INSTRUCTIONS FOR COMPLYING WITH THE 2019 MDRO REPORTING REQUIREMENTS

The following instructions relate to the Los Angeles County (LAC) Department of Public Health (DPH) Health Officer Order for Reporting of Carbapenem-Resistant Enterobacterales (formerly Enterobacteriaceae) *(CRE) and Antimicrobial Resistance of Bacterial Pathogens, issued on January 19, 2017 and the updates to the Title 17, California Code of Regulations (CCR), §2500 and §2505 on November 11, 2019.*

Updated information and instructions for MDRO reporting can be found at:
http://publichealth.lacounty.gov/acd/Diseases/CRE.htm
http://publichealth.lacounty.gov/acd/Diseases/NMDRO.htm

Contents

1 MDRO Reporting Overview

Organism	Disease categories	Criteria	Who reports
Candida auris *(C. auris)*	*C. auris*	*Candida auris*	Lab and provider
Carbapenem-resistant Enterobacterales (CRE)*	CRE	Enterobacterales that are resistant to one or more carbapenems (independent of any carbapenemase testing)	Provider only
	CP-CRE	• Carbapenemase positive (CP)-CRE by phenotypic or molecular test OR • Carbapenemase unknown (no carbapenemase test performed)	Lab only
Carbapenemase-producing ***Acinetobacter baumannii***	CP-*Acinetobacter* spp.	*Acinetobacter* spp. positive for carbapenemase by phenotypic or molecular test	Lab only
Carbapenemase-producing ***Pseudomonas aeruginosa***	CP- *P. aeruginosa*	*P. aeruginosa* positive for carbapenemase by phenotypic or molecular test	Lab only
Vancomycin-resistant ***Staphylococcus aureus*** (VRSA)	VRSA	*S. aureus* with a vancomycin MIC ≥16	Lab only
Pan-resistant organisms (Suspect PDR)	Suspect PDR	Gram negative bacteria that are non-susceptible to all antibiotics tested	Lab only

**E. coli, Klebsiella oxytoca, Klebsiella pneumoniae, Enterobacter spp.*

2 Carbapenem-Resistant Enterobacterales (CRE)

2.1 Surveillance Definition

2.1.1 LAC Reporting Requirements

Effective January 19, 2017 all acute care hospitals and skilled nursing facilities (SNFs) are mandated to report carbapenem-resistant Enterobacterales (CRE) and submit an antibiogram annually. Reporting of CRE to the Los Angeles County Department of Public Health (LACDPH) will follow the Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN) Multidrug-Resistant Organism (MDRO) and *Clostridium difficile* Infection (CDI) Module: report all first CRE positive tests per patient, per calendar month, per location, regardless of specimen source except when a unique blood source is identified, that were collected on or after January 1st, 2017. Events should be reported within 7 days of identification, unless exemption is granted by LACDPH. SNFs are to follow the same surveillance rule above and report to the LACDPH Morbidity Unit via NHSN if enrolled, or via fax beginning February 28, 2017. If reporting via fax submit the completed CRE epi form and include the lab report with susceptibility results.

In addition, effective November 11, 2019, Title 17 LAC DPH Laboratory Reportable Disease list was updated to include carbapenemase positive CRE (CP-CRE).

2.1.2 CDPH Requirements

Effective October 1,2019 California Department of Public Health (CDPH) Title 17, Section 2505, Subsection (e)(2) laboratory reportable conditions list has been updated to include CP *Enterobacter* spp., *E. coli*, or *Klebsiella* spp. Laboratories must now report CP-CRE via ELR in addition to provider reporting in NHSN (see section 4 for ELR information).

2.2 CRE Definition

2.2.1 LACDPH CRE Definition

LACDPH will follow the CDC NHSN MDRO and CDI Module CRE surveillance definition, which define CRE as any *Escherichia coli*, *Klebsiella oxytoca*, *Klebsiella pneumoniae*, or *Enterobacter spp*. demonstrating resistance by one or more of the following methods:

1. Resistant to imipenem, meropenem, doripenem, or ertapenem by standard susceptibility testing methods (i.e., minimum inhibitory concentrations of ≥4 mcg/mL for doripenem, imipenem and meropenem or ≥2 mcg/mL for ertapenem) **OR**
2. Production of a carbapenemase (e.g., KPC, NDM, VIM, IMP, OXA-48) demonstrated using a recognized test (e.g., polymerase chain reaction (PCR), metallo-β-lactamase test, modified-Hodge test, Carba-NP.

