of CPO were identified in Q1. Of these, 12 were identified in Fraser Health, 1 in Interior Health, and 8 in Vancouver Coastal Health. NDM (11/21, 52.4%) was the most common gene identified, followed by OXA-48 (3/21, 14.3%). Seventeen cases (81.0%) reported healthcare exposure (e.g. overnight hospitalization, certain medical or surgical procedures) outside Canada, and one of them also had hemodialysis outside Canada. One case (4.8%) had close contact with a CPO patient in the past twelve months. Four cases (19.0%) were transferred from another healthcare facility prior to CPO identification. No specific risk factors were identified in three cases (14.3%).

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

Health authority	Q1 (April 1 – June 18, 2015)*				Total
	NDM	OXA-48	KPC	Other	
Fraser Health	10	1	1	0	12
Interior Health	0	1	0	0	1
Island Health	0	0	0	0	0
Northern Health	0	0	0	0	0
Vancouver Coastal Health	1	1	0	6	8
Provincial Health Services Authority	0	0	0	0	0
<b>Total</b>	<b>11</b>	<b>3</b>	<b>1</b>	<b>6</b>	<b>21</b>

\* 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>.