Breakpoints Eliminated from CLSI document M100 Since 2010

Antimicrobial Agent	Disk Content	Interpretive Categories and Zone Diameter Breakpoints (nearest whole mm)			Interpretive Categories and MIC Breakpoints (µg/mL)			M100 Edition in Which Breakpoints Were Last Included/Comments	Rationale
		S	I	R	S	I	R		
Enterobacteriaceae									
Cephalothin (surrogate test for uncomplicated UTI)	30 µg	≥18	15–17	≤14	≤8	16	≥32	M100-S25	Cefazolin is a more reliable surrogate than cephalothin for predicting results for oral cephalosporins that might be used for treatment of uncomplicated UTIs.
Nalidixic acid	30 µg	≥19	14–18	≤13	≤16	–	≥32	M100S, 26th ed. Deleted for *Salmonella* spp. only	Nalidixic acid does not perform reliably in predicting susceptibility to fluoroquinolones that might be used for treatment of *Salmonella* infections. It has been shown to produce both false-resistant and false-susceptible results.[1,2]
Ticarcillin	75 µg	≥20	15–19	≤14	≤16	32–64	≥128	M100-S25	This agent is no longer available.
Pseudomonas aeruginosa									
Cefoperazone	75 µg	≥21	16–20	≤15	≤16	32	≥64	M100-S20	These agents are no longer available or have limited indications for *P. aeruginosa.*
Cefotaxime	30 µg	≥23	15–22	≤14	≤8	16–32	≥64	M100-S20	
Ceftriaxone	30 µg	≥21	14–20	≤13	≤8	16–32	≥64		
Ceftizoxime	30 µg	≥20	15–19	≤14	≤8	16–32	≥64	M100-S20	
Moxalactam	30 µg	≥23	15–22	≤14	≤8	16–32	≥64	M100-S20	
Ticarcillin	75 µg	≥24	16-23	≤15	≤16	32–64	≥128	M100-S25	
Acinetobacter spp.									
Mezlocillin	75 µg	≥21	18-20	≤17	≤16	32–64	≥128	M100-S25	These agents are no longer available.
Ticarcillin	75 µg	≥20	15–19	≤14	≤16	32–64	≥128	M100-S25	
Other Non-*Enterobacteriaceae*									
Carbenicillin		–	–	–	≤16	32	≥64	M100-S25	These agents are no longer available.
Mezlocillin		–	–	–	≤16	32–64	≥128		
Ticarcillin		–	–	–	≤16	32–64	≥128		
***Staphylococcus* spp.**									
Oxacillin (*S. aureus*/ *S. lugdunensis*)	1 µg	≥13	11–12	≤10	–	–	–	M100-S22	Oxacillin disk diffusion performance is inferior to that of cefoxitin for detection of *mecA*-mediated oxacillin resistance.
Amoxicillin-clavulanate	20/10 µg	≥20	–	≤19	≤4/2	–	≥8/4	M100-S22	There are limited data available to demonstrate the predictive value of testing these β-lactam agents against staphylococci. Consequently, susceptibility results for antistaphylococcal β-lactams other than penicillin and oxacillin (cefoxitin) are best determined by deducing results from testing penicillin and oxacillin (cefoxitin). An exception is for ceftaroline, which must be tested if ceftaroline results are requested.[3]
Ampicillin-sulbactam	10/10 µg	≥15	12–14	≤11	≤8/4	16/8	≥32/16		
Piperacillin-tazobactam	100/10 µg	≥18	–	≤17	≤8/4	–	≥16/4		
Ticarcillin-clavulanate	75/10 µg	≥23	–	≤22	≤8/2	–	≥16/2		
Cefamandole	30 µg	≥18	15–17	≤14	≤8	16	≥32		
Cefazolin	30 µg	≥18	15–17	≤14	≤8	16	≥32		
Cefepime	30 µg	≥18	15–17	≤14	≤8	16	≥32		
Cefmetazole	30 µg	≥16	13–15	≤12	≤16	32	≥64		

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Cefonicid	30 μg	≥18	15–17	≤14	≤8	16	≥32		
Cefoperazone	75 μg	≥21	16–20	≤15	≤16	32	≥64		
Cefotaxime	30 μg	≥23	15–22	≤14	≤8	16–32	≥64		
Cefotetan	30 μg	≥16	13–15	≤12	≤16	32	≥64		
Ceftazidime	30 μg	≥18	15–17	≤14	≤8	16	≥32		
Ceftizoxime	30 μg	≥20	15–19	≤14	≤8	16–32	≥64		
Ceftriaxone	30 μg	≥21	14–20	≤13	≤8	16–32	≥64		
Cefuroxime (parenteral)	30 μg	≥18	15–17	≤14	≤8	16	≥32		
Cephalothin	30 μg	≥18	15–17	≤14	≤8	16	≥32		
Moxalactam	30 μg	≥23	15–22	≤14	≤8	16–32	≥64		
Cefaclor	30 μg	≥18	15–17	≤14	≤8	16	≥32		
Cefdinir	5 μg	≥20	17–19	≤16	≤1	2	≥4		
Cefpodoxime	10 μg	≥21	18–20	≤17	≤2	4	≥8		
Cefprozil	30 μg	≥18	15–17	≤14	≤8	16	≥32		
Cefuroxime (oral)	30 μg	≥23	15–22	≤14	≤4	8–16	≥32		
Loracarbef	30 μg	≥18	15–17	≤14	≤8	16	≥32		
Doripenem	10 μg	≥30	–	–	≤0.5	–	–		
Ertapenem	10 μg	≥19	16–18	≤15	≤2	4	≥8		
Imipenem	10 μg	≥16	14–15	≤13	≤4	8	≥16		
Meropenem	10 μg	≥16	14–15	≤13	≤4	8	≥16		
Anaerobes									
Mezlocillin		–	–	–	≤32	64	≥128	M100-S25	
Ticarcillin		–	–	–	≤32	64	≥128		

Abbreviations: I, intermediate; MIC, minimal inhibitory concentration; R, resistant; S, susceptible; UTI, urinary tract infection.

References

1 Deak E, Skov R, Hindler JA, Humphries RM. Evaluation of surrogate disk tests for detection of ciprofloxacin and levofloxacin resistance in clinical isolates of *Salmonella enterica*. *J Clin Microbiol*. 2015;53(11):3405-3410.

2 Skov R, Matuschek E, Sjölund-Karlsson M, et al. Development of a pefloxacin disk diffusion method for detection of fluoroquinolone-resistant *Salmonella enterica*. *J Clin Microbiol*. 2015;53(11):3411-3417.

3 Dien Bard J, Hindler JA, Gold HS, Limbago B. Rationale for eliminating *Staphylococcus* breakpoints for β-lactam agents other than penicillin, oxacillin or cefoxitin, and ceftaroline. *Clin Infect Dis*. 2014;58(9):1287-1296.