

Novel MDROs in LA County

The Los Angeles County Department of Public Health (LACDPH) has become aware of novel forms of multiple-drug resistant organisms (MDROs) in LA County. These can spread easily within and between healthcare facilities and can be very difficult to treat. When you report suspect novel MDROs to Acute Communicable Disease Control (ACDC), we will work with you to prevent their spread.

Contact ACDC at 213-240-7941 within 1 working day if your facility detects organisms meeting any criteria from any specimen source:

Targeted MDRO	Organism(s)	Phenotypic Criteria	Genotypic Criteria
Rare carbapenemase producing organisms	Carbapenem-resistant (CR)- Enterobacteriaceae	Carbapenemase positive* and/or R to ceftazidime-avibactam and/or meropenem-vaborbactam	VIM, NDM, IMP, and/or OXA
	CR- <i>Pseudomonas aeruginosa</i>	Carbapenemase positive** and/or R to cefepime and/or ceftazidime	KPC, VIM, NDM, IMP, and/or OXA
	CR- <i>Acinetobacter</i> spp.	Carbapenemase positive**	KPC, VIM, NDM, IMP, and/or OXA
<i>mcr</i> -producing organisms	Enterobacteriaceae (excluding <i>Proteus</i> , <i>Providencia</i> , <i>Morganella</i> and <i>Serratia</i>)	N/A	<i>mcr</i>
Vancomycin intermediate or resistant <i>S. aureus</i> (VISA/ VRSA)	<i>Staphylococcus aureus</i>	Vancomycin MIC \geq 8 μ g/ml	N/A
Suspect pan-resistant organisms	Enterobacteriaceae, <i>Pseudomonas aeruginosa</i> , or <i>Acinetobacter</i> spp.	Resistant to all drugs tested on your gram-negative panel(s) †	N/A
<i>Candida auris</i>	<i>C. auris</i> can be misidentified when using traditional methods for yeast identification. ‡ Report <i>C. haemulonii</i> as a suspect case.	N/A	N/A

* mCIM and eCIM positive, or positive with any other approved carbapenemase test specific for metallo beta-lactamase.

** Positive with any approved carbapenemase test.

† Disregard colistin susceptibility results when identifying a suspect pan-resistant isolate.

‡ See attached table for recommendations on when to suspect *C. auris*.

For the more information on antimicrobial resistance in LA County, please visit:

<http://publichealth.lacounty.gov/acd/AntibioticResistance.htm>

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When to suspect *Candida auris*

C. auris can be misidentified as many different organisms when using traditional phenotypic methods for yeast identification. The table below from the Centers for Disease Prevention & Control (CDC) summarizes common misidentifications based on the identification method used. If any of the species listed below are identified, or if species identity cannot be determined, further characterization using appropriate methodology should be sought.

Identification Method	Organism <i>C. auris</i> can be misidentified as:
Vitek 2 YST	<i>Candida haemulonii</i> <i>Candida duobushaemulonii</i>
API 20C	<i>Rhodotorula glutinis</i> (characteristic red color not present) <i>Candida sake</i>
BD Phoenix yeast identification system	<i>Candida haemulonii</i> <i>Candida catenulate</i>
MicroScan	<i>Candida famata</i> <i>Candida guilliermondii</i> * <i>Candida lusitaniae</i> * <i>Candida parapsilosis</i> *
RapID Yeast Plus	<i>Candida parapsilosis</i> *

**C. guilliermondii*, *C. lusitaniae*, and *C. parapsilosis* generally make pseudohyphae on cornmeal agar. If hyphae or pseudohyphae are not present on cornmeal agar, this should raise suspicion for *C. auris* as *C. auris* typically does not make hyphae or pseudohyphae. However, some *C. auris* isolates have formed hyphae or pseudohyphae. Therefore, it would be prudent to consider any *C. guilliermondii*, *C. lusitaniae*, and *C. parapsilosis* isolates identified on MicroScan or any *C. parapsilosis* isolates identified on RapID Yeast Plus as possible *C. auris* isolates and forward them for further identification.

These recommendations may change as CDC learns more about misidentification of *C. auris*. Visit www.cdc.gov/fungal/candida-auris/recommendations.html for the most updated information, including detailed algorithms for when to suspect *C. auris* based on identification methods.

