



## INSTRUCTIONS FOR COMPLYING WITH ANTIBIOGRAM REPORTING REQUIREMENTS

*The following instructions relate to the Health Officer Order for Reporting Annual Antibioqram Data, issued on January 19<sup>th</sup>, 2017. These instructions were updated March 2023.*

*Updated information and instructions for antibiogram reporting can be found at:  
<http://publichealth.lacounty.gov/acd/antibiogram.htm>*

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# 1 Submission of Antibigram Data to LACDPH

The annual Los Angeles County regional antibiogram will be limited to inpatients from acute care hospitals, inpatients from long-term acute care hospitals, and residents of skilled nursing facilities (SNFs) in LA County.

Skilled nursing facilities that already obtain antibiogram data should work with their reference laboratories to make sure that antibiogram data are being submitted to the Los Angeles County Department of Public Health (LACDPH) in a timely manner, and to ensure that antibiogram preparation is consistent with LACDPH recommendations.

Mandated facilities must submit their annual antibiograms by email to [hai@ph.lacounty.gov](mailto:hai@ph.lacounty.gov).

For healthcare facilities in Long Beach and Pasadena, please refer to your Health Department's instructions.

## 1.1 Requirements

In order to generate meaningful analyses, LACDPH has set the following requirements for submission of annual facility-level antibiogram data:

- Data must **only** be submitted in an Excel format (.xls, .xlsx).
  - PDF formats are **no longer** acceptable.
- Susceptibility results (%S) from all specimen sources must be included.
- Results should be reported both as percentage of susceptible isolates and number of isolates tested for each pathogen-drug combination.
- Report 1 year of data with exact dates of collection period (ie. January 1 to December 31).
- Complete the checklist on tabs #2 and #3 to indicate methods used to generate your data.
- If you serve multiple facilities, please prepare a separate report for each facility location.

## 1.2 Deadlines

Mandated facilities are required submit their annual antibiograms no later than June 1<sup>st</sup> of the following year.

## 1.3 Drug-Pathogen Combinations of Interest to LACDPH

LACDPH has identified several pathogens of epidemiological and clinical importance. The suggested drug-pathogen ("drug-bug") combinations of interest to include in your submitted antibiograms are:

- **Gram-negative pathogens:**
  - *Enterobacteriales* group: *Escherichia coli*, *Enterobacter cloacae*, *Enterobacter* spp. (other than *E. cloacae*), *Klebsiella (Enterobacter) aerogenes*, *Klebsiella oxytoca*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Morganella morganii*, *Citrobacter freundii*, *Citrobacter koseri*, *Serratia marcescens*
  - Non-*Enterobacteriales*: *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, *Stenotrophomonas maltophilia*.
- **Antimicrobial susceptibility for gram-negative pathogens:** amikacin, ampicillin, ampicillin-sulbactam, cefazolin, cefepime, ceftazidime, ceftriaxone/cefotaxime, ceftazidime-avibactam,

ceftolozane-tazobactam, ciprofloxacin, doripenem, ertapenem, imipenem, imipenem-relebactam, gentamicin, levofloxacin, meropenem, meropenem-vaborbactam, minocycline, nitrofurantoin, piperacillin-tazobactam, trimethoprim-sulfamethoxazole and tobramycin.

- **Gram-positive pathogens:** methicillin-resistant *Staphylococcus aureus* (MRSA), methicillin-susceptible *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Streptococcus pyogenes* (Group A *Streptococcus*), *Streptococcus agalactiae* (Group B *Streptococcus*), *Enterococcus faecalis*, *Enterococcus faecium*, *Enterococcus* spp. (all enterococcal species).
- **Antimicrobial susceptibility for gram-positive pathogens:** oxacillin, penicillin, ampicillin, ceftriaxone, ceftaroline, doxycycline, levofloxacin, ciprofloxacin, linezolid, trimethoprim-sulfamethoxazole clindamycin, erythromycin, vancomycin, daptomycin, nitrofurantoin.

If your facility does not routinely test for any of the drugs and/or pathogens listed above, please do not include them in your antibiogram. Indicate “NT” if not tested.

#### 1.4 Submission Templates

The LACDPH antibiogram template is available at

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

LACDPH will no longer be accepting any other format (e.g., Word document, PDF). Antibiogram data must be submitted in the format presented in the Excel submission form.

#### 1.5 Use of Data

Antimicrobial resistance is a growing public health problem nationwide. LACDPH will analyze data from facility-level antibiograms to develop an understanding of patterns of antimicrobial resistance in LA County<sup>1,2</sup>. These data are valuable to identify potential opportunities to prevent the spread of antimicrobial resistance and improve public health of LA County<sup>3,4</sup>. In addition, the data will be considered for future antimicrobial stewardship initiatives as has been done in other states<sup>5</sup>. These data will not be shared with outside entities without facilities' permission. Individual results will not be publicly reported, and data will either be aggregated at the County or regional level.