2.2.2 CDPH CP-CRE Definition

CDPH will follow the CDC case definition for Carbapenemase Producing Carbapenem-Resistant Enterobacterales (CP-CRE) defined as *E. coli*, *Klebsiella* spp., or *Enterobacter* spp. from any isolate that is:

1. Positive for known carbapenemase resistance mechanism (e.g., KPC, NDM, VIM, IMP, OXA-48) demonstrated by a recognized test (e.g., PCR, Xpert Carba-R); **OR**
2. Positive on a phenotypic test for carbapenemase production (e.g., metallo-β-lactamase test, modified Hodge test, Carba NP, Carbapenem Inactivation Method [CIM], or modified CIM [mCIM]). Note that only CRE specimens positive for carbapenemase production by mCIM need to be reported per the CDPH protocol

2.3 Submitting Data via the National Healthcare Safety Network – All NHSN Enrolled Facilities

Refer to Instructions for Complying with CRE Reporting Requirements, 4/4/2019 for instruction on joining the LA County CRE NHSN Group, conferral of rights, adding CRE to the monthly plan, entering a CRE event, and summary data entry (http://publichealth.lacounty.gov/acd/docs/CREInstructions.pdf).

2.3.1 Reporting Time Frame

Events are to be reported into NHSN within seven (7) calendar days of receiving the final positive laboratory report. If you are unable to meet the reporting time frame for any reason, an exemption can be granted. Email hai@ph.lacounty.gov to request a reporting time frame exemption.

2.4 Submitting Data to Morbidity Unit – Skilled Nursing Facilities Only

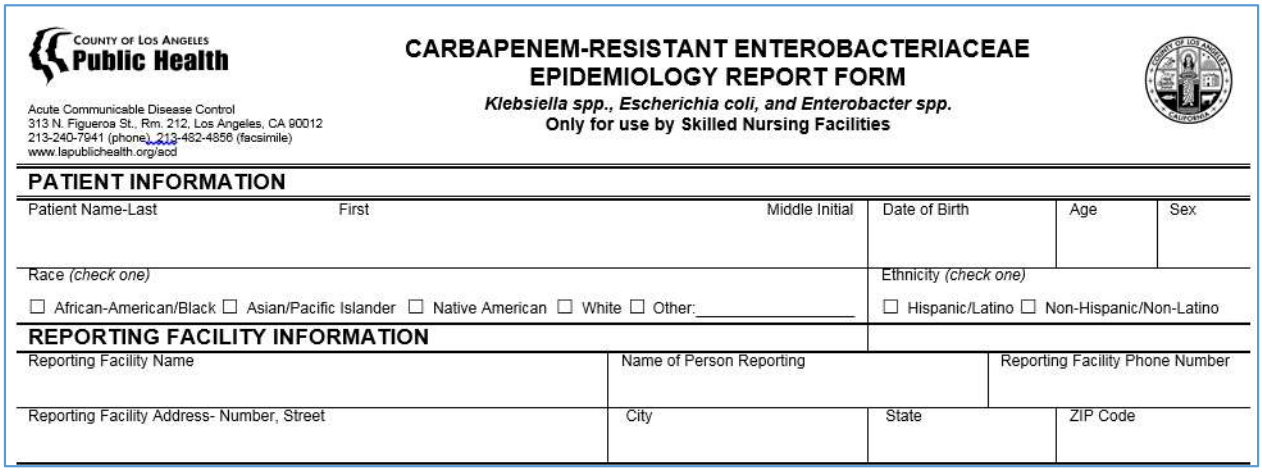
2.4.1 Completing CRE Epi Form

For SNFs not enrolled in NHSN, compliance with the CRE reporting mandate will be met through completion of the CRE Epi form available at http://ph.lacounty.gov/acd/EpiForms.htm. This completed form should be faxed to the LACDPH Morbidity Unit at (888) 397-3778 along with the laboratory report indicating the specimen's susceptibility testing results.

SNFs are to utilize the CRE definition at the beginning of this document for their residents. We understand that reference labs may submit laboratory results to LACDPH, however the completion of the CRE epi form is still required to be submitted in order to consider the case report complete and in compliance with the reporting mandate.

