Infectious Diseases Diagnostics Laboratory Antibiogram
MHealth University of Minnesota Medical Center, Fairview East or West Bank
MHealth Fairview Clinics and Surgery Center – Minneapolis
March 2024

Printed herein are the latest cumulative antibiotic susceptibility results from MHealth University of Minnesota Medical Center, Fairview East or West Bank, MHealth Fairview Clinics and Surgery Center Minneapolis and MHealth University of Minnesota Masonic Children's Hospital from January 1, 2023 - December 31, 2023 except where noted otherwise. These data should provide some guidelines in selecting the appropriate antibiotics for your patient. Results listed are based on the Vitek™ Automated Microbiology System, E-test method, or a microdilution minimum inhibitory concentration (MIC) procedure.

Data are for bacteria isolated from diverse sources, including bloods. A separate antibiogram from urine isolates only is listed at the end.

Additional organisms including Staph. saprophyticus, Aerococcus urinae, Burkholderia cepacia, Lactobacillus species, Micrococcus species, Bacillus species, Moraxella catarrhalis, Eikenella corrodens, Pasteurella multocida, Haemophilus influenzae, Anaerobic organisms and Yeast susceptibility data can be seen on this antibiogram. These susceptibility data are collected cumulatively through the MHealth Fairview system and are not specific per hospital/clinic location. Information regarding additional organisms not listed can be found through the literature.

The figures listed indicate the number of isolates tested and percentages of organisms that are susceptible. Colors indicated with percentage are as follows:

- Drug is above 90% susceptible
- Drug is between 60-90% susceptible
- Drug is below 60% susceptible

*Note: drugs that show percentages of 0 may be intrinsically resistant

If you have any questions or for susceptibilities of infrequently isolated organisms, please call the laboratory at (612) 273-3665.

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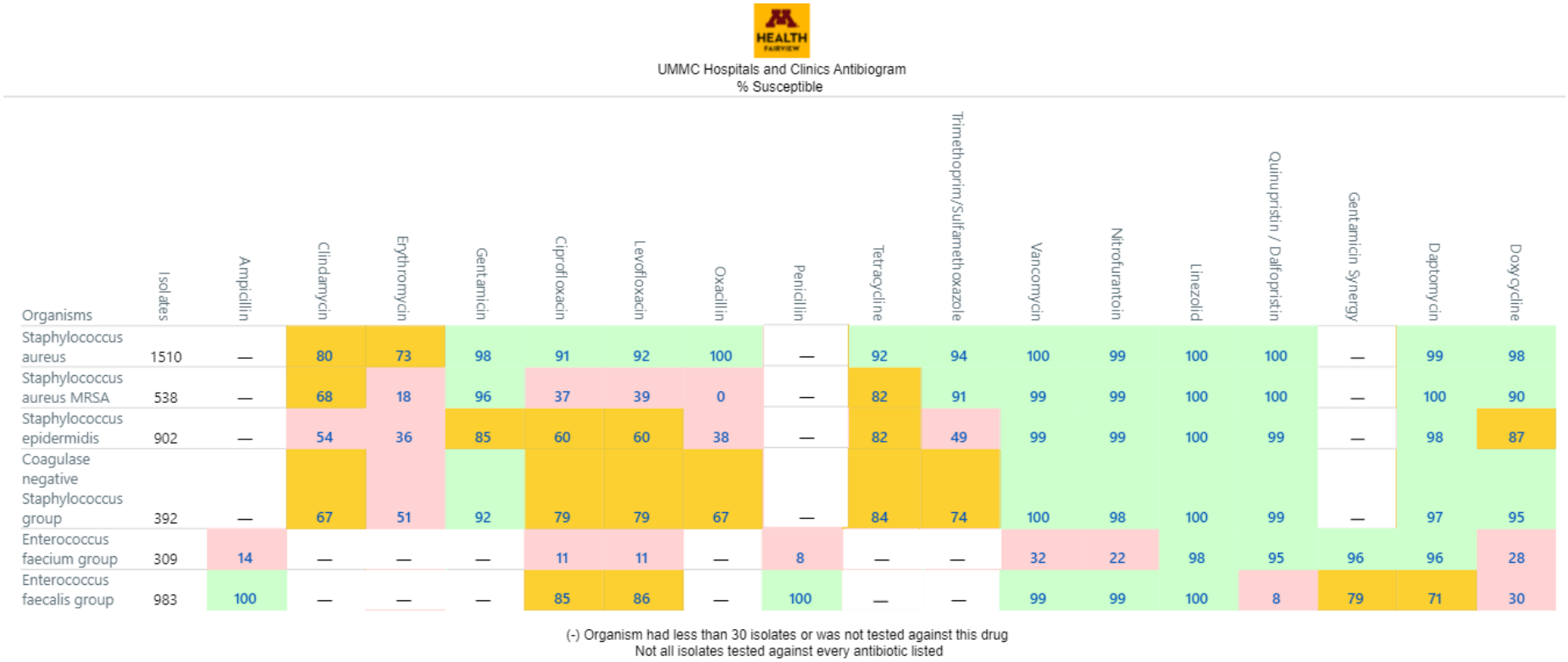
Gram positive organisms



