

ANTIBIOGRAM 2017, WASHOE COUNTY

Organism	# Isolates Identified	Antibiotic Susceptibility (%)																									
		Ampicillin (Am)	Amikacin (Ak)	Amoxicillin/clavulanate (Aug)	Ampicillin/sulbactam (A/S)	Cefazolin (Caz)	Cefepime (Cep)	Ceftriaxone (Cax)	Clindamycin (Cl)	Ciprofloxacin (Cp)	Daptomycin (Dap)	Erythromycin (E)	Gentamicin (Gm)	Gentamicin 500 (Gm 500)	Levofloxacin (Lvx)	Linezolid (Lzd)	Moxifloxacin (Mfx)	Nitrofurantoin (Fd)	Oxacillin (Ox)	Penicillin-G (P)	Rifampin (RF)	Quinupristin-dalopristin (Syn)	Streptomycin 2000 (ST2000)	Tetracycline (Te)	Trimethoprim/sulfamethoxazole (T/S)	Vancomycin (Va)	
Gram Positive	<i>Enterococcus faecalis</i>	1157	99%							70%	100%	23%		71%	78%	99%		93%		99%	59%		79%	18%		97%	
	<i>Enterococcus faecium</i>	199	21%							15%	84%	11%		95%	17%	99%		51%		18%	15%		67%	21%		49%	
	<i>Enterococcus species*</i>	1356																									78%
	<i>Staphylococcus aureus</i>	2398	0%		66%	66%			65%	77%	66%	99%	50%		99%		68%	99%		100%	65%	18%	99%		96%	99%	100%
	<i>Staphylococcus spp. Coag neg</i>	437	0%		44%	44%			43%	66%	64%	100%	47%		89%		66%	100%		98%	47%	19%	97%		80%	70%	100%
	<i>Staphylococcus Epidermidis</i>	411	0%		50%	50%			66%	56%	100%	48%		85%		61%	100%		100%	42%	5%	99%		84%	59%	100%	
	<i>Streptococcus pneumoniae**</i>	219					98%	87%						67%		98%					96%***				78%	100%	

*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%



ANTIBIOGRAM 2017
WASHOE COUNTY

Division of Epidemiology & Public Health Preparedness

Washoe County Health District, Reno, NV

September 2018

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		Ampicillin (Am)	Amikacin (Ak)	Amoxicillin/clavulanate (Aug)	Ampicillin/sulbactam (A/S)	Aztreonam (Az)	Cefepime (Cep)	Cefazolin (Caz)	Cefuroxime (Crm)	Ceftriaxone (Cax)	Cefepime (Cep)	Cefazolin (Caz)	Ceftriaxone (Cax)	Cephalothin (Cl)	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/sulfamethoxazole (T/S)				
<i>Acinetobacter Baumannii*</i>	40			70%			78%				78%	36%		75%		80%			80%				75%		80%	70%					
<i>Citrobacter freundii</i>	40				79%						68%	70%		95%	100%	93%			100%	93%		88%	65%	98%	90%	80%					
<i>Enterobacter aerogenes</i>	126			100%							84%	100%		83%		75%	73%		95%	98%	98%	95%	99%	99%	36%	83%	78%	89%	98%	98%	94%
<i>Enterobacter cloacae</i>	357			100%							81%	95%		72%		88%	78%		96%	99%	99%	99%	97%	100%	32%	72%	82%	88%	97%	98%	92%
<i>Escherichia coli</i>	5127	55%	99%	82%	61%	93%	94%	87%	91%	94%	92%	93%	94%	50%	81%	100%	92%	100%	81%	100%	98%	57%	97%	76%	100%	92%	74%				
<i>Klebsiella oxytoca</i>	178			94%	69%	92%	96%	46%	82%				96%	90%	45%	97%	100%	96%	100%	99%	100%	94%		92%	90%	99%	96%	90%			
<i>Klebsiella pneumoniae</i>	1168			99%	93%	82%	88%	90%	89%	85%	90%	86%	90%	90%	84%	92%	99%	99%	99%	94%	100%	53%	57%	96%	80%	99%	92%	88%			
<i>Morganella morganii*</i>	30				3%	83%	93%						93%		40%	97%	43%	93%		97%			97%				23%				
<i>Proteus mirabilis</i>	404	70%	96%	89%	77%	95%	94%	76%	94%	93%			97%	94%	82%	59%	100%	79%		74%	100%		72%	100%		81%	70%				
<i>Pseudomonas aeruginosa</i>	630			97%		79%	91%						90%			86%		91%	89%	85%	94%		98%	96%		98%					
<i>Serratia marcescens</i>	53					85%	100%						79%	89%		98%	98%	98%		98%	100%		77%	8%	94%	96%	98%				
<i>Stenotrophomonas maltophilia</i>	36												33%							94%							97%				

