

Extending the Reach against Resistance



Understanding the Change

Strains of *Klebsiella pneumoniae*, *Klebsiella oxytoca*, *Escherichia coli*, and *Proteus mirabilis* that produce Extended-Spectrum Beta-Lactamases (ESBL) may be clinically resistant to therapy with penicillins, cephalosporins, and aztreonam, despite apparent *in vitro* susceptibility to some of these agents.

Based on this, the CLSI Guidelines² recommend the use of screening and confirmation methods to detect these strains. Confirmed ESBL-producing strains should be reported as resistant for all penicillins, cephalosporins, and aztreonam.

As the era of antimicrobial resistance continues to evolve, it is critical that clinical microbiology laboratories perform the most reliable tests for prompt detection of emerging resistance, and understand how to communicate those results clearly to their clinicians.

James H. Jorgensen, PhD
CLSI eNews. 2006¹

Meeting the Challenges

The MicroScan® ESBL *plus* panel provides confirmation and susceptibility testing of ESBL-producing *E. coli*, *K. pneumoniae*, *K. oxytoca*, and *P. mirabilis*.

- Complies with CLSI guidelines, which recommend testing of cefotaxime and ceftazidime alone and in combination with clavulanic acid. ESBL production is confirmed by a ≥ 3 two-fold concentration decrease in MICs to either drug in the presence of clavulanic acid, versus its MIC when tested alone (Table 1)

Drug	Dilution Range (µg/mL)
Cefotaxime	0.5–128
Cefotaxime + 4 µg/mL Clavulanic Acid	0.12/4–16/4
Ceftazidime	0.5–128
Ceftazidime + 4 µg/mL Clavulanic Acid	0.12/4–16/4

ESBL *plus*

Answers for life.

SIEMENS

- Provides susceptibility results for both imipenem and meropenem (carbapenems), recommended therapeutic choices for ESBL-confirmed isolates (Table 2)

Additional therapeutic choices for treating non-ESBL isolates are also provided (Table 2)

- Achieves sensitivity of 97.3% and specificity of 90.1% for *E. coli*, *K. oxytoca*, and *K. pneumoniae**
- Achieves sensitivity of 92.3% and specificity of 100% for *P. mirabilis*

Table 2†

Drug	Dilution Range (µg/mL)
Aztreonam	0.5–64
Cefepime	1–32
Cefotaxime	0.5–128
Cefotetan†	1–32
Cefoxitin†	2–32
Cefpodoxime	0.5–64
Ceftazidime	0.5–128
Ceftriaxone	1–64
Imipenem	0.5–16
Meropenem	0.5–16
Piperacillin‡	16–64

Product Description	Quantity	Catalog Number
MicroScan® ESBL <i>plus</i> Confirmation Panel	20 panels/pk	B1027-101
MicroScan® ESBL <i>plus</i> Ancillary Kit	20 panels	B1015-40

Panel Growth is Easy to Interpret

Eliminate calculations and guesswork with clear-cut endpoints. If the growth in the wells of the antibiotic/clavulanic acid row is below or to the left of the dilution of the antibiotic alone, the confirmation test is positive.

CAZ



CAZ/CA



References:

1. CLSI eNews. [Recommendations for Detecting Emerging Resistance](http://enews.clsi.org/clsi/issues/2006-12-01/2.html). December 1, 2006. <http://enews.clsi.org/clsi/issues/2006-12-01/2.html>. Accessed 6 June, 2007.
2. CLSI. [Performance Standards for Antimicrobial Susceptibility Testing; Eighteenth Informational Supplement \(M100-S18\)](#). Clinical and Laboratory Standards Institute, 940 West Valley Road, Suite 1400, Wayne, Pennsylvania 19807-1898 USA, 2006.

For more information on MicroScan® ESBL *plus* Confirmation Panel and/or the MicroScan® Microbiology Systems, please visit www.siemens.com/diagnostics or call 1-800-242-3233, option 3, 2.

Product availability may vary from country to country and is subject to varying regulatory requirements. Please contact your local representative for availability.

* 95% exact binomial confidence limits.

† Performance of ceftazidime 128 µg/mL, cefotaxime 0.5 µg/mL, 1.0 µg/mL, and 128 µg/mL have only been established for the ESBL confirmation test with *Escherichia coli*, *Klebsiella pneumoniae*, *Klebsiella oxytoca* and *Proteus mirabilis*.

‡ Researchers may find these antibiotics and dilutions helpful for studying emerging resistance.

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