

Table 2B-5. MIC Breakpoints for Other Non-Enterobacterales (Refer to General Comment [2])

Testing Conditions	
<b>Medium:</b>	Broth dilution: CAMHB Agar dilution: MHA
<b>Inoculum:</b>	Broth culture method or colony suspension, equivalent to a 0.5 McFarland standard
<b>Incubation:</b>	35°C ± 2°C; ambient air; 16-20 hours

Routine QC Recommendations (see Table 5A-1 for acceptable QC ranges)
<i>Escherichia coli</i> ATCC <sup>®a</sup> 25922 (for chloramphenicol, tetracyclines, sulfonamides, and trimethoprim-sulfamethoxazole) <i>Pseudomonas aeruginosa</i> ATCC <sup>®</sup> 27853
Refer to Tables 4A-2 and 5A-2 to select strains for routine QC of $\beta$ -lactam combination agents.
When a commercial test system is used for susceptibility testing, refer to the manufacturer's instructions for QC test recommendations and QC ranges.

General Comments

- (1) Refer to Table 1G for antimicrobial agents that should be considered for testing and reporting by microbiology laboratories.
- (2) Other non-Enterobacterales include *Pseudomonas* spp. and other nonfastidious, glucose-nonfermenting, gram-negative bacilli but exclude *P. aeruginosa*, *Acinetobacter* spp., *Burkholderia cepacia* complex, and *Stenotrophomonas maltophilia* (refer to Tables 2B-2, 2B-3, and 2B-4, respectively). Recommendations for testing and reporting *Aeromonas* spp. (includes members of *A. caviae* complex, *A. hydrophila* complex, and *A. veronii* complex), *Burkholderia mallei*, *Burkholderia pseudomallei*, and *Vibrio* spp. (including *V. cholerae*) are found in CLSI document M45.<sup>1</sup>
- (3) For other non-Enterobacterales, the disk diffusion method has not been systematically studied. Therefore, for this organism group, disk diffusion testing is not recommended.

**NOTE:** Information in black boldface type is new or modified since the previous edition.

Table 2B-5. Other Non-Enterobacterales (Continued)

Antimicrobial Agent	Disk Content	Interpretive Categories and Zone Diameter Breakpoints, nearest whole mm			Interpretive Categories and MIC Breakpoints, µg/mL			Comments
		S	I	R	S	I	R	
<b>PENICILLINS</b>								
Piperacillin*	-	-	-	-	≤16	32-64	≥128	
<b>β-LACTAM COMBINATION AGENTS</b>								
(4) Organisms that test susceptible to the β-lactam agent alone are also considered susceptible to the β-lactam combination agent. However, organisms that test susceptible to the β-lactam combination agent cannot be assumed to be susceptible to the β-lactam agent alone. Similarly, organisms that test intermediate or resistant to the β-lactam agent alone may be susceptible to the β-lactam combination agent.								
Piperacillin-tazobactam	-	-	-	-	≤16/4	32/4-64/4	≥128/4	
Ticarcillin-clavulanate*	-	-	-	-	≤16/2	32/2-64/2	≥128/2	
<b>CEPHEMS (PARENTERAL) (Including cephalosporins I, II, III, and IV. Please refer to Glossary I.)</b>								
Ceftazidime	-	-	-	-	≤8	16	≥32	
Cefepime	-	-	-	-	≤8	16	≥32	
Cefotaxime	-	-	-	-	≤8	16-32	≥64	
Ceftriaxone	-	-	-	-	≤8	16-32	≥64	
Cefoperazone*	-	-	-	-	≤16	32	≥64	
Ceftizoxime*	-	-	-	-	≤8	16-32	≥64	
Moxalactam*	-	-	-	-	≤8	16-32	≥64	
<b>MONOBACTAMS</b>								
Aztreonam	-	-	-	-	≤8	16	≥32	
<b>CARBAPENEMS</b>								
Imipenem	-	-	-	-	≤4	8	≥16	
Meropenem	-	-	-	-	≤4	8	≥16	
<b>AMINOGLYCOSIDES</b>								
Gentamicin	-	-	-	-	≤4	8	≥16	
Tobramycin	-	-	-	-	≤4	8	≥16	
Amikacin	-	-	-	-	≤16	32	≥64	
Netilmicin*	-	-	-	-	≤8	16	≥32	
<b>TETRACYCLINES</b>								
(5) 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.								
Tetracycline (U) <sup>p</sup>	-	-	-	-	≤4	8	≥16	
Doxycycline*	-	-	-	-	≤4	8	≥16	
Minocycline	-	-	-	-	≤4	8	≥16	

Table 2B-5. Other Non-Enterobacterales (Continued)

Antimicrobial Agent	Disk Content	Interpretive Categories and Zone Diameter Breakpoints, nearest whole mm			Interpretive Categories and MIC Breakpoints, µg/mL			Comments
		S	I	R	S	I	R	
<b>FLUOROQUINOLONES</b>								
Ciprofloxacin	-	-	-	-	≤1	2	≥4	
Levofloxacin	-	-	-	-	≤2	4	≥8	
Gatifloxacin*	-	-	-	-	≤2	4	≥8	
Lomefloxacin*	-	-	-	-	≤2	4	≥8	
Norfloxacin* (U) <sup>b</sup>	-	-	-	-	≤4	8	≥16	
Ofloxacin*	-	-	-	-	≤2	4	≥8	
<b>FOLATE PATHWAY ANTAGONISTS</b>								
Trimethoprim-sulfamethoxazole	-	-	-	-	≤2/38	-	≥4/76	
Sulfonamides (U) <sup>b</sup>	-	-	-	-	≤256	-	≥512	(6) Sulfisoxazole can be used to represent any of the currently available sulfonamide preparations.
<b>PHENICOLS</b>								
Chloramphenicol*	-	-	-	-	≤8	16	≥32	(7) Not routinely reported on <b>organisms isolated</b> from the urinary tract.

Abbreviations: ATCC®, American Type Culture Collection; CAMHB, cation-adjusted Mueller-Hinton broth; I, intermediate; MHA, Mueller-Hinton agar; MIC, minimal inhibitory concentration; QC, quality control; R, resistant; S, susceptible, **U, urine**.

Symbol: \*, designation for “Other” agents that are not included in Tables 1 but have established clinical breakpoints.

**Footnotes**

- a. ATCC® is a registered trademark of the American Type Culture Collection.
- b. Report only on organisms isolated from the urinary tract.

Reference for Table 2B-5

<sup>1</sup> CLSI. *Methods for Antimicrobial Dilution and Disk Susceptibility Testing of Infrequently Isolated or Fastidious Bacteria*. 3rd ed. CLSI guideline M45. Clinical and Laboratory Standards Institute; 2016.