

Using this Antibiogram

- This antibiogram provides useful information for the selection of empiric antibiotic treatment when a presumptive diagnosis of infection, with a specific bacterium, is made.
- The numbers represent the percentage of isolates that are susceptible to the antimicrobial. Susceptibility percentage for each organism / antibiotic combination is generated by including the first isolate of that organism encountered on a given patient.
- A lack of data indicates that the organism is intrinsically resistant to the antibiotic, or that insufficient data (< 10 isolates) exists.
- Isolates from certain inpatient floors (ICU, etc.) may be more resistant than isolates on the general medicine floors. Use susceptibility data wisely.
- Review footnotes for valuable information useful in antibiotic selection.
- When patient specific cultures and susceptibilities become available, alteration of drug therapy may be appropriate.
- Pharmacy or microbiology consults are available.

Contact Information

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Footnotes based on CLSI Document M100-31st Edition

a = Oxacillin-resistant staphylococci are considered resistant to all other beta-lactam class of agents, i.e., penicillins, β-lactam combination agents, cepheids (with the exception of ceftaroline) and carbapenems.

b = Isolates that are sensitive to tetracycline are also considered sensitive to doxycycline and minocycline. However, some organisms that are intermediate or resistant to tetracycline may be susceptible to doxycycline and minocycline or both.

c = The following antimicrobial agents should not be used for bacteria isolated from the CSF: agents administered by oral route only, 1st and 2nd generation cephalosporins and cephamycins, clindamycin, macrolides, tetracyclines, and fluoroquinolones.

d = Susceptibility to azithromycin and clarithromycin can be predicted by testing erythromycin.

e = Strains of Klebsiella spp. and E. coli that produce ESBLs (Extended-Spectrum Beta-lactamases) may be clinically resistant to therapy with penicillins, cephalosporins, or aztreonam, despite apparent in vitro susceptibility to some of these agents.

f = Combination therapy of ampicillin, penicillin, or vancomycin (for susceptible strains only), plus an aminoglycoside, is usually indicated for serious enterococcal infections, such as endocarditis, unless high-level resistance to both gentamicin and streptomycin is documented; such combinations are predicted to result in synergistic killing of the Enterococcus.

g = Not routinely used on organisms from the urinary tract.

h = Recommended for use only against isolates in the urinary tract.

i = Rifampin should not be used alone for antibiotic therapy.

j = *Enterobacter*, *Klebsiella* (formerly *Enterobacter*) *aerogenes*, *Citrobacter*, and *Serratia* may develop resistance during prolonged therapy with third-generation cephalosporins as a result of depression of AmpC- beta lactamase. Therefore, isolates that are initially susceptible may become resistant within three to four days after initiation of therapy. Testing of repeat isolates may be warranted.

