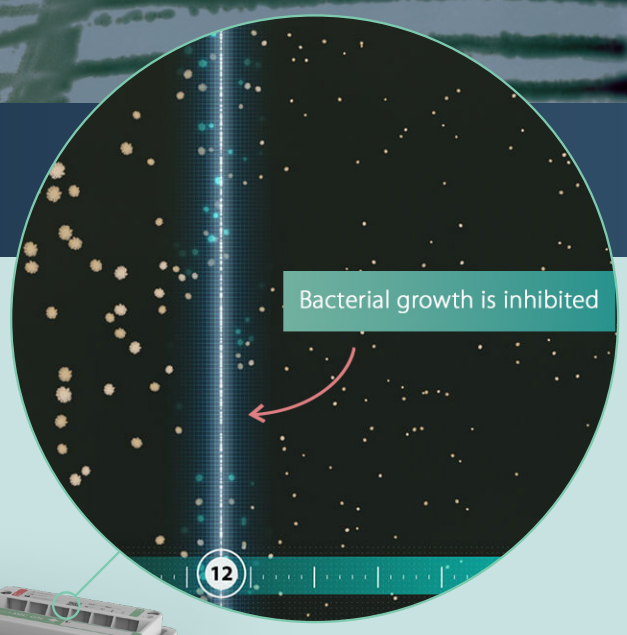
gradientech

Please refer to the original article for detailed information and resources.

When every hour counts:
Redefining rapid AST for Gram-negative bloodstream infections

A multicenter study of the QuickMIC® GN panel and future prospects

The data presented is from the article: Berinson B, Davies E, Torpner J, Flinkfeldt L, Fernberg J, Åman A, Bergqvist J, Öhrn H, Ångström J, Johansson C, Jäder K, Andersson H, Ghaderi E, Rolf M, Sundqvist M, Rohde H, Fernandez-Zafra T, Malmberg C. 2024. A multicenter evaluation of a novel microfluidic rapid AST assay for Gram-negative bloodstream infections. J Clin Microbiol 62:e00458-24.



We are on a race against time

Increasing antimicrobial resistance underscores the need for new diagnostic solutions to guide therapy, but traditional antimicrobial susceptibility testing (**AST**) is often inadequate in time-critical diseases such as sepsis. Despite advances in AST, the delays associated with standard of care tests can lead to suboptimal patient outcomes, increased length of hospital stays, and prolonged exposure to broad-spectrum antibiotics.[1] Common phenotypic methods for AST of bacteria are slow, labor intensive, and display considerable technical variability. The **QuickMIC® system** provides ultra-rapid AST using a linear concentration gradient of antibiotics, providing precise and accurate MIC values.

Speed, accuracy & precision

The multicenter study evaluated the performance of a new ultra-rapid AST system, QuickMIC, regarding speed, accuracy, precision and reproducibility compared to the reference method broth microdilution (BMD). The data was collected at four separate locations; three clinical microbiological laboratories and the internal laboratory at Gradientech, which also performed the BMD reference testing.

The study included both spiked (n=411) and clinical blood cultures (n= 148), which were tested with the QuickMIC GN panel and compared with BMD for the 12 on-panel antibiotics (Fig 1), and 10 defined strains were run at each site to measure reproducibility.



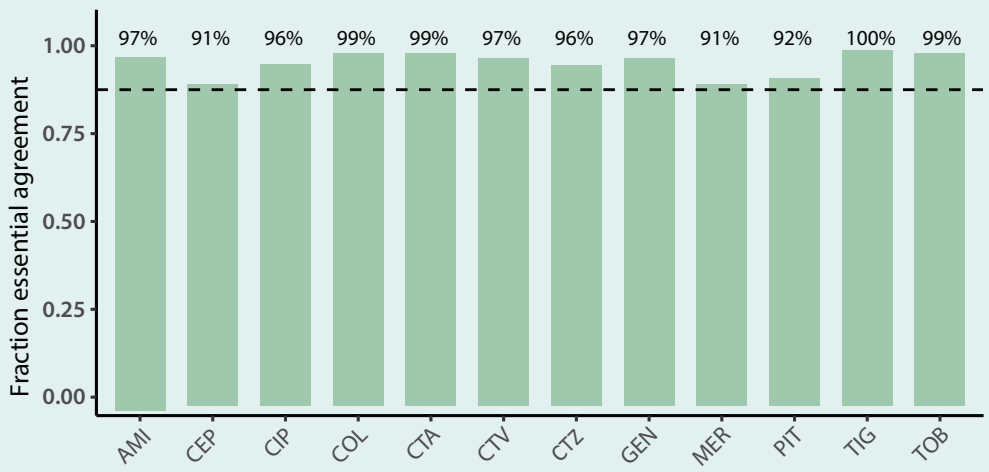


Figure 1. Overview of essential agreement split over all antibiotics and species in the study.

Key conclusions

- QuickMIC can provide MIC results in 2-4 hours directly from positive blood cultures in a clinical setting.
- The linear gradient gives MIC values with a low technical variation and high precision.
- QuickMIC has high reproducibility and accuracy between study sites.

Highlights

QuickMIC® delivers superior reproducibility in record time

559

Positive blood cultures
Bacterial species included *E. coli, K. pneumoniae, P. aeruginosa, Proteus* spp., *Citrobacter* spp., *A. baumannii* complex, *E. cloacae* complex and *S. marcescens.*

>5000

Drug-bug combinations
Each sample was run against a panel containing 12 antibiotics resulting in a total of 5308 combinations.

>98%

Inter-laboratory reproducibility
was high at 98.9% between the study sites.

3 h 13 min

Average time to result
for the QuickMIC system. Resistance category, species, and antibiotic were found to affect analysis time, with resistant isolates taking on average 38 min longer.

1. Banerjee R, Humphries R. 2021. Rapid antimicrobial susceptibility testing methods for blood cultures and their clinical impact. Front Med (Lausanne) 8:635831

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The QuickMIC® system and its Gram-negative panel are CE marked. The QuickMIC system is not FDA 510(k)-cleared and not available in the U.S.

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