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## IS0300A Carbapenemase Producing Organisms (CPOs)

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### 1.0 PURPOSE

To prevent transmission of CPOs (Carbapenemase Producing Organisms) in hospitals, residential care homes and community settings.

### 2.0 DEFINITIONS

**CPO** – Carbapenemase-Producing Organism refers to bacteria that are resistant to carbapenems – a class of antibiotic usually reserved to treat serious infections. These resistant bacteria produce an enzyme (carbapenemase) that breaks down the structure of the carbapenem antibiotics, making infections very difficult to treat. CPOs can arise through the acquisition of carbapenemase genes from other bacteria. Some examples of these genes are the New-Delhi Metallo- $\beta$ -lactamase (NDM) and *Klebsiella pneumoniae* carbapenemase (KPC).

Many people with a CPO harbor the bacteria without causing symptoms (colonization). Others may have an infection in their bloodstream, urinary tract or surgical site, with very limited antibiotic treatment options and poor clinical outcomes. In Canada, most CPO cases have been identified in persons who have been hospitalized and/or had a medical procedure done in countries outside of Canada.

CPOs are usually spread person-to-person through contact with infected or colonized people, or contaminated surfaces or medical equipment. Good hand hygiene by healthcare workers, patients, and visitors and careful cleaning and disinfection of rooms and equipment, can help prevent the spread of CPOs.

**Colonization** – the presence of microorganisms in or on an individual with growth and multiplication but without tissue invasion or cellular injury. With most microorganisms, colonization is far more common than clinical disease.

**Contact** – an individual who is exposed to a person, colonized or infected, with a CPO in a manner that allows potential transmission to occur (i.e.) roommate.

**Infection** – when sufficient cellular and tissue changes occur to produce overt signs and symptoms, an individual has clinical disease. Depending on the microorganism and health status of the host this disease may range from mild to severe. Clinical manifestations of local or systemic infection can include fever, increased white blood cell count, purulence, inflammation, redness, heat, swelling, and/or pain.

**Internal Alert** – when the number of CPO cases in a unit or facility is above the pre-determined threshold (trigger point) or there is suspected transmission. Internal alerts bring increased staff awareness of CPO cases in the unit/facility so actions can be taken to prevent an outbreak.

**Outbreak Definition** – CPO cases are classified as an outbreak when the number of new, time-related, healthcare associated CPO cases in a unit or facility is above the expected threshold for that unit or facility and where there is evidence of ongoing transmission despite appropriate interventions. Molecular confirmation of CPO genes in patient’s isolates is required to determine ongoing transmission. Declaring an outbreak must be done in conjunction with the facility Outbreak Management Team.

**Outbreak Management Team** – at a minimum, includes the site Infection Control Practitioner, Infection Prevention and Control (IPAC) director, Medical Microbiologist, epidemiologist, site administrator, site medical director, nursing unit manager and housekeeping supervisor.

**Screening** – a process to identify patients at risk for being colonized with CPO, obtaining specimens for CPO identification and ensuring Additional Precautions are implemented.

### 3.0 GUIDING PRINCIPLES

**3.1** Anyone being screened for CPO must be placed on **Contact Precautions** in a **single room** while awaiting screening results. If the PCRA (point of care risk assessment) identifies respiratory symptoms, use Droplet Contact Precautions.

#### 3.2 How Are CPOs Spread?

##### Note

The single most important mode of transmission for AROs in a health care setting is via transiently colonized hands of health care workers who acquire it from contact with colonized or infected patients, OR after handling contaminated material or equipment

**3.3** An ARO Alert is entered into the patient’s electronic record by the Infection Control Practitioner.

**3.4** Any patients potentially exposed to a known CPO positive patient should have a screening test (rectal swab; stool if rectal swab not available) performed.

**3.5** The CPO status of a patient should not prevent transfer of the individual within a facility or to another facility.

### 4.0 PROCEDURE

#### 4.1 Acute Care Admission Screening for CPO

All patients being admitted to acute care for 24 hours or more require screening. Follow procedure outlined on patient Admission History forms. Use the Acute Care Admission

Screening for MRSA and CPO tool for pre-surgical screening, for surgical patients with an unplanned admission and for patient transfers between acute care facilities.

Patients require a rectal swab (stool if rectal swab not available) for CPO screening if they answer 'yes' to any of the following:

- Has the patient ever had a CPO?
- Has the patient been **outside of Canada** and had an overnight stay in a hospital or undergone a medical/surgical procedure within the past 12 months?
- Has the patient had dialysis **outside Canada** within the past 12 months?
- Has the patient had close contact with a known CPO patient within the past 12 months? (close contact defined as household member or roommate in hospital)
- Has the patient been transferred from a facility with known, active CPO transmission?
- There are different types of CPOs, so patients who are known to be CPO positive must be retested for each hospital admission.

**Please Note:** For negative screening results, there will be a comment on the lab result that states 'Continue Contact Precautions as patient has had a previous positive CPO result'.

**Any patient requiring CPO screening swabs must be placed on Contact Precautions in a single room.** Precautions may be discontinued if the screening swab is negative and the patient was not previously CPO positive.