Generic Name	Trade Name	Dosage grams / dose	Dosing schedule	Daily drug cost
Penicillins				
Amoxicillin/clavulanate *	Augmentin	0.5	3	\$
Ampicillin	Omnipen	0.5	4	\$
Ampicillin/sulbactam	Unasyn	1.5	4	\$
Nafcillin *		1	6	\$\$
Penicillin VK		0.5	4	\$
Penicillin G Potassium		5 MU	4	\$
Piperacillin/tazobactam	Zosyn	3.375	3	\$\$
Cephalosporins				
Cefazolin	Ancef	1	3	\$
Cefdinir *	Omnicef	0.3	2	\$
Cefoxitin *	Mefoxine	1	4	\$\$
Cefuroxime *	Zinacef	0.75	3	\$
Cefotaxime	Claforan	1	3	\$
Ceftazidime	Fortaz	1	3	\$
Ceftriaxone	Rocephin	1	1	\$
Cefepime	Maxipime	1	3	\$
Aminoglycosides				
Amikacin	Amikin	0.5	2	\$
Gentamicin	Garamycin	0.08	3	\$
Tobramycin *	Nebcin	0.08	3	\$
Macrolides				
Erythromycin	Erythrocin	1	4	\$
Fluoroquinolones				
Ciprofloxacin	Cipro	0.4	2	\$
Levofloxacin	Levaquin	0.5	1	\$
Moxifloxacin	Avelox			
Monobactams				
Aztreonam	Azactam	1	3	\$\$\$\$
Carbapenems				
Ertapenem	Invanz	1	1	\$\$\$\$
Meropenem	Merrem	1	3	\$
Others				
Clindamycin	Cleocin	0.6	4	\$
Daptomycin *	Cubicin	0.5	1	\$\$\$\$
Linezolid	Zyvox	0.6	2	\$\$\$\$
Nitrofurantoin	Macrobid	0.1	2	\$
Rifampin	Rifadin	0.6	1	\$\$\$\$
Doxycycline (Tetracycline)	Vibramycin	0.1	2	\$\$
Tigecycline	Tyggcil	0.05	2	\$\$\$\$
Trimethoprim/sulfamethox.	Bactrim	1	2	\$
Vancomycin	Vanocin	1	2	\$\$
* Antimicrobial susceptibility not performed on these antibiotics	Cost key: \$= \$0-25 \$\$= \$25.01-50 \$\$\$= \$50.01-75 \$\$\$\$= \$75.01-100 \$\$\$\$\$= >=\$100			

2021
ANTIBIOGRAM

Antibiotic
Cumulative
Summary

2022 Antibiogram Based on 2021 Data

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INPATIENTS Lima Memorial Health System 2021																		
% Susceptible	Trade Name	<i>Citrobacter freundii</i>	<i>Enterobacter cloacae</i> complex	<i>Escherichia coli</i>	<i>Escherichia coli</i> ESBL ^e	<i>Klebsiella aerogenes</i>	<i>Klebsiella oxytoca</i>	<i>Klebsiella pneumoniae</i>	<i>Morganella morganii</i>	<i>Proteus mirabilis</i>	<i>Pseudomonas aeruginosa</i>	<i>Serratia marcescens</i>	<i>Enterococcus faecalis</i> ^f	<i>Enterococcus faecium</i> VRE	<i>Enterococcus faecium</i>	MRSA (Methicillin-resistant <i>Staphylococcus aureus</i>) ^a	MSSA (Methicillin-sensitive <i>Staphylococcus aureus</i>)	<i>Streptococcus pneumoniae</i>
# Isolates		15	32	255	26	13	41	87	14	69	95	25	81	14	14	76	91	12
Penicillins																		
Ampicillin	Omnipen			57	0		0	0	0	87			100	0	36			
Ampicillin/sulbactam	Unasyn			64	23		66	87	14	96								
Oxacillin																0	100	
Penicillin													100	0	29	0	0	100
Piperacillin/tazobactam	Zosyn	79	66	95	92	77	93	98	100	100	89							
Cephalosporins																		
Cefazolin ^c	Ancef	0	0	94	4	0	85	98	0	93	0	0						
Ceftazadime ^j	Fortaz	79	63	99	4	77	95	100	100	96	85	100						
Ceftriaxone ^j	Rocephin	79	59	100	8	77	95	100	100	94		100						100
Cefepime	Maxipime	100	94	100	12	100	95	100	100	96	91	100						
Aminoglycosides																		
Amikacin	Amikin	100	100	100	96	100	100	100	100	100	96	100						
Gentamicin	Garamycin	87	97	94	65	100	100	100	86	91	94	100				97	100	
Macrolides																		
Erythromycin ^{c, d, g}	Erythrocin												6	0	7	13	67	67
Fluoroquinolones																		
Ciprofloxacin ^c	Cipro	86	88	83	4	100	100	100	93	78	86	100	73	0	14	37	92	
Levofloxacin ^c	Levaquin												75	0	14	38	95	100
Moxifloxacin	Avelox															74	98	100
Monobactam																		
Aztreonam	Azactam	80	63	99	12	77	93	100	100	96		100						
Carbapenems																		
Ertapenem	Invanz	93	91	100	100	100	100	100	100	97		100						
Meropenem	Merrem	100	100	100	100	100	100	100	100	100	96	100						
Others																		
Clindamycin ^{c, g}	Cleocin															62	77	83
Linezolid	Zyvox												99	100	100	100	100	100
Nitrofurantoin ^h	Macrobid	93	34	97	81	8	90	44	0	0		0	99	14	36	100	100	
Rifampin ⁱ	Rifadin															99	100	
Tetracycline ^{b, c}													26	21	50	80	97	100
Trimethoprim/sulfamethox.	Bactrim	86	88	81	62	100	98	86	86	77		100				86	100	83
Vancomycin	Vancocin												100	0	100	100	100	100

