


Non-Urine	 Southern Colorado Region <b>INPATIENT</b> Adult (Age ≥18) Antibigram January 2021 – December 2021	Amoxicillin/Clavulanic Acid (Augmentin)	Ampicillin +/- Sulbactam (Unasyn) ◇	Cefazolin *	Cefepime	Ceftriaxone	Ciprofloxacin*	Clindamycin	Erythromycin (Use Azithromycin)	Gentamicin †	Levofloxacin	Meropenem	Oxacillin	Penicillin	Piperacillin/Tazobactam (Zosyn)	Tetracycline (Use Doxycycline)	Tobramycin	Trimethoprim/Sulfamethoxazole (Bactrim)	Vancomycin	
	<i>Enterobacter</i> spp. (85)	R	R	R	91	67	99			98	97	97			67	92	98	98		<i>Enterobacter</i> spp. (85)
	<i>Enterococcus faecalis</i> (119)		100	R	R	R		R					R					R	100	<i>Enterococcus faecalis</i> (119)
	<i>Escherichia</i> spp. (286)	85	56	84	94	91	83			94	73	100			98	77	91	77		<i>Escherichia</i> spp. (286)
	<i>Klebsiella oxytoca</i> (41)	100	R	66	100	100	100			100	97	100			100	92	100	97		<i>Klebsiella oxytoca</i> (41)
	<i>Klebsiella pneumoniae</i> (94)	93	R	93	97	94	96			95	90	100			96	89	95	91		<i>Klebsiella pneumoniae</i> (94)
	<i>Proteus mirabilis</i> (49)	97	71	80	96	95	69			89	69	100			100	R	89	75		<i>Proteus mirabilis</i> (49)
	<i>Serratia</i> spp. (39)	R	R	R	100	89	100			100	97	100				74	97	100		<i>Serratia</i> spp. (39)
	<i>Pseudomonas aeruginosa</i> (96)	R	R	R	86	R	90				83	93			83	R	100	R		<i>Pseudomonas aeruginosa</i> (96)
	MSSA (404)			100				81	72	99			100	R		92		98	100	MSSA (404)
	MRSA (207)	R	R	R	R	R		70	13	99		R	R	R	R	92		96	100	MRSA (207)
	<i>Staphylococcus epidermidis</i> (103)			30				56	27	83			31	R		82		56	100	<i>Staphylococcus epidermidis</i> (103)
	<i>Streptococcus pneumoniae</i> (53)					96		79	63		100			96		80		77	100	<i>Streptococcus pneumoniae</i> (53)
	<i>S. pneumo.</i> Meningitis MIC					83					100			75		80			100	<i>S. pneumo.</i> Meningitis MIC
	All Enterobacterales (587)	71	33	66	96	89	89			95	82	99			93	76	94	85		All Enterobacterales (587)

Organism (# of isolates)

% susceptible

R = Intrinsically resistant.

spp = species

\* = Due to breakpoint limitation % susceptible & intermediate shown; for ciprofloxacin applies to Enterobacterales group only

† = For synergy for gram-positive infections, not appropriate as monotherapy for gram-positives.

◇ = Ampicillin/sulbactam susceptibility is approximately the same or only a few percentage points better than ampicillin by itself except for *K. pneumo* which it should still maintain decent activity against

#### Notes:

- Includes inpatients at MHN, MHC, Grandview, and PPRH, it does NOT include inpatient rehab
- For *S. pneumo* and penicillin for oral administration use the meningitis MIC susceptibility data

#### Resistant Isolate Frequencies

% (N)

All adults, All Sources, All Regional Locations

N/N → Erta/Mero [often mero same isolate as erta]

CRE = 1.64% (36)

19/2 *E. cloacae*

4/3 *K. aerogenes*

3/1 *E. coli*

3/1 *S. marcescens*

3/0 *Proteus* spp.

2/1 *K. pneumoniae*


1/0 *Citrobacter* spp.

