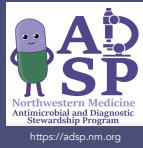


Northwestern Memorial Hospital (NMH) 2022 Antibigrams

- I. Facility-Wide Antibigram
- II. Blood Antibigram
- III. Urinary Antibigram
- IV. Emergency Department (ED) Antibigram
- V. Respiratory Antibigram
- VI. Medical Intensive Care Unit (MICU) Antibigram
- VII. Intensive Care Unit (ICU) Non-MICU Antibigram

NMH 2022
Facility-Wide
Antibiogram



Isolates	Amikacin	Ampicillin	Ampicillin/Sulbactam	Aztreonam	Cefazolin	Cefepime	Cefiderocol ^a	Ceftriaxone	Ceftazidime/Avibactam ^b	Ceftolozane/Tazobactam ^c	Ceftriaxone	Ciprofloxacin	Clindamycin	Daptomycin	Doxycycline	Fluconazole	Genitamicin	Levofloxacin	Linezolid	Meropenem ^d	Micafungin	Minocycline	Oxacillin	Penicillin G	Piperacillin/Tazobactam	Rifampin	Sulfamethoxazole/Trimethoprim	Tetracycline	Tobramycin	Vancocycin	Voriconazole	
GRAM POSITIVES																																
Enterococcus faecalis	993	100 ^b													72 ^a				99												97	
Enterococcus faecium	369	14 ^b													98 ^h				98												30	
Vancomycin-Resistant Enterococci	284	8 ^b													98 ^h				98													
Staphylococcus coagulase negative	387														60	99			100				31 ⁱ			96	65	83 ^a		100		
Staphylococcus aureus	946														67	100			100				68 ^j			99	94	88 ^k		100		
Methicillin-resistant Staphylococcus aureus	315														56	100			100							100	88	77 ^l		100		
Streptococcus pneumoniae (non-meningitis)	34										100							100		94			100				82			100		
Streptococcus pneumoniae (meningitis)	34										91							100		94			71				82			100		
Viridans streptococci	269										94		79					92					88							100		
GRAM NEGATIVES																																
Acinetobacter species	90	71	67				47					52			68			55	52			78			32		69					
Citrobacter freundii complex	129	99		78		99	76			75	90						94	87	99						82	87	83	100 ⁱ				
Citrobacter koseri	110	100		99		99	99			99	95						98	95	100						98	96	95	91 ⁱ				
Enterobacter cloacae complex	323	98		76		96	75				89						96	87	98						75	83	85	95 ⁱ				
Escherichia coli	2790	96	49 ^c	59	91	77	91	93		86	69						88	64	100						94	72		85				
Klebsiella species	1342	98		72 ^d	85	69 ^d	86			84	81						93	79	97						89	80	78	91 ⁱ				
Klebsiella aerogenes	142	99		80		99				76	95						98	93	97						77	98	94	98 ⁱ				
Klebsiella oxytoca	207	99		74	95	49	98	97		93	95						97	95	99						96	82	80	93 ⁱ				
Klebsiella pneumoniae	1023	98		72	84	80	88	86		83	77						92	77	97						89	77	75	90 ⁱ				
Morganella morganii	85	99		94			86				86						98	86	100						98	88		90 ⁱ				
Proteus mirabilis	487	98	79 ^c	87	99	66	99	97		96	78						91	79	100						100	83		93 ⁱ				
Pseudomonas aeruginosa	842	98 ^a		75		92	87	99	97									77		84						87			95			
Serratia species	129	98		98		99	99			94	91						98	87	98								99		95			
Stenotrophomonas maltophilia	113																	89				100					98					
MULTI-DRUG RESISTENT GRAM NEGATIVES																																
Carbapenem Resistant Acinetobacter baumannii (CRAB)	35	34	29												37							60						34				
Carbapenem Resistant Enterobacterales (CRE)	51	63					90 ⁱ			12							67	10										20	33 ⁱ			
Extended-Spectrum β -Lactamase Enterobacterales (ESBL-E)	597	84					99	82		14							62	11	95								29		51			
CANDIDA SPECIES																																
Candida albicans	65															95						100									95	
Candida glabrata	36															83						97										

Antibiogram data helps guide clinicians to choose appropriate empiric antibiotics for many infectious syndromes.

See protocol for multi-drug resistant gram-negative agents for guidance

Page ADSP with questions: 55955

^a %S using MIC breakpoint for urine sources (≤ 16 mcg/ml). If amikacin is preferred for *P. aeruginosa*, recommend using in combination empirically for sources outside the urine.

