

Appendix B – Requisition Form for Carbapenemase-Producing Organisms (CPO) Testing



Public Health Laboratory

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**Bacteriology and Mycology Requisition
Carbapenemase Producing Organism Testing**



Section 1 - Patient Information

PERSONAL HEALTH NUMBER (or out-of-province Health Number and province)	DOB (DD/MM/YYYY)	GENDER <input type="checkbox"/> M <input type="checkbox"/> F <input type="checkbox"/> UNK	LABORATORY USE ONLY
PATIENT SURNAME	PATIENT FIRST AND MIDDLE NAME		
ADDRESS	CITY	POSTAL CODE	

Section 2 - Submitting Laboratory Details

CONTACT PERSON	HOSPITAL (Name and address for report delivery)	SAMPLE REF. NO.
TELEPHONE NUMBER		DATE COLLECTED (DD/MM/YYYY)
ADDITIONAL COPIES TO:		PHSA CLIENT NO.

Section 3 - Specimen Details

ORGANISM IDENTIFICATION:	Genus	Species	SPECIMEN SOURCE <input type="checkbox"/> respiratory <input type="checkbox"/> blood <input type="checkbox"/> urine <input type="checkbox"/> wound <input type="checkbox"/> rectal <input type="checkbox"/> other: _____
<input type="checkbox"/> SCREENING ISOLATE	<input type="checkbox"/> CLINICAL ISOLATE	<input type="checkbox"/> CONTACT TRACING	
PREVIOUS CPO SCREENING: <input type="checkbox"/> NO <input type="checkbox"/> YES DATE: _____			

Automated Antibiogram:

Antibiotic	MIC	Interpretation (S, I, R)	Antibiotic	MIC	Interpretation (S, I, R)
Ampicillin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Gentamicin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>
Ampicillin/Clavulanate		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Imipenem		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>
Aztreonam		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Levofloxacin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>
Amikacin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Meropenem		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>
Cefazolin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Minocycline		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>
Cefepime		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Nitrofurantoin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>
Cefoxitin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Pefloxacin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>
Cefpodoxime		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Piperacillin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>
Ceftazidime		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Piperacillin/Tazobactam		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>
Cefixime		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Rifampin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>
Ceftriaxone		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Ticarcillin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>
Cephalothin/Cephalexin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Ticarcillin/Clavulanic Acid		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>
Ciprofloxacin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Tigecycline		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>
Colistin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Tobramycin		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>
Ertapenem		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>	Trimethoprim/Sulfamethoxazole		S <input type="checkbox"/> I <input type="checkbox"/> R <input type="checkbox"/>

OR, See attached for automated AST results

Phenotypic Confirmation:				Other Results:	
E-test/discs				ESBL E-test Interpretation: _____	
Antibiotic	MIC	Zone diameter	Interpretation	Other Tests and Interpretation: _____	
Ertapenem				CPO PCR Interpretation: _____	
Meropenem				_____	
Imipenem				_____	
Rosco Disc Interpretation: _____					

Form PHBM_225_2001F Version 1.1 05/2017



Appendix C – Surveillance Form for Carbapenemase-Producing Organisms (CPO) Identified in Acute Care Facility

1	Unique Identifier – assigned by BCCDC Public Health Laboratory (PHL) _____
2	Patient's status <input type="checkbox"/> Inpatient <input type="checkbox"/> Other, <i>please specify</i> _____
3	Date of admission or visit (dd/mmm/yyyy) _____
4	Name of the facility _____
5	CPO status <input type="checkbox"/> Infection (please also complete appendix D) <input type="checkbox"/> Colonization <input type="checkbox"/> Unknown
6	Did the patient travel outside of Canada within the past 12 months? <input type="checkbox"/> Yes. <i>Please specify the name of the country</i> _____ <input type="checkbox"/> Country not provided <input type="checkbox"/> No. <i>Please skip Question 7.</i> <input type="checkbox"/> Unknown or patient is discharged. <i>Please skip Question 7.</i>
7	If answered Yes to Question 6, did the patient have a healthcare encounter outside of Canada within the past 12 months? <input type="checkbox"/> Yes, an overnight stay in a hospital or undergone medical/surgical procedure outside of Canada <input type="checkbox"/> Yes, other healthcare encounter, e.g., visited GP, walking clinic, dentist, ER, etc. <input type="checkbox"/> No healthcare encounter <input type="checkbox"/> Unknown
8	What types of healthcare encounters has the patient had in BC in the past 12 months? (Check all that apply) <input type="checkbox"/> An acute care unit/facility admission <input type="checkbox"/> A long-term care facility admission <input type="checkbox"/> A medical/surgical procedure in an outpatient setting <input type="checkbox"/> No healthcare encounter <input type="checkbox"/> Unknown
9	Is the unit/facility in which the patient is currently admitted under investigation for CPO transmission? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown or patient is discharged
10	Did the patient have contact [minimum 12 hours] with a known CPO case or environmental sources within the past 12 months? (Check all that apply) <input type="checkbox"/> Yes, within an acute care facility <input type="checkbox"/> Yes, within a long-term care facility <input type="checkbox"/> Yes, private household <input type="checkbox"/> Yes, other <i>please specify</i> _____ <input type="checkbox"/> No. <i>Please skip Question 11.</i> <input type="checkbox"/> Unknown. <i>Please skip Question 11</i>
11	If answer Yes to Question 10, what was the nature of the contact? (Check all that apply) <input type="checkbox"/> Roommate <input type="checkbox"/> Person in the same unit/facility or house <input type="checkbox"/> Healthcare provider <input type="checkbox"/> Friend/Relative <input type="checkbox"/> Environmental sources (e.g., contaminated sink or other surface, medical equipment, etc.) <input type="checkbox"/> Other, <i>please specify</i> _____ <input type="checkbox"/> Unknown