MRSA = 33.6% (299)

VRE = 4.2% (16)

CRPA = 10% (22)

CRAsp = 0%

Urine	 Southern Colorado Region <b>INPATIENT</b> Adult (Age ≥18) Antibiogram January 2021 – December 2021	Amoxicillin/Clavulanic Acid (Augmentin)	Ampicillin +/- Sulbactam (Unasyn) ◇	Cefazolin	Cefepime	Ceftriaxone (Non-Meningitis/Meningitis)	Ciprofloxacin*	Gentamicin †	Levofloxacin	Meropenem	Nitrofurantoin	Oxacillin	Penicillin (Non-meningitis /Meningitis/Oral)	Piperacillin/Tazobactam (Zosyn)	Tetracycline (Use Doxycycline)	Tobramycin	Trimethoprim/Sulfamethoxazole (Bactrim)	Vancomycin	
	<i>Enterobacter</i> spp. (46)	R	R	R	91	73	93	100	91	97	47			73		100	91		<i>Enterobacter</i> spp. (46)
	<i>Enterococcus faecalis</i> (107)		100	R	R	R	84		84		100	R					R	100	<i>Enterococcus faecalis</i> (107)
	<i>Escherichia</i> spp. (374)	82	56	90	94	93	77	93	69	100	94			97		91	80		<i>Escherichia</i> spp. (374)
	<i>Klebsiella oxytoca</i> (30)	93	R		100	85	100	100	100	100	86			90		100	100		<i>Klebsiella oxytoca</i> (30)
	<i>Klebsiella pneumoniae</i> (92)	94	R	88	95	89	89	94	84	100	32			93		93	88		<i>Klebsiella pneumoniae</i> (92)
	<i>Proteus mirabilis</i> (40)	100	70	95	95	95	60	80	60	100	R			100	R	80	62		<i>Proteus mirabilis</i> (40)
	<i>Pseudomonas aeruginosa</i> (66)	R	R	R	93	R	80		75	90	R			95	R	98	R		<i>Pseudomonas aeruginosa</i> (66)
	<i>Staphylococcus epidermidis</i> (39)			31				87			100	31	R		82		56	100	<i>Staphylococcus epidermidis</i> (39)
	All Enterobacterales (592)	76	43	75	95	89	81	93	75	99	73			94		92	82		All Enterobacterales (592)

Organism (# of isolates)

% susceptible

R = Intrinsically resistant.

spp = species

† = For synergy for gram-positive infections, not appropriate as monotherapy for gram-positives.

\* = Due to breakpoint limitation % susceptible & intermediate shown; for ciprofloxacin applies to Enterobacterales group only

◇ = Ampicillin/sulbactam susceptibility is approximately the same or only a few percentage points better than ampicillin by itself except for *K. pneumo* which it should still maintain decent activity against

#### Notes:

- Routine testing of urine isolate of *Staph saprophyticus* is not advised because infections respond to concentrations achieved in urine of antimicrobial agents commonly used to treat acute, uncomplicated UTIs (e.g. cephalosporins, nitrofurantoin, trimethoprim/sulfamethoxazole, or fluoroquinolones). It is intrinsically resistant to fosfomycin.
- Includes inpatients at MHN, MHC, Grandview, and PPRH, it does NOT include inpatient rehab.

Resistant Isolate Frequencies		% (N)
All adults, All Sources, All Regional Locations		
N/N → Erta/Mero [often mero same isolate as erta]		
CRE = 1.64% (36)		MRSA = 33.6% (299)
19/2 <i>E. cloacae</i>		VRE = 4.2% (16)
4/3 <i>K. aerogenes</i>		CRPA = 10% (22)
3/1 <i>E. coli</i>		CRAsp = 0%
3/1 <i>S. marcescens</i>		
3/0 <i>Proteus</i> spp.		
2/1 <i>K. pneumoniae</i>		
1/0 <i>Citrobacter</i> spp.		

**MDRO PROTOCOL:** An automatic infectious disease consult will occur at MHN, MHC, and GVH for **CRE/CRPA/CRAB/CRO/C. auris** from **ANY site** and **blood specimens positive for S. aureus, S. lugdunensis, Enterococcus, or Yeast** in inpatient adult patients age 15 and over. Unless there are extenuating circumstances, the patient will be seen within 24 hours.