2.4.2 Patient and Facility Information

This form requires completion of patient information (name, date of birth, age and sex) in addition to reporting facility information. Please indicate the name and address of the SNF that is reporting the case, as well as the name of the person that is reporting and their contact information.



County of Los Angeles Public Health

Acute Communicable Disease Control
313 N. Figueroa St., Rm. 212, Los Angeles, CA 90012
213-240-7941 (phone) 213-482-4856 (facsimile)
www.lapublichealth.org/acd

CARBAPENEM-RESISTANT ENTEROBACTERIACEAE EPIDEMIOLOGY REPORT FORM

Klebsiella spp., Escherichia coli, and Enterobacter spp.

Only for use by Skilled Nursing Facilities

PATIENT INFORMATION

Patient Name-Last	First	Middle Initial	Date of Birth	Age	Sex

Race *(check one)*

☐ African-American/Black ☐ Asian/Pacific Islander ☐ Native American ☐ White ☐ Other:_____

Ethnicity *(check one)*

☐ Hispanic/Latino ☐ Non-Hispanic/Non-Latino

REPORTING FACILITY INFORMATION

Reporting Facility Name	Name of Person Reporting	Reporting Facility Phone Number

Reporting Facility Address- Number, Street	City	State	ZIP Code

2.4.3 Diagnostic Information

In this section indicate the organism identified, date the specimen was collected and the specimen source. If known, indicate if the patient was colonized or infected with the organism identified; if you are not sure if the patient had an infection select 'Unsure/unknown.' Indicate if your laboratory tests for the presence of a carbapenemase (Yes, No, Unk); if Yes, select the type of test your laboratory performs to detect the presence of a carbapenemase. If the laboratory identified a carbapenemase, please check the box next to the type that was identified. If you answer is 'Other' please specify the type detected. If you detect a carbapenemase that is not listed on this form, please contact Acute Communicable Disease Control Program at (213) 240-7941 immediately to report.

DIAGNOSTIC TESTS

Organism identified: ☐ *Klebsiella spp.* ☐ *E. coli* ☐ *Enterobacter spp* | Date of collection: _____

Specimen source: ☐ Blood ☐ Sputum ☐ Wound- sterile site ☐ Wound- non-sterile site ☐ Urine ☐ Rectal swab ☐ Other: _____

Patient status at time specimen was collected:	Was the bacterial isolate tested for the presence of a carbapenemase?	If Yes, which tests were done *(check all performed)*:
☐ Colonization ☐ Infection ☐ Unsure/unknown	☐ Yes ☐ No ☐ Unk	☐ Broth MIC ☐ PCR ☐ ETest ☐ CarbaNP ☐ MHT ☐ Unk ☐ Other *(specify)*:_____

If Yes, what carbapenemase was detected *(check all that apply)*:

☐ Klebsiella pneumoniae carbapenemase (KPC) ☐ New Delhi metallo-β-lactamase (NDM) ☐ Imipenemase (IMP) ☐ OXA-48-like

☐ Verona integron-encoded metallo-β-lactamase (VIM) ☐ Negative/none detected ☐ Other specify):_____

2.4.4 Healthcare Presentation

Information for this section should be taken from the resident's current admission. Please indicate the date of admission and note if this resident has been in your facility for more than three months. If the resident was admitted from a different healthcare facility in the four weeks prior to their current positive test, please indicate that on the form along with the type of facility they were admitted from as well as the name of the facility. At the time you are reporting the case, indicate the status of the resident in the 'Disposition' as one of the following: currently in your facility, discharged to a different facility, or died.

HEALTHCARE PRESENTATION

Date of admission:	Has the patient been a resident of your facility for more than 3 months?	Was the resident admitted from a healthcare facility in the four weeks prior to their current positive test?
	☐ Yes ☐ No ☐ Unk	☐ Yes ☐ No ☐ Unk

If Yes, what type of facility?	Disposition:
☐ Hospital ☐ LTAC ☐ Other SNF Facility name: _____	☐ Current resident ☐ Discharged to hospital ☐ Discharged to LTAC ☐ Discharged to another SNF ☐ Discharged home ☐ Date of discharge:_____ ☐ Died - Date of Death: _____

Additional notes:

2.4.5 Reporting Time Frame

Events are to be reported to the Morbidity Unit within seven (7) calendar days of receiving the final positive laboratory report. If you are unable to meet the reporting time frame for any reason, an exemption can be granted. Email hai@ph.lacounty.gov to request a reporting time frame exemption.