Once completed, please send it to PICNet at picnet@phsa.ca (cc Katherine.Sunderland@phsa.ca)

Description and notes

1	Unique Identifier	Record the ID number assigned by PHL on their laboratory report. The format of ID includes yyyy####-###-##: yyyy is the year of the first CPO test for the patient; #### is the serial number of the patient being tested for CPO in the year beginning from 0001 each year; ### is a serial number for the isolate being tested from the patient, and ## is a serial number of carbapenamase genes identified from the patient. If the ID number has not been received for this case or there are any questions about ID, please contact PHL
2	Patient's status	Check 'Inpatient' (hospitalized) if the patient was admitted to an acute care unit. Otherwise, check 'Other' and specify in written text the location where the sample was collected (e.g., Emergency Department, Hemodialysis or Oncology Clinic, etc)
3	Date of admission or visit (dd/mmm/yyyy)	Record the Day (e.g., 17), Month (e.g., Jul) and Year (e.g. 2014) in this order (e.g., 17-Jul-2014). Write out the month (e.g. Jan, Mar, Aug, etc.).
4	Name of the Facility	Specify the name of the facility where the patient was admitted or visited at the time when the sample was collected.
5	CPO status	Specify the patient's CPO status in terms of infection, colonization or unknown according to the following definitions: Infection is defined as a patient with evidence of clinical signs and symptoms resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s) in addition to a positive culture of CPO. Clinical evidence may be derived from direct observation of the infection site (e.g., a wound), or review of information in the patient chart or other clinical records, or a physician or surgeon diagnosis of infection. Please refer to the 2015 "CDC/NHSN Surveillance Definitions for Specific Type of Infections" for definitions and criteria of all specific types of infections (http://www.cdc.gov/nhsn/PDFs/pscManual/17pscNosInfDef_current.pdf). (Note that by checking infection, Appendix D needs to be completed.) Colonization is the presence of CPO on skin, on mucous membranes, in open wounds, or in excretions or secretions but are not causing adverse clinical signs or symptoms. Unknown if there is no or insufficient information to define whether the patient's CPO status represents an infection or colonization.
6	Did the patient travel outside of Canada within the past 12 months?	Select Yes if the patient had travelled to other countries or had healthcare encounter outside Canada in the past 12 month. Specify which country the patient travelled. Select No if the patient did not travel in the past 12 months and skip the Question 7.
7	If answered Yes to Question 6, did the patient have a healthcare encounter outside of Canada within the past 12 months?	Select one that applies based on the information available
8	What types of healthcare encounters has the patient had in BC in the past 12	Check all that apply based on the patient's healthcare encounter history

	month?	
9	Is the unit/facility in which the patient is currently admitted under investigation for CPO transmission?	Select Yes if the patient was admitted to a unit which was under investigation for on-going CPO transmission during his/her stay in the unit. Select No if the was NOT under investigation for CPO transmission during his/her stay in the unit.
10	Did the patient have contact [minimum 12 hours] with a known CPO case within the past 12 months?	Check all that apply based on the patient's contact with a known CPO case
11	If answer Yes to Question 10, what was the nature of the contact?	Check all that apply based on the nature of the contact

Appendix D – Addendum Form for Carbapenemase-Producing Organisms (CPO) Infections Identified in Acute Care Facility

NB: This form should be complete if a) the case was identified as a CPO infection; b) the case was initially reported as colonization, and subsequently developed into a CPO infection within a year from initial identification. Please ensure that the surveillance form for CPO (**Appendix C**) has been completed for this case.