The recommendations above are current as of 12/21/18.

Reporting Novel MDROs in Los Angeles County

Frequently Asked Questions

1. Why are we reporting these organisms?

These organisms pose an urgent public health threat because they are difficult to treat and can spread rapidly. With your help to detect and report these organisms, Public Health will coordinate a response effort to contain their spread. You can learn more about the threat of antibiotic resistance here:

<http://publichealth.lacounty.gov/acd/AntibioticResistance.htm>

2. What are carbapenemases and *mcr*?

Carbapenemases are enzymes that make an organism resistant to carbapenems and other β -lactam antibiotics. The *mcr* gene can make bacteria resistant to colistin. Carbapenemase genes (i.e., KPC, NDM, OXA, VIM, and IMP) and *mcr* are typically encoded on mobile elements called plasmids that can spread very easily between different kinds of bacteria. The KPC gene is frequently found in CRE in LA County; however, it is very rare amongst *Acinetobacter* and *Pseudomonas aeruginosa*. You can learn more about carbapenemases at: <http://publichealth.lacounty.gov/acd/Diseases/CPO.htm>

3. Is this different than the mandated CRE reporting in LA County?

Yes. CRE is required via a Health Officer Order. Novel MDROs are considered an “occurrence of any unusual disease,” and should be reported in addition to CRE. The current list of reportable diseases and conditions can be found here: http://publichealth.lacounty.gov/report/disease_rpt.pdf

4. Why is resistance to ceftazidime-avibactam, meropenem-vaborbactam and ceftolozanetazobactam highlighted?

These new agents have been FDA-approved to treat organisms with limited treatment options, including carbapenemase-producing organisms. Thus, if an isolate is resistant to one or more of these agents, it is likely that the organism is producing a rare or novel resistance mechanism. This list may be updated over time.

5. Why is it unnecessary to report vancomycin- intermediate *Staphylococcus aureus* (VISA) with a vancomycin MIC of 4 μ g/ml?

VISA isolates demonstrating vancomycin MICs of 4 μ g/ml may represent testing variation. However, VISA strains with a vancomycin MIC of 8 μ g/ml and vancomycin-resistant *S. aureus* (VRSA; MICs \geq 16 μ g/ml) are of concern and should be reported to public health. Please also refer to the Clinical and Laboratory Standards Institute (CLSI) website <https://clsi.org/standards/> for the most up-to-date testing standards.

6. How do I report suspect or confirmed novel MDROs?

Call ACDC at 213-240-7941 to report a “novel MDRO”. Our staff will forward your call to the appropriate staff persons.

7. Should I save these isolates?

Yes, please save any suspect or confirmed novel MDRO isolates until you have spoken with ACDC.

8. My facility does not do the testing that is outlined in the flyer. Is Public Health recommending that clinical labs implement these tests?

No. We are only asking those facilities that currently utilize the phenotypic and/or genotypic tests described in the flyer to report these novel MDROs when any criteria are met.

9. Should we report organisms isolated from all body sites?

Yes, organisms from any specimen source should be reported.

10. Do we include isolates from specimens collected for non-clinical purposes, such as surveillance cultures?

Yes, report both clinical and surveillance cultures.

11. Should we report specimens collected in outpatient settings?

Yes, both outpatient and inpatient specimens may be reported.

12. Should we report duplicate isolates from the same patient?

No, do not report the same species from same patient within 30 days.

13. What information do healthcare facilities need to provide?

- Patient identifiers, including name and date of birth
- Healthcare facility of origin (especially if clinical lab serves multiple healthcare facilities)
- Collection date
- Specimen source
- Organism ID
- Final antimicrobial susceptibility testing results (if applicable)

14. Will we receive confirmatory results for suspect cases?

Yes, if confirmatory testing needs to be done, your laboratory will receive a result via secure fax. LACDPH will work with our Public Health Laboratory to determine which organisms need confirmatory testing.

15. How quickly will we receive confirmatory results for suspect cases?

Depending on the organism, results are anticipated to be reported within 3-5 working days.

16. What happens if we receive a positive result after confirmatory testing?

LACDPH will work with your infection prevention staff to conduct any necessary follow-up.

17. Where can I find more information/resources regarding novel MDROs?

Please visit our website: <http://publichealth.lacounty.gov/acd/Diseases/NMDRO.htm>