

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 M100-30th Edition

a = Oxacillin-resistant staphylococci are considered resistant to all other beta-lactam class of agents, i.e., penicillins, β -lactam combination agents, cepheems (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 Betalactamases) 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.

k = Daptomycin is not indicated for treating respiratory infections.

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/subactam	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	\$
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	Tygaril	0.05	2	\$\$\$\$
Trimethoprim/sulfamethox.	Bactrim	1	2	\$
Vancomycin	Vancocin	1	2	\$
* Antimicrobial susceptibility not performed on these antibiotics		Cost key: \$= \$0-25 \$\$= \$25.01-50 \$\$\$= \$50.01-75 \$\$\$\$= \$75.01-100 \$\$\$\$\$= \geq \$100		

2019

ANTIBIOGRAM

Antibiotic Cumulative Summary

2020 Antibiogram Based on 2019 Data

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 **Lima Memorial**
HEALTH SYSTEM
Affiliate of ProMedica

INPATIENTS Lima Memorial Health System 2019																	
% Susceptible	Trade Name	Klebsiella (Enterobacter) aerogenes	Enterobacter cloacae complex	Escherichia coli	Escherichia coli ESBL ^o	Klebsiella pneumoniae	Klebsiella pneumoniae ESBL ^o	Morganella morganii	Proteus mirabilis	Pseudomonas aeruginosa	Serratia marcescens	Enterococcus faecalis ^f	Streptococcus pneumoniae	MRSA (Methicillin-resistant Staphylococcus aureus) ^a	MSSA (Methicillin-sensitive Staphylococcus aureus)	Dosage grams/ dose	Dosing schedule
# Isolates		12	73	452	70	168	18	26	62	139	10	98	15	115	150		
Penicillins																	
Amoxicillin/clavulanate ^c	Augmentin	0	6	87	42	96	50	0	98		0		87	0	100	0.5	3
Ampicillin	Omnipen	11	9	55	0	0	0	0	79		20	100		0	0	0.5	4
Ampicillin/sulbactam	Unasyn	33	22	62	1	91	0	12	89		10			0	100	1.5	4
Oxacillin														0	100	0.5	4
Penicillin												100	67	0	8	0.5	4
Piperacillin/tazobactam	Zosyn	92	78	97	86	98	89	100	100	94	80			0		3.375	3
Cephalosporins																	
Cefazolin ^c	Ancef	1	0	93	0	96	0	0	95	0	0					1	3
Cefuroxime ⁱ	Zinacef	56	37	93	0	96	0	11	94		0		73			0.75	3
Cefotaxime ^j	Claforan	89	77	98	0	100	0	89	100		100		87			1	3
Ceftazadime ^j	Fortaz	84	79	97	0	99	0	88	98	90	100					1	3
Ceftriaxone ^j	Rocephin	84	77	99	0	99	0	92	98		100		87	0	100	1	1
Cefepime ^j	Maxipime	100	90	100	0	99	0	96	98	90	100		93			1	3
Aminoglycosides																	
Amikacin	Amikin	100	100	100	93	99	100	100	100	95	100					0.5	2
Gentamicin	Garamycin	100	100	93	75	99	61	89	97	83	100			99	98	0.08	3
Tobramycin	Nebcin	100	98	95	47	99	57	100	98	94	100					0.08	3
Macrolides																	
Erythromycin ^{c,d,g}	Erythrocin											18	40	10	58	1	4
Fluoroquinolones																	
Ciprofloxacin ^c	Cipro	100	93	80	1	99	28	77	73	84	100	61		27	88	0.4	2
Levofloxacin ^c	Levaquin	100	97	81	7	100	50	94	81	81	100	65	100	28	90	0.5	1
Monobactam																	
Aztreonam	Azactam	100	75	99	0	100	0	100	93							1	3
Carbapenems																	
Ertapenem	Invanz	100	100	100	100	100	95	100	100		100					1	1
Imipenem	Primaxin	89	98	100	100	100	93	56		87	100					0.5	4
Meropenem	Merrem	100	100	100	100	100	100	100	100	92	100		80			1	3
Others																	
Chloramphenicol	Chloramycetin											100				1	4
Clindamycin ^{c,g}	Cleocin											87	38	76	0.6	4	
Daptomycin ^k	Cubicin										100		100	100	0.5	1	
Linezolid	Zyvox										99		100	100	0.6	2	
Nitrofurantoin ^h	Macrobid	29	42	97	94	45	38	0	0		0	98		97	100	0.1	2
Rifampin ⁱ	Rifadin										52		96	99	0.6	1	
Tetracycline ^{b,c}		100	78	82	47	89	64	56	4		20	20	80	67	91	0.1	2
Trimethoprim/sulfamethox.	Bactrim	100	90	82	50	93	50	89	63		100		60	81	100	1	2
Vancomycin	Vancocin										100	100	100	100	100	1	2

