

IN THIS ISSUE: 2023 WASHOE COUNTY COMMUNITY-WIDE ANTIBIOGRAM**2023 Washoe County Community-wide Antibioqram Now Available Online****What is an Antibioqram**

Antibioqrams are reports that provide information on clinically important bacteria and their susceptibility trends.¹ As part of antimicrobial stewardship, the Centers for Disease Control and Prevention (CDC) and the Clinical and Laboratory Standards Institute (CLSI) recommend creating these reports at a local level.^{1,2}

Antibioqram Data

In the “Analysis and Presentation of Cumulative Antimicrobial Susceptibility Test Data” document, CLSI provides recommendations on antibioqram preparation. Basic features include creating reports annually, including only organisms with at least 30 isolates tested, and only counting the first isolate of a species per patient within the reporting period.¹

Local hospitals and some private laboratories produce annual antibioqrams for their own institutions. Between 2002 and 2006, data were provided by both clinical and private laboratories in Washoe County, which the Northern Nevada Public Health’s (NNPH) Epidemiology Program aggregated to generate the community-wide antibioqram. However, since 2007, antibioqram data for private laboratories have not been available. As a result, recent antibioqrams only include data from hospital inpatients, outpatients, and emergency departments.

Utility of the Antibioqram

Antibioqrams can be used by a variety of professions involved with testing organisms and promoting responsible antibiotic use. The Washoe County community-wide antibioqram can be used as a reference for clinicians, pharmacists, infection control practitioners, microbiologists, public health professionals, and other interested parties. Antibioqrams may serve as a guideline for clinicians when selecting antimicrobial therapy empirically in situations where clear susceptibility results are

unavailable.¹ In hospitals, it’s best to use the hospital-specific antibioqram created by infection control teams, microbiologists, or pharmacists, as antimicrobial resistance varies greatly between different locales. For other health care professionals, a community-wide antibioqram may be preferred.

Although community-wide antibioqrams provide valuable information about local antimicrobial susceptibility, data limitations should be acknowledged.^{3,4} Antibioqrams are aggregate data and do not show cross-resistance trends, cannot be generalized to a specific patient population, and do not consider a patient’s antimicrobial treatment history.^{3,4} Furthermore, minimum inhibitory concentration (MIC) values are not included and may miss emerging antimicrobial resistance.⁴

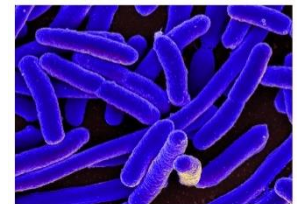
Accessing the 2023 Antibioqram

The 2023 Antibioqram was uploaded to NNPH’s website on November 20, 2024. Different versions of the antibioqram can be found here:

<https://www.nnph.org/programs-and-services/ephp/communicable-diseases-and-epidemiology/healthcare-professionals/County-wide%20Antibioqram.php>.

The three formats for the antibioqram are:

- ✓ **Online** format can be easily browsed on a device (e.g., computer, laptop, iPhone, Smart Phone, etc.) with internet access.



- ✓ **Pocket size** format is a colored copy on legal sized paper, which can be folded into a pocket size (easy to carry).

- ✓ **Wall chart** format is a colored copy in a poster size (36”W x 26”H) and easy to read, but hard to carry. It’s good for health care providers to use in the office.



2023 Community-wide Antibigram

- ◆ Antibiotic susceptibility (%) data for 19 commonly seen organisms.
- ◆ Graphic presentation of 2019-2023 antibiotic susceptibility (%) trend data in Washoe County.
- ◆ Summary of major findings on Methicillin-resistant *Staphylococcus aureus* (MRSA), Penicillin-nonsusceptible *Streptococcus Pneumoniae* (PNSSP), Vancomycin-resistant *Enterococci* (VRE), Extended-spectrum beta-lactamase (ESBLs), and Carbapenem-resistant *Enterobacteriaceae* (CRE).