OUTPATIENTS Lima Memorial Health System 2021																		
% Susceptible	Trade Name	<i>Citrobacter freundii</i>	<i>Citrobacter koseri</i>	<i>Enterobacter cloacae</i> complex	<i>Escherichia coli</i>	<i>Escherichia coli</i> ESBL ^e	<i>Klebsiella aerogenes</i>	<i>Klebsiella oxytoca</i>	<i>Klebsiella pneumoniae</i>	<i>Morganella morganii</i>	<i>Proteus mirabilis</i>	<i>Pseudomonas aeruginosa</i>	<i>Serratia marcescens</i>	<i>Enterococcus faecalis</i> ^f	MRSA (Methicillin-resistant <i>Staphylococcus aureus</i>) ^a	MSSA (Methicillin-sensitive <i>Staphylococcus aureus</i>)		
# Isolates		24	19	49	1472	47	44	53	269	20	106	112	16	110	90	178		
Penicillins																		
Ampicillin	Omnipen				63	0		0	0	5	90			100				
Ampicillin/sulbactam	Unasyn				69	26		0	90	20	95							
Oxacillin															0	100		
Penicillin														98	0	0		
Piperacillin/tazobactam	Zosyn	92	100	85	98	87	84	98	99	95	100	97						
Cephalosporins																		
Cefazolin ^c	Ancef	0	95	0	97	0	0	89	99	0	94	0	0					
Ceftazadime ^j	Fortaz	88	100	86	100	0	86	100	100	95	95	96	100					
Ceftriaxone ^j	Rocephin	88	100	86	100	2	86	100	100	100	95		100					
Cefepime ^j	Maxipime	100	100	100	100	6	100	100	100	100	96	96	100					
Aminoglycosides																		
Amikacin	Amikin	100	100	100	100	100	100	100	100	100	100	100	100					
Gentamicin	Garamycin	88	100	100	93	74	100	98	100	90	96	97	100					
Macrolides																		
Erythromycin ^{c, d, g}	Erythrocin													10	18	69		
Fluoroquinolones																		
Ciprofloxacin ^c	Cipro	92	100	96	89	19	100	100	99	85	92	83	100	80	53	89		
Levofloxacin ^c	Levaquin													80	53	90		
Moxifloxacin	Avelox														82	99		
Monobactams																		
Aztreonam	Azactam	88	100	88	100	4	89	98	100	95	94		94					
Carbapenems																		
Ertapenem	Invanz	100	100	94	100	100	100	100	100	95	98		94					
Meropenem	Merrem	100	100	100	100	100	100	100	100	100	100	97	94					
Others																		
Clindamycin ^{c, g}	Cleocin														76	80		
Linezolid	Zyvox													96	100	100		
Nitrofurantoin ^h	Macrobid	92	89	22	98	81	14	83	31	0	0		0	99	100	100		
Rifampin ⁱ	Rifadin														99	100		
Tetracycline ^{b, c}														32	90	93		
Trimethoprim/sulfamethox.	Bactrim	84	100	96	83	45	100	96	93	85	92		100		88	99		
Vancomycin	Vancocin													100	100	100		