*The number of isolates in 2017 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:

1. 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.
2. 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%.
3. Nitrofurantoin is tested for urine specimens only.
4. The susceptibility result for *Streptococcus pneumoniae* is a combination of screening test and E-test results.
5. 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).
6. 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.

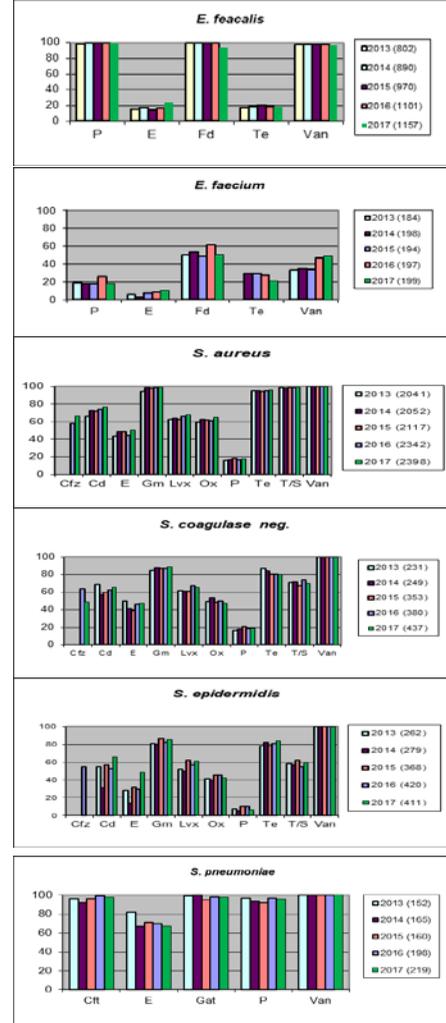
The online version is available at www.tinyurl.com/WCAntibiogram

Acknowledgements (In alphabetic order)