1	Unique Identifier – assigned by BCCDC Public Health Laboratory (PHL) _____
2	Patients' status <input type="checkbox"/> Inpatient <input type="checkbox"/> Other, <i>please specify</i> _____
3	Date of admission or visit (dd/mmm/yyyy) _____
4	Name of the facility _____
5	Date of CPO infection identification (dd/mmm/yyyy) _____
6	Site(s) of infection <input type="checkbox"/> Bloodstream <input type="checkbox"/> Urinary tract <input type="checkbox"/> Respiratory tract <input type="checkbox"/> Wound <input type="checkbox"/> Surgical site <input type="checkbox"/> Other, <i>please specify</i> _____
7	Organism(s) isolated (<i>Check all that apply</i>) <input type="checkbox"/> <i>Acinetobacter</i> spp. <input type="checkbox"/> <i>Serratia</i> spp. <input type="checkbox"/> <i>Klebsiella pneumoniae</i> <input type="checkbox"/> <i>Enterobacter</i> spp. <input type="checkbox"/> <i>Escherichia coli</i> <input type="checkbox"/> <i>Proteus</i> spp. <input type="checkbox"/> <i>Morganella morganii</i> <input type="checkbox"/> <i>Citrobacter</i> spp. <input type="checkbox"/> <i>Pseudomonas</i> spp. <input type="checkbox"/> Other <i>Entero-bacteriaceae</i> , <i>please specify</i> _____
8	CPO gene(s) detected: <input type="checkbox"/> NDM <input type="checkbox"/> KPC <input type="checkbox"/> OXA-48 <input type="checkbox"/> VIM <input type="checkbox"/> IMP <input type="checkbox"/> SME <input type="checkbox"/> Other, <i>please specify</i> _____
9	Was ICU admission required due to CPO infections or the complications associated with CPO infection? <input type="checkbox"/> Yes – the patient was admitted to ICU as a result of a CPO infection or complications associated with a CPO infection. <input type="checkbox"/> No – the patient was not admitted to ICU <input type="checkbox"/> N/A – patient was already in ICU due to other medical conditions <input type="checkbox"/> Unknown
10	Patient outcome <u>30 days</u> or up until discharge after identification of CPO infection <input type="checkbox"/> Patient alive, still in hospital 30 days after diagnosis <input type="checkbox"/> Patient survived and discharged <input type="checkbox"/> Patient survived and transferred <input type="checkbox"/> Patient died

Once completed, please send it to PICNet at picnet@phsa.ca (cc Katherine.Sunderland@phsa.ca)

Description and notes

1	Unique Identifier	Record the ID number assigned by PHL for the CPO positive isolate that was associated with the infection. If the ID number has not been received for the isolates or there are any questions about ID, please contact PHL.
2	Patient's status	Check 'Inpatient' (hospitalized) if the patient was admitted to an acute care unit. Otherwise, check 'Other' and specify in written text the location where the sample was collected (e.g., Emergency Department, Hemodialysis or Oncology Clinic, etc)
3	Date of admission or visit (dd/mmm/yyyy).	Record the Day (e.g., 17), Month (e.g., Jul) and Year (e.g. 2014) in this order (e.g., 17-Jul-2014). Write out the month (e.g. Jan, Mar, Aug, etc.).
4	Name of the Facility	Specify the name of the facility where the patient was identified with CPO infection
5	Date of CPO infection identification (dd/mmm/yyyy)	Record the date when the CPO infection was identified, and enter Day (e.g. 17), Month (e.g. Jul) and Year (e.g. 2014) in this order (e.g., 17-Jul-2014).
6	Site(s) of infection	Check the site(s) of CPO infection – check all that apply or specify the site(s) of infection(s).
7	Organism (s) isolated	Check all of the organisms that were associated with the infection(s).
8	CPO gene(s) detected	Check all of the CPO genes that were associated with the infection(s).
9	Was ICU admission required due to CPO infections or the complications associated with CPO infection?	Select one of the options that applies to the patient
10	Patient outcome at 30 days or up until discharge after identification of CPO infection	Select one of the options that apply to the patient at 30 days or at the time of discharge after the CPO infections was identified.