^b Results of ampicillin susceptibility tests should be used to predict the activity of amoxicillin.

Ampicillin may be used to predict susceptibility to amoxicillin-clavulanate, ampicillin-sulbactam, and piperacillin-tazobactam among non- β -lactamase-producing enterococci in clinically stable/non-immunocompromised patients.

^c Results of ampicillin can predict results for amoxicillin.

^d Klebsiella (formerly Enterobacter) aerogenes is intrinsically resistant to ampicillin/sulbactam and cefazolin. If final culture results in Klebsiella aerogenes, empiric therapy with ampicillin/sulbactam or cefazolin should be changed to a susceptible definitive agent.

^e Recommend infectious diseases consultation for ongoing use

^f %S out of 30 isolates; KPC and OXA48 only (excludes NDM)

^g %S based on dosage regimen of 6 mg/kg every 24 hours for daptomycin

^h %SDD based on a dosage regimen of 8-12 mg/kg every 24 hours for daptomycin intended for serious infections due to *E. faecium*. Consultation with an infectious diseases specialist recommended.

ⁱ Should be reserved for patients who are intolerant to penicillins and cephalosporins or in patients who are suspected of having a drug-resistant bacteria.

^j For agents with established clinical efficacy and considering site of infection and appropriate dosing, oxacillin-susceptible staphylococci can be considered susceptible to: 1) β -lactam combination agents (amoxicillin-clavulanate, ampicillin-sulbactam, piperacillin-tazobactam);

2) oral cephalosporins (cefaclor, cefdinir, cephalixin, cefpodoxime, cefprozil, cefuroxime); 3) IV cephalosporins (cefazolin, cefepime, ceftriaxone); and 4) carbapenems (ertapenem, imipenem, meropenem)

^k Organisms that are susceptible to tetracycline are also considered susceptible to doxycycline and minocycline. However, some organisms that are intermediate or resistant to tetracycline may be susceptible to doxycycline, minocycline, or both.

^l %S extrapolated from NMH 2021 Facility-wide antibiogram

Abbreviations: %S, percent susceptible; %SDD, susceptible-dose-dependent

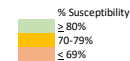
30 isolate threshold

Blank boxes indicate organism has intrinsic resistance to corresponding antimicrobial or resistance testing is not applicable

When risk for mortality or significant morbidity is high (eg. meningitis, sepsis, ICU patients) agents with %S at least 90-95% should be selected.

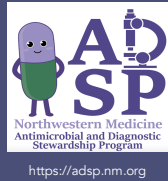
Less significant concerns for mortality within the next 24 to 48 hours (eg. uncomplicated UTIs or community-acquired infections), %S of 80-85% may be appropriate.

Antibiogram Guidance (CLSI M100-Ed33)



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NMH 2022 Blood Antibiogram



Isolates	Amikacin	Ampicillin	Ampicillin/Sulbactam	Aztreonam	Cefazolin	Cefepime	Ceftazidime	Ceftazidime/Avibactam ^e	Ceftolozane/Tazobactam ^e	Ceftriaxone	Ciprofloxacin	Clindamycin	Daptomycin	Gentamicin	Levofloxacin	Linezolid	Meropenem ^h	Oxacillin	Penicillin G	Piperacillin/Tazobactam	Rifampin	Sulfamethoxazole/Trimethoprim	Tetracycline	Tobramycin ^k	Vancomycin	
GRAM POSITIVES																										
Enterococcus faecalis	55	100 ^b											64 ^f			98										94
Enterococcus faecium	46	11 ^b											95 ^g			98										29
Vancomycin-Resistant Enterococci	36	11 ^b											94 ^g			97										
Staphylococcus coagulase negative	114											44	99			99		24 ⁱ					50	78 ^j		100
Staphylococcus aureus	134											71	100			99		72 ⁱ			99	92	88 ^j			100
Methicillin-resistant Staphylococcus aureus	38											52	100			100					97	79	66 ^j			100
Viridans streptococci	39									92		87			64				81							100
GRAM NEGATIVES																										
Escherichia coli	170	95	37 ^c	51	89	71	92	89		80	63			87	54		100			92		66				78
Klebsiella species	100	97		74 ^d	91	78 ^d	91	91		88	78			94	75		99			82		77				85
Pseudomonas aeruginosa	44	95 ^a			72		90	85	93	95					73		80			81						96
MULTI-DRUG RESISTANT GRAM NEGATIVES																										
Extended-Spectrum β-Lactamase Enterobacterales (ESBL-E)	49	84						98	90		20			67	16		100					27				35

Antibiogram data helps guide clinicians to choose appropriate empiric antibiotics for many infectious syndromes.

