



## INSTRUCTIONS FOR COMPLYING WITH THE 2017 ANTIBIOGRAM REPORTING REQUIREMENTS

*The following instructions relate to the Health Officer Order for Reporting of Carbapenem-Resistant Enterobacteriaceae (CRE) and Antimicrobial Resistance of Bacterial Pathogens, issued on January 19<sup>th</sup>, 2017.*

*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 Cumulative 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 should preferably be submitted in an Excel format (.xls, .xlsx).
  - PDF formats are 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, 2016).

## 1.2 Deadlines

Mandated facilities are required submit their annual cumulative 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:**
  - *Enterobacteriaceae* group: *Escherichia coli*, *Enterobacter* spp. (specify if combined or report as species, e.g. *E. aerogenes* and *E. cloacae*), *Klebsiella* spp. (specify if combined or report as species, e.g. *K. pneumonia* and *K. Oxytoca*), *Proteus mirabilis*
  - Non-*Enterobacteriaceae*: *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, *Stenotrophomonas maltophilia*.
- **Antimicrobial susceptibility for gram-negative pathogens:** piperacillin-tazobactam, ceftriaxone, ceftazidime, cefepime, meropenem, doripenem, ertapenem, imipenem, gentamicin, tobramycin, amikacin, ciprofloxacin, levofloxacin, nitrofurantoin, and trimethoprim-sulfmethoxazole.

- **Gram-positive pathogens:** methicillin-resistant *Staphylococcus aureus* (MRSA), Methicillin-sensitive *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Streptococcus pyogenes* (Group A *Streptococcus*), *Streptococcus agalactiae* (Group B *Streptococcus*), and *Enterococcus* spp. (specify if combined or report as species, e.g. *E. faecalis* and *E. faecium*).
- **Antibiotic susceptibility for gram-positive pathogens:** penicillin (*S. pneumoniae*), ampicillin (*Enterococcus* spp.), ceftriaxone (*S. pneumoniae*), ceftaroline, doxycycline, levofloxacin (*S. pneumoniae*), ciprofloxacin (*S. pneumoniae*), linezolid (*S. aureus*, *Enterococcus* spp.), trimethoprim-sulfamethoxazole (*S. aureus*, *S. pneumoniae*), clindamycin, vancomycin, daptomycin, nitrofurantoin (*Enterococcus* spp.).

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. If your facility tests more than the drugs and/or pathogens listed above, please do include them in your antibiogram.

#### 1.4 Submission Templates

LACDPH has created an example antibiogram template for submission, available at <http://publichealth.lacounty.gov/acd/antibiogram.htm>.

Note: This document only contains the suggested drug-bug combinations of interest (as defined in **Section 1.3**).

#### 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>. 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 Cumulative Antibigram

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

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

Cumulative 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 Cumulative Antimicrobial Susceptibility Test Data,” to prepare their cumulative antibiogram (M39-A4 is current for 2017). The CLSI guidelines provide comprehensive instructions on developing an antibiogram.

### 2.2 Ways to Address Common Mistakes in Preparing a Cumulative 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>5,6</sup>. LACDPH recommends facilities follow the following general guidelines to correct common mistakes<sup>7,8,9</sup> when preparing their antibiograms:

- Report 1 year of data with exact dates of collection period (e.g. January 1, 2016 to December 31, 2016)
- Report percent susceptible (%S) only
- Encourage laboratory to follow most current CLSI breakpoints (M100S 27th edition for 2017); especially for *Enterobacteriaceae*, *Acinetobacter baumannii*, and *Pseudomonas aeruginosa*
- Include only final, verified results
- Include only drugs that are routinely tested- do not include those tested on request, by reflex, or via stepped/cascade testing protocol
- 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 *Enterobacteriaceae* (CRE) obtained from rectal swabbing, etc).
- Indicate patient location (e.g. inpatient versus outpatient or combined)
- Indicate number of isolates for each organism
- Indicate when results are based on less than (<) 30 isolates, and that interpretation is thus limited
- Isolates drawn in the emergency department (ED) are generally considered outpatient
- Separately report methicillin-susceptible *Staphylococcus aureus* (MSSA) and methicillin-resistant *Staphylococcus aureus* (MRSA)
- For *Streptococcus pneumoniae*, list %S for meningitis and non-meningitis breakpoints, and %S for penicillin with oral breakpoints, 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 antibiotic selection. Early empiric antimicrobial therapy with microbiologic activity can improve survival from sepsis<sup>5,6</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>10</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*, *MRSA*, *Klebsiella* spp. and *Acinetobacter baumannii*)
- Location specific antibiograms (ICU versus Non-ICU)
- Source specific antibiograms (urine, blood, etc.)
- Percent intermediate (%I) and percent resistant (%R) instead of percent susceptible (%S)

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.

The LACDPH has scheduled webinars in February 2017 to address questions and concerns relating to submission of antibiogram data to LADPH. Recordings of these webinars will be available at:

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

### 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 cumulative 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 Southern California American Society for Microbiology (SCASM)

The Southern California American Society for Microbiology (SCASM) will provide additional information and education on developing an antibiogram from automated susceptibility testing systems. More information about SCASM can be found at: <https://www.scasm.org/>

### 4.4 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).

## 5 References

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