2.5 Submitting Data via ELR (Electronic Laboratory Reporting)

2.5.1 Laboratories that perform carbapenemase testing

Report any *Enterobacter spp., E. coli,* or *Klebsiella* spp. where the isolate is:

1. Positive for carbapenemase production by a phenotypic method **OR**
2. Positive for a known carbapenemase resistance mechanism (KPC, NDM, IMP, VIM, OXA-48, novel carbapenemase) by a recognized molecular test (see below)

2.5.1.1 Laboratory Criteria for Diagnosis

Laboratory evidence of carbapenemase production in an isolate by a phenotypic method or positive for a known carbapenemase resistance mechanism by specific testing methods such as:

- Currently available phenotypic methods for carbapenemase production:
  - Carba NP positive
  - Metallo-β-lactamase testing (e.g., E-test) positive
  - Modified Carbapenem Inactivation Method (mCIM) positive or indeterminate
  - Carbapenem Inactivation Method (CIM) positive
- Currently available molecular methods to detect specific resistance mechanism (e.g. *Klebsiella pneumoniae* Carbapenemase [KPC], New Delhi metallo-β-lactamase [NDM], oxacillinase-48 [OXA-48], Verona integron-encoded metallo-β-lactamase [VIM], imipenemase [IMP]):
  - BD Phoenix™ CPO Detect
  - Biomerieux Rapidec© Carba NP
  - Hardy NG-Test© CARBA 5
  - Cepheid Xpert® Carba-R
  - Biofire® FilmArray© BCID Panel (FDA cleared for blood cultures; only detects KPC)
  - VERIGENE© (FDA cleared for blood cultures)
  - Check-Points Check-Direct CPE for BD MAX™ (research use only)
  - In-House PCR

Note that isolates positive via phenotypic test but negative by molecular test should still be reported.

2.5.2 Laboratories that do not perform or obtain carbapenemase testing

Report *Enterobacter* spp., *E. coli,* or *Klebsiella* spp. from any site, resistant to any carbapenem (doripenem, ertapenem, imipenem, meropenem) as "CP-CRE Unknown".

2.6 Laboratory Reporting (non- ELR)

Reports can be submitted online via REDCap portal at this link: https://redcap.link/LACMDROPortal. All reports submitted to the LACDPH MDRO Reporting Portal will be received in a secure format. Reporters will have the options to save their progress, upload lab reports, and download a PDF copy of what was submitted to LACDPH. Please include a final lab report including AST results.

3 Carbapenemase-producing *Acinetobacter* spp. (CP-*Acinetobacter*)

3.1 LAC Reporting Requirements

Effective November 11, 2019, all laboratories serving LAC healthcare facilities are required to report carbapenemase-producing *Acinetobacter* spp. within 1 working day of final result.

3.2 Definition

Acinetobacter spp. with production of a carbapenemase demonstrated using a recognized test (e.g., polymerase chain reaction (PCR), metallo-β-lactamase test, Carba-NP, Carbapenem Inhibition Method (CIM)).

3.3 Laboratory Reporting

3.3.1 Labs that perform carbapenemase testing

Report any *Acinetobacter* spp. where the isolate is:

1. Positive for carbapenemase production by a phenotypic method **OR**
2. Positive for a known carbapenemase resistance mechanism (KPC, NDM, IMP, VIM, OXA) by a recognized molecular test

See *Section 2.5.1.1* for a list of currently available carbapenemase testing methods.
Laboratories that are able to perform carbapenemase testing should wait until all tests (antimicrobial susceptibility, phenotypic and/or molecular carbapenemase) are resulted before submitting a report.

3.3.1.1 Submitting data via ELR (preferred)

Ensure that only carbapenemase-positive/producing organisms are submitted.

3.3.1.2 Submitting reports via REDCap

Reports can be submitted online via REDCap portal at this link: https://redcap.link/LACMDROPortal. All reports submitted to the LACDPH MDRO Reporting Portal will be received in a secure format. Reporters will have the options to save their progress, upload lab reports, and download a PDF copy of what was submitted to LACDPH.

