

ANTIBIOGRAM 2016, WASHOE COUNTY

Organism	# Isolates Identified	Antibiotic Susceptibility (%)																									
		Amoxicillin (Am)	Amikacin (Ak)	Amoxicillin/clavulanate (Aug)	Amoxicillin/subactam (AS)	Cefazime (Ch) - Non-meningitis	Cefazime (Ch) - Meningitis	Ceftriaxone (Cax)	Clindamycin (Cl)	Ciprofloxacin (Cp)	Deptomycin (Dap)	Erythromycin (E)	Gatifloxacin (Gat)	Gentamicin (Gm)	Gentamicin 500 (Gm 500)	Levofloxacin (Lvx)	Linezolid (Lzd)	Moxifloxacin (Mfx)	Nitrofurantoin (Fd)	Oxacillin (Ox)	Penicillin-G (P)	Rifampin (Rif)	Quinupristin-dalfopristin (Syn)	Streptomycin 2000 (ST2000)	Tetracycline (Te)	Trimethoprim/sulfia (T/S)	Vancomycin (Va)
Gram Positive	<i>Enterococcus faecalis</i>	1101	100%							70%	100%	16%			65%	75%	99%		99%		99%	76%		74%	18%		98%
	<i>Enterococcus faecium</i>	197	97%							81%	91%	3%			85%	25%	100%		62%		36%	31%		65%	87%		47%
	<i>Enterococcus species*</i>	1298								80	197	162			174	197	197		175		197	197		57	197		80%
	<i>Staphylococcus aureus</i>	2342	10%	62%	62%		66%	74%	64%	99%	44%		99%		2342	2085	2085		1628	2342	2085	2085		2342	2342	2342	2342
	<i>Staphylococcus spp. Coag neg</i>	380	97%	97%	97%		97%	63%	67%	100%	46%		87%		380	380	380		212	380	380	380		380	380	380	380
	<i>Staphylococcus Epidermidis</i>	420	97%	97%	97%		97%	92%	100%	100%	29%		82%		420	398	398		410	420	398	398		420	398	420	420
	<i>Streptococcus pneumoniae**</i>	198				99%	93%					70%	98%			98%					97%	**				44	90

\* Enterococcus faecalis and Enterococcus faecium \*\* Data from Washoe County Health District's surveillance project, not based on reported hospital's antibiogram \*\*\* Non-meningitis breakpoint; Meningitis breakpoint 5%–75%

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		Amoxicillin (Am)	Amikacin (Ak)	Amoxicillin/clavulanate (Aug)	Amoxicillin/subactam (AS)	Aztreonam (Azi)	Cefepime (Cepm)	Cefazolin (Cz)	Cefuroxime (Crm)	Cefazime (Ch)	Cefoxitin (Cfx)	Ceftazidime (Caz)	Ceftriaxone (Cax)	Cephalexin (Cf)	Ciprofloxacin (Cp)	Ertapenem (Etp)	Gentamicin (Gm)	Imipenem (Imp)	Levofloxacin (Lvx)	Meropenem (Mem)	Nitrofurantoin (Fd)	Piperacillin (Pi)	Piperacillin-tazobactam (P/T)	Tetracycline (Te)	Tigecycline (TGC)	Tobramycin (To)	Trimethoprim/sulfia (T/S)	
<i>Acinetobacter Baumannii*</i>	36			75%			53%				61%	42%		55%		67%			69%					67%		81%	67%	
<i>Citrobacter freundii</i>	101				88%						83%	82%		94%	99%	96%			99%	97%			94%	86%	99%	97%	91%	
<i>Enterobacter aerogenes</i>	107				83%	95%					79%	79%		95%	98%	100%			97%	100%	30%		87%	93%	100%	98%	99%	
<i>Enterobacter cloacae</i>	306	100%			77%	93%				71%	0%	75%	72%		95%	98%	96%	98%	99%	100%	35%	71%	81%	86%	99%	98%	89%	
<i>Escherichia coli</i>	4756	92%	99%	83%	89%	93%	94%	86%	91%	94%	96%	92%	93%	84%	78%	99%	92%	100%	78%	99%	98%	98%	98%	98%	76%	99%	92%	75%
<i>Klebsiella oxytoca</i>	167			94%	68%	90%	94%	89%	82%			94%	93%	97%	92%	99%	96%		93%	100%	86%		95%	88%	99%	95%	90%	
<i>Klebsiella pneumoniae</i>	1001		99%	89%	77%	89%	89%	86%	73%	99%	95%	95%	87%	87%	78%	90%	99%	93%	100%	95%	99%	54%	54%	97%	81%	98%	92%	87%
<i>Morganella morganii*</i>	30				83%	93%					93%	93%		93%	97%	40%	97%	43%	93%	100%	97%		97%				83%	
<i>Proteus mirabilis</i>	314	73%	100%	94%	77%	98%	98%	80%	93%	99%		99%	97%	82%	64%	100%	83%		80%	100%			79%			85%	71%	
<i>Pseudomonas aeruginosa</i>	636		99%		80%	85%			0%			90%			83%				89%	87%	81%	92%		95%	97%		98%	
<i>Serratia marcescens</i>	39				87%							63%		63%		63%	191	547	636			191	636			594	95%	
<i>Stenotrophomonas maltophilia</i>	55										42%			39	39	39	39	39		87%					39	39	39	