See [protocol for multi-drug resistant gram-negative agents for guidance](#)

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^a %S using MIC breakpoint for urine sources (≤ 16 mcg/ml). If amikacin is preferred for *P. aeruginosa*, recommend using in combination empirically for sources outside the urine.

^b Results of ampicillin susceptibility tests should be used to predict the activity of amoxicillin.

Ampicillin may be used to predict susceptibility to amoxicillin-clavulanate, ampicillin-sulbactam, and piperacillin-tazobactam among non-β-lactamase-producing enterococci in clinically stable/non-immunocompromised patients.

^c Results of ampicillin can predict results for amoxicillin.

^d Klebsiella (formerly Enterobacter) aerogenes is intrinsically resistant to ampicillin/sulbactam and cefazolin.

If final culture results in Klebsiella aerogenes, empiric therapy with ampicillin/subactam or cefazolin should be changed to a susceptible definitive agent.

^e Recommend infectious diseases consultation for ongoing use

^f %S based on dosage regimen of 6 mg/kg every 24 hours for daptomycin

^g %SDD based on a dosage regimen of 8-12 mg/kg every 24 hours for daptomycin intended for serious infections due to *E. faecium*. Consultation with an infectious diseases specialist recommended.

^h Should be reserved for patients who are intolerant to penicilins and cephalosporins or in patients who are suspected of having a drug-resistant bacteria.

ⁱ For agents with established clinical efficacy and considering site of infection and appropriate dosing, oxacillin-susceptible staphylococci can be considered susceptible to:

- 1) β-lactam combination agents (amoxicillin-clavulanate, ampicillin-sulbactam, piperacillin-tazobactam);
- 2) oral cephalosporins (cefactor, cefdinir, cephalexin, cefpodoxime, ceftiofur, cefuroxime);
- 3) IV cephalosporins (cefazolin, cefepime, ceftriaxone); and
- 4) carbapenems (ertapenem, imipenem, meropenem)

^j Organisms that are susceptible to tetracycline are also considered susceptible to doxycycline and minocycline. However, some organisms that are intermediate or resistant to tetracycline may be susceptible to doxycycline, minocycline, or both.

^k %S extrapolated from NMH 2021 Blood antibiogram

Abbreviations: %S, percent susceptible; %SDD, susceptible-dose-dependent

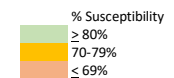
30 isolate threshold

Blank boxes indicate organism has intrinsic resistance to corresponding antimicrobial or resistance testing is not applicable

When risk for mortality or significant morbidity is high (eg. meningitis, sepsis, ICU patients) agents with %S at least 90-95% should be selected.

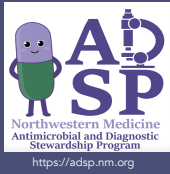
Less significant concerns for mortality within the next 24 to 48 hours (eg. uncomplicated UTIs or community-acquired infections), %S of 80-85% may be appropriate.

Antibiogram Guidance (CLSI M100-Ed33)



