 Southern Colorado Region <b>INPATIENT</b> Adult (Age ≥18) Antibigram  January 2022 – December 2022		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	
		Organism (# of isolates)	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible
Non-Urine	<i>Enterobacter</i> spp. (85)	R	R	R	93	69	97			98	91	100			72	91	100	91		<i>Enterobacter</i> spp. (85)
	<i>Enterococcus faecalis</i> (135)		99	R	R	R		R					R					R	100	<i>Enterococcus faecalis</i> (135)
	<i>Escherichia</i> spp. (307)	85	56	85	93	90	84			91	75	100			97	75	92	80		<i>Escherichia</i> spp. (307)
	<i>Klebsiella oxytoca</i> (29)	75	R	45	100	75	96			96	100	100			79	89	96	96		<i>Klebsiella oxytoca</i> (29)
	<i>Klebsiella pneumoniae</i> (103)	97	R	90	91	90	94			96	89	100			97	87	95	92		<i>Klebsiella pneumoniae</i> (103)
	<i>Proteus mirabilis</i> (50)	100	88	84	94	92	86			90	86	100			100	R	91	86		<i>Proteus mirabilis</i> (50)
	<i>Serratia</i> spp. (33)	R	R	R	100	100	100			100	100	96				60	100	100		<i>Serratia</i> spp. (33)
	<i>Pseudomonas aeruginosa</i> (106)	R	R	R	90	R	88				87	91			86	R	100	R		<i>Pseudomonas aeruginosa</i> (106)
	MSSA (423)			99				80	71	98			99	R		91		97	100	MSSA (423)
	MRSA (201)	R	R	R	R	R		74	17	99		R	R	R	R	91		93	100	MRSA (201)
	<i>Staphylococcus epidermidis</i> (82)			27				53	27	95			30	R		82		61	100	<i>Staphylococcus epidermidis</i> (82)
	<i>Streptococcus pneumoniae</i> (66)					100		83	72		100			100		90		82	100	<i>Streptococcus pneumoniae</i> (66)
	<i>S. pneumo.</i> Meningitis MIC					92								84						<i>S. pneumo.</i> Meningitis MIC
	All Enterobacteriales (604)	70	52	67	93	87	89			93	83	99			93	73	94	86		All Enterobacteriales (604)

Non-Urine

Organism (# of isolates)

% susceptible

R = Intrinsically resistant.

spp = species

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

Non-Susceptible Isolate Frequencies		% (N)
All adults, All Sources, All Regional Locations		
N/N → Erta/Mero [often mero same isolate as erta]		
CRE = 1.31% (45)	MRSA = 31.7% (290)	
20/2 <i>E. cloacae</i>	VRE = 6.3% (65)	
6/0 <i>E. coli</i>	CRPA = 8.6% (24)	
5/2 <i>S. marcescens</i>	CRAsp = 0%	
5/0 <i>E. aerogenes</i>		
3/2 <i>K. pneumoniae</i>	2/0 <i>C. freundii</i>	
3/0 <i>P. mirabilis</i>	1/0 <i>P. rettgeri</i>	

Urine	 Southern Colorado Region <b>INPATIENT</b> Adult (Age ≥18) Antibigram January 2022 – December 2022	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. (50)	R	R	R	90	62	90	96	86	98	20			69		96	92		<i>Enterobacter</i> spp. (50)
	<i>Enterococcus faecalis</i> (102)		100	R	R	R	88		88		100	R					R	100	<i>Enterococcus faecalis</i> (102)
	<i>Escherichia</i> spp. (436)	84	58	87	93	90	83	91	74	100	97			96		92	80		<i>Escherichia</i> spp. (436)
	<i>Klebsiella oxytoca</i> (36)	94	R		100	94	100	100	94	100	94			94		100	94		<i>Klebsiella oxytoca</i> (36)
	<i>Klebsiella pneumoniae</i> (131)	97	R	84	94	94	93	97	90	100	34			99		97	93		<i>Klebsiella pneumoniae</i> (131)
	<i>Proteus mirabilis</i> (54)	98	79	90	90	90	61	88	61	100	R			100	R	90	70		<i>Proteus mirabilis</i> (54)
	<i>Pseudomonas aeruginosa</i> (83)	R	R	R	91	R	80		73	91	R			85	R	97	R		<i>Pseudomonas aeruginosa</i> (83)
	<i>Staphylococcus epidermidis</i> (32)			53				87			100	53	R		75		59	100	<i>Staphylococcus epidermidis</i> (32)
	All Enterobacterales (688)	80	50	89	93	89	85	93	79	100	75			95		93	84		All Enterobacterales (688)

Organism (# of isolates)  
 R = Intrinsically resistant.

% susceptible  
 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. cephalixin, nitrofurantoin, trimethoprim/sulfamethoxazole, or fluoroquinolones). It is intrinsically resistant to fosfomicin.
- Includes inpatients at MHN, MHC, Grandview, and PPRH, it does NOT include inpatient rehab.

<b>Non-Susceptible Isolate Frequencies % (N)</b>	
<b>All adults, All Sources, All Regional Locations</b>	
<b>N/N → Erta/Mero [often mero same isolate as erta]</b>	
CRE = 1.31% (45)	MRSA = 31.7% (290)
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5/2 <i>S. marcescens</i>	CRAsp = 0%
5/0 <i>E. aerogenes</i>	
3/2 <i>K. pneumoniae</i>	
3/0 <i>P. mirabilis</i>	
2/0 <i>C. freundii</i>	
1/0 <i>P. rettgeri</i>	

**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 3%  
MSSA inducible clindamycin resistance 19%

Grp B Strep Clinda = 47% Sensitive; 28% of the total resistance was due to "inducible mechanism" during this time period from 39 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. *E. coli* (174)
2. MSSA (152)
3. MRSA (58)
4. *K. pneumoniae* (50)
5. *S. pneumoniae* (43)
6. Viridans streptococci (33)
7. *S. epidermidis* (32)
8. *E. faecalis* (31)

**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 2022 – December 2022

**MICROBIOLOGY**

**719-365-5686**

**Nathan D. Johnston, DO – Medical Director**

**Elizabeth Kleiner, MD – Infectious Disease Physician**

**Alex Novin, PharmD, BCPS, BCIDP  
Infectious Disease Clinical Pharmacist**

**Amery Vilander, MT (ASCP) – Microbiology Manager**

**Krenza Ortiz, MLS (ASCP)<sup>CM</sup> – Microbiology Medical Laboratory Scientist, Molecular Lead**