\* The number of isolates in 2016 was under 30 therefore not reported. Keep the data available from the prior antibiogram for a reference as well as for future report preparation convenience.

To read this antibiogram:

- Each organism is presented in two rows. The top row represents susceptibility in percent to that antibiotic. The 2nd row represents the number of isolates tested for that specific antibiotic.
- Susceptibility greater than or equal to 90% is highlighted in light GREEN, 60%-89% in YELLOW, and less than 60% in RED. Susceptibility not reaching 100% is also labeled as 99%.
- Nitrofurantoin is tested for urine specimens only.
- The susceptibility result for *Streptococcus pneumoniae* is a combination of screening test and E-test results.
- 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).
- 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 a valid reporting.



ANTIBIOGRAM 2016  
WASHOE COUNTY

Division of Epidemiology & Public Health Preparedness

Washoe County Health District, Reno, NV

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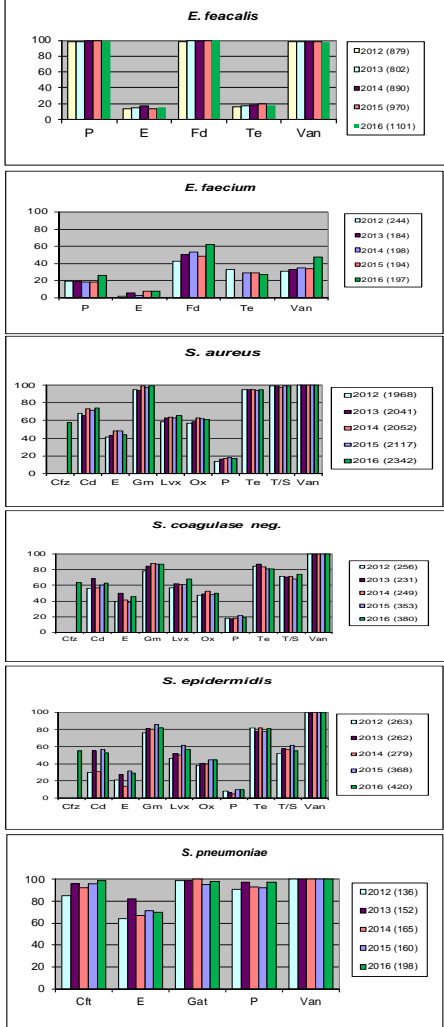
The online version is available at <http://tinyurl.com/WashoeAntibiogram>

Acknowledgements (In alphabetic order)

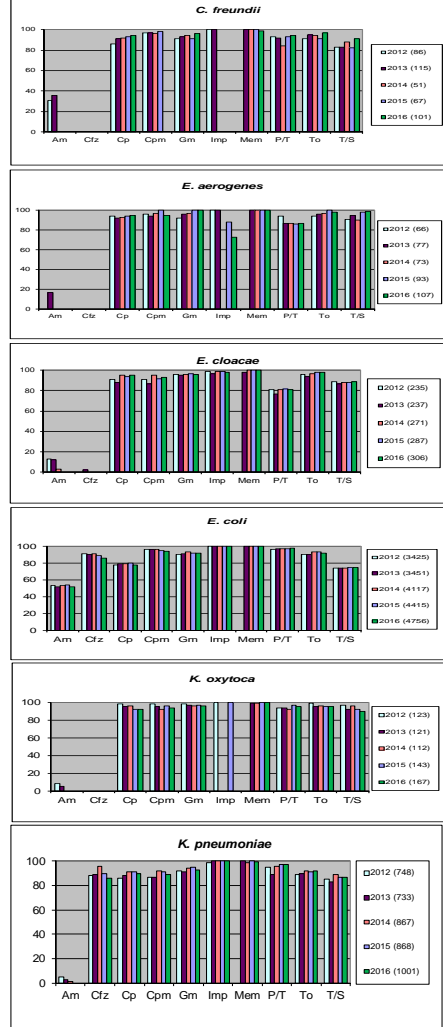
- Northern Nevada Medical Center Laboratory
- Renown Regional Medical Center Laboratory
- St. Mary's Regional Medical Center Laboratory
- Veteran's Affairs Medical Center Laboratory (Reno)

