

Antibiogram of Lahore General Hospital

(01-01-2021)----- (30-06-2022)

- Antibiogram can help pick empiric antibiotic therapy.
- However, the antibiotic should be adjusted as soon as the original culture and sensitivity report becomes available.
- The percentage given in the tables is the percentage of organisms sensitive to the respective drug
- Colistin Sensitivity has not been entered into the antibiogram because of its 100% sensitivity.
- Organisms reported less than 30 times are not included in the antibiogram

Acinetobacter spp

# Of Isolates	Aminoglycosides		Carbapenems		Cephalosporins & Penicillins						Quinolones		Other		
	AMIKACIN	GENTAMICIN	MEROPENEM	IMPENEM	AMPICILLIN+ SULBACTAM	PIPERACILLIN+ TAZOBACTAM	CEFEPIME	CEFOTAXIME	CEFTRIAZONE	CEFTAZIDIME	CIPROFLOXACIN	LEVOFLOXACIN	DOXYCYCLINE	TETRACYCLINE	TMP/SMX
2927	48.82%	42.61%	40.58%	45.24%	17.52%	40.20%	23.80%	15.21%	8.00%	20.14%	23.24%	24.77%	63.88%	18.47%	17,82%

- Tetracycline is to be used for urinary isolates only.
- **Intrinsic resistance:** Ampicillin, Amoxicillin, Amoxicillin-clavulanate, Aztreonam, Trimethoprim, Chloramphenicol, Fosfomycin, Benzylpenicillin, Cephalosporin I (cephalothin, cefazolin), Cephalosporin II (cefuroxime), Cephamycins (cefoxitin, cefotetan) Clindamycin, Daptomycin, Fusidic acid, Glycopeptides (vancomycin, teicoplanin), Linezolid, Macrolides (erythromycin, azithromycin, clarithromycin).

Pseudomonas spp

	Aminoglycosides		Carbapenems		Cephalosporins & Penicillins				Quinolones	
# Of Isolates	AMIKACIN	GENTAMICIN	IMPENEM	MEROPENEM	CEFTAZIDIME	CEFEPIME	PIPERACILLIN+ TAZOBACTAM	PIPERACILLIN	CIPROFLOXACIN	LEVOFLOXACIN
1829	61.01%	51.55%	61.37%	49.70%	29.05%	41.16%	64.40%	29.37%	45.14%	43.00%

- Intrinsic Resistance:** Ampicillin, Amoxicillin, Ampicillin-sulbactam, Amoxicillin – Clavulanate, Cefotaxime, Ceftriaxone, Tigecycline/Tetracycline, Trimethoprim, Trimethoprim-Sulphamethoxazole, Chloramphenicol, Betylpenicillin, Cephalosporin I (cephalothin, cefazolin), Cephalosporin II (cefuroxime), Cephamecins (cefoxitin, cefotetan) Clindamycin, Daptomycin, Fusidic acid, Glycopeptides (vancomycin, teicoplanin), Linezolid, Macrolides (erythromycin, azithromycin, clarithromycin).

Pseudomonas aeruginosa may develop resistance during prolonged therapy with all antimicrobial agents. Therefore, isolates that are initially susceptible may become resistant within 3 to 4 days after initiation of therapy. Testing of repeat isolates may be warranted

Klebsiella spp

# Of Isolates	Aminoglycosides		Carbapenems		Cephalosporins & Penicillins								Quinolones		Others			TMP/SMX
	AMIKACIN	GENTAMICIN	MEROPENEM	IMIPENEM	AMOXICILLIN+CA	PIPERCILLIN+TAZOBACTAM	CEFEPIME	CEFOTAXIME	CEFTRIOXONE	CEFOPERAZONE	CEFUROXIME	CEFTAZIDIME	CIPROFLOXACIN	LEVOFLOXACIN	DOXYCYCLINE	TETRACYCLINE	NITROFURANTOIN	
1711	56.22%	46.95%	44.04%	57.91%	12.74%	44.13%	24.92%	17.65%	57.77%	36.01%	7.13%	20.70%	24.50%	24.48%	32.76%	18.87%	52.06%	16.66%