#### Urine Culture Guidance (Inpatient):

- Inpatient orders are limited to UA Reflex to Microscopic.
- Providers are responsible for ordering culture, as indicated. Refer to UTI guidance on stewardship website for more details. Any patient <13 years will automatically have a culture added.
- Asymptomatic bacteriuria does not require therapy.** If the patient does not have UTI symptoms, urine culture is not indicated unless the patient is pregnant, pediatric, undergoing invasive urinary tract procedures, or immunocompromised.
- If culture is indicated; re-submit a clean catch or catheterized urine if it has been >24 hours from initial collection of UA, otherwise add-on from UA.
- The negative chemical and/or microscopic urinalysis has a very high specificity and a very high negative predictive value for absence of a UTI.

#### United States Anaerobic Susceptibility Data 2013-2016 % Susceptible

	Amp/Sulb	Pip/Tazo	Cefoxitin	Meropenem	Clindamycin	Metronidazole
Anaerobic GPC*	-	99	-	100	97	100
<i>Bacteroides fragilis</i>	84	96	100	93	26	100
<i>B. fragilis</i> group	74	94	70	95	33	100
<i>Clostridium perfringens</i>	100	100	-	100	83	100
<i>Fusobacterium</i> spp	100	96	-	100	77	95

\*Anaerobic gram-positive cocci = *Peptococcus*, *Peptostreptococcus*, *Fingoldia*, *Peptoniphilus*, and *Anaerococcus* species

- = no data available      GPC = Gram Positive Cocci

#### Inducible Resistance: All ages/sources/locations:

MRSA inducible clindamycin resistance 7%  
MSSA inducible clindamycin resistance 17%

Grp B Strep Clinda = 48% Sensitive; 0% of the total resistance was due to "inducible mechanism" during this time period from 13 resistant isolates tested.

While susceptibility testing may indicate that bacteria are susceptible to an antibiotic, some bacteria may have enzymes that can be "turned on" or induced (thus inducible resistance) in vitro resulting in antibiotic resistance.

#### Blood Cultures (Inpatient) Frequency of Pathogen Isolation:

- |                               |                               |
|-------------------------------|-------------------------------|
| 1. <i>E. coli</i> (163)       | 5. <i>K. pneumoniae</i> (42)  |
| 2. MSSA (141)                 | 6. Viridans streptococci (34) |
| 3. MRSA (62)                  | 7. <i>E. faecalis</i> (30)    |
| 4. <i>S. epidermidis</i> (55) | 8. <i>S. pneumoniae</i> (28)  |

#### Types of Isolation and Associated Organisms

Isolation	Required PPE	Organisms/ Diseases (active or r/o)	Comments
Contact	Gowns & gloves	MRSA, VRE, MDROs and draining abscesses	MRSA can be cleared with nares/axilla/groin cultures.
Special Contact	Gowns & gloves, soap & water for hand hygiene	<i>C. diff</i>	Isolate until discontinued by physician or Infection Preventionist.
		Diapered or incontinent pts with: Shigella, Shigella, & Norovirus	Isolate for duration of illness.
Droplet	Mask, eye protection rec'd; gowns & gloves as necessary	Influenza	Isolate for 7 days from onset of sx or 24 hrs after resolution of fever & resp sx whichever is longer.
		<i>Neisseria meningitidis</i> , meningitis	Isolation until pt on abxs for 24 hrs. Viral or aseptic meningitis → Standard precautions.
Airborne	PAPR or N95, gowns & gloves as needed per standard precaution	Tuberculosis	3 negative AFB AND 2 negative PCR required to rule out.
		Varicella (Chickenpox)	Airborne/contact until lesions dry and crusted over.
		Varicella Zoster (Shingles)	Airborne/contact for immunocomp'd pts or disseminated shingles infection. For non-immunocomp'd pts and/or shingles confined to one area on body → Standard precautions.
Droplet/ Contact Peds Units	Gowns, gloves, & mask	RSV, Enterovirus, Acute respiratory illness, Bronchiolitis	Isolate for duration of illness.

#### Questions? Possible Employee Exposure?

Call Infection Prevention at 719-365-6612

For more information search, "isolation guidelines" on The Source



## Southern Colorado Region

### **INPATIENT** Adult (Age ≥18) Antibiogram

January 2021 – December 2021

## MICROBIOLOGY

719-365-5686

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