UMMC Hospitals and Clinics Antibiogram
% Susceptible

Organisms	Isolates	Ampicillin	Clindamycin	Erythromycin	Gentamicin	Ciprofloxacin	Levofloxacin	Oxacillin	Penicillin	Tetracycline	Trimethoprim/Sulfamethoxazole	Vancomycin	Nitrofurantoin	Linezolid	Quinupristin / Dalfopristin	Gentamicin Synergy	Daptomycin	Doxycycline
Staphylococcus aureus	1510	—	80	73	98	91	92	100	—	92	94	100	99	100	100	—	99	98
Staphylococcus aureus MRSA	538	—	68	18	96	37	39	0	—	82	91	99	99	100	100	—	100	90
Staphylococcus epidermidis	902	—	54	36	85	60	60	38	—	82	49	99	99	100	99	—	98	87
Coagulase negative Staphylococcus group	392	—	67	51	92	79	79	67	—	84	74	100	98	100	99	—	97	95
Enterococcus faecium group	309	14	—	—	—	11	11	—	8	—	—	32	22	98	95	96	96	28
Enterococcus faecalis group	983	100	—	—	—	85	86	—	100	—	—	99	99	100	8	79	71	30

(-) Organism had less than 30 isolates or was not tested against this drug
Not all isolates tested against every antibiotic listed

Oxacillin data are representative of all semi-synthetic penicillins (nafcillin, methicillin). Oxacillin results can be used to infer the result of cephalosporins including cefazolin and cephalexin.

Coagulase negative Staphylococcus group includes: S. capitis, S. haemolyticus, S. caprae, S. warneri, S. simulans, S. auricularis, S. pettenkoferi, S. hominis.

E. faecalis and E. faecium groups include non-VRE and VRE isolates

UMMC Hospitals and Clinics Antibiogram
% Susceptible

Organisms	Isolates	Ampicillin	Azithromycin	Cefotaxime	Ceftriaxone	Ceftriaxone (Meningitis)	Ceftriaxone (Non-Meningitis)	Clindamycin	Erythromycin	Levofloxacin	Penicillin	Penicillin (Meningitis)	Penicillin (Non-Meningitis)	Penicillin (Oral)	Meropenem	Trimethoprim/Sulfamethoxazole	Vancomycin	Doxycycline
Streptococcus agalactiae (Group B Streptococcus)	232	100	—	100	100	—	—	50	42	100	99	—	—	—	100	—	100	—
Streptococcus pneumoniae	98	—	60	—	—	90	96	89	—	98	—	68	97	68	90	—	100	—
Streptococcus viridans group	144	77	—	95	95	—	—	89	50	—	78	—	—	—	93	—	100	—
Corynebacterium group	51	—	—	—	34	—	—	21	—	—	18	—	—	—	—	79	100	81
Corynebacterium striatum	54	—	—	—	0	—	—	0	—	—	0	—	—	—	—	24	100	25