OUTPATIENTS Lima Memorial Health System 2019																		
% Susceptible	Trade Name	Acinetobacter baumannii/haemolyticus	Enterobacter aerogenes	Enterobacter cloacae complex	Escherichia coli	Escherichia coli ESBL ^o	Klebsiella pneumoniae	Klebsiella pneumoniae ESBL ^o	Morganella morganii	Proteus mirabilis	Pseudomonas aeruginosa	Serratia marcescens	Enterococcus faecalis ^f	MRSA (Methicillin-resistant Staphylococcus aureus) ^a	MSSA (Methicillin-sensitive Staphylococcus aureus)	Dosage grams/ dose	Dosing schedule	
# Isolates		17	46	84	1926	88	351	11	41	149	187	28	153	211	254			
Penicillins																		
Amoxicillin/clavulanate ^c	Augmentin		3	8	90	74	97	75	0	97		4		0	100	0.5	3	
Ampicillin	Omnipen		10	18	62	0	0	0	2	86		11	99	0	0	0.5	4	
Ampicillin/sulbactam	Unasyn	82	52	28	66	34	91	9	8	95		14	99	0	100	1.5	4	
Oxacillin														0	100	0.5	4	
Penicillin														0	7	0.5	4	
Piperacillin/tazobactam	Zosyn		86	88	99	97	99	82	100	100	97	89				3.375	3	
Cephalosporins																		
Cefazolin ^c	Ancef		9	5	95	1	98	0	0	93	0	0				1	3	
Cefuroxime ^j	Zinacef		68	37	96	0	98	0	7	98		0				0.75	3	
Cefotaxime ^j	Claforan	53	84	88	99	0	100	0	97	100		89				1	3	
Ceftazadime ^j	Fortaz	88	83	85	99	1	99	9	98	97	92	93				1	3	
Ceftriaxone ^j	Rocephin	71	83	87	99	1	100	9	98	98		96		0	100	1	1	
Cefepime ^j	Maxipime	94	98	93	100	2	100	9	100	98	91	100				1	3	
Aminoglycosides																		
Amikacin	Amikin	88	100	98	99	95	100	100	100	100	97	100				0.5	2	
Gentamicin	Garamycin	88	98	94	94	72	99	72	98	95	91	100		96	98	0.08	3	
Tobramycin	Nebcin	82	97	97	96	59	99	38	100	98	96	96				0.08	3	
Macrolides																		
Erythromycin ^{c,d,g}	Erythrocin													8	11	57	1	4
Fluoroquinolones																		
Ciprofloxacin ^c	Cipro	82	98	93	88	19	99	55	92	86	85	96	74	36	86	0.4	2	
Levofloxacin ^c	Levaquin	94	100	98	88	24	99	50	100	88	85	100	80	41	90	0.5	1	
Monobactams																		
Aztreonam	Azactam		100	79	100	5	100	33	91	93						1	3	
Carbapenems																		
Ertapenem	Invanz		100	97	100	100	100	100	100	100		100				1	1	
Imipenem	Primaxin		97	98	99	100	100	100	43		81	100				0.5	4	
Meropenem	Merrem	82	100	100	100	100	100	100	100	100	90	100				1	3	
Others																		
Clindamycin ^{c,g}	Cleocin													66	75	0.6	4	
Daptomycin ^k	Cubicin												100	99	100	0.5	1	
Linezolid	Zyvox												98	100	100	0.6	2	
Nitrofurantoin ^h	Macrobid		23	42	98	86	48	27	0	1		0	99	100	99	0.1	2	
Rifampin ⁱ	Rifadin												50	98	99	0.6	1	
Tetracycline ^{b,c}		82	94	93	81	44	86	25	53	0		25	32	86	92	0.1	2	
Trimethoprim/sulfamethox.	Bactrim	88	98	95	83	40	93	46	95	84		100		91	100	1	2	
Vancomycin	Vancocin													100	100	100	1	2