PICNet
PROVINCIAL INFECTION CONTROL NETWORK OF BRITISH COLUMBIA
A program of the Provincial Health Services Authority

PHSA Laboratories
Public Health Microbiology & Reference Laboratory

Healthcare-associated infections surveillance report

Carbapenemase-producing organisms (CPO)

September 2015

Highlights for Q4 of Fiscal Year 2014/2015 (December 5, 2014 – March 31, 2015)

- CPOs are an important emerging medical concern in healthcare settings
- A provincially mandated surveillance program for CPO was implemented in July 2014
- 28 new cases of CPO were identified among patients in Q4 in BC acute care facilities
- NDM was the most common gene (13/28) identified
- 22 cases 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. Recently, some bacteria have developed resistance to carbapenems by producing an enzyme (carbapenemase) that breaks down the structure of these antibiotics. These very 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 pneumonia* 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 CPO will have the germ in or on their body without causing symptoms (this is called colonization). Others may have infections in their body sites (such as bloodstream, urinary tract, surgical site), 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 Microbiology and Reference Laboratory (BCPHMRL), 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 CPO identified 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 BCPHMRL 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 4 (Q4, December 5, 2014 – March 31, 2015). A total of 28 new cases were identified in Q4. Of these, 16 were identified in Fraser Health, 7 in Island Health, and 6 were in Vancouver Coastal Health. NDM was the most common gene identified (13/28), followed by OXA-48 (6/28). Twenty-two cases reported healthcare exposure (e.g. overnight hospitalization, certain medical or surgical procedures) outside Canada, and two cases had close contact with a CPO patient in the past six months, with no specific factors identified in the remaining cases.

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

Health authority	**Q4** (2014/12/5 – 2015/3/31)							**Total to date** (2014/07/18 - 2015/3/31)
	NDM	KPC	OXA-48	VIM	SME	Other	**Subtotal**	
Fraser Health	6		5		1	4	**16**	**31**
Interior Health							**0**	**0**
Island Health	3		1	1		2	**7**	**7**
Northern Health							**0**	**0**
Vancouver Coastal Health	4	1					**5**	**11**
Provincial Health Services Authority							**0**	**0**
Subtotal in Q4	**13**	**1**	**6**	**1**	**1**	**6**	**28**	
Total to date (2014/07/18 -2015/3/31)	**30**	**4**	**7**	**1**	**1**	**6**		**49**

Note: The data were based on the first CPO-positive isolate that was submitted by the microbiology laboratory in the hospital. Those isolate from outpatients, or submitted by the community laboratory, or with the same CPO gene recovered from the same patient, were not included.

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