(-) Organism had less than 30 isolates or was not tested against this drug
Not all isolates tested against every antibiotic listed

Streptococcus viridans group includes: S. anginosus, S. constellatus, S. intermedius, S. mitis group

Corynebacterium group includes: C. species, C. coyleae, C. accolens, C. jeikeium, C. simulans, C. ulcerans, C. amycolatum, C. propinquum, C. aurimucosum, C. urealyticum, C. minutissmum, C. kroppenstedtii, C. glucuronolyticum, C. tuberculostearicum, C. pseudodiphtheriticum

Gram negative organisms

Organisms	Isolates	Amikacin	Ampicillin	Ampicillin/Sulbactam	Cefazolin	Cefoxitin	Ceftazidime	Ceftriaxone	Cefepime	Ciprofloxacin	Levofloxacin	Gentamicin	Meropenem	Piperacillin/Tazobactam	Tobramycin	Trimethoprim/Sulfamethoxazole	Nitrofurantoin
Citrobacter freundii complex	169	100	0	0	0	0	—	—	99	92	83	95	100	—	95	88	97
Klebsiella aerogenes	157	100	0	0	0	0	—	—	100	99	96	99	100	—	99	100	20
Enterobacter cloacae complex	355	100	0	0	0	0	—	—	95	94	91	97	100	—	96	90	58
Escherichia coli group	4630	99	58	67	90	94	92	92	93	79	75	93	99	95	93	77	97
Klebsiella pneumoniae group	971	100	0	82	90	96	90	90	90	87	84	93	100	90	92	88	30
Klebsiella oxytoca group	290	99	0	69	59	98	94	93	94	98	96	96	100	89	96	95	89
Morganella morganii group	83	100	0	4	0	59	86	87	100	89	87	95	100	100	97	87	0
Proteus mirabilis group	527	99	85	92	97	97	97	97	97	83	83	94	100	100	94	84	0
Serratia marcescens	133	99	0	0	0	0	98	96	98	93	90	99	100	95	88	100	0

(-) Organism had less than 30 isolates or was not tested against this drug
Not all isolates tested against every antibiotic listed

Enterobacter cloacae, Klebsiella aerogenes, and Citrobacter freundii have moderate to high levels of inducible AmpC β-lactamase expression. The use of 3rd generation cephalosporins including ceftriaxone and ceftazidime, as well as piperacillin-tazobactam, should be avoided for invasive infections, regardless of susceptibility results.

Isolates listed as a “group” include data for non-ESBL and ESBL isolates. The percentage of ESBLs are as follows:

- E. coli 7.0%
- K. pneumoniae 9.6%
- K. oxytoca 5.7%
- P. mirabilis 2.3%

UMMC Hospitals and Clinics Antibiogram
% Susceptible

Organisms	Isolates	Amikacin	Ampicillin/Sulbactam	Ceftazidime	Ceftriaxone	Cefepime	Ciprofloxacin	Levofloxacin	Gentamicin	Meropenem	Minocycline	Piperacillin/Tazobactam	Tobramycin	Trimethoprim/Sulfamethoxazole
Acinetobacter baumannii complex	44	—	90	90	70	84	95	95	93	100	—	88	95	86
Pseudomonas aeruginosa	676	96	—	89	—	90	83	78	90	88	—	85	97	—
Pseudomonas aeruginosa, mucoid strain	79	68	—	82	—	73	—	59	63	78	—	86	82	0
Stenotrophomonas maltophilia	181	—	—	24	—	—	—	85	—	—	100	—	—	88

(-) Organism had less than 30 isolates or was not tested against this drug
Not all isolates tested against every antibiotic listed

The data above shows Pseudomonas aeruginosa isolates from cultures other than Cystic Fibrosis cultures.