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NMH 2022 Urine Antibiogram



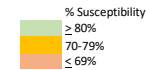
	Isolates	Amikacin	Ampicillin	Ampicillin/Sulbactam	Aztreonam	Cefazolin	Cefepime	Ceftazidime	Ceftazidime/Avibactam ^d	Ceftolozane/Tazobactam ^f	Ceftriaxone	Ciprofloxacin	Clindamycin	Fosfomycin	Gentamicin	Levofloxacin	Linezolid	Meropenam ^h	Nitrofurantoin	Oxacillin	Piperacillin/Tazobactam	Sulfamethoxazole/Trimethoprim	Tetracycline	Tobramycin	Vancocycin	
GRAM POSITIVES																										
Enterococcus faecalis	582		100 ^b													100		100					27		97	
Enterococcus faecium	192		12 ^b													98		32					23		30	
Vancomycin-Resistant Enterococci	154		11 ^b													97		35								
Staphylococcus coagulase negative	61												54			97				47		58	77		100	
Staphylococcus aureus	81												62			100				63 ⁱ		85	86 ^j		100	
Methicillin-resistant Staphylococcus aureus	32												43			100						78	75 ^j		100	
GRAM NEGATIVES																										
Citrobacter freundii complex	80	99		74		99	74				80	90			91	87		99	91		82	83				
Citrobacter koseri	74	100		100		100	100				100	96			100	96		100	92		99	97				
Enterobacter species	119	99		72		97	71					91			97	86		98	28		70	87			92 ^{k,l}	
Escherichia coli	2374	97	50 ^e	60	92	85	91	94			88	69		93 ^f	89	65		100	96		95	72			84	
Klebsiella aerogenes	85	100		79		99	76				76	96			99	93		100	13		76	99				
Klebsiella oxytoca	118	98		71	94	87	96	97			92	93			94	93		99	92		97	75			89 ^{k,m}	
Klebsiella pneumoniae	767	98		73	85	82	88	86			83	77			92	74		97	28		90	77			91 ^{k,n}	
Morganella morganii	38	97		92			84					86			100	86		100			98	86				
Proteus species	331	99	75 ^e	86	99	90	98	97			96	80			91	81		100			100	82			94 ^k	
Pseudomonas aeruginosa	350	99 ^a		72		94	89	100	99			80				73		84			90				96 ^k	
MULTI-DRUG RESISTENT GRAM NEGATIVES																										
Carbapenem Resistant Enterobacterales (CRE)	29	83						92 ^e				14			72	14			17			17			20 ^k	
Extended-Spectrum β-Lactamase Enterobacterales (ESBL-E)	448	84						100	85			12		84 ^g	62	9		96	62			28			50	

Several agents have the potential to concentrate in the urine with an intermediate MIC. Contact ADSP for appropriate indication and recommended dosing.

Antibiogram data helps guide clinicians to choose appropriate empiric antibiotics for many infectious syndromes.

[See protocol for multi-drug resistant gram-negative agents for guidance](#)

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^a %S using MIC breakpoint for urine sources (≤ 16 mcg/ml). If amikacin is preferred for *P. aeruginosa*, recommend using in combination empirically for sources outside the urine.

^b Results of ampicillin susceptibility tests should be used to predict the activity of amoxicillin.

Ampicillin may be used to predict susceptibility to amoxicillin-clavulanate, ampicillin-sulbactam, and piperacillin-tazobactam among non-β-lactamase-producing enterococci in clinically stable/non-immunocompromised patients.

^c Results of ampicillin can predict results for amoxicillin.

^d Recommend infectious diseases consultation for ongoing use

^e %S out of 12 isolates

^f %S out of 15 isolates

^g %S out of 23 isolates

^h Should be reserved for patients who are intolerant to penicillins and cephalosporins or in patients who are suspected of having a drug-resistant bacteria.

ⁱ For agents with established clinical efficacy and considering site of infection and appropriate dosing, oxacillin-susceptible staphylococci can be considered susceptible to:

1) β-lactam combination agents (amoxicillin-clavulanate, ampicillin-sulbactam, piperacillin-tazobactam); 2) oral cephalosporins (cefazolin, cefdinir, cephalexin, cefepodoxime, cefprozil, cefuroxime);

3) IV cephalosporins (cefazolin, cefepime, ceftriaxone); and 4) carbapenems (ertapenem, imipenem, meropenem)

^j Organisms that are susceptible to tetracycline are also considered susceptible to doxycycline and minocycline.

However, some organisms that are intermediate or resistant to tetracycline may be susceptible to doxycycline, minocycline, or both.

^k %S extrapolated from NMH 2021 Urinary antibiogram

^l %S out of 39 isolates

^m %S out of 36 isolates

ⁿ %S out of 179 isolates

Abbreviations: %S, percent susceptible

30 isolate threshold (exception: CRE)

Blank boxes indicate organism has intrinsic resistance to corresponding antimicrobial or resistance testing is not applicable

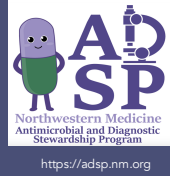
When risk for mortality or significant morbidity is high (eg. meningitis, sepsis, ICU patients) agents with %S at least 90-95% should be selected.

Less significant concerns for mortality within the next 24 to 48 hours (eg. uncomplicated UTIs or community-acquired infections), %S of 80-85% may be appropriate.

