Appendix B: Provincial Case Definitions for Diseases of Public Health Significance

Disease: Carbapenemase-producing Enterobacteriaceae (CPE) infection or colonization

Effective: February 2019
Carbapenemase-producing Enterobacteriaceae (CPE) infection or colonization

1.0 Provincial Reporting
Confirmed cases of colonization or infection

2.0 Type of Surveillance
Case and outbreak level data (see Outbreak Definitions)

3.0 Case Classification

3.1 Confirmed Case
Laboratory confirmation of CPE by an Ontario microbiology laboratory.
Both colonization detected from active screening and clinical infections are considered confirmed cases of CPE. All confirmed cases of CPE require investigation to determine if nosocomial transmission of CPE has occurred, and to identify the source of transmission.

The first positive isolate from any individual identified as colonized or infected with CPE is reportable. Subsequent positive isolates from the same patient are reportable only if the patient tests positive for a different CPE (i.e., different carbapenemase).

3.2 Outbreak Definitions

3.2.1 Suspect Outbreak Definition
An outbreak may be suspected in a health care facility if:

Two or more patients with CPE with the same carbapenemase (not known to be colonized or infected prior or upon admission) are reported on the same ward/unit(s) in a three-month period;

OR

Three or more patients with CPE with the same carbapenemase (not known to be colonized or infected prior or upon admission) are reported at the same health care facility or institution in a three-month period.

Whenever an outbreak is suspected, point prevalence screening should be performed on the ward/unit(s) where the case originated.
3.2.2 Confirmed Outbreak Definition

An outbreak is confirmed in a health care facility if:

Evidence of transmission between patients is identified;

OR

An epidemiological link between patients is identified;

OR

The health care facility/institution considers, based on their policies, transmission has occurred between suspected or confirmed cases, or if the incidence of CPE at the facility is higher than expected even without a clear link between patients.

4.0 Laboratory Evidence

4.1 Laboratory Confirmation

CPE isolated by culture from any human specimen (clinical or screening specimen) tested in an Ontario microbiology laboratory

OR

Positive nucleic acid amplification technique (NAAT) results for CPE from any human specimen (clinical or screening) tested in an Ontario microbiology laboratory

4.2 Approved/Validated Tests

Any validated test approved for CPE culture or NAAT by an Ontario microbiology laboratory.

Note: The first isolate from any individual identified as colonized or infected with CPE should be forwarded to Public Health Ontario Laboratory (PHOL).

4.3 Indications and Limitations

- Not all carbapenem resistant organisms are due to a carbapenemase;
- In carbapenem resistant isolates, the presence of a carbapenemase must be confirmed by a laboratory before CPE is reported;
- Carbapenemase genes may also be found in other gram-negative bacteria, including Acinetobacter and Pseudomonas spp.
- Most carbapenemase testing is limited to identification of known carbapenemases. Novel/currently unknown carbapenemases will not be detected by existing genotypic (e.g. PCR) laboratory testing methods.

5.0 Clinical Evidence

All CPE colonizations and infections are reportable. CPE are associated with a wide range of infections, including, but not limited to, pneumonia, bloodstream infections,
intra-abdominal infections, urinary tract infections, and central venous catheter infections.

6.0 Comments

- Declaration of an outbreak can be made by either the institution/health facility or the medical officer of health (MOH).
- In the event of a disagreement between the institution/health facility and the MOH, the MOH has the authority to determine if an outbreak of a communicable disease exists, for purposes of exercising statutory powers under the *Health Protection and Promotion Act*. Once an outbreak is declared, it is reported to the Ministry through the integrated Public Health Information System (iPHIS).
- The board of health shall declare whether an outbreak is over, in consultation with the institution/facility. Rationale for declaring or not declaring an outbreak, and declaring an outbreak over should be documented.
- Issuing a media release to the public is the responsibility of the institution or health facility. Should there be a public health risk to the general population, a joint media alert may be issued, or the board of health may issue an alert on behalf of the institution or health facility with their knowledge.

7.0 Sources


8.0 Document History

Table 1: History of Revisions

<table>
<thead>
<tr>
<th>Revision Date</th>
<th>Document Section</th>
<th>Description of Revisions</th>
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<tbody>
<tr>
<td>March 2018</td>
<td>Entire appendix</td>
<td>CPE was designated as a disease of public health significance effective May 1, 2018.</td>
</tr>
<tr>
<td>Revision Date</td>
<td>Document Section</td>
<td>Description of Revisions</td>
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<tr>
<td>February 2019</td>
<td>General</td>
<td>Minor revisions were made to support the regulation change to Diseases of Public Health Significance.</td>
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