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Challenges in the clinical interpretation of antibiotic susceptibility tests

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Clinical categories of antimicrobial susceptibility are devised to guide clinical use of antibiotics by attempting to predict the outcome of treatment. However antimicrobial susceptibility testing is imprecise because of variations in the tests themselves, the microbes, and the patients.

Recent developments particularly the incorporation of PK/PD approaches has resulted in a reduction in the discrepancies between the major breakpoint setting organizations and should lead to better clinical correlation with in vitro results.

However, new challenges have surfaced as the variety of resistance mechanisms increases. After a period of increasingly complex supplementary phenotypic testing the breakpoint setting organizations are now heading in the opposite direction.

The trend is now to simplify the testing of cephalosporins and carbapenems for Gram-negative bacilli by relying on lowered breakpoints. While this may make life easier for the technologist, expert opinion is divided. This is a critical issue to resolve because of the increasing prevalence of pAmpC, ESBL and carbapenemase-producing Enterobacteriaceae.

Increasing multidrug-resistance among Gram-negative bacilli has increased usage of the Polymixins. However in vitro testing is problematic and results do not always correlate well with clinical outcome.

Vancomycin MIC testing is now required for *Staphylococcyus aureus*, but how many labs perform true MIC testing? Are automated methods viable alternatives? Should we still be looking for hetero-VISA?

These and some other issues confronting clinicians trying to make sense of antibiotic susceptibility test results will be discussed.