Antibiogram Guidance (CLSI M100-Ed33)

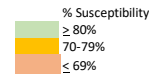
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NMH 2022 ED Antibiogram



	Isolates	Amikacin	Ampicillin	Ampicillin/Sulbactam	Aztreonam	Cefazolin	Cefepime	Ceftazidime	Ceftriaxone	Ciprofloxacin	Clindamycin	Daptomycin	Gentamicin	Levofloxacin	Linezolid	Meropenem ^f	Oxacillin	Piperacillin/Tazobactam	Sulfamethoxazole/Trimethoprim	Tetracycline	Tobramycin	Vancomycin
GRAM POSITIVES																						
Enterococcus faecalis	301		100 ^b									76 ^d			99							96
Enterococcus faecium	67		18 ^b									100 ^e			95							35
Vancomycin-Resistant Enterococci	56		20 ^b									100 ^e			95							
Staphylococcus coagulase negative	91										56	99			100		32 ^g	60	81 ^h			100
Staphylococcus aureus	240										66	100			100		68 ^g	97	89 ^h			100
Methicillin-resistant Staphylococcus aureus	82										52	100			100			91	79 ^h			100
Viridans streptococci	64							95			78			92								100
GRAM NEGATIVES																						
Citrobacter freundii complex	32	100			66		100	63	59	88			94	84		100		68	91	90		
Citrobacter koseri	45	100			98		98	98	90	93			98	91		100		100	95	93		
Enterobacter species	75	100			73		88	73		92			93	91		97		73	91	92	96 ^{l,j}	
Escherichia coli	1315	97	50 ^c	61	92	80	91	93	87	72			89	67		100		94	73			82
Klebsiella aerogenes	46	100			85		100	87	83	100			100	98		100		80	100	98		
Klebsiella oxytoca	66	100		74	95	44	95	95	92	95			95	95		98		95	80	77	96 ^k	
Klebsiella pneumoniae	430	98		75	86	83	90	89	85	78			93	75		98		85	81	77	88 ^{l,j}	
Morganella morganii	34	97			88			82		82			94	82		100		97	79			
Proteus species	211	98	74 ^c	85	100	61	98	96	96	77			92	77		100		100	83			94 ⁱ
Pseudomonas aeruginosa	228	89 ^a			77		95	91		78				72		84		93				96 ⁱ

Antibiogram data helps guide clinicians to choose appropriate empiric antibiotics for many infectious syndromes.
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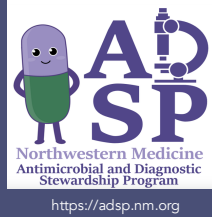


^a %S using MIC breakpoint for urine sources (≤ 16 mcg/ml). If amikacin is preferred for *P. aeruginosa*, recommend using in combination empirically for sources outside the urine.
^b Results of ampicillin susceptibility tests should be used to predict the activity of amoxicillin.
 Ampicillin may be used to predict susceptibility to amoxicillin-clavulanate, ampicillin-sulbactam, and piperacillin-tazobactam among non-β-lactamase-producing enterococci in clinically stable/non-immunocompromised patients.
^c Results of ampicillin can predict results for amoxicillin.
 If final culture results in *Klebsiella aerogenes*, empiric therapy with ampicillin/sulbactam or cefazolin should be changed to a susceptible definitive agent.
^d %S based on dosage regimen of 6 mg/kg every 24 hours for daptomycin
^e %SDD based on a dosage regimen of 8-12 mg/kg every 24 hours for daptomycin intended for serious infections due to *E. faecium*. Consultation with an infectious diseases specialist recommended.
^f Should be reserved for patients who are intolerant to penicillins and cephalosporins or in patients who are suspected of having a drug-resistant bacteria.
^g For agents with established clinical efficacy and considering site of infection and appropriate dosing, oxacillin-susceptible staphylococci can be considered susceptible to:
 1) β-lactam combination agents (amoxicillin-clavulanate, ampicillin-sulbactam, piperacillin-tazobactam); 2) oral cephalosporins (cefazolin, cefdinir, cephalexin, cefprozil, cefuroxime);
 3) IV cephalosporins (cefazolin, cefepime, ceftriaxone); and 4) carbapenems (ertapenem, imipenem, meropenem)
^h Organisms that are susceptible to tetracycline are also considered susceptible to doxycycline and minocycline.
 However, some organisms that are intermediate or resistant to tetracycline may be susceptible to doxycycline, minocycline, or both.
ⁱ %S extrapolated from NMH 2021 ED antibiogram
^j %S out of 49 isolates
^k %S out of 45 isolates
^l %S out of 254 isolates