3.3.2 Labs that do not perform carbapenemase testing

If your laboratory does not perform carbapenemase testing for *Acinetobacter* spp., you are not required to report any carbapenem-resistant *Acinetobacter.* Carbapenem-resistant *Acinetobacter spp.* is not currently a reportable condition for LAC.

4 Carbapenemase-producing *Pseudomonas aeruginosa (*CP-*P. aeruginosa)*

4.1 LAC Reporting Requirements

Effective November 11, 2019, all laboratories serving LAC healthcare facilities are required to report carbapenemase-producing *Pseudomonas aeruginosa* within 1 working day of final result.

4.2 Definition

P. aeruginosa with production of a carbapenemase demonstrated using a recognized test (e.g., polymerase chain reaction (PCR), Carba-NP, mCIM).

4.3 Laboratory Reporting

4.3.1 Labs that perform carbapenemase testing

Report any *P. aeruginosa* where the isolate is:

1.Positive for carbapenemase production by a phenotypic method **AND/OR**
2.Positive for a known carbapenemase resistance mechanism (KPC, NDM, IMP, VIM, OXA) by a recognized molecular test

See Section 1.5.1.1 for a list of currently available carbapenemase testing methods.
Laboratories that are able to perform carbapenemase testing should wait until all tests (antimicrobial susceptibility, phenotypic and/or molecular carbapenemase) are resulted before submitting a report.

4.3.1.1 Submitting data via ELR

Ensure that only carbapenemase-positive/producing organisms are submitted.

4.3.1.2 Submitting reports via REDCap

Reports can be submitted online via REDCap portal at this link: https://redcap.link/LACMDROPortal. All reports submitted to the LACDPH MDRO Reporting Portal will be received in a secure format. Reporters will have the options to save their progress, upload lab reports, and download a PDF copy of what was submitted to LACDPH.

4.3.2 Labs that do not perform carbapenemase testing

If your laboratory does not perform carbapenemase testing for *Pseudomonas* spp., you are not required to report any carbapenem-resistant *P. aeruginosa (CRPA).* CRPA is not currently a reportable condition for LAC.

5 Candida auris (C. auris).

5.1 LAC Reporting Requirements

Effective November 11, 2019, all laboratories serving LAC healthcare facilities are required to report confirmed *C. auris* within 1 working day of final result.

5.2 Definitions

5.2.1 Confirmed *C. auris*

Confirmed *C. auris* is defined as detection of *C. auris* from any body site using either culture or a culture independent diagnostic test (CIDT) (e.g., Polymerase Chain Reaction [PCR]).

5.2.2 Presumptive *C. auris*

C. auris can be misidentified as many different organisms when using some traditional phenotypic methods for yeast identification. Visit this website to learn when you should suspect C. auris depending upon which identification method is used by your laboratory:
http://publichealth.lacounty.gov/acd/docs/When_to_suspect_Cauris.pdf

5.2.3 Screening cases

Person with confirmatory laboratory evidence from a swab collected for the purpose of screening for *C. auris* colonization, regardless of site swabbed. Typical screening specimen sites are skin (e.g., axilla,

groin), nares, rectum, or other external body sites. Swabs collected from wound or draining ear as part of clinical care are considered clinical specimens.

5.2.4 Clinical cases

Persons with confirmatory laboratory evidence from a clinical specimen collected for the purpose of diagnosing or treating disease in the normal course of care would be considered clinical cases. This includes specimens from sites reflecting invasive infection (e.g., blood, cerebrospinal fluid) and specimens from non-invasive sites such as wounds, urine, and the respiratory tract. Note, presence of *C. auris* from non-invasive sites may represent colonization and not true infection.

5.3 Laboratory Reporting

5.3.1 Laboratories that can identify *C. auris*

Currently, accurate identification of *C. auris* can be performed using the Bruker Biotyper brand MALDI-TOF using the updated Bruker FDA-approved MALDI Biotyper CA System library (Version Claim 4) or their "research use only" libraries (Versions 2014 [5627] and more recent) and using the bioMérieux VITEK (MALDI-TOF) MS using the FDA-approved IVD v3.2 or their "research use only" libraries (with Saramis Ver 4.14 database and Saccharomycetaceae update). In addition, please submit **all** final results, including ASFT if performed.
Please see the CDC website for updates as they become available: https://www.cdc.gov/fungal/candida-auris/recommendations.html

5.3.1.1 Submitting data via ELR

Ensure that only confirmed *C. auris*, regardless of specimen site, are submitted.

