

ANTIBIOGRAM 2021, WASHOE COUNTY

| Organism | # Isolates identified | Antibiotic Susceptibility (%) | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|-----------------------|-------------------------------|-------------------------------|----------------------------|-------------------------|-----------------|--|--|------------------|--------------------|-------------------|------------------|------------------|-----------------|-------------------------|--------------------|-----------------|---------------------|----------------|---|---|---------------|----------------------------|-------------------|--------------------------|-----------------|
| | | Ampicillin (Am) | Amoxicillin/clavulanate (Aug) | Ampicillin/sulbactam (AVS) | Benzylpenicillin (PenG) | Cefazolin (Cfz) | Ceftriaxone (Cax) (S. pneumo non-meningitis) | Ceftriaxone (Cax) (S. pneumo Meningitis) | Clindamycin (Cd) | Ciprofloxacin (Cp) | Ceftaroline (Cpt) | Daptomycin (Dap) | Erythromycin (E) | Gentamicin (Gm) | Gentamicin 500 (Gm 500) | Levofloxacin (LvX) | Linezolid (Lzd) | Nitrofurantoin (Fd) | Oxacillin (Ox) | Penicillin-G (P) (S. pneumo non-meningitis) | Penicillin-G (P) (S. pneumo Meningitis) | Rifampin (RF) | Streptomycin 2000 (ST2000) | Tetracycline (Te) | Trimethoprim/sulfa (T/S) | Vancomycin (Va) |
| <i>Enterococcus faecalis</i> | 1402 | 99% | | | 100% | | | | 81% | | | | | 77% | 86% | 99% | 98% | | | 99% | | 53% | 87% | 24% | | 99% |
| <i>Enterococcus faecium</i> | 180 | 26% | | | | | | | 13% | | | | | 94% | 22% | 96% | 56% | | | 24% | | 52% | 34% | | 56% | |
| <i>Enterococcus species*</i> | 1582 | | | | | | | | | | | | | 99% | 80% | 99% | 94% | | | | | | | | | 95% |
| <i>Staphylococcus aureus</i> | 2764 | 64% | 63% | | | 71% | 67% | | 75% | 64% | 100% | 99% | 52% | 92% | | 69% | 100% | 99% | 67% | 17% | | 98% | | 89% | 98% | 100% |
| <i>Staphylococcus spp. Coag neg</i> | 458 | 50% | 50% | | | 64% | 49% | | 72% | 80% | | | | 100% | 53% | 90% | | | 57% | 18% | | 98% | | 82% | 73% | 100% |
| <i>Staphylococcus epidermidis</i> | 444 | 57% | 58% | | | 58% | | | 42% | 72% | | | | 100% | 23% | 93% | | | 74% | 10% | | 95% | | 77% | 63% | 100% |
| <i>Staphylococcus lugdunensis</i> | 72 | | | | | 97% | | | 89% | | | | | 72% | | 100% | | | 90% | | | | | 91% | 100% | |
| <i>Streptococcus pneumoniae</i> | 83 | | | | | 100% | 100% | | | | | | | 77% | | | | | 72% | | | 97% | 88% | | | |

SUMMARY OF MAJOR FINDINGS

WASHOE COUNTY HEALTH DISTRICT
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MRSA
The rate of Methicillin-resistant *Staphylococcus aureus* (MRSA) significantly decreased from 35% in 2020 to 33.5% in 2021. This increase was not statistically significant ($\chi^2 = 2.3018, P = 0.129221$).

VISA / VRSA
Vancomycin-intermediate resistant *Staphylococcus aureus* (VISA) or Vancomycin-resistant *Staphylococcus aureus* (VRSA) has not been found yet in Washoe County. Please report VISA or VRSA to the Washoe County Health District at 775-328-2447. Please also have your laboratory send the VISA/VRSA isolate for further confirmation at the Nevada State Public Health Laboratory.

VRE
The rate of vancomycin-resistant *enterococci* (VRE) was 5.0% in 2021, which was not a statistically significant increase compared to 4.0% in 2020 ($\chi^2 = 1.7077, P = 0.191286$). The VRE rate in 2015 was the highest (25.2%) one since 2002.