Appendix E – Notification of Ongoing Carbapenemase-Producing Organisms (CPO) Transmission Investigation

Please complete this form for notification of ongoing CPO transmission investigation in your facility or health authority and email to picnet@phsa.ca (cc Katherine.Sunderland@phsa.ca)

A. Notification Information

Health Authority: _____ Facility Name: _____ Unit: _____

Contact Person: _____ Title: _____

Contact Phone: _____ Email: _____

Facility type: Acute Care Hospital Residential Care Facility Other _____

Is this report: Notification of transmission investigation (*complete section B below*)

Notification of transmission investigation resolved (*complete section C*)

B. Transmission Investigation Notification

Date of the index case* identified (dd/mm/yyyy): _____

Organism (Genus species): _____

CPO gene identified (e.g. NDM, KPC): _____

Date investigation initiated (dd/mm/yyyy): _____

* A case that makes health authority suspected of CPO transmission. It may be or may not be the first case in the transmission.

C. Transmission Investigation Resolved

Date investigation closed (dd/mm/yyyy): _____

Notes:

Reported by: _____ Date: _____

Once completed, please send it to PICNet at picnet@phsa.ca (cc Katherine.Sunderland@phsa.ca)

Appendix F – Letter to Ordering Provider in Response to CPO Cases Identified in the Community

Date:

Dear *Health Care Provider (ordering provider)*,

Re: *Patient Last name, First name; PHN; DOB*

Public Health has received laboratory notification that your patient tested positive for a carbapenemase-producing organism (CPO) - an emerging public health concern. As per the Public Health Act and the Communicable Disease Regulation, physicians/administrators for laboratories that identify CPO are required to report cases to their local medical health officer.

A provincial non-nominal surveillance program is in place to monitor the epidemiology (e.g. risk factors, laboratory data) of CPO in BC. Each patient isolate is assigned a unique identifier for this purpose. The unique identifier for your patient is _____. Attached is a surveillance form. We ask that you complete this form to the best of your ability and return it by email to the Provincial Infection Control Network of BC at picnet@phsa.ca (cc Katherine.Sunderland@phsa.ca).

CPOs are multi-drug resistant gram negative bacteria that pose significant risk to vulnerable patients in healthcare facilities, as the antibiotics available to treat infections are very limited. Due to this risk, please request that your patient inform any healthcare facility on admission and/or routine healthcare encounters (such as hemodialysis, oncology clinics, BMT day care) that they have tested positive for CPO. Infection Control measures will be put in place to decrease the likelihood of spreading these bacteria to other patients.

At this time, little is known about the carriage and clearance of CPO infections in the community after treatment. Follow-up testing of clearance is not recommended, as carriage may return after treatment with a carbapenem antibiotic.

Interpretation of this laboratory result should be in context of the overall health of your patient. In the community, patients who test positive for a CPO do not generally pose a risk to others. Patients should be advised to maintain good personal hygiene and avoid sharing personal items to prevent spread to others. Added precautions are NOT required in the community office setting.

Attached is a patient information sheet for your patient (CPO Health file). Further information on CPO is available at [BCCDC website](#).

Appendix G – Enhanced Surveillance Form for Carbapenemase-Producing Organisms (CPO) Identified in the Community

1	Unique Identifier – assigned by BCCDC Public Health Laboratory (PHL) _____
2	Patient's CPO status <input type="checkbox"/> Infection <input type="checkbox"/> Colonization <input type="checkbox"/> Unknown
3	At what care setting was the patient identified with CPO? <input type="checkbox"/> Outpatient clinic <input type="checkbox"/> Emergency room <input type="checkbox"/> Community health center/clinic <input type="checkbox"/> Long-term care facility <input type="checkbox"/> GP's office <input type="checkbox"/> Other, <i>please specify</i> _____
4	Has the patient travelled outside Canada within the past 12 months? <input type="checkbox"/> Yes, <i>please specify the name of the country</i> _____ <input type="checkbox"/> Country not provided <input type="checkbox"/> No <input type="checkbox"/> Unknown
5	Has the patient had an overnight stay in a hospital or undergone medical/surgical procedure (e.g., endoscopic procedure, inserting catheter, hemodialysis, outpatient surgery) outside of Canada within the past 12 months? <input type="checkbox"/> Yes, <i>please specify the name of the country</i> _____ <input type="checkbox"/> Country not provided <input type="checkbox"/> No <input type="checkbox"/> Unknown
6	Has the patient had an overnight stay or longer in any BC care facilities (e.g., hospital, residential care facility) within the past 12 months? <input type="checkbox"/> Yes, <i>please specify the name of the facility</i> _____ <input type="checkbox"/> No <input type="checkbox"/> Unknown
7	Has the patient had contact with a known CPO case within the past 12 months? <input type="checkbox"/> Yes, <i>please specify the nature of contact:</i> <input type="checkbox"/> Household, i.e., a family member with CPO <input type="checkbox"/> Non-household, i.e., a friend/acquaintance with CPO <input type="checkbox"/> Healthcare facility, i.e., stayed in the same care unit or long-term care facility with a patient/resident with CPO <input type="checkbox"/> Other, <i>please specify</i> _____ <input type="checkbox"/> No <input type="checkbox"/> Unknown
If the patient was infected with CPO, please answer the following questions	
8	Site(s) of infection (<i>Check all that apply</i>) <input type="checkbox"/> Bloodstream <input type="checkbox"/> Urinary tract <input type="checkbox"/> Respiratory tract <input type="checkbox"/> Wound <input type="checkbox"/> Surgical site <input type="checkbox"/> Other, <i>please specify</i> _____
9	Was the patient admitted to a BC hospital due to current CPO infection? <input type="checkbox"/> Yes, the patient was admitted due to CPO infection. <i>Specify the name of the facility</i> _____ <input type="checkbox"/> No, the patient was admitted due to other medical conditions. <input type="checkbox"/> No, the patient was not admitted <input type="checkbox"/> Unknown

