



## Antibiogram 2022 Gram Negative/Gram Positive

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### Revision Insight

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Revision Note:  
Annual update to 2022 data

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forks Community Hospital  
530 Bogachiel Way - Forks, WA  
**GRAM NEGATIVE ANTIBIOGRAM - 2022**

2022	# of isolates	Amikacin	Ampicillin	Ampicillin/Sulbactam	Cefazolin	Cefepime	Ceftazidime	Ceftriaxone	Ciprofloxacin	Ertapenem	Gentamicin	Levofloxacin	Meropenam	Nitrofurantoin (Urine Only)	Piperacillin-Tazobactam	Tobramycin	Trim/Sulfa
<b>Gram Negative Isolates</b>																	
Citrobacter freundii	8						100%	100%	100%	100%	100%	100%	100%	100%			100%
Citrobacter koseri	2						100%	100%	100%	100%	100%	100%	100%	50%	100%		100%
Enterobacter cloacae	6			0%	0%	100%	83%	83%	100%	83%	83%	100%	100%	50%	83%		83%
Escherichia coli	202		67%	69%	94%	99%	99%	98%	83%	100%	99%	87%	100%	97%	98%		79%
Klebsiella oxytoca	7			14%	71%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		100%
Klebsiella pneumoniae	30			86%	90%	90%	90%	90%	86%	100%	100%	90%	100%	45%	97%		90%
Klebsiella aerogenes	7			0%	0%	86%	86%	86%	100%	100%	100%	100%	100%	14%	86%		100%
Proteus mirabilis	12		92%	92%	92%	100%	100%	100%	83%	100%	100%	83%			100%		83%
Pseudomonas aeruginosa	9	100%				100%	100%		67%		100%	63%	100%		100%	100%	

**General Notes:**

- \* Antibioqram for Gram Negative Bacteria isolated from January 01, 2022 to December 31, 2022.
- \* All data is derived from the Epicenter Microbiological Management Program.
- \* Data is from specimens collected from the Emergency Department, Acute Care, Out Patients, and Clinic Patients.
- \* Susceptibility is based on CLSI (Clinical Laboratory Standards Institute) breakpoints for the individual microorganisms.
- \* The antibiotics reported for each microorganisms group is based on the CLSI M100 publication.
- \* Only the first isolate of a given species per patient, per analysis period, should be included in antibiogram reporting.
- \* The numbers represent the percentage of isolates that are susceptible to the antimicrobial. Antibiotics that are less than 75% are not to be considered a drug of choice.
- \* If <30 isolates, use caution extrapolating results: data may be inconclusive for therapeutic efficacy and selection of empiric treatment.
- \* Antibiotics for Urine Specimens: Nitrofurantoin is only reported on urine through the Electronic Health Record.

**SUMMARY:**

1. CRE: 0 CRE identified in 2022, 1 in 2021, 0 in 2020, 2019, 2018, 2016, 2015, 2014, 2013. One CRE identified in 2017.
2. ESBL: 9 (4 new patients) identified in 2022, 2 in 2021, 7 in 2020, 6 in 2019, 5 in 2018, 1 in 2017, 4 in 2016, 4 in 2015, 4 in 2014.
3. Levofloxacin is to be given ONLY if all other antibiotics are resistant.
4. No significant change in sensitivity pattern for gram negative organisms in 2022.
5. Continue antibiotic formulary.

CRE = Carbapenem- Resistant Enterobacteriaceae      ESBL = Extended-spectrum beta-lactamase

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**GRAM NEGATIVE ANTIBIOGRAM - 2022**

2021 numbers for comparison

2021	# of Isolates	Amikacin	Ampicillin	Ampicillin/Sulbactam	Cefazolin	Cefepime	Ceftazidime	Ceftriaxone	Ciprofloxacin	Ertapenem	Gentamicin	Levofloxacin	Nitrofurantoin (Urine Only)	Piperacillin-Tazobactam	Tobramycin	Trim/Sulfa
<b>Gram Negative Isolates</b>																
Citrobacter freundii/C koseri	11						100%	94%	100%	100%	100%	100%	100%	100%		100%
Enterobacter cloacae	12			100%	100%	100%	100%	100%	100%	100%	100%	100%	50%	100%		100%
Escherichia coli	237		69%	71%	95%	98%	98%	98%	86%	99%	98%	86%	99%	100%		83%
Klebsiella oxytoca	8			63%	88%	100%	100%	100%	100%	100%	100%	100%	100%	100%		100%
Klebsiella pneumoniae	29			75%	77%	79%	79%	82%	81%	98%	89%	89%	54%	89%		79%
Klebsiella aerogenes	8			0%	0%	100%	83%	83%	100%	100%	100%	100%	67%	83%		100%
Proteus mirabilis	12		75%	75%	55%	100%	100%	92%	75%	100%	83%	75%		75%		75%
Pseudomonas aeruginosa	13	100%				92%	85%		69%		92%	62%		92%	100%	