This data (below) shows isolates from Cystic Fibrosis cultures only

- Due to testing limitations on Pseudomonas aeruginosa, the lab is unable to report a breakpoint for Ciprofloxacin susceptible isolates.

Organisms	Isolates	Amikacin	Ceftazidime	Cefepime	Levofloxacin	Gentamicin	Meropenem	Minocycline	Piperacillin/Tazobactam	Tobramycin	Trimethoprim/Sulfamethoxazole	Aztreonam	Imipenem	Piperacillin
Pseudomonas aeruginosa	101	49	68	57	38	37	73	—	70	67	0	62	64	60
Pseudomonas aeruginosa, mucoid strain	129	61	79	66	38	44	75	—	84	74	0	74	67	72
Stenotrophomonas maltophilia	36	—	22	—	80	—	—	100	—	—	88	—	—	—

(-) Organism had less than 30 isolates or was not tested against this drug
Not all isolates tested against every antibiotic listed

Haemophilus influenzae

UMMC Hospitals and Clinics Antibiogram
% Susceptible

Organisms	Isolates	Ampicillin	Amoxicillin / clavulanate	Ceftriaxone	Levofloxacin
Haemophilus influenzae	70	74	88	100	100

(-) Organism had less than 30 isolates or was not tested against this drug
Not all isolates tested against every antibiotic listed

Additional organisms (system data collected)

% Susceptible

Organisms	Isolates	Ampicillin	Clindamycin	Erythromycin	Gentamicin	Ciprofloxacin	Levofloxacin	Oxacillin	Penicillin	Tetracycline	Trimethoprim/Sulfamethoxazole	Vancomycin	Nitrofurantoin	Linezolid	Daptomycin	Doxycycline	Ceftazidime	Ceftriaxone	Azithromycin	Meropenem
Staphylococcus saprophyticus	65	—	51	38	100	100	96	75	—	87	94	100	100	100	100	100	—	—	—	—
Micrococcus species	62	—	86	81	—	—	—	—	98	—	—	100	—	—	—	—	—	—	—	—
Lactobacillus species	39	97	92	—	—	—	—	—	97	—	—	17	—	—	—	—	—	—	—	—
Aerococcus urinae	128	—	—	—	—	—	91	—	99	92	—	100	—	—	—	—	—	99	—	—
Bacillus cereus group, not anthracis	57	0	53	—	100	96	96	—	0	—	—	100	—	—	—	—	—	—	—	—
Bacillus species, not anthracis nor cereus group	32	62	22	—	100	100	100	—	56	—	—	96	—	—	—	—	—	—	—	—
Moraxella catarrhalis	113	0	0	—	—	—	100	—	0	—	84	—	—	—	—	—	—	100	100	—
Eikenella corrodens	84	98	—	—	—	—	100	—	84	—	88	—	—	—	—	—	—	100	95	—
Pasteurella multocida	46	100	—	—	—	—	95	—	100	—	97	—	—	—	—	—	—	97	58	—
Burkholderia cepacia complex	24	—	—	—	—	—	45	—	—	—	45	—	—	—	—	—	45	—	—	75

Anaerobes (1/1/2020 – 12/31/2023)

Organisms	Isolates	Cefotaxime	Clindamycin	Metronidazole	Penicillin	Meropenem	Amoxicillin / clavulanate
Actinomyces species	88	97	77	1	96	100	100
Bacteroides fragilis group	120	15	—	100	—	96	86
Bacteroides fragilis	178	50	—	100	—	96	89
Anaerobic Gram negative bacilli group	201	91	91	100	96	99	99
Clostridium, not perfringens group	78	81	40	97	59	91	100
Clostridium perfringens	82	100	86	100	100	100	100
Cutibacterium (Propionibacterium) acnes	613	100	95	—	100	100	100
Anaerobic Gram positive cocci Group	350	98	76	88	97	100	99
Veillonella species	55	94	90	98	20	100	91

(-) Organism had less than 30 isolates or was not tested against this drug
Not all isolates tested against every antibiotic listed

Bacteroides fragilis group includes: B. fragilis group, B. ovatus, B. thetaiotamicron, B. vulgatus, B. uniformis

Anaerobic gram negative bacilli group includes: Prevotella sp, Porphyromonas sp, Bacteroides sp (not fragilis), Fusobacterium sp, Parabacteroides sp.