- **Intrinsic resistance:** Ampicillin, Clindamycin, Fusidic acid, Glycopeptides (vancomycin, teicoplanin), linezolid, rifampin, and macrolides (erythromycin, clarithromycin, and azithromycin)

Escherichia coli

# OF ISOLATES	AMIKACIN	GENTAMICIN	MEROPENEM	IMPENEM	AMPICILLIN	AMOXICILLIN+CA	PIPERACILLIN+TAZOBACTAM	CEFEPIME	CEFOTAXIME	CEFTRIAZONE	CEFOPERAZONE	CEFUROXIME	CEFTAZIDIME	CIPROFLOXACIN	LEVOFLOXACIN	DOXYCYCLINE	TETRACYCLINE	FOSFOMYCIN	NITROFURANTOIN
2537	74.32%	58.56%	61.25%	77.40%	6.06%	18.29%	54.62%	15.21%	22.62%	20.08%	51.97%	10.50%	26.98%	22.30%	23.84%	25.21%	20.00%	77.80%	71.75%

Intrinsic Resistance: Clindamycin, Fusidic acid, Glycopeptides (vancomycin, teicoplanin), linezolid, rifampin, and macrolides (erythromycin, clarithromycin, and azithromycin)

Citrobacter spp

	Aminoglycosides		Carbapenems		Cephalosporins & Penicillins						Quinolones		Other		
# Of Isolates	AMIKACIN	GENTAMICIN	MEROPENEM	IMPENEM	PIPERACILLIN+ TAZOBACTAM	CEFEPIME	CEFOTAXIME	CEFTRIAZONE	CEFOPERAZONE	CEFTAZIDIME	CIPROFLOXACIN	LEVOFLOXACIN	DOXYCYCLINE	TETRACYCLINE	TMP/SXT
198	58.82%	48.53%	71.85%	75.00%	60.29%	33.82%	9.56%	25.00%	54.41%	19.61%	27.94%	27.94%	32.84%	27.94%	20.3%

- **Intrinsic resistance:** Ampicillin, Ampicillin-sulbactam Amoxicillin-CA, Cefazolin, Cefuroxime, Clindamycin, Fusidic acid, Glycopeptides (vancomycin, teicoplanin), Linezolid, Rifampin, and Macrolides (erythromycin, clarithromycin, and azithromycin)
- *Citrobacter* may develop resistance during prolonged therapy with third-generation cephalosporins. Therefore, isolates that are initially susceptible may become resistant within 3 to 4 days after initiation of therapy. Testing of repeat isolates may be warranted.

Enterobacter spp

	Aminoglycosides		Carbapenems		Cephalosporins & Penicillins						Quinolones		Others		
# Of Isolates	AMIKACIN	GENTAMICIN	MEROPENEM	IMIPENEM	PIPERACILLIN+ TAZOBACTAM	CEFEPIME	CEFOTAXIME	CEFTRIAZONE	CEFOPERAZONE	CEFTAZIDIME	CIPROFLOXACIN	LEVOFLOXACIN	DOXYCYCLINE	TETRACYCLINE	TMP/SXT
76	58.33%	41.67%	63.92%	72.00%	48.98%	30.61%	15.00%	24.49%	45.83%	31.97%	28.57%	34.04%	41.67%	24.49%	10.21%

- **Intrinsic resistance:** Ampicillin, Amoxicillin, Ampicillin-sulbactam, Amoxicillin –CA, Cefazolin, Cefuroxime, Clindamycin, Fusidic acid, Glycopeptides (vancomycin, teicoplanin), Linezolid, Rifampin, and Macrolides (erythromycin, clarithromycin, and azithromycin)
- *Enterobacter* may develop resistance during prolonged therapy with third-generation cephalosporins. Therefore, isolates that are initially susceptible may become resistant within 3 to 4 days after initiation of therapy. Testing of repeat isolates may be warranted.

