

# Cut-off values recommended by the EU Reference Laboratory for Antimicrobial Resistance (EURL-AR)

Updated November 29<sup>th</sup> 2013 – Page 1 of 2

Cut-off values in **bold** have been updated in this version

Standardised cut off values are essential for comparison of antimicrobial susceptibility monitoring results. The European Committee on Antimicrobial Susceptibility Testing (EUCAST; <http://www.eucast.org/>) provides clinical breakpoints, epidemiological cut-off values and expert rules to assist microbiologists in the interpretation of antimicrobial susceptibility test (AST) results.

For the purpose of monitoring, the EURL-AR recommends the use of EUCAST epidemiological cut-off values, when available, which allow categorisation of bacteria as wildtype or non-wildtype (to simplify, the terms 'susceptible' and 'resistant' are often maintained). Accordingly, the epidemiological cut off values recommended by the EURL-AR for interpretation of AST results for *Salmonella* spp., *Campylobacter coli*, *C. jejuni*, *Escherichia coli*, *Staphylococcus aureus*, *Enterococcus faecium* and *E. faecalis* are listed in Tables 1-4 below.

## ESBL- and carbapenemase producing *Salmonella* and *E. coli*

Bacterial isolates resistant to cephalosporins, such as cefotaxime (CTX), ceftazidime (CAZ) or meropenem (MER), should be confirmed as extended-spectrum  $\beta$ -lactamase (ESBL)- or carbapenemase producers by confirmatory tests.

Table 1: Guidelines for interpretation of antimicrobial susceptibility test results for *Salmonella* spp. and *Escherichia coli*

Antimicrobial	MIC ( $\mu\text{g/mL}$ ) (R>)	
	<i>Salmonella</i>	<i>E. coli</i>
Ampicillin (AMP)	8	8
Azithromycin (AZI)	Not available	Not available
Cefotaxime (CTX)	0.5	0.25
Ceftazidime (CAZ)	2	0.5
Chloramphenicol (CHL)	16	16
Ciprofloxacin (CIP)	0.06	0.06
Colistin (COL)	2	2
Gentamicin (GEN)	2	2
Meropenem (MER)	0.125	0.125
Nalidixic acid (NAL)	16	16
Sulfonamides (SMX)	256*	64
Tetracycline (TET)	8	8
Tigecycline (TIG)	1**	1
Trimethoprim (TMP)	2	2

\* CLSI M100 Table 2A

\*\* Data from EUCAST available for *Salmonella* Enteritidis, Typhimurium, Typhi and Paratyphi

Table 2: Guidelines for interpretation of antimicrobial susceptibility test results for *Campylobacter jejuni* and *C. coli*

Antimicrobial	MIC ( $\mu\text{g/mL}$ ) (R>)	
	<i>C. jejuni</i>	<i>C. coli</i>
Ciprofloxacin (CIP)	0.5	0.5
Erythromycin (ERY)	4	8
Gentamicin (GEN)	2	2
Nalidixic acid (NAL)	16	16
Streptomycin (STR)	4	4
Tetracycline (TET)	1	2

Table 3: Guidelines for interpretation of antimicrobial susceptibility test results for *Enterococcus faecium* and *E. faecalis*

Antimicrobial	MIC ( $\mu\text{g/mL}$ ) (R>)	
	<i>E. faecium</i>	<i>E. faecalis</i>
Ampicillin (AMP)	4	4
Chloramphenicol (CHL)	32	32
Ciprofloxacin (CIP)	4	4
Daptomycin (DAP)	4	4
Erythromycin (ERY)	4	4
Gentamicin (GEN)	32	32
Linezolid (LZD)	4	4
<b>Quinpristin-dalfopristin (Synacid) (SYN)</b>	<b>Not available</b>	Not applicable
Teicoplanin (TEI)	2	2
Tetracycline (TET)	4	4
Tigecycline (TIG)	0.25	0.25
Vancomycin (VAN)	4	4

Table 4: Guidelines for interpretation of antimicrobial susceptibility test results for *Staphylococcus aureus*

Antimicrobial	MIC ( $\mu\text{g/mL}$ ) (R>)
Cefoxitin (FOX)	4
Chloramphenicol (CHL)	16
Ciprofloxacin (CIP)	1
Erythromycin (ERY)	1
Florfenicol (FFN)	8
Gentamicin (GEN)	2
Penicillin (PEN)	0.125*
Streptomycin (STR)	16
Sulfonamides (SMX)	128
Tetracycline (TET)	1
Trimethoprim (TMP)	2

\*CLSI M100 Table 2A