- 4.2** Patients who have a CPO identified in a clinical specimen must be placed on Contact Precautions for the duration of their hospitalization. Use Droplet Contact Precautions if a CPO is identified in a sputum culture.
- 4.3 Hand Hygiene**  
Perform hand hygiene as per IF0200 (Hand Hygiene Guidelines in IPAC Manual).
- 4.4 Patient Placement and Accommodation**  
Place patient in a single room on Contact Precautions until discharge
- Door may remain open
  - Additional precautions signage placed at the entrance to the patient room, cubicle or designated bed space (i.e.) Emergency Department
- 4.5 Patient Flow/Transport**
- Transfers and/or bed moves should be avoided unless clinically necessary
  - Communication of additional precautions is essential when a patient goes to another department for testing, to another unit or to other healthcare settings/facilities including Emergency Medical Services (EMS) and other transport staff.
  - Healthcare provider to remove PPE and do hand hygiene prior to transporting patients.
  - If direct contact with patient is required during transport, then those staff must don PPE.
- 4.6 Personal Protective Equipment (PPE)**
- PPE to be available directly outside the patient room, cubicle or designated bed space.
  - Wear gloves and gown when in direct contact with patient or patient environment.
  - Remove gown and gloves and discard before leaving the room or bed space and do hand hygiene
- 4.7 Patient Care Equipment**
- Dedicate equipment to a single patient (e.g. blood pressure cuff, commodes etc.).
    - If equipment must be shared it must be cleaned and disinfected between patients.

- Do not take extra supplies into patient's room.
- Do not take patient chart into the room.
- Clean and disinfect equipment used for transport after each use.

#### 4.8 Cleaning of Patient Environment

- Patient room to be cleaned daily and **frequently touched surfaces to be cleaned twice daily using regular hospital disinfectant** – housekeeping to be notified by nursing staff (Appendix 1: [Enhanced Cleaning Checklist](#))
- Do an **additional precautions discharge clean** of the room/bed space and bathroom which includes changing privacy curtains and cleaning and disinfecting or changing string/cloth call bells or light cords (IH Housekeeping for Healthcare manual pg.109).

#### 4.9 Waste, Laundry, Dishes and Cutlery

- Use routine practices

#### 4.10 Education of Patients, Families and Visitors

- Educate as per additional precautions signage.
- Provide the **Screening for CPOs** patient information pamphlet to the patient and family available on the Infection Prevention & Control website

#### 4.11 Surveillance

- For patients confirmed to be positive for a CPO, Infection Prevention and Control (IPAC) will collaborate with unit staff and the BC Public Health Microbiology & Reference Laboratory (BCPHMRL) to collect data required for surveillance purposes
- For positive CPO isolates, BCPHMRL will assign a unique identifier which will be included in the laboratory report and will notify the submitting laboratory
- The submitting laboratory will work with the site ICP to ensure completion of the surveillance form for CPO <https://www.picnet.ca/wp-content/uploads/Appendix-C-1.pdf> Complete Appendix C for CPO colonization cases. Complete Appendix C and Appendix D for CPO infected cases.
- Submit completed forms to the Provincial Infection Control Network (PICNet) and IPAC epidemiologist
- The IPAC epidemiologist will submit denominator data to PICNet on a quarterly basis including:
  - Total number of hospital admissions per quarter
  - Total number of inpatient days per quarter
  - Total number of CPO cases per quarter
- PICNet and BCPHMRL will summarize the CPO data and report back to the health authorities, the Ministry of Health and the BC Association of Medical Microbiologists (BCAMM) quarterly.

#### 4.12 Internal Alert

- When the number of CPO cases in a unit or facility is above the pre-determined threshold (trigger point) or there is suspected transmission
- Triggering an internal alert does not require confirmed laboratory results and may include patients that were known or found to be positive for a CPO on admission
- When an 'internal alert' has been reached, staff within the facility should be alerted to the situation and enhanced control measures implemented
- Facility administration should work with the unit staff and IPAC to put additional control measures and resources in place
- An internal alert is for the operational purposes of that facility and a public announcement is **not** required

#### 4.13 Outbreak Management Team

- An Outbreak Management Team (OMT) works collaboratively in the early detection, declaration and management of the outbreak
- Under the Public Health Act, consultation is required with the Medical Health Officer (MHO) or designate for the management of outbreaks by IPAC and the facility Administrator - Medical Microbiologist is point of contact for acute facilities
- The OMT to collaborate with the BCPHMRL to facilitate rapid testing of isolates to determine CPO gene types
- The OMT facilitates communication of the outbreak situation to receiving hospitals of all transferred patients and informs other health authorities and PICNet
- The OMT guides decisions to limit new admissions, close units or close an entire facility if necessary
- Decisions around contact tracing to be done in consultation with the IPAC Medical Director or designate, including the need for CPO screening swabs (i.e.) rectal swab, ostomy site swab
- The OMT advocates for enhanced resources required to implement control measures
- The OMT to summarize outcome and lessons learned to share with local/regional IPAC committees

## 5.0 REFERENCES

- 5.1 **Toolkit for the Management of Carbapenemase Producing Organisms (CPO)**  
Provincial Infection Control Network (PICNet) BC; September 2014.

**Appendix 1**

**Appendix 1: Enhanced Cleaning Checklist**  
**(to be Done Twice Daily)**

Area	Yes	No	Comments/Reason not done
Door knobs			
Bedrails			
Light switches			
Bathroom faucets (including handles)			
Any grab bars mounted on walls			
Toilet (including flush handle)			
Remote controls			
Telephone			
Over-bed table			
Bed-side table/stand (including drawer handles)			
Call light controls			
Medical Equipment (IV pump, monitor leads)			