Abbreviations: %S, percent susceptible; %SDD, susceptible-dose-dependent
 30 isolate threshold
 Blank boxes indicate organism has intrinsic resistance to corresponding antimicrobial or resistance testing is not applicable
 When risk for mortality or significant morbidity is high (eg. meningitis, sepsis, ICU patients) agents with %S at least 90-95% should be selected.
 Less significant concerns for mortality within the next 24 to 48 hours (eg. uncomplicated UTIs or community-acquired infections), %S of 80-85% may be appropriate.
 Antibiogram Guidance (CLSI M100-Ed33)

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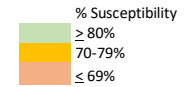
NMH 2022 Respiratory Antibiogram



Isolates	Amikacin	Ampicillin	Ampicillin/Sulbactam	Aztreonam	Cefazolin	Cefepime	Ceftazidime	Ceftriaxone	Ciprofloxacin	Clindamycin	Gentamicin	Levofloxacin	Linezolid	Meropenem ^d	Minocycline	Oxacillin	Penicillin	Piperacillin/Tazobactam	Sulfamethoxazole/Trimethoprim	Tetracycline ^f	Tobramycin ^g	Vancomycin
GRAM POSITIVES																						
Staphylococcus aureus	157								61			100				72 ^e			94	86		100
Methicillin-resistant Staphylococcus aureus	50								48			100							90	73		100
Viridans streptococci	30						96		76		96						59					100
GRAM NEGATIVES																						
Enterobacter species	49	92		69		92	69		85		97	78		94				67	80			97
Escherichia coli	54	92	25 ^b	45	74	45	81	89	60	45	81	45		100				81	57			83
Klebsiella species	119	97		64 ^c	75	56 ^c	83	74	73	79	93	72		91				76	75			89
Klebsiella oxytoca and pneumoniae	92	96		58	74	63	78	74	73	74	91	66		90				77	68			85
Pseudomonas aeruginosa	158	98 ^a		75		87	82		86		81		78					84				92
Serratia species	50	94		100		98	100	92	96		94	94		100				100	100			89
Stenotrophomonas maltophilia	48											83			100				100			

Antibiogram data helps guide clinicians to choose appropriate empiric antibiotics for many infectious syndromes.

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^a %S using MIC breakpoint for urine sources (≤ 16 mcg/ml). If amikacin is preferred for *P. aeruginosa*, recommend using in combination empirically for sources outside the urine.

^b Results of ampicillin can predict results for amoxicillin.

^c Klebsiella (formerly Enterobacter) aerogenes is intrinsically resistant to ampicillin/sulbactam and cefazolin.

If final culture results in Klebsiella aerogenes, empiric therapy with ampicillin/sulbactam or cefazolin should be changed to a susceptible definitive agent.

^d Should be reserved for patients who are intolerant to penicilins and cephalosporins or in patients who are suspected of having a drug-resistant bacteria.

^e For agents with established clinical efficacy and considering site of infection and appropriate dosing, oxacillin-susceptible staphylococci can be considered susceptible to:

1) β-lactam combination agents (amoxicillin-clavulante, ampicillin-sulbactam, piperacillin-tazobactam); 2) oral cephalosporins (cefaclor, cefdinir, cephalixin, cefpodoxime, cefprozil, cefuroxime); 3) IV cephalosporins (cefazolin, cefepime, ceftriaxone); and 4) carbapenems (ertapenem, imipenem, meropenem).

^f Organisms that are susceptible to tetracycline are also considered susceptible to doxycycline and minocycline.

However, some organisms that are intermediate or resistant to tetracycline may be susceptible to doxycycline, minocycline, or both.

^g %S extrapolated from NMH 2021 Respiratory antibiogram

Abbreviations: %S, percent susceptible

30 isolate threshold

Blank boxes indicate organism has intrinsic resistance to corresponding antimicrobial or resistance testing is not applicable.

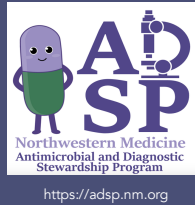
When risk for mortality or significant morbidity is high (eg. meningitis, sepsis, ICU patients), agents with %S at least 90-95% should be selected.

Less significant concerns for mortality within the next 24 to 48 hours (eg. uncomplicated UTIs or community-acquired infections), agents with %S of 80-85% may be appropriate.