Clostridium, not perfringens group includes: C. difficilie, C. species (not perfringens), C. ramosum, C. tertium, C. septicum

Anaerobic gram positive cocci group includes: Anaerococcus sp, Finegoldia magna, Parvimonas micra, Peptococcus sp, Peptoniphilus sp, Streptopeptococcus anaerobius, Staphylococcus saccharolyticus

Yeast (1/1/2020 – 12/31/2023)

Note: there are no breakpoints for Amphotericin B, Itraconazole, 5-Flucytosine or Cryptococcus neoformans.

M Health Fairview System Antibiogram
% Susceptible

Organisms	Isolates	Micafungin	Fluconazole	Voriconazole
Candida albicans	374	99	93	94
Candida glabrata complex	239	98	2	2
Candida krusei	32	100	3	90
Candida tropicalis	38	94	68	50
Candida parapsilosis complex	104	95	94	95

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Not all isolates tested against every antibiotic listed

Urine isolates only

Organisms	Isolates	Amikacin	Ampicillin	Ampicillin/Sulbactam	Cefazolin	Cefoxitin	Ceftazidime	Ceftriaxone	Cefepime	Ciprofloxacin	Levofloxacin	Gentamicin	Meropenem	Piperacillin/Tazobactam	Tobramycin	Trimethoprim/Sulfamethoxazole	Nitrofurantoin
Citrobacter freundii complex	118	100	0	0	0	0	—	—	99	90	83	95	100	—	94	87	95
Klebsiella aerogenes	100	100	0	0	0	0	—	—	100	100	97	100	100	—	100	100	20
Enterobacter cloacae complex	172	100	0	0	0	0	—	—	95	92	89	97	100	—	94	87	54
Escherichia coli group	4201	99	58	68	90	94	92	92	93	80	75	93	99	96	94	77	97
Klebsiella pneumoniae group	764	100	0	83	90	97	90	90	90	87	84	93	100	90	92	88	31
Klebsiella oxytoca group	158	100	0	67	62	99	92	92	92	98	95	96	100	89	95	93	88
Morganella morganii group	38	100	0	7	0	59	86	86	100	89	86	94	100	100	97	84	0
Proteus mirabilis group	411	99	85	92	97	97	97	97	97	84	83	94	100	100	94	84	0
Pseudomonas aeruginosa	251	99	—	—	—	—	92	—	94	84	79	94	92	86	98	0	0
Serratia marcescens	41	100	0	0	0	0	97	90	95	92	87	100	100	87	90	100	0

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Urine isolates only

UMMC Hospitals and Clinics Antibiogram
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Staphylococcus aureus	99	—	75	71	97	80	81	100	—	96	95	100	100	100	100	—	100	100
Staphylococcus aureus MRSA	33	—	54	18	93	24	27	0	—	72	93	100	96	100	—	—	—	—
Staphylococcus epidermidis	289	—	58	40	84	61	60	38	—	83	48	100	99	100	98	—	99	87
Coagulase negative Staphylococcus group	89	—	64	45	87	71	71	59	—	84	76	100	100	100	100	—	100	93
Enterococcus faecium group	124	12	—	—	—	5	6	—	8	—	—	39	29	97	96	95	96	28
Enterococcus faecalis group	552	100	—	—	—	83	86	—	100	—	—	99	99	100	6	79	74	29

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