DRSP
The rate of drug-resistant *Streptococcus pneumoniae* (DRSP) decreased from 2012 through 2018 in Washoe County. The Washoe County Health District discontinued the surveillance system for *Streptococcus pneumoniae* in early 2019. The surveillance program data was used to create the antibiograms until this year (2019). As of the 2019 antibiogram, the antibiogram data reported by area hospitals is now used and rates to previous years will not be compared pre-2019 to post-2019. In 2020, the rate for PNSSP was 0%, while in 2021 it increased to 2.4%, although was not statistically significant.

ESBLs & CRE
Strains of *Klebsiella spp.*, *Proteus mirabilis*, and *E. coli* that produce extended-spectrum beta-lactamase (ESBLs) may be clinically resistant to therapy with penicillins, cephalosporins, or aztreonam, despite apparent *in vitro* susceptibility to some of these agents. ESBL screening data reported from three laboratories showed an average 5.0% of *E. coli*/*Klebsiella spp.*/*Proteus mirabilis* produced ESBLs in 2021, which was not statistically significantly higher than 4.9% in 2020 ($\chi^2 = 3.2959, P = 0.0695$). The rate of carbapenem-resistant enterobacteriaceae (CRE) was 0.12% (8/6939) in 2021. It is important to note that the numerator was pulled from the active Carbapenem Resistant Organism (CRO) surveillance for 2021.

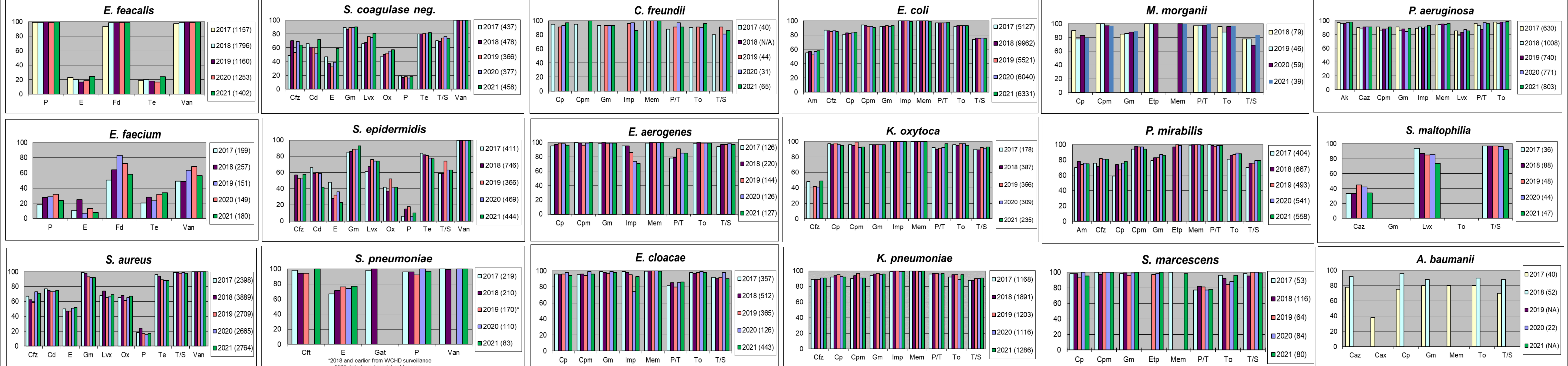
This antibiogram was compiled by the Division of Epidemiology & Public Health Preparedness (DEPHP), Washoe County Health District in collaboration with all four hospital laboratories in the community. Data covered all inpatients in local hospitals and outpatients seen at hospital emergency rooms. This antibiogram can be used as a reference for clinicians but shouldn't serve as a basis for therapy. The antibiotic susceptibility test for individual patients is still encouraged, if needed. This antibiogram only represents antibiotic susceptibility *in vitro*. Please address your questions, comments, and/or suggestions to DEPHP at 775-328-2447 or e-mail to EpiCenter@WashoeCounty.gov. The online version and pocket size version can be downloaded from the Health Department's website at <http://tinyurl.com/WCAntibiogram>.