Antibiogram Guidance (CLSI M100-Ed33)

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NMH 2022 MICU Antibiogram



GRAM POSITIVES

Organism	Isolates	Amikacin	Ampicillin	Ampicillin/Sulbactam	Aztreonam	Cefazolin	Cefepime	Ceftazidime	Ceftazidime/Avibactam ^e	Ceftolozane/Tazobactam ^e	Ceftriaxone	Ciprofloxacin	Clindamycin	Daptomycin	Gentamicin	Levofloxacin	Linezolid	Meropenem ^h	Oxacillin	Piperacillin/Tazobactam	Sulfamethoxazole/Trimethoprim	Tetracycline	Tobramycin ⁱ	Vancomycin
Enterococcus faecalis	78		99 ^b											74 ^f			97							96
Enterococcus faecium	52		4 ^b											95 ^g			100							25
Vancomycin-Resistant Enterococci	41		5 ^b											95 ^h			100							
Staphylococcus aureus	83											60	100				100		65 ^j		94	87 ^k		100
Methicillin-resistant Staphylococcus aureus	31											45	100				100				87	74 ^l		100

GRAM NEGATIVES

Escherichia coli	58	93	29 ^c	39	72	50	76	74	98	95	66	48			78	40		100		83	57			78
Klebsiella species	82	98		50 ^d	67	61 ^d	77	70	96	80	67	68			90	62		90		74	68			79
Klebsiella oxytoca and pneumoniae	72	97		48	67	60	73	69	97	81	67	67			89	55		92		75	64			73
Pseudomonas aeruginosa	90	98 ^a			70		84	77	98	94		83				74		67		85				92

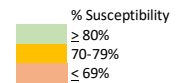
MULTI-DRUG RESISTANT GRAM NEGATIVES

Extended-Spectrum β -Lactamase Enterobacterales (ESBL-E)	43	91							98	65		7			63	6		84			16			47
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Antibiogram data helps guide clinicians to choose appropriate empiric antibiotics for many infectious syndromes.

See [protocol for multi-drug resistant gram-negative agents for guidance](#)

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^a %S using MIC breakpoint for urine sources (≤ 16 mcg/ml). If amikacin is preferred for *P. aeruginosa*, recommend using in combination empirically for sources outside the urine.

^b Results of ampicillin susceptibility tests should be used to predict the activity of amoxicillin.

Ampicillin may be used to predict susceptibility to amoxicillin-clavulanate, ampicillin-sulbactam, and piperacillin-tazobactam among non- β -lactamase-producing enterococci in clinically stable/non-immunocompromised patients.

^c Results of ampicillin can predict results for amoxicillin.

^d Klebsiella (formerly Enterobacter) aerogenes is intrinsically resistant to ampicillin/sulbactam and cefazolin.

If final culture results in Klebsiella aerogenes, empiric therapy with ampicillin/subactam or cefazolin should be changed to a susceptible definitive agent.

^e Recommend infectious diseases consultation for ongoing use

^f %S based on dosage regimen of 6 mg/kg every 24 hours.

^g %S out of 21 isolates

^h %S out of 22 isolates

ⁱ Should be reserved for patients who are intolerant to penicillins and cephalosporins or in patients who are suspected of having a drug-resistant bacteria.

^j For agents with established clinical efficacy and considering site of infection and appropriate dosing, oxacillin-susceptible staphylococci can be considered susceptible to:

- 1) β -lactam combination agents (amoxicillin-clavulanate, ampicillin-sulbactam, piperacillin-tazobactam); 2) oral cephalosporins (cefaclor, cefdinir, cephalexin, cefpodoxime, cefprozil, cefuroxime); 3) IV cephalosporins (cefazolin, cefepime, ceftriaxone); and 4) carbapenems (ertapenem, imipenem, meropenem).

^k Organisms that are susceptible to tetracycline are also considered susceptible to doxycycline and minocycline.

However, some organisms that are intermediate or resistant to tetracycline may be susceptible to doxycycline, minocycline, or both.

^l %S extrapolated from NMH 2021 MICU antibiogram

Abbreviations: %S, percent susceptible

30 isolate threshold unless indicated otherwise.

Blank boxes indicate organism has intrinsic resistance to corresponding antimicrobial or resistance testing is not applicable.

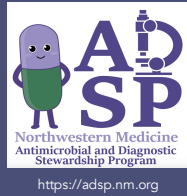
When risk for mortality or significant morbidity is high (eg. meningitis, sepsis, ICU patients), agents with %S at least 90-95% should be selected.

