Non-Urine

uchealth

Southern Colorado Region
INPATIENT
Adult (Age ≥18) Antibiogram

January 2020 – December 2020

	Amoxicillin/Clavulanic Acid (Augmentin)	Ampicillin +/- Sulbactam (Unasyn) ◊	Cefazolin *	Cefepime	Ceftriaxone (Non-Meningitis/Meningitis)	Ciprofloxacin*	Clindamycin	Erythromycin (Use Azithromycin)	Gentamicin ǂ	Levofloxacin	Meropenem	Oxacillin	Penicillin (Non-meningitis /Meningitis/Oral)	Piperacillin/Tazobactam (Zosyn)	Tetracycline (Use Doxycycline)	Tobramycin	Trimethoprim/Sulfamethoxazole (Bactrim)	Vancomycin	
***Enterobacter* spp. (69)**	R	R	R	90	79	97			98	95	100			82	91	98	97		***Enterobacter* spp. (69)**
***Enterococcus faecalis* (138)**		100	R	R	R		R					R					R	99	***Enterococcus faecalis* (138)**
***Escherichia* spp. (254)**	83	50	81	93	91	82			92	79	100			93	75	92	77		***Escherichia* spp. (254)**
***Kleb. pneumoniae* (86)**	94	R	92	93	93	93			95	90	100			94	89	94	93		***Kleb. pneumoniae* (86)**
***Proteus mirabilis* (28)**	96	92	79	100	100	75			82	75	100			100	R	82	78		***Proteus mirabilis* (28)**
***Pseudo. aeruginosa* (74)**	R	R	R	93	R	90				89	91			86	R	100	R		***Pseudo. aeruginosa* (74)**
MSSA (369)			100				78	68	99			100	R		94		98	100	**MSSA (369)**
MRSA (161)	R	R	R	R	R		68	9	99		R	R	R	R	94		98	100	**MRSA (161)**
***Staph. epidermidis* (65)**			35				63	36	83			35	R		78		52	100	***Staph. epidermidis* (65)**
***Strep. pneumoniae* (46)**				100/97			87	76		100		100/84/84			86		80	100	***Strep. pneumoniae* (46)**
All Enterobacterales (486)	70	30	67	94	91	88			93	85	100			88	74	93	85		**All Enterobacterales (486)**

Non-Urine

Organism (# of isolates) % susceptible
R = Intrinsically resistant. spp = species
* = Due to breakpoint limitation % susceptible & intermediate shown; for ciprofloxacin applies to Enterobacterales group only
ǂ = 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.

Resistant Isolate Frequencies All age/source/location
% (N) – Erta = E, Mero = M

CRE = 0.13% (6)
2, *K. aerogenes* (E=R, M=S)
2, *K. pneumoniae* (E=R, M=S)
1, *C. koseri* (E=R, M=R)
1, *K. pneumoniae* (E=R, M=R)

MRSA = 32% (274)
VRE = 3.9% (18)
CRPA = 3.8% (13)
CRAsp = 0%

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Urine	Amoxicillin/Clavulanic Acid (Augmentin)	Ampicillin +/- Sulbactam (Unasyn) ◊	Cefazolin	Cefepime	Ceftriaxone (Non-Meningitis/Meningitis)	Ciprofloxacin*	Gentamicin ǂ	Levofloxacin	Meropenem	Nitrofurantoin	Oxacillin	Penicillin (Non-meningitis /Meningitis/Oral)	Piperacillin/Tazobactam (Zosyn)	Tetracycline (Use Doxycycline)	Tobramycin	Trimethoprim/Sulfamethoxazole (Bactrim)	Vancomycin		Urine
***Enterobacter* spp. (28)**	R	R	R	86	70	96	96	89	100	28			82		92	96		***Enterobacter* spp. (30)**	
***Enterococcus faecalis* (101)**		100	R	R	R	76		77		98	R					R	100	***Enterococcus faecalis* (82)**	
***Escherichia* spp. (434)**	83	52	89	94	91	77	92	73	100	98			96		92	77		***Escherichia* spp. (512)**	
***Kleb. pneumoniae* (124)**	93	R	91	94	92	91	94	85	99	32			95		92	91		***Kleb. pneumoniae* (134)**	
***Proteus mirabilis* (36)**	97	72	77	81	81	53	63	52	99	R			100	R	63	50		***Proteus mirabilis* (46)**	
***Pseudo. aeruginosa* (64)**	R	R	R	95	R	82		79	93	R			89	R	98	R		***Pseudo. aeruginosa* (57)**	
***Staph. epidermidis* (39)**			33				89			100	33	R		84		64	100	***Staph. epidermidis* (29)**	
All Enterobacterales (643)	80	38	90	92	89	80	91	76	99	76			94		91	80		**All Enterobacterales (749)**	
Results Below This Line Must Be Interpreted With Caution Due To Low Isolate Numbers – Significant Outlier Effects Possible – May Not Be Representative of Wild Type Bacteria																			
***Kleb. oxytoca* (23)**	78	R		96	83	96	95	95	100	95			78		91	91		***Kleb. oxytoca* (28)**	

Organism (# of isolates) % susceptible
R = Intrinsically resistant. spp = species
ǂ = 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. cephalexin, 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 **All age/source/location**
% (N) – Erta = E, Mero = M

CRE = 0.13% (6)
2, *K. aerogenes* (E=R, M=S)
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1, *C. koseri* (E=R, M=R)
1, *K. pneumoniae* (E=R, M=R)

MRSA = 32% (274)
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CRPA = 3.8% (13)
CRAsp = 0%

MDRO PROTOCOL: An automatic infectious disease consult will occur for **CRE/CRPA from ANY site** and **blood specimens positive for S. aureus, 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
Bacteroides fragilis	84	96	100	93	26	100
B. fragilis group	74	94	70	95	33	100
Clostridium perfringens	100	100	-	100	83	100
Fusobacterium 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 6%
MSSA inducible clindamycin resistance 18%

Grp B Strep Clinda = 32% Sensitive; 18% of the total resistance was due to "inducible mechanism" during this time period from 17 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* (156)
2. MSSA (142)
3. MRSA (59)
4. *K. pneumoniae* (47)
5. *E. faecalis* (46)
6. *S. epidermidis* (34)
7. Viridans streptococci (30)
8. *S. pneumoniae* (27)

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	*C. diff*	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.
		Neisseria meningitides, meningitis	Isolation until pt on abxs for 24 hrs. Viral or aspectic 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

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MICROBIOLOGY

719-365-5686

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