## 2 Recommendations for Preparation of a Facility Antibigram

Due to variation in how healthcare facilities develop and report their facility antibiograms, LACDPH has developed a set of recommendations for facilities to follow when preparing their antibiograms.

### 2.1 Clinical and Laboratory Standards Institute (CLSI) Guidelines

Antibiogram data are impacted by several factors, including: 1) patient population; 2) culturing practices; 3) susceptibility testing and reporting policies; and 4) methods for compiling data (ie. excluding duplicates). However, following standardized laboratory practices can generate more accurate results.

LACDPH strongly recommends that facilities follow the most-updated Clinical and Laboratory Standards Institute (CLSI) consensus document, titled “Analysis and Presentation of Antimicrobial Susceptibility Test Data,” to prepare their antibiogram (M39-A4 is current for 2022). The CLSI guidelines provide comprehensive instructions on developing an antibiogram. Changes to M39-A4 as compared to previous versions of this guideline have recently been summarized by Simner et al<sup>6</sup>.

### 2.2 Ways to Address Common Mistakes in Preparing an Antibigram

Mistakes in antibiogram preparation can result in misinterpretation by treating clinicians and antimicrobial stewardship programs and thus, impact both empiric antibiotic selection and survival from sepsis<sup>7,8</sup>. LACDPH recommends facilities adhere to the following general guidelines to correct common mistakes<sup>9,10,11</sup> when preparing their antibiograms:

- Report 1 year of data with exact dates of the calendar year (January 1 to December 31)
- Obtain the most complete data possible; include results from agents that are tested but may be selectively suppressed on patient reports
- Report percent susceptible (%S) and number of isolates tested for each drug-organism combination
- Encourage laboratory to follow most current CLSI breakpoints (M100 32nd edition for 2022 data)
- Include only final, verified results
- Include only drugs that are routinely tested- do not include those tested on special request
- Include the first isolate per patient per reporting period, irrespective of body site or antimicrobial susceptibility profile
- Exclude results obtained from surveillance studies (e.g. nasopharyngeal colonization studies for methicillin-resistant *Staphylococcus aureus* (MRSA), carbapenem-resistant *Enterobacterales* (CRE) obtained from rectal swabbing, etc).
- Indicate number of isolates for each organism
- Separately report methicillin-susceptible *Staphylococcus aureus* (MSSA) and methicillin-resistant *Staphylococcus aureus* (MRSA) and *all S. aureus*
- For *Streptococcus pneumoniae*, list %S following analysis of data from all isolates using meningitis and non-meningitis breakpoints for penicillin, cefotaxime and ceftriaxone if appropriate

### 3 The Antibiogram and Antimicrobial Stewardship

The antibiogram is an important tool for the development of antimicrobial stewardship policies and protocols for empiric antimicrobial selection. Early empiric antimicrobial therapy with microbiologic activity can improve survival from sepsis<sup>7,8</sup>.

The annual antibiogram is an important component of developing an effective antimicrobial stewardship program (ASP) and should be reviewed by the ASP team, at least annually. Whenever possible, the microbiology laboratory should present the results of the antibiogram to the ASP<sup>12</sup>. The antibiogram should be made available to all treating clinicians in the facility.

The ASP may request additional analysis, including but not limited to:

- Combination antibiograms against select species such as *Pseudomonas aeruginosa*, and *Acinetobacter baumannii*
- Location specific antibiograms (ICU versus Non-ICU)
- Source specific antibiograms (urine, blood, etc.)
- Age specific antibiograms (pediatrics, adults, etc.)

More information about antimicrobial stewardship can be found at:

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

## 4 Resources

LACDPH has compiled other resources for healthcare facilities and clinical laboratories to use in improving their antibiogram development and laboratory testing practices.

### 4.1 Los Angeles County Department of Public Health (LACDPH)

The LACDPH has convened an expert task force to help facilitate the standardization and analysis of antibiogram data for Los Angeles County. The task force is available to provide guidance and support to facilities in development of their individual antibiogram and format for submitting data to LADPH.

### 4.2 WHONET

WHONET is a free software developed by the World Health Organization (WHO) that can be used to help develop the facility level antibiogram. The software is available at:

<http://www.whonet.org/aboutus.html>

An example of WHONET-developed antibiogram can be found here:

<http://www.asp.mednet.ucla.edu/files/view/AMIC2015online.pdf>

### 4.3 Clinical and Laboratory Standards Institute (CLSI)

The CLSI Guidelines, as well as other laboratory education and resources, are available at:

<http://clsi.org/>.

**If you have additional questions, please contact the Acute Communicable Disease Program at (213)240-7941 or [hai@ph.lacounty.gov](mailto:hai@ph.lacounty.gov).**

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