Proteus spp

	Aminoglycosides		Carbapenems		Cephalosporins & Penicillins							Quinolones		Others	
# Of Isolates	AMIKACIN	GENTAMICIN	MEROPENEM	IMPENEM	AMOXICILLIN+CA	PIPERACILLIN_+ TAZOBACTAM	CEFEPIME	CEFOTAXIME	CEFTRIAZONE	CEFOPERAZONE	CEFTAZIDIME	CIPROFLOXACIN	LEVOFLOXACIN	DOXYCYCLINE	TMP/SXT
431	76.09%	56.96%	66.84%	88.16%	45.78%	88.26%	45.98%	16.68%	37.39%	83.91%	28.02%	45.85%	49.13%	34.33%	9.70%

- **Intrinsic resistance:** Colistin/Polymyxin B, Ampicillin, Cefazolin, Cefuroxime, Tetracycline, Tigecycline, Nitrofurantoin, Clindamycin, Fusidic acid, Glycopeptides (vancomycin, teicoplanin), linezolid, rifampin, and macrolides (erythromycin, clarithromycin, and azithromycin)

Salmonella typhi

# Of Isolates	AMPICILLIN	CIPROFLOXACIN	LEVOFLOXACIN	CEFTRIAXONE	CEFEPXIME	CHLORAMPHENICOL	AZITHROMYCIN	MEROPENEM	COTRIMOXAZOLE
468	17.86%	22.94%	21.76%	32.35%	18.45%	35.38%	100%	100%	8.83%

For *Salmonella* spp, aminoglycosides, Ist and IInd generation Cephalosporins and Cephamycins may appear effective in vitro but are not effective clinically.

Staphylococcus aureus

	Penicillins		Aminoglycosides		Quinolones		Others						
# Of Isolates	PENICILLIN	OXACILLIN	AMIKACIN	GENTAMICIN	CIPROFLOXACIN	LEVOFLOXACIN	LINEZOLID	TETRACYCLINE	TMP/SXM	VANCOMYCIN	CLINDAMYCIN	ERYTHROMYCIN CLARITHROMYCIN/ AZITHROMYCIN	DOXYCYCLINE
1692	13.51%	33.01%	25.89%	54.84%	21.99%	22.78%	100 %	37.37%	35.83%	100.0%	59.67%	45.07%	65.32%

- **Intrinsic resistance:** Aztreonam, Polymyxin B/Colistin, and Nalidixic Acid
- Isolates resistant to oxacillin are MRSA i.e. resistant to other beta-lactam agents, i.e., penicillins, cephalosporins, beta-lactam/beta-lactamase inhibitor combinations, aztreonam and carbapenems

Staphylococcus spp (coagulase-negative), CoNS

	Penicillins		Aminoglycosides		Quinolones		Others						
# Of Isolates	PENICILLIN	OXACILLIN	AMIKACIN	GENTAMICIN	CIPROFLOXACIN	LEVOFLOXACIN	LINEZOLID	TETRACYCLINE	TMP/SXT	VANCOMYCIN	CLINDAMYCIN	ERYTHROMYCIN/ CLARITHROMYCIN/ AZITHROMYCIN	DOXYCYCLINE
1378	21.43%	42.09%	36.76%	56.95%	43.50%	42.09%	100%	51.87%	48.17%	100.00%	65.87%	36.07%	72.41%

- **Intrinsic resistance:** Aztreonam, Polymyxin B/Colistin, and Nalidixic Acid
- Isolates resistant to Oxacillin are considered resistant to other beta-lactam agents, ie, penicillins, cephalosporins, beta-lactam/beta-lactamase inhibitor combinations, aztreonam, and carbapenems

Enterococcus spp

	Penicillins		Quinolones		Others					
# Of Isolates	PENICILLIN	AMPICILLIN	CIPROFLOXACIN	NORFLOXACIN	LEVOFLOXACIN	LINEZOLID	TETRACYCLINE	VANCOMYCIN	FOSFOMYCIN	NITROFURANTOIN
453	53.09%	45.63%	14.74%	16.46%	29.73%	100%	16.80%	88.16%	78.78%	68.71%

- **Intrinsic resistance:** Cephalosporins, Aminoglycosides (amikacin, gentamicin), Clindamycin, Trimethoprim, Trimethoprim/Sulphamethoxazole, Fusidic acid, Aztreonam, Polymyxin B/Colistin, and Nalidixic acid.