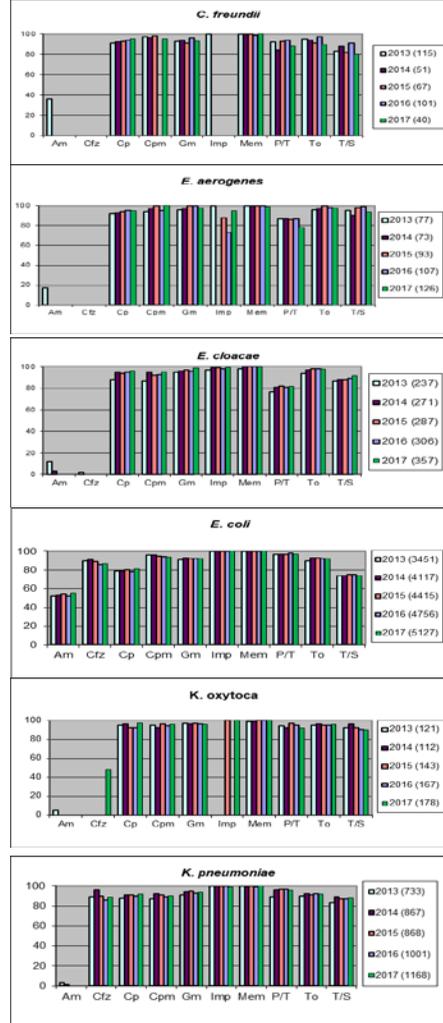
Northern Nevada Medical Center Laboratory
Renown Regional Medical Center Laboratory
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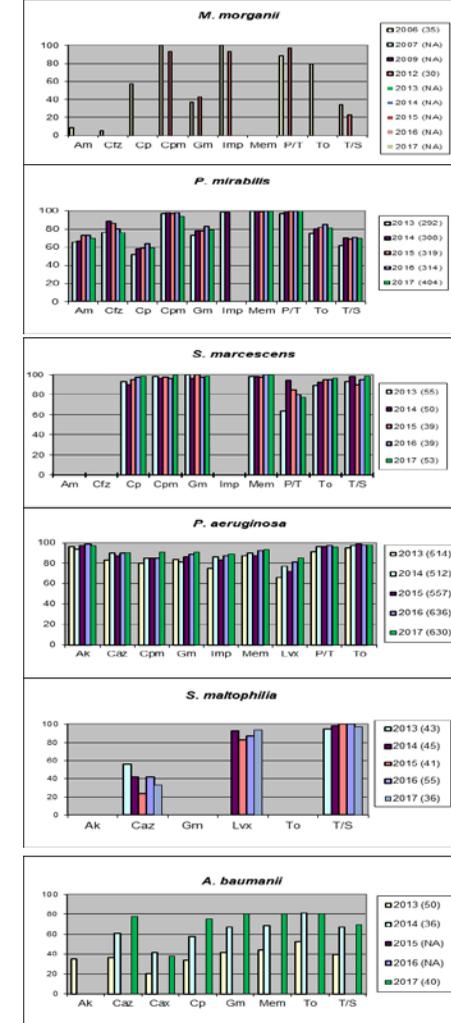
Antibiotic Susceptibility (%) Trend 2013-2017, Washoe County



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Antibiotic Susceptibility (%) Trend 2013-2017, 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!** The number of *Morganella morganii* was under 30 in 2013-2017. Therefore, the last available data for this organism 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 ($\chi^2 = 145, P < 0.001$). The MRSA rate was 35% in 2017, which showed no statistically significant decrease compared to 39% in 2016 ($\chi^2 = 5.334, P = 0.0209$).

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](tel: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) increased from 9.8% in 2002 to 11.6% in 2007, which showed a statistical significance ($\chi^2 = 65, P < 0.001$). The VRE rate was 22.2% in 2017, which did not show any statistically significant change compared to 20.4% in 2016 ($\chi^2 = 1.255, P = 0.2636$). The VRE rate in 2015 was the highest (25.2%) 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 ($\chi^2 = 5.562, P = 0.234$). The decrease might be associated with the introduction of pneumococcal conjugate vaccine in 2000. The rate for PNSSP was significantly reduced to 3% in 2016. The rate for PNSSP in 2017 was 4%, which did not show a statistical significance ($\chi^2 = 0.3493, P = 0.5545$). The multi-drug resistance (resistant to 2 or more antibiotics tested) rate was 11.4% in 2017, which was similar to 12% in 2016.

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 6.7% of *E. coli/Klebsiella* spp./*Proteus mirabilis* produced ESBLs in 2017, slightly lower than 7.2% in 2016 but no statistical significance ($\chi^2 = 1.016, P = 0.3156$). The rate of carbapenem-resistant enterobacteriaceae (CRE) was 0.48% (36/7453) in 2017. It is important to note that the numerator was pulled from the active Carbapenem Resistant Organism (CRO) surveillance beginning 2017.

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](tel:775-328-2447) or e-mail to EpiCenter@WashoeCounty.nv.