

**Screening for ESBL and carbapenemases in *Escherichia coli*, *Klebsiella pneumoniae* and *Salmonella enterica* for epidemiological purposes as part of the RAST procedure.**

**EUCAST Guidelines for detection of resistance mechanisms and specific resistance of clinical and/or epidemiological importance using EUCAST rapid antimicrobial susceptibility testing (RAST) directly from positive blood culture bottles.**

**Version 3.0**

**March 2025**

Changes from previous version (v. 2.0)

Section	Change
Extended-spectrum $\beta$ -lactamase (ESBL)-producing <i>S. enterica</i>	•Information for all incubation times added.
Table 1	•Screening cut-off values added.

## 1. Introduction

- Use this document with the EUCAST RAST method.
- Screening breakpoints are for public health and infection control purposes. They are NOT clinical breakpoints.
- For further information, refer to the EUCAST guideline on the detection of resistance mechanisms ([http://www.eucast.org/resistance\\_mechanisms/](http://www.eucast.org/resistance_mechanisms/)).

## 2. Extended-spectrum $\beta$ -lactamase (ESBL)-producing *E. coli*, *K. pneumoniae* and *S. enterica*.

- With the RAST method, ESBL production in *E. coli*, *K. pneumoniae* and *S. enterica* can be detected by using cefotaxime and ceftazidime screening cut-off values at 4, 6, 8 and 16-20 hours.
- Test both cefotaxime and ceftazidime.
- Screen-positive organisms (for cefotaxime and/or ceftazidime) should be subjected to ordinary confirmatory and typing procedures.

**Table 1. Screening cut-off values (mm) for ESBL-producing *E. coli*, *K. pneumoniae* and *S. enterica*.**

Species	Antimicrobial agent	Conduct ESBL testing if			
		4 hours	6 hours	8 hours	16-20 hours
<i>E. coli</i>	Cefotaxime 5 $\mu$ g	<15	<16	<17	<16
	Ceftazidime 10 $\mu$ g	<15	<16	<17	<17
<i>K. pneumoniae</i>	Cefotaxime 5 $\mu$ g	<15	<18	<18	<16
	Ceftazidime 10 $\mu$ g	<15	<16	<16	<18
<i>S. enterica</i>	Cefotaxime 5 $\mu$ g	<13	<14	<14	<14
	Ceftazidime 10 $\mu$ g	<12	<16	<17	<18

## 3. Carbapenemase-producing *E. coli* and *K. pneumoniae*.

- With the EUCAST RAST method carbapenemase-producing *E. coli* and *K. pneumoniae* can be detected by using meropenem screening cut-off values at 6, 8 and 16-20 hours. There is no screening cut-off value for 4 hours incubation.
- Screen-positive organisms should be subjected to ordinary confirmatory and typing procedures.

**Table 2. Screening cut-off values (mm) for carbapenemase-producing *E. coli* and *K. pneumoniae*.**

Species	Antimicrobial agent	Screening cut-off			
		4 hours	6 hours	8 hours	16-20 hours
<i>E. coli</i>	Meropenem 10 µg	-	<20	<20	<20
<i>K. pneumoniae</i>	Meropenem 10 µg	-	<18	<18	<20