Major Findings

Good News

- ◆ *S. epidermidis* showed an increase of 13% in susceptibility to Amoxicillin/clavulanate, Ampicillin/sulbactam, and Cefazolin (2022=46%, 2023=59%, $p=0.03389$), as well as an increase of 14.2% in susceptibility to Erythromycin (2022=24.1%, 2023=38.3%, $p < 0.00001$). These increases were all statistically significant.
- ◆ *Staphylococcus spp. Coag neg* susceptibility to Erythromycin increased from 43.4% in 2022 to 55.8% in 2023, a statistically significant increase of 12.4% ($p=0.026403$).
- ◆ The rate of VRE decreased from 6.4% in 2022 to 5.1% in 2023. This 1.3% decrease was not statistically significant.

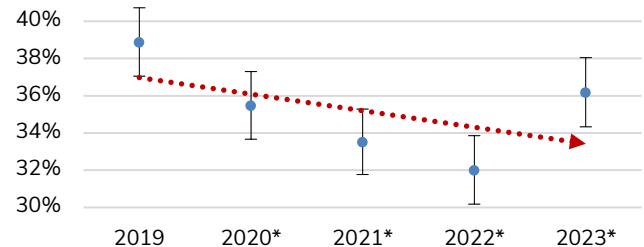
Not-So-Good News

- ◆ *E. cloacae* showed a decrease in susceptibility to Imipenem by 21.6% (2022=94.6%, 2023=73.0%, $p=0.000348$) and to Tetracycline by 16.1% (2022=94.2%, 2023=78.1%, $p=0.008995$). These decreases were both statistically significant.
- ◆ *K. aerogenes* susceptibility to Ceftazidime decreased from 82.4% in 2022 to 64.9% in 2023, a statistically significant decrease of 17.5% ($p=0.018938$).
- ◆ *P. mirabilis* susceptibility to Levofloxacin decreased from 94.0% in 2022 to 78.7% in 2023, a statistically significant decrease of 15.3% ($p < 0.00001$).
- ◆ *S. pneumoniae* susceptibility to Erythromycin decreased from 84.2% in 2022 to 69.8% in 2023, a statistically significant decrease of 14.4% ($p=0.013416$).

- ◆ MRSA showed a statistically significant increase from 32.0% in 2022 to 36.2% in 2023, an increase of 4.2% ($p=0.001757$).

Despite this year's increase in MRSA rates, the 5-year trend continues to show a downward trajectory, as illustrated in Figure 1, with 95% confidence intervals for resistance percentages.

Figure 1: Proportion of *S. aureus* identified as MRSA, Washoe County, 2019-2023



* Includes data from Tahoe Forest Hospital, located outside Washoe County
Source: Washoe County Antibigram

ATTENTION!

If you are a Washoe County healthcare provider, you are eligible to receive the *Antibiogram 2023 Pocket Size and Wall Chart* format at NO COST. Please email your request to EpiCenter@nnpb.org and clearly indicate your name, medical group, and local mailing address. Please note there may be a delay in printing requested documents.

Acknowledgements

In alphabetic order: Incline Village Community Hospital, Northern Nevada Medical Center, Renown Regional Medical Center, Saint Mary's Regional Medical Center, Tahoe Forest Hospital, Veterans Affairs Medical Center

References

1. Clinical and Laboratory Standards Institute. Analysis and Presentation of Cumulative Antimicrobial Susceptibility Test Data. 5th ed. CLSI guideline M39. Clinical and Laboratory Standards Institute; 2022.
2. Centers for Disease Control and Prevention. Core Elements of Antibiotic Stewardship. Accessed May 2024 <https://www.cdc.gov/antibiotic-use/hcp/core-elements/index.html>
3. Simner PJ, Hindler JA, Bhowmick T, Das S, Johnson JK, Lubers BV, Redell MA, Stelling J, Erdman SM. What's New in Antibiograms? Updating CLSI M39 Guidance with Current Trends. J Clin Microbiol. 2022 Oct 19;60(10):e0221021. doi: 10.1128/jcm.02210-21. Epub 2022 Aug 2. PMID: 35916520; PMCID: PMC9580356.
4. Minnesota Department of Health. About Antibiograms. 2015. Accessed May 2024 <https://www.health.state.mn.us/diseases/antibioticresistance/abx/antibiograms.pdf>