Less significant concerns for mortality within the next 24 to 48 hours (eg. uncomplicated UTIs or community-acquired infections), agents with %S of 80-85% may be appropriate.

Antibiogram Guidance (CLSI M100-Ed33)

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NMH 2022 NON-MICU Antibiogram

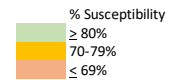


Isolates	Amikacin	Ampicillin	Ampicillin/Sulbactam	Aztreonam	Cefazolin	Cefepime	Cefazidime	Cefazidime/Avibactam ^e	Ceftolozane/Tazobactam ^e	Ceftriaxone	Ciprofloxacin	Clindamycin	Daptomycin	Gentamicin	Levofloxacin	Linezolid	Meropenem ^g	Oxacillin	Piperacillin/Tazobactam	Sulfamethoxazole/Trimethoprim	Tetracycline	Tobramycin ^j	Vancocycin	
GRAM POSITIVES																								
Enterococcus faecalis	72	100 ^b											80 ^f			99								97
Enterococcus faecium	47	4 ^b														98								28
Vancomycin-Resistant Enterococci	34	2 ^b														97					21			
Staphylococcus aureus	99											69	100			100		73 ^h		94	89 ⁱ			100
GRAM NEGATIVES																								
Enterobacter species	46	93		78		93	78				89				96	89		93		78	83			
Escherichia coli	81	96	41 ^c	53	80	61	80	84			73	62			80	54		99		82	68			92
Klebsiella species	90	97		62 ^d	73	61 ^d	95	71			66	75			90	72		91		71	70			91
Klebsiella oxytoca and pneumoniae	69	96		62	74	56	79	75			69	69			87	65		90		75	60			87
Pseudomonas aeruginosa	83	85 ^a			69		89	73	95	95					65	78		76		78				91
Serratia species	42	98			100		100	100			93	100			98	93		100			100			
MULTI-DRUG RESISTENT GRAM NEGATIVES																								
Extended-Spectrum β-Lactamase Enterobacterales (ESBL-E)	44	86							93	61		23			52	18		82			32			56

Antibiogram data helps guide clinicians to choose appropriate empiric antibiotics for many infectious syndromes.

[See protocol for multi-drug resistant gram-negative agents for guidance](#)

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^a %S using MIC breakpoint for urine sources (≤ 16 mcg/ml). If amikacin is preferred for *P. aeruginosa*, recommend using in combination empirically for sources outside the urine.

^b Results of ampicillin susceptibility tests should be used to predict the activity of amoxicillin.

Ampicillin may be used to predict susceptibility to amoxicillin-clavulanate, ampicillin-sulbactam, and piperacillin-tazobactam among non-β-lactamase-producing enterococci in clinically stable/non-immunocompromised patients.

^c Results of ampicillin can predict results for amoxicillin.

^d Klebsiella (formerly Enterobacter) aerogenes is intrinsically resistant to ampicillin/sulbactam and cefazolin. If final culture results in Klebsiella aerogenes, empiric therapy with ampicillin/subactam or cefazolin should be changed to a susceptible definitive agent.

^e Recommend infectious diseases consultation for ongoing use

^f %S based on dosage regimen of 6 mg/kg every 24 hours for daptomycin

^g Should be reserved for patients who are intolerant to penicilins and cephalosporins or in patients who are suspected of having a drug-resistant bacteria.

^h For agents with established clinical efficacy and considering site of infection and appropriate dosing, oxacillin-susceptible staphylococci can be considered susceptible to: 1) β-lactam combination agents (amoxicillin-clavulanate, ampicillin-sulbactam, piperacillin-tazobactam); 2) oral cephalosporins (cefaclor, cefdinir, cephalexin, cefpodoxime, cefprozil, cefuroxime); 3) IV cephalosporins (cefazolin, cefepime, ceftriaxone); and 4) carbapenems (ertapenem, imipenem, meropenem)

ⁱ Organisms that are susceptible to tetracycline are also considered susceptible to doxycycline and minocycline. However, some organisms that are intermediate or resistant to tetracycline may be susceptible to doxycycline, minocycline, or both.

^j %S extrapolated from NMH 2021 Facility-wide antibiogram

Abbreviations: %S, percent susceptible

30 isolate threshold

Blank boxes indicate organism has intrinsic resistance to corresponding antimicrobial or resistance testing is not applicable

When risk for mortality or significant morbidity is high (eg. meningitis, sepsis, ICU patients) agents with %S at least 90-95% should be selected.

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