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**GRAM POSTIVE ANTIBIOGRAM - 2022**

2022	# of isolates	Ampicillin	Amoxicillin	Cefepime	Cefotaxime	Ceftriaxone	Clindamycin	Erythromycin	Gentamicin	Levofloxacin	Linezolid	Moxifloxacin	Nitrofurantoin (Urine Only)	Oxacillin	Penicillin G	Quinupristin-dalfopristin	Sulfamethoxazole-Trimethoprim	Tetracycline	Vancomycin	
<b>Gram Positive Isolates</b>																				
Staphylococcus aureus	72						89%	59%	97%		99%		100%	64%	0%		91%	97%	100%	
Staphylococcus epidermidis	30						70%	100%	100%		88%		100%	30%	0%			100%	100%	
Staphylococcus saprophyticus	8						88%	0%	100%		100%		100%	13%	0%			100%	100%	
Staphylococcus haemolyticus	3						33%	0%	100%		100%		100%	67%	0%			0%	100%	
Staphylococcus hominis	4						0%	0%	67%		67%		100%	33%	0%			100%	100%	
Streptococcus agalactiae (Group B)	30			94%	94%	94%	39%	33%							94%				100%	
Streptococcus pyogenes (Group A)	8			100%	100%	100%	88%	88%							100%				100%	
Streptococcus pneumoniae	1			100%	100%	100%	100%	100%		100%		100%			100%		100%	100%	100%	
Streptococcus intermedius	2		100%	100%	100%	100%									100%				100%	
Enterococcus faecalis	22	95%								86%	86%		100%						18%	100%
Enterococcus faecium	2	0%								100%	100%					75%		0%	100%	

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- \* Only the first isolate of a given species per patient, per analysis period, should be included in antibiogram reporting.
- \* The numbers represent the percentage of isolates that are susceptible to the antimicrobial. Antibiotics that are less than 75% are not to be considered a drug of choice.
- \* If <30 isolates, use caution extrapolating results: data may be inconclusive for therapeutic efficacy and selection of empiric treatment.
- \* Antibiotics for Urine Specimens: Do not use Clindamycin and Erythromycin. These are not included in the report through the Electronic Health Records.

**Summary:**

1. MRSA: 36% identified in 2022 compared to 32% in 2021, 31% in 2020, 39% in 2019, 45% in 2018, 49% in 2017 and 52% in 2016.
2. VISA & VRSA: 0% identified in 2022, 2021, 2020, 2019, 2018, 2017, 2016, 2015, 2013, 2012 or in 2011. 3% identified in 2014.
3. VRE: 0% identified in 2022, 2021, 2020, 2019, 2018, 2017, 2016, 2015, 2014, 2013, 2012, or in 2011.
4. No significant change in sensitivity pattern for gram positive organisms in 2021.
5. Continue antibiotic formulary.

MRSA = Methicillin Resistant Staphylococcus Aureus      VISA & VRSA = Vancomycin Intermediate or Resistant Staphylococcus Aureus      VRE = Vancomycin Resistant Enterococcus

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2021 Numbers for Comparison

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<b>Gram Positive Isolates</b>																			
Staphylococcus aureus	86					89%	48%	100%		100%		100%	69%	0%		88%	96%	100%	
Staphylococcus epidermidis	21					75%	35%	100%		100%		100%	45%	0%			90%	100%	
Staphylococcus saprophyticus	10					56%	22%	100%		100%		100%	0%	0%			100%	100%	
Staphylococcus haemolyticus	7					100%	57%	86%		100%		100%	71%	0%			86%	100%	
Staphylococcus lugdunensis	7					86%	86%	86%		100%		100%	100%	0%			100%	100%	
Streptococcus agalactiae (Group B)	24		82%	91%	91%	64%	55%							86%				100%	
Streptococcus pyogenes (Group A)	11		91%	91%	91%	64%	55%							86%				100%	
Streptococcus pneumoniae	2		100%	100%	100%	100%	100%		100%		100%			100%		50	100%	100%	
Streptococcus intermedius / sanguinis	6		100%	100%	67%	100%								100%				100%	
Enterococcus faecalis	25	88%							88%	96%		100%		100%				28%	100%
Enterococcus faecium	2	100%							100%	100%								100%	100%