Once completed, please send it to PICNet at picnet@phsa.ca (cc Katherine.Sunderland@phsa.ca)

Description and notes

1	Unique Identifier	The unique ID for the CPO case assigned by PHL is provided in the letter from medical health officer. If the ID number has not been included or there are any questions about ID, please contact PHL (telephone 604-707-2617, fax 604-707-2604, or email to linda.hoang@bccdc.ca).
2	CPO status	Specify the patient's CPO status in terms of infection, colonization or unknown according to the following definitions: Infection is defined as a patient with evidence of clinical signs and symptoms resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s) in addition to a positive culture of CPO. Clinical evidence may be derived from direct observation of the infection site (e.g., a wound), or review of information in the patient chart or other clinical records, or a physician or surgeon diagnosis of infection. Please refer to the 2015 "CDC/NHSN Surveillance Definitions for Specific Type of Infections" for definitions and criteria of all specific types of infections (http://www.cdc.gov/nhsn/PDFs/pscManual/17pscNosInfDef_current.pdf). Colonization is the presence of CPO on skin, on mucous membranes, in open wounds, or in excretions or secretions but are not causing adverse clinical signs or symptoms. Unknown if there is no or insufficient information to define whether the patient's CPO status represents an infection or colonization.
3	At what care setting was the patient identified with CPO?	Check one that apply
4	Has the patient travelled outside Canada within the past 12 months?	If the patient has stayed outside Canada for overnight or longer within the past 12 months, select Yes and specify which country the patient travelled to.
5	Has the patient had an overnight stay in a hospital or undergone medical/surgical procedure outside of Canada within the past 12 months?	Examples of healthcare exposure outside Canada in the past 12 months include (but not limited to): <ul style="list-style-type: none"> • an overnight stay or longer in a hospital or other healthcare facility • hemodialysis • invasive diagnostic procedure, such as endoscopy, cardiac catheterization, Pap smear, trans-esophageal echocardiography, trans-vaginal or trans-rectal ultrasound, biopsy, etc • invasive therapeutic procedure, such as, intravenous therapy, blood transfusion, etc • surgical procedure, including plastic and cosmetic surgery, and organ transplantation • other medical procedure, such as wound or surgical site cleaning and dressing • dental procedures, e.g. dental implant, dental surgery. If responding with Yes , specify which country the patient travelled to.
6	Has the patient had an overnight stay or longer in any BC care facilities within the past 12 months?	Select Yes if the patient had an overnight stay or longer in any BC care facilities (e.g. acute care facility, residential care facility, rehab center, etc.) within the past 12 months prior to identification of CPO in the patient. Specify the name of the facility.
7	Has the patient had contact with a known CPO case within the past 12 months?	Select Yes if the patient had contact with a known CPO patient in the past 12 months prior to identification of CPO in the patient. If Yes , specify the nature of the contact.

8	Site(s) of infection	Check the site(s) of CPO infection – check all that apply or specify the site(s) of infection(s).
9	Was the patient admitted to a BC hospital due to current CPO infection?	Select Yes the patient admitted to a hospital due to current CPO infection. Select No if the patient admitted to a hospital due to other medical conditions, or the patient was not admitted.