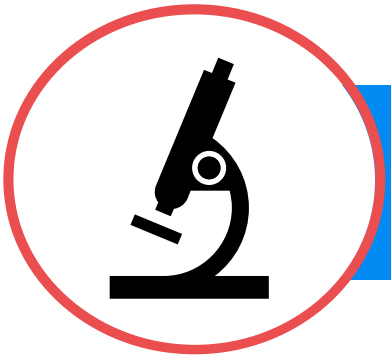


QUARTERLY MDRO UPDATE #10

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH

7/29/22

HIGHLIGHTED IN THIS ISSUE

- LAC Multifacility Antibiogram and highlights from 2020 data
- Amphotericin B susceptibility
- *Candida auris* update

SUMMARY

Antimicrobial resistance is a growing public health problem nationwide. The LAC multifacility antibiogram, defined as a summary of antimicrobial susceptibility rates for selected bacterial pathogens, provides comprehensive information about local antimicrobial resistance and can support antimicrobial treatment protocols.

KEY RESOURCES

LA County Antibiogram Home Page

LA County N-MDRO Home Page

LA County Reportable Disease List

CDC MDR Data

CDC Urgent AR Threats Report (2019)

CDC HAI Lab Resources Home Page

Note: When calling 213-240-7941 to report MDROs (which is currently routed to a COVID-19 Call Center), please state that you are calling to report an MDRO to the Acute Communicable Disease Control (ACDC) Program.

MESSAGE FOR CLINICAL LABORATORIES

This issue will cover the following topics:

- LACDPH 2020 Regional Multifacility Antibiogram
- Method variability with amphotericin B susceptibility testing
- *Candida auris* update

NEW! Check out the latest edition of the CLSI Outreach Working Group AST News Update where you will find summaries of direct disk diffusion testing on positive blood cultures, new requirements for updating breakpoints, AST case studies and more!

PREVIOUS NEWSLETTERS

Previous Newsletters can be found by clicking the links below:

Issue	Featured Content
1 (link)	• Identifying and reporting *C. auris* • Resources for testing for *C. auris*
2 (link)	• Antifungal susceptibility testing of *C. auris* • Validating MALDI-TOF for *C. auris*
3 (link)	• Case Study: A team approach to containing *C. auris* • The Antibiotic Resistance Lab Network
4 (link)	• Passive surveillance systems for *C. auris* • Updated resources for testing for *C. auris*
5 (link)	• Multi-Drug Resistant Organisms (MDRO)
6 (link)	• Carbapenem-resistant *Acinetobacter baumannii* (CRAB) • NDM-CRAB outbreak in Northern California • Testing methods for carbapenemases
7 (link)	• *C. auris* update
8 (link)	• Carbapenem-resistant *Pseudomonas aeruginosa* (CRPA)
9 (link)	• Carbapenem-resistant organisms (CRO)

We welcome feedback on this Newsletter, previous Newsletters or any other issue related to MDROs (mail hai@ph.lacounty.org).

QUESTIONS? CONTACT THE LACDPH HEALTHCARE OUTREACH UNIT AT HAI@PH.LACOUNTY.GOV OR 213-240-7941

LAC REGIONAL MULTIFACILITY ANTIBIOGRAM

BACKGROUND

Beginning January 2017, an LAC DPH Health Officer Order mandated that all acute care hospitals in the county submit their facility's antibiogram to DPH, beginning with data from 2016 with the order provided here. The intent is to compile antibiograms from individual facilities into a multifacility or community antibiogram with instructions for electronic submission of the reports provided here.

The first LAC Multifacility Antibiogram was presented in 2015 based on data voluntarily submitted from 75 acute care hospitals. The report containing data from 2017 is also posted on the LAC DPH Antibiogram page. The most recent report is from 2020 where you will find 2 large tables, one for gram-negative bacteria and another for gram-positive bacteria, each with data for all gram-negative or gram-positive organisms, respectively. Then there are separate tables for each organism where the interquartile range for each antimicrobial agent is also listed.

It is obvious that AST protocols and antimicrobial agents tested will vary among laboratories and these variations can impact antibiogram data. Consequently, there are limitations to the data provided in the LAC Multifacility Antibiogram which are summarized in the beginning of the reports. It is important to understand these limitations when reviewing the data.

