

July 2010

CLSI M100-S20 Enterobacteriaceae susceptibility - Cephalosporins and Carbapenems Breakpoint Revisions

To Health Care Providers:

Effective July 19, 2010, the Ontario Agency for Health Protection and Promotion (OAHPP) public health laboratories (PHL) will update its interpretation guidelines for cephalosporins and carbapenems for Enterobacteriaceae in accordance with the 2010 Clinical Laboratory Standards Institute (CLSI) recommendations. The following changes will be made to comply with the CLSI.

1. Cephalosporins

The revised interpretative criteria are as follows:

Table 1 MIC breakpoints for cephalosporins ($\mu\text{g/mL}$):

Agent	Previous (M100-S19)			Revised (M100-S20)		
	S	I	R	S	I	R
Modified						
Cefazolin	≤ 8	16	≥ 32	≤ 1	2	≥ 4
Cefotaxime	≤ 8	16-32	≥ 64	≤ 1	2	≥ 4
Ceftazidime	≤ 8	16	≥ 32	≤ 4	8	≥ 16
Ceftizoxime	≤ 8	16-32	≥ 64	≤ 1	2	≥ 4
Ceftriaxone	≤ 8	16-32	≥ 64	≤ 1	2	≥ 4
Unchanged						
Cefuroxime (parenteral)	≤ 8	16	≥ 32	≤ 8	16	≥ 32
Cefepime	≤ 8	16	≥ 32	≤ 8	16	≥ 32
Cefotetan	≤ 16	32	≥ 64	≤ 16	32	≥ 64
Cefoxitin	≤ 8	16	≥ 32	≤ 8	16	≥ 32

Note: S: susceptible; I: intermediate; R: resistant

For the revised disk diffusion breakpoints, refer to CLSI document M100-S20.

Cephalothin group

Cephalothin is now classified under Test/Report Group U for Enterobacteriaceae. Results for cephalothin can be used to represent activities of several other oral FDA-approved agents for treatment of urinary tract infections which include cefadroxil, cefpodoxime, cephalixin, and loracarbef.

Non-Enterobacteriaceae breakpoints

Cephalosporin breakpoints remain unchanged for non-Enterobacteriaceae.

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2. Carbapenem

Following CLSI's update to M100-S20-U in June 2010, PHL is revising carbapenem breakpoints for Enterobacteriaceae (Table 2). The revised interpretative criteria are as follows:

Table 2 MIC breakpoints for carbapenems ($\mu\text{g/mL}$):

Agent	Old (M100-S19)			Revised (M100-S20 June 2010)		
	S	I	R	S	I	R
Doripenem	NA	NA	NA	≤ 1	2	≥ 4
Ertapenem	≤ 2	4	≥ 8	≤ 0.25	0.5	≥ 1
Imipenem	≤ 4	8	≥ 16	≤ 1	2	≥ 4
Meropenem	≤ 4	8	≥ 16	≤ 1	2	≥ 4

For the revised disk diffusion breakpoints, refer to CLSI M100-S-20-U.

3. PHL Laboratories testing and reporting

Effective July 19, 2010, PHL will implement a new testing interpretation scheme. Extended spectrum beta lactamase (ESBL) and modified Hodge test (MHT) for susceptibility purposes will no longer be performed. The following antimicrobials (table 3 and 4) for Enterobacteriaceae will be reported:

Table 3 Basic antibiotics reported

	S	I	R
Ampicillin	≤ 8	16	≥ 32
Cefazolin	≤ 1	2	≥ 4
Ceftriaxone	≤ 1	2	≥ 4
Ciprofloxacin	≤ 1	2	≥ 4
Gentamicin	≤ 4	8	≥ 16
Trimethoprim/Sulfamethoxazole	$\leq 2/38$		$\geq 4/76$

Table 4 Supplemental antibiotics reported

	S	I	R
Amoxicillin-clavulanic acid	$\leq 8/4$	16/8	$\geq 32/16$
Cefepime	≤ 8	16	≥ 32
Cefoxitin	≤ 8	16	≥ 32
Ertapenem	≤ 0.25	0.5	≥ 1
Meropenem	≤ 1	2	≥ 4
Piperacillin	≤ 16	32-64	≥ 128
Piperacillin-tazobactam	$\leq 16/4$	32/4-64/4	$\geq 128/4$
Tobramycin	≤ 4	8	≥ 16

4. Epidemiological ESBL and MHT

PHL will continue to provide ESBL and MHT confirmatory testing for infection control or epidemiological purposes.

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For further information:

- Clinical and Laboratory Standards Institute: Performance Standards for Antimicrobial Susceptibility Testing; Twentieth Informational Supplement: M100-S20 & M100-S-20-U (2010)
- Clinical microbiologist, Dr. Samir Patel, **416-235-5766**
- OAHPP Laboratory Helpline **1-800-640-7221**
- For the OAHPP Specimen Collection Guide and previous Lababstracts refer to <http://www.oahpp.ca>