5.3.1.2 Submitting reports via REDCap

Reports can be submitted online via REDCap portal at this link: https://redcap.link/LACMDROPortal. Please include the final lab report (including all AST) All reports submitted to the LACDPH MDRO Reporting Portal will be received in a secure format. Reporters will have the options to save their progress, upload lab reports, and download a PDF copy of what was submitted to LACDPH.

5.3.2 Laboratories that cannot identify C. auris

Labs that cannot accurately identify C. auris should conduct confirmatory/rule-out testing to determine if it is true C. auris or not – LACDPH can assist with this if needed. Email hai@ph.lacounty.gov to request approval to submit the isolate to LAC Public Health Laboratories (PHL). Do not send isolate to the LAC PHL without approval.
Please see the CDC website for updates as they become available: https://www.cdc.gov/fungal/candida-auris/recommendations.html

5.4 Provider Reporting

Providers are required to report confirmed *C. auris* to LAC DPH.

5.4.1 Submitting reports via REDCap

Reports can be submitted online via REDCap portal at this link: https://redcap.link/LACMDROPortal. Please include the final lab report (including all AST). All reports submitted to the LACDPH MDRO Reporting Portal will be received in a secure format. Reporters will have the options to save their progress, upload lab reports, and download a PDF copy of what was submitted to LACDPH.

5.4.2 Submitting reports via CMR

In addition to reporting C. auris online via the REDCap, another option is to report directly into IRIS via community CMR module. Please include the final lab report (including all AST). If you have technical questions on how to access this form in IRIS please contact IRISsystem@ph.lacounty.gov.

6 Vancomycin-resistant *Staphylococcus aureus* (VRSA)

6.1 LAC Reporting Requirements

Effective November 11, 2019, all laboratories serving LAC healthcare facilities are required to report VRSA within 1 working day of final result.

6.2 Definition

The CDC currently defines VRSA as *S. aureus* with a vancomycin MIC ≥ 16 µg/ml.

6.3 Laboratory Reporting

Laboratories should wait until all tests are completed before submitting a report.

6.3.1.1 Submitting data via ELR (preferred)

Ensure that only confirmed VRSA, regardless of specimen site, are submitted.

6.3.1.2 Submitting reports via REDCap

Reports can be submitted online via REDCap portal at this link: https://redcap.link/LACMDROPortal. All reports submitted to the LACDPH MDRO Reporting Portal will be received in a secure format. Reporters will have the options to save their progress, upload lab reports, and download a PDF copy of what was submitted to LACDPH.

6.3.2 Submitting isolates

Due to the rarity of VRSA in the United States, laboratories should save any VRSA isolates for confirmatory testing at the LAC Public Health Laboratory (PHL) if needed. Please do not submit isolates to the LAC PHL without calling ACDC first at 213-240-7941.

7 Suspect pan-resistant organisms (Suspect PDR)

7.1 LAC Reporting Requirements

Effective November 11, 2019, all laboratories serving LAC healthcare facilities are required to report suspect pan-resistant organisms (suspect PDR) within 1 working day of final result.

7.2 Definition

LACDPH currently defines suspect PDR as gram-negative bacteria that are resistant to all antibiotics tested, excluding colistin. This definition is subject to change.

7.3 Laboratory Reporting

Laboratories should wait until all antimicrobial susceptibility testing (AST) is completed before submitting a report.

7.3.1.1 Submitting data via ELR (preferred)

Reporting suspect PDR via ELR is not available at this time.

7.3.1.2 Submitting reports via REDCap

Reports can be submitted online via REDCap portal at this link: https://redcap.link/LACMDROPortal. All reports submitted to the LACDPH MDRO Reporting Portal will be received in a secure format. Reporters will have the options to save their progress, upload lab reports, and download a PDF copy of what was submitted to LACDPH.

If you have questions, please contact the Healthcare Outreach Unit of the Acute Communicable Disease Program (ACDC) at ***(213)240-7941*** *or* ***hai@ph.lacounty.gov****.*