PURPOSE OF LAC MULTIFACILITY ANTIBIOGRAM

- Evaluate temporal trends and geographic patterns of antimicrobial susceptibility / resistance among isolates from acute care hospitals within LAC.
- Assist in identifying where control efforts are needed.
- Provide a benchmark for antibiograms prepared by individual facilities.
- Support empiric therapy selection at the local level when: the individual facility antibiogram has too few isolates (less than 30) of a particular organism; facilities do not encounter a wide variety of organisms such as the case in small hospitals and skilled nursing facilities; and healthcare facilities outside LA County receive patients from within LA County.

LAC 2020 MULTIFACILITY ANTIBIOGRAM DATA

Antibiogram data from 83 acute care hospitals were included in the 2020 report. Of the 83 hospitals, 75 are general acute care and 8 are long-term acute care hospitals. Some multi-facility organizations elected to combine data from multiple facilities for their LAC submission.

A few highlights include:

- *Acinetobacter baumannii* from all facilities were highly resistant. The drug with the highest %S was minocycline, however, only 9 facilities reported this agent.
- *Citrobacter freundii* was more resistant than *Citrobacter koseri*, most notably with the 3rd generation cephalosporins, ceftriaxone and ceftazidime.

- Using ceftriaxone as a marker, approximately 13% of *E. coli* and 15% *Klebsiella pneumoniae* were ESBL producers.

- Although it is not known how many isolates of Enterobacterales reported were from urine, the %S for nitrofurantoin and *E. coli* was 96% which was considerably higher than %S for other drugs commonly used for urinary tract infections and also higher than the %S for nitrofurantoin with other species of Enterobacterales.

- Among isolates of Enterobacterales, carbapenem %S was >98% when testing over 250,000 isolates. Despite this high %S, this could represent as many as 5,000 carbapenem-resistant Enterobacterales (CRE), which is concerning.

- Carbapenem (meropenem) %S was much lower for *Pseudomonas aeruginosa* (88%) than for Enterobacterales and even lower for *Acinetobacter baumannii* (37%).

- Oxacillin %S among *Staphylococcus aureus* in 2020 was basically unchanged from 2017 (64% in 2017, 63% in 2020).

- Clindamycin %S for Group B Streptococcus was 49% in 2020 and 43% in 2017, with eight times more isolates reported in 2020 (N=7528) compared to 2017 (N=647).

- Nearly all *Enterococcus faecalis* remain susceptible to vancomycin (94%).

- Interestingly, for *Enterococcus faecium*, there were substantial differences in %S for both vancomycin and daptomycin with %S increasing for vancomycin and %S decreasing for daptomycin from 2017 to 2020.

Agent Year	% Susceptible (IQR)	Number of isolates tested	Number of hospitals
Vancomycin			
2017	23% (2.5-31.0)	3,362	57
2020	34% (28-50)	4,460	65
Daptomycin			
2017	97% (96-100)	461	9
2020	79% (38-98)	1,540	16

  - For vancomycin, the IQR appears to suggest outliers in 2017 at the low end of the %S range, which could impact the overall %S data.
  - For daptomycin, there are several factors that may have impacted the wide range of daptomycin %S data among facilities and between the two time periods to include: laboratories using different breakpoints as CLSI made recent changes to daptomycin breakpoints and laboratories selectively testing/reporting daptomycin on select isolates which is plausible since 4460 isolates were tested with vancomycin and only 1540 for daptomycin in 2020.

Laboratories should review their daptomycin testing strategies and daptomycin %S data with their Antimicrobial Stewardship Team to ensure individual AST results are interpreted based on appropriate breakpoints and antibiogram %S data are conveying reliable messages.

EXPANDED GUIDELINES FOR ANTIBIOGRAM PREPARATION IN 2022

CLSI recently updated their antibiogram guideline with publication of "Analysis and Presentation of Cumulative AST Data, M39 5th Ed."[1] This document includes detailed instructions for antibiogram preparation and a small section on other types of cumulative AST reports. As a reminder, **antibiogram** refers to the report aimed at guiding clinicians in the selection of empirical antimicrobial therapy for initial infections when definitive susceptibility results are not available. For cumulative AST reports intended for purposes other than guiding empirical therapy (e.g., identifying emergence of resistance, trending antimicrobial resistance for public health initiatives), alternative analyses may be more appropriate than those recommended in CLSI M39 for preparation of a routine antibiogram.