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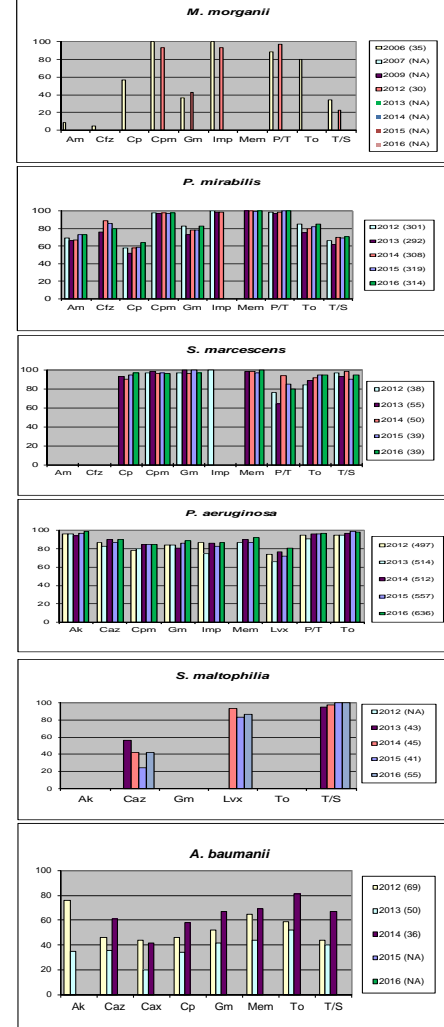
Antibiotic Susceptibility (%) Trend 2012-2016, Washoe County



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Antibiotic Susceptibility (%) Trend 2012-2016, Washoe County



**To read these graphs:** Each graph represents an organism; X-axis represents the abbreviation of an antibiotic (see tables on the opposite page 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. **Attention!** Susceptibility result for *Acinetobacter Baumannii* was available in 2006 and forward. The number of *Morganella morganii* and *Acinetobacter baumannii* was under 30 in 2013-2016 and in 2016, respectively. Therefore, the last available data for these two organisms are displayed here.

SUMMARY OF MAJOR FINDINGS

MRSA

The rate of Methicillin-resistant *Staphylococcus aureus* (MRSA) significantly increased from 35% in 2002 to 48% in 2007, a 37% increase from 2002 to 2007, which showed a statistical significance ( $X^2 = 145, P < 0.001$ ). The MRSA rate was 39% in 2016, which showed no statistically significant increase compared to 38% in 2015 ( $X^2 = 0.5205, P = 0.4706$ ).

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 save the VISA/VRSA isolate for further confirmation at Nevada State Public Health Laboratory.

VRE

The rate of vancomycin-resistant *enterococci* (VRE) increased from 9.8% in 2002 to 11.6% in 2007, which showed a statistical significance ( $X^2 = 65, P < 0.001$ ). The VRE rate was 20% in 2016, which showed a statistically significant reduction compared to 25% in 2015 ( $X^2 = 8.15, P = 0.0043$ ). The VRE rate in 2015 was the highest one since 2002.

DRSP

The rate of drug-resistant *Streptococcus pneumoniae* (DRSP) decreased in the past several years in Washoe County. The rate for penicillin non-susceptible *streptococcus pneumoniae* (PNSSP) decreased from 29% in 2002 to 23% in 2007, a 21% decrease, which did not show a statistical significance ( $X^2 = 5.562, P = 0.234$ ). The decrease might be associated with the introduction of pneumococcal conjugate vaccine in 2000. The rate for PNSSP decreased from 8% in 2015 to 3% in 2016, which showed a statistical significance ( $X^2 = 5.0370, P = 0.0248$ ). The multi-drug resistance (resistant to 2 or more antibiotics tested) rate was 12% in 2016, a 9% reduction compared to 13% in 2015.

ESBLs & CRE

Strains of *Klebsiella spp.*, *E. coli*, *Proteus mirabilis* 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 7.2% of *E. coli*/*Klebsiella spp.*/*Proteus mirabilis* produced ESBLs in 2016, no change from 7.2% in 2015. The rate of carbapenem-resistant enterobacteriaceae (CRE) was 0.32% (22/6791) in 2016, no statistically significant change compared to 0.34% (19/5518) in 2015 ( $X^2 = 0.0380, P = 0.8453$ ).

TO READERS

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.us](mailto:EpiCenter@WashoeCounty.us).