Table 2B-2. Zone Diameter and MIC Breakpoints for *Acinetobacter* spp.

Testing Conditions

Medium: Disk diffusion: MHA
Broth dilution: CAMHB; iron-depleted CAMHB for cefiderocol (see Appendix I)[1]
Agar dilution: MHA

Inoculum: Broth culture method or colony suspension, equivalent to a 0.5 McFarland standard

Incubation: 35°C±2°C; ambient air; 20–24 hours, all methods

Routine QC Recommendations (see Tables 4A-1 and 5A-1 for acceptable QC ranges)

Escherichia coli ATCC®[a] 25922 (for tetracyclines and trimethoprim-sulfamethoxazole)
Pseudomonas aeruginosa ATCC® 27853

Refer to Tables 4A-2 and 5A-2 to select strains for routine QC of β-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 1D for antimicrobial agents that should be considered for testing and reporting by microbiology laboratories.

(2) For disk diffusion, test a maximum of 12 disks on a 150-mm plate and no more than 6 disks on a 100-mm plate; disks should be placed no less than 24 mm apart, center to center (see M02,[2] Subchapter 3.6). Each zone diameter should be clearly measurable; overlapping zones prevent accurate measurement. Measure the diameter of the zones of complete inhibition (as judged by the unaided eye), including the diameter of the disk (see the *M02 Disk Diffusion Reading Guide*[3]). Hold the Petri plate a few inches above a black background illuminated with reflected light. The zone margin should be considered the area showing no obvious, visible growth that can be detected with the unaided eye. Ignore faint growth of tiny colonies that can be detected only with a magnifying lens at the edge of the zone of inhibited growth. With trimethoprim and the sulfonamides, antagonists in the medium may allow some slight growth; therefore, disregard slight growth (20% or less of the lawn of growth) and measure the more obvious margin to determine the zone diameter.

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

Table 2B-2. *Acinetobacter* spp. (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	
PENICILLINS								
Piperacillin*	100 µg	≥21	18-20	≤17	≤16	32-64	≥128	
β-LACTAM COMBINATION AGENTS								
(3) 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.								
Ampicillin-sulbactam	10/10 µg	≥15	12-14	≤11	≤8/4	16/8	≥32/16	
Piperacillin-tazobactam	100/10 µg	≥21	18-20	≤17	≤16/4	32/4-64/4	≥128/4	
Ticarcillin-clavulanate*	75/10 µg	≥20	15-19	≤14	≤16/2	32/2-64/2	≥128/2	
CEPHEMS (PARENTERAL) (Including cephalosporins I, II, III, and IV. Please refer to Glossary I.)								
Ceftazidime	30 µg	≥18	15-17	≤14	≤8	16	≥32	
Cefepime	30 µg	≥18	15-17	≤14	≤8	16	≥32	
Cefotaxime Ceftriaxone	30 µg 30 µg	≥23 ≥21	15-22 14-20	≤14 ≤13	≤8 ≤8	16-32 16-32	≥64 ≥64	
Cefiderocol	30 µg	≥15	-	-	≤4	8	≥16	**(4)** Breakpoints are based on a dosage regimen of 2 g every 8 h administered over 3 h. Disk diffusion zone diameters ≤14 mm should not be interpreted or reported because zone diameters ≤14 mm occur with resistant, intermediate, and susceptible isolates. For isolates with zone diameters ≤14 mm, do not report cefiderocol without performing an MIC test. **(5)** For testing and reporting against *Acinetobacter baumannii* complex only. **(6) The accuracy and reproducibility of cefiderocol testing results by disk diffusion and broth microdilution are markedly affected by iron concentration and inoculum preparation and may vary by disk and media manufacturer. Depending on the type of variance observed, false-resistant or false-susceptible results may occur. Testing subsequent isolates is encouraged. Discussion with prescribers and antimicrobial stewardship members regarding the potential for inaccuracies is recommended.**