The following basic recommendations for antibiogram preparation have not changed since the initial publication of M39 in 2000 and include:

- Antibiogram reports should be analyzed and presented at least annually
- Only diagnostic (not surveillance) isolates should be included
- Only final, verified test results should be included
- Duplicates should be eliminated by including only the first isolate of a species, patient, and/or analysis period, regardless of specimen source or antimicrobial susceptibility profile
- Only species with testing data for ≥ 30 isolates should be included
- Only antimicrobial agents routinely tested against the population of isolates to be analyzed should be included, and the %S should be calculated from results reported as well as those that may be suppressed on patient reports for which selective or cascade reporting rules have been applied
- To decrease biases in susceptibility estimates, laboratorians should refrain from including results for supplemental antimicrobial agents selectively tested on resistant isolates only
- Laboratorians should report the %S but exclude the %I and %SDD in the %S statistic

New and expanded content in the M39 5th Edition includes:

- Refined definitions of "cumulative AST data report" and "antibiogram"
- Practical concerns and advantages and disadvantages in extracting data from various data sources for antibiogram preparation
- Combining results from rapid diagnostics and resistance markers with the antibiogram
- Developing antibiograms for:
    - yeast and antifungal agents
    - long-term care facilities
    - veterinary practices
- Developing multifacility antibiograms
- Use of antibiograms in ASP including %S thresholds for empirical therapy guidance
- Preparing cumulative AST data reports for peer-reviewed publication
- Using statistical analysis including percentiles, interquartile ranges, MIC_{50}, MIC_{90}, to evaluate antibiogram data
- Including intermediate^ results in antibiograms for urinary tract agents
- Defining antibiogram percent susceptible thresholds related to empirical therapy decisions

In addition to the above, there is an updated section in the new M39 that provides guidance for reviewing the local antibiogram before distribution to avoid reporting errors. And there are many new tips for dealing with AST reporting issues (e.g., updated breakpoints, cascade reporting, selective testing of certain agents, etc.) that might impact antibiogram %S data. Facilities in LAC are encouraged to follow recommendations in CLSI M39 for preparation of their local antibiogram.

[1] Clinical and Laboratory Standards Institute. 2022. Analysis and Presentation of Cumulative Antimicrobial Susceptibility Test Data; Approved Guideline - Fifth Edition. CLSI, Wayne, PA.

AMPHOTERICIN B SUSCEPTIBILITY TESTING AND *CANDIDA AURIS*

While there are no new recommendations regarding testing, we wanted to remind laboratories and providers that there may be variation in MIC values obtained for amphotericin B and *Candida auris* depending on the test method used--so results must be interpreted with caution. Since this is a very complicated issue which may impact prescribing, laboratories are encouraged to share information about testing *C. auris* and amphotericin B with their Antimicrobial Stewardship Team. We have addressed differences in results that may be encountered using various test methods in a previous edition of our newsletter. The topic was again raised in a short article published in a recent CLSI AST Subcommittee News Update. See CDC recommendations for treatment of *C. auris* infections if needed: https://www.cdc.gov/fungal/candida-auris/c-auris-treatment.html.

CANDIDA AURIS UPDATE

Candida auris continues to pose a threat to persons residing in LA County healthcare facilities. LACDPH recommends that clinical labs increase detection of *C. auris* within LAC to control its spread via two key actions:

- *C. auris* admission screening
- Identifying *Candida* spp. to the species level for non-sterile sites

If conducting these actions is not possible for all patients/residents, LACDPH advises laboratories work with clinical/IP staff to find high-risk patients on which to focus this testing. High risk patients for *C. auris* include:

- Persons being admitted from any long-term acute care hospital (LTACH) (per 3/18/21 CAHAN) or any subacute unit of a skilled nursing facility (aka ventilator-capable SNFS (vSNFs))
- High-risk contacts of new *C. auris* cases (i.e., roommates) -use CDPH Screening Decision Tree
- Persons on a mechanical ventilator or with presence of tracheostomy
- Persons who are colonized with MDROs, especially rare carbapenemase-producing organisms
- Persons who have had a recent overnight stay in a healthcare facility outside of the US

If your laboratory cannot conduct *C. auris* testing on-site, refer to the LACDPH List of Laboratories with *C. auris* Testing Capacity to find a reference lab that provides this service for you. Note that the LAC Public Health Laboratories (PHL) can only conduct rule-out *C. auris* testing at this time for confirmed or presumptive *C. auris* isolates. **Please do not send any *C. auris* isolates nor swabs to LAC PHL without contacting the HOU first.** You may either call us at 213-240-7941 or email us at hai@ph.lacounty.gov.

