

Non-Urine	 Southern Colorado Region OUTPATIENT Adult (Age ≥18) Antibrogram January 2022 – December 2022	Amoxicillin/Clavulanic Acid (Augmentin)	Ampicillin +/- Sulbactam (Unasyn) ◊	Cefazolin *	Cefepime	Ceftriaxone (Non-Meningitis/Meningitis)	Ciprofloxacin*	Clindamycin	Erythromycin (Use Azithromycin)	Gentamicin †	Levofloxacin	Meropenem	Oxacillin	Penicillin (Non-meningitis /Meningitis/Oral)	Piperacillin/Tazobactam (Zosyn)	Tetracycline (Use Doxycycline)	Tobramycin	Trimethoprim/Sulfamethoxazole (Bactrim)	Vancomycin	
	<i>Enterobacter</i> spp. (37)	R	R	R	100	91	94			100	89	100			94	91	100	97		<i>Enterobacter</i> spp. (37)
	<i>Enterococcus faecalis</i> (67)		100	R	R	R							R					R	100	<i>Enterococcus faecalis</i> (67)
	<i>Escherichia</i> spp. (131)	88	58	86	93	92	90			91	77	100			100	76	91	80		<i>Escherichia</i> spp. (131)
	<i>Pseudomonas aeruginosa</i> (55)	R	R	R	90	R	87				85	94			90	R	96	R		<i>Pseudomonas aeruginosa</i> (55)
	MSSA (288)			100				76	67	99			100	R		92		98	100	MSSA (288)
	MRSA (121)	R	R	R	R	R		79	18	98		R	R	R	R	94		95	100	MRSA (121)
	<i>Staphylococcus epidermidis</i> (74)			36				64	36	93			36	R		75		64	100	<i>Staphylococcus epidermidis</i> (74)
All Enterobacterales (272)	70	49	85	96	94	90			95	80	100			98	74	93	84		All Enterobacterales (272)	

Organism (# of isolates)

% susceptible

R = Intrinsically resistant.

spp = species

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

† = 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 outpatients at MHN, MHC, Grandview, and PPRH emergency departments who were discharged from the emergency department as well as urgent care and freestanding emergency departments that are part of UCHHealth. Inpatient rehab is also included in this 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>	
3/0 <i>P. mirabilis</i>	
2/0 <i>C. freundii</i>	
1/0 <i>P. rettgeri</i>	

 Southern Colorado Region OUTPATIENT Adult (Age ≥18) Antibiogram 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	
		Organism (# of isolates)	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible	% susceptible
Urine	<i>Enterobacter</i> spp. (208)	R	R	R	95	80	97	99	94	99	27		83		98	97		<i>Enterobacter</i> spp. (208)	
	<i>Enterococcus faecalis</i> (396)		100	R	R	R	92		92		99	R				R	100	<i>Enterococcus faecalis</i> (396)	
	<i>Escherichia</i> spp. (3998)	88	63	92	96	94	87	93	79	100	97			97		93	81		<i>Escherichia</i> spp. (3998)
	<i>Klebsiella oxytoca</i> (126)	95	R		96	92	98	98	96	100	92			94		97	92		<i>Klebsiella oxytoca</i> (126)
	<i>Klebsiella pneumoniae</i> (661)	97	R	96	98	96	95	98	91	99	39			97		98	94		<i>Klebsiella pneumoniae</i> (661)
	<i>Proteus mirabilis</i> (202)	99	89	97	97	97	89	92	88	100	R			100	R	93	88		<i>Proteus mirabilis</i> (202)
	<i>Pseudomonas aeruginosa</i> (195)	R	R	R	95	R	78		77	91	R			91	R	99	R		<i>Pseudomonas aeruginosa</i> (195)
	<i>Staphylococcus epidermidis</i> (209)			55				96			99	55	R		83		68	100	<i>Staphylococcus epidermidis</i> (209)
	All Enterobacterales (5158)	84	57	94	96	94	89	94	82	99	84			97		94	84		All Enterobacterales (5158)

Urine

Organism (# of isolates)

% susceptible

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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. cephalexin, nitrofurantoin, trimethoprim/sulfamethoxazole, or fluoroquinolones). It is intrinsically resistant to fosfomycin.
- Includes outpatients at MHN, MHC, Grandview, and PPRH emergency departments who were discharged from the emergency department as well as urgent care and freestanding emergency departments that are part of UCHealth. Inpatient rehab is also included in this data.

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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 Reflex Guidance (Outpatient):

- A urine sample will be cultured when the patient is <13 years old OR when reflex criteria are met:
 - Positive leukocyte esterase AND/OR
 - Positive nitrite **and** leukocytes > 10/hpf
 - No reflex culture will be done when epithelial cells > 10/hpf (indicative of contaminated specimen, unsatisfactory for culture)
- 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 (Outpatient) Frequency of Pathogen Isolation:

- | | |
|-------------------------------|--|
| 1. <i>E. coli</i> (46) | 5. MRSA (8) |
| 2. MSSA (16) | 6/7. <i>S. pneumoniae</i> , Viridans streptococci (7 each) |
| 3. <i>S. epidermidis</i> (13) | 8. <i>E. faecalis</i> (6) |
| 4. <i>K. pneumoniae</i> (9) | |

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 meningitides</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
OUTPATIENT Adult (Age ≥18)
Antibiogram

January 2022 – December 2022

MICROBIOLOGY

719-365-5686

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