ACKNOWLEDGEMENTS
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| Organism | # Isolates identified | Antibiotic Susceptibility (%) | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----------------------|-------------------------------|---------------|-------------------------------|----------------------------|-----------------|----------------|-----------------|------------------|----------------|-----------------|-------------------|-------------------|------------------|--------------------|-----------------|-----------------|----------------|--------------------|-----------------|---------------------|-------------------------------|-------------------|-------------------|-----------------|--------------------------|-----|
| | | Ampicillin (Am) | Amikacin (Ak) | Amoxicillin/clavulanate (Aug) | Ampicillin/sulbactam (AVS) | Aztreonam (Azr) | Cefepime (Cpm) | Cefazolin (Cfz) | Cefuroxime (Crm) | Cefazime (Cti) | Cefotetan (Cht) | Ceftazidime (Caz) | Ceftriaxone (Cax) | Cephalothin (Ct) | Ciprofloxacin (Cp) | Ertapenem (Etp) | Gentamicin (Gm) | Imipenem (Imp) | Levofloxacin (LvX) | Meropenem (Mem) | Nitrofurantoin (Fd) | Piperacillin/tazobactam (P/T) | Tetracycline (Te) | Tigecycline (TGC) | Tobramycin (To) | Trimethoprim/sulfa (T/S) | |
| <i>Citrobacter freundii</i> | 65 | | | | | | | | | | | 77% | | 97% | | 93% | | | | | 91% | | | | 96% | 86% | |
| <i>Klebsiella aerogenes</i> (formerly called <i>Enterobacter aerogenes</i>) | 127 | | | 48% | 48% | 93% | 100% | 8% | | | | 81% | 72% | | 96% | 100% | 99% | 71% | 98% | 100% | 33% | 85% | | | 99% | 97% | |
| <i>Enterobacter cloacae</i> | 443 | | | 79% | 66% | 87% | 80% | 96% | | | | 53% | 82% | 75% | | 94% | 89% | 98% | 93% | 98% | 99% | 36% | 86% | 79% | 99% | 98% | 90% |
| <i>Escherichia coli</i> | 6331 | | | 89% | 88% | 66% | 92% | 91% | 85% | | | 91% | 91% | | 84% | 99% | 93% | 99% | 87% | 99% | 98% | 98% | 98% | 78% | 92% | 93% | 75% |
| <i>Klebsiella oxytoca</i> | 235 | | | 100% | 91% | 71% | 95% | 93% | 49% | | | 93% | 99% | 95% | 94% | | 95% | 100% | 96% | 100% | 98% | 100% | 82% | 97% | 95% | 100% | 95% |
| <i>Klebsiella pneumoniae</i> | 1286 | | | 100% | 96% | 84% | 95% | 91% | 91% | | | 93% | 100% | 93% | 93% | | 92% | 99% | 96% | 99% | 98% | 99% | 46% | 97% | 83% | 99% | 95% |
| <i>Morganella morganii</i> | 39 | | | | | | | | | | | 66% | 78% | | | | 79% | 88% | | | | 100% | | | 97% | 84% | |
| <i>Proteus mirabilis</i> | 558 | | | 75% | 100% | 89% | 85% | 96% | 94% | 81% | | 94% | 100% | 94% | 93% | | 78% | 99% | 86% | | 87% | 100% | | 99% | | 88% | 79% |
| <i>Pseudomonas aeruginosa</i> | 803 | | | 98% | | | 81% | 91% | | | | 91% | | | 87% | | 89% | 93% | 85% | 96% | | 96% | | | 99% | | |
| <i>Serratia marcescens</i> | 80 | | | | | | | | | | | 61% | 65% | | | 95% | 100% | 100% | | | | 78% | | | 96% | 99% | |
| <i>Stenotrophomonas maltophilia</i> | 47 | | | | | | | | | | | 34% | | | | | | | 74% | | | | | | 96% | 92% | |

To read this antibiogram: 1) Each organism is presented in two rows. The top row represents susceptibility in percent to that antibiotic. The 2nd row represents number of isolates tested for that specific antibiotic. 2) Susceptibility greater than or equal to 90% is highlighted in light GREEN, 60%-89% in YELLOW, and less than 60% in RED. 3) Nitrofurantoin is tested for urine specimens only. 4) CLSI performance standards for antimicrobial susceptibility testing were applied. CLSI stands for Clinical and Laboratory Standards Institute (Formerly NCCLS, The National Committee for Clinical Laboratory Standards). 5) Black empty shaded cells indicate that susceptibility testing for that specific organism is not recommended or complete testing data was not available or number is too small for valid reporting.

ANTIBIOTIC SUSCEPTIBILITY (%) TREND, 2017-2021, WASHOE COUNTY (Published July 2023)



To read these graphs: Each graph represents an organism; X-axis represents the abbreviation of an antibiotic (see tables above graphs for full name of antibiotics); Y-axis represents susceptibility in percent; legends indicate each year and number of isolates identified for that year in parentheses.