C. AURIS BY THE NUMBERS (Updated 07/12/22)

To date, 138 bloodstream infections have been reported in LA County (8.8% of total LAC *C. auris* cases).

Table 1. *C. auris cases in Los Angeles County by facility and case type, 2020-2022 (n=1562)*

HCF Type	Surveillance*	Clinical^	Surveillance-to-clinical†	Total
General Acute Care Hospital (GACH)	103	82	15	200
Long Term Acute Care Hospital (LTACH)	1100	48	137	1285
Skilled Nursing Facility (SNF)	65	0	8	73
Other	3	1	0	4
Total	**1271**	**131**	**160**	**1562**

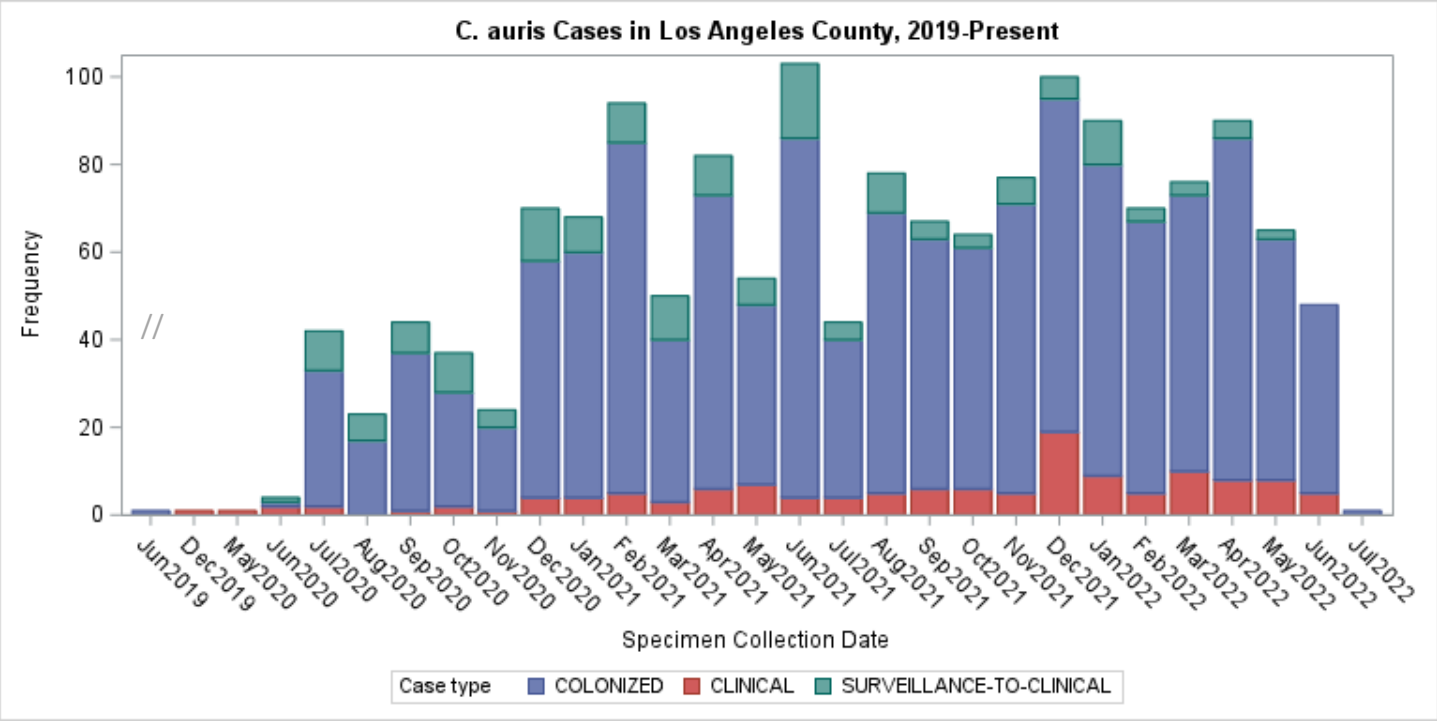
Note that all cases are counted by facility type and case type at time of first positive specimen collection.

** Swab collected for the purpose of screening for C. auris colonization.*

^ Specimen collected for clinical purposes.

† *Cases who were first identified via screening swab and later had one or more positive clinical specimen(s).*

Figure 1. ***C. auris cases in Los Angeles County by month, June 2019-July 2022 (n=1562)***



See footnotes from *Table 1* above.