Table 2B-2. *Acinetobacter* spp. (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	
CARBAPENEMS								
Doripenem*	10 µg	≥18	15-17	≤14	≤2	4	≥8	**(7)** Breakpoints for doripenem are based on a dosage regimen of 500 mg administered every 8 h.
Imipenem	10 µg	≥22	19-21	≤18	≤2	4	≥8	**(8)** Breakpoints for imipenem are based on a dosage regimen of 500 mg administered every 6 h.
Meropenem	10 µg	≥18	15-17	≤14	≤2	4	≥8	**(9)** Breakpoints for meropenem are based on a dosage regimen of 1 g administered every 8 h or 500 mg administered every 6 h.
LIPOPEPTIDES								
(10) WARNING: Clinical and PK/PD data demonstrate colistin and polymyxin B have limited clinical efficacy, even if an intermediate result is obtained. Alternative agents are strongly preferred. Colistin and polymyxin B should be used in combination with one or more active antimicrobial agents. Consultation with an infectious diseases specialist is recommended.								
Colistin or polymyxin B	- -	- -	- -	- -	- -	≤2 ≤2	≥4 ≥4	**(11)** Colistin (methanesulfonate) should be given with a loading dose and maximum renally adjusted doses (see International Consensus Guidelines[4]). **(12)** Polymyxin B should be given with a loading dose and maximum recommended doses (see International Consensus Guidelines[4]). **(13)** When colistin or polymyxin B is given systemically, the drug is unlikely to be effective for pneumonia. **(14)** The only approved MIC method is broth microdilution. CBDE, CAT, disk diffusion, and gradient diffusion should not be performed. See comment (5).
AMINOGLYCOSIDES								
Gentamicin	10 µg	≥15	13-14	≤12	≤4	8	≥16	
Tobramycin	10 µg	≥15	13-14	≤12	≤4	8	≥16	
Amikacin	30 µg	≥17	15-16	≤14	≤16	32	≥64	
Netilmicin*	-	-	-	-	≤8	16	≥32	
TETRACYCLINES								
(15) 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.								
Doxycycline	30 µg	≥13	10-12	≤9	≤4	8	≥16	
Minocycline	30 µg	≥16	13-15	≤12	≤4	8	≥16	
Tetracycline **(U)**[b]	30 µg	≥15	12-14	≤11	≤4	8	≥16	

Table 2B-2. *Acinetobacter* spp. (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	
FLUOROQUINOLONES								
Ciprofloxacin	5 µg	≥21	16-20	≤15	≤1	2	≥4	
Levofloxacin	5 µg	≥17	14-16	≤13	≤2	4	≥8	
Gatifloxacin*	5 µg	≥18	15-17	≤14	≤2	4	≥8	
FOLATE PATHWAY ANTAGONISTS								
Trimethoprim-sulfamethoxazole	1.25/23.75 µg	≥ 16	11-15	≤10	≤2/38	-	≥4/76	

Abbreviations: ATCC®, American Type Culture Collection; CAMHB, cation-adjusted Mueller-Hinton broth; CAT, colistin agar test; CBDE, colistin broth elution test; I, intermediate; MHA, Mueller-Hinton agar; MIC, minimal inhibitory concentration; PK/PD, pharmacokinetic/pharmacodynamic; 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.

References for Table 2B-2

1 Hackel MA, Tsuji M, Yamano Y, Echols R, Karlowsky JA, Sahm DF. Reproducibility of broth microdilution MICs for the novel siderophore cephalosporin, cefiderocol, determined using iron-depleted cation-adjusted Mueller-Hinton broth. *Diagn Microbiol Infect Dis*. 2019;94(4):321-325.

2 CLSI. *Performance Standards for Antimicrobial Disk Susceptibility Tests*. 13th ed. CLSI standard M02. Clinical and Laboratory Standards Institute; 2018.

3 CLSI. *M02 Disk Diffusion Reading Guide*. 1st ed. CLSI quick guide M02QG. Clinical and Laboratory Standards Institute; 2018.

4 Tsuji BT, Pogue JM, Zavascki AP, et al. International consensus guidelines for the optimal use of the polymyxins: endorsed by the American College of Clinical Pharmacy (ACCP), European Society of Clinical Microbiology and Infectious Diseases (ESCMID), Infectious Diseases Society of America (IDSA), International Society for Anti-Infective Pharmacology (ISAP), Society of Critical Care Medicine (SCCM), and Society of Infectious Diseases Pharmacists (SIDP). *Pharmacotherapy*. 2019;39(1):10-39.