PUBLICATIONS ON OUR RESIST RANGE

NEW

Exploring New Delhi Metallo Beta Lactamases in *Klebsiella pneumoniae* and *Escherichia coli*: genotypic vs. phenotypic insights- 2025 - *Ann Clin Microbiol Antimicrob*

Early detection of OXA-48 producing *Klebsiella pneumoniae* with the use of rapid antibiotic susceptibility testing - 2024 - *Eur J Clin Microbiol Infect Dis*

RESIST ACINETO test for the rapid detection of NDM and OXA acquired carbapenemases directly from blood culture in Acinetobacter species - 2024 - *Microbiol Spectr.*

Performance evaluation of the newly developed *in vitro* rapid diagnostic test for detecting OXA-48-like, KPC-, NDM-, VIM- and IMP- type carbapenemases: the RESIST-5 O.K.N.V.I. Multiplex Lateral Flow Assay - 2021 - *Antibiotics (Basel)*

Comparison of three lateral flow immunochromatographic assays for the rapid detection of KPC, NDM, IMP, VIM and OXA-48 carbapenemases in Enterobacterales - 2022 - *J Antimicrob Chemother.*

Assessing O.K.N.V.I. RESIST-5 performance for post-mortem biological samples: A prospective pilot study - 2023 - *Exp Ther Med.*

Carbapenem-resistant organisms isolated in surgical site infections in Benin: A public health problem - 2022 - *Trop Med Infect Dis.*

RESIST Acineto rapid immunological test for the detection of acquired carbapenemase producers among Acinetobacter spp - 2023 - *Diagn Microbiol Infect Dis.*

Evaluation of RESIST ACINETO immunochromatographic assay from positive blood cultures - 2023 - *J Antimicrob Chemother.*

Comparison of two immunochromatographic tests for the detection of CTX-M ESBL on clinical isolates at the Belgian National Reference Centre - 2023 - *ECCMID*

AntiMicrobial Resistance

Pressbook

V4

A selection of the most recent publications on AMR

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HIGHLIGHTS

WHO Global research priorities for AMR in human health - 2024 - *The Lancet*

◊ 40 high-priority research areas to address bacterial and fungal AMR: prevention, diagnosis, treatment and care, as well as cross-cutting gaps in epidemiology, policies/regulations, and awareness/education

◊ Multistage approach: scoping review of 2340 identified knowledge gaps with the help of 260 experts worldwide

◊ Key themes: Prevention (effectiveness of water, sanitation, and hygiene (WASH) interventions; role of immunization in reducing AMR); Diagnosis (improved POC diagnostics and rapid AST for bacterial and fungal pathogens); Treatment & Care (shorter, more effective drug regimens and sustainable antimicrobial stewardship methods in various healthcare settings); Overarching topics (strengthening national AMR surveillance, assessing economic impact, and integrating AMR policy into wider health systems)

◊ Aims to steer global stakeholders - governments, funders, industry, and academia - toward evidence-based interventions that reduce the AMR burden by 2030 and align with the Sustainable Development Goals.

Carbapenem-resistant Enterobacterales – 3rd update - 2024 - *ECDC report*

◊ Rising incidence of CR *K. pneumoniae* & higher mortality rates for CRE infections

◊ Limited / inadequate access to newly approved, better-tolerated antibiotics and absence of rapid, routine carbapenemase-detection tests

◊ Multiple drivers increase the likelihood of CRE outbreaks in healthcare facilities + insufficient infection prevention and control measures

◊ ECDC Recommendations: Establish dedicated, multidisciplinary management teams to oversee surveillance, outbreak investigation, and ensure availability of newly approved antimicrobials; Implement contact precautions, active screening for CRE carriers (especially in high-risk units), and robust environmental cleaning; Strengthen phenotypic and molecular detection to guide targeted therapy and detect emerging clones; Ensure local guidelines for empiric and targeted therapy, optimize access to new drugs, and monitor usage to prevent further resistance; Communicate CRE status upon patient transfer, and share data via EU-level platforms for timely public health interventions.

FOCUS ON *A. BAUMANNII*

The evolution of Antimicrobial Resistance in *Acinetobacter baumannii* and new strategies to fight it - 2025 - *Antibiotics*

◊ Resistance arises from β-lactamases (OXA, NDM, IMP, VIM), efflux pumps, target site modifications, and biofilm formation. Insertion sequences (ISAba1, ISAba125) and resistance islands (AbaRs) enhance antibiotic resistance through gene activation and horizontal transfer

◊ Plasmids, transposons, and resistance islands facilitate rapid acquisition and spread of antimicrobial resistance. Global Clones GC1 and GC2 dominate nosocomial infections due to their ability to acquire diverse resistance genes

◊ Combination therapies (colistin-meropenem, sulbactam-durlobactam) show potential but face resistance challenges. New antimicrobials (cefiderocol, SPR206, macolacin) target resistant strains with varying success

◊ Bacteriophage therapy and phage-antibiotic synergy can overcome MDR, but resistance to phages remains a concern. Anti-biofilm agents (quorum sensing inhibitors, phage-derived enzymes) offer new approaches to disrupt bacterial persistence

◊ *A. baumannii* resistance extends beyond hospitals to environmental and animal reservoirs, requiring a One Health approach. Urgent need for advanced diagnostics and novel therapeutic targets to control MDR/XDR strains effectively.

Acinetobacter baumannii complex infections, new treatment options in the antibiotic pipeline - 2025 - *microorganisms*

◊ Despite the launch of SD and cefiderocol, treatment gaps remain for CRAB infections, emphasizing the need for combination regimens and further real-world data; decisions often hinge on local susceptibility patterns, availability, and emerging evidence

◊ Sulbactam–Durlobactam (SD): a Phase III trial (ATTACK) showed non-inferiority against colistin for CRAB infections, with potential advantages in lower nephrotoxicity and early survival benefit

◊ BV-100 (IV Rifabutin Formulation): a Phase II trial is testing BV-100 + polymyxin for severe CRAB pneumonia or bloodstream infections

◊ Cefepime–Zidebactam (WCK 5222): *in vitro* studies show encouraging results; Phase III trials in complicated UTI are underway; rescue use in severe CRAB infections has shown early promising outcomes

◊ Zosurabalpin (novel macrocyclic peptide): Phase I data show acceptable safety; future clinical trials will clarify optimal dosing and efficacy in ABC pneumonia

◊ OMN6 (antimicrobial peptide): early-phase clinical studies indicate safe administration; Phase II trial exploring use in nosocomial pneumonia.

Comparative analysis of clinical characteristics and antimicrobial resistance between *Acinetobacter baumannii* and other Acinetobacter species - 2025 - *Pathogens*

◊ About 16% of *Acinetobacter* bacteremia cases involved non-baumannii species

◊ Pneumonia was the most frequent infection site in *A. baumannii* cases, whereas catheter-related infections predominated in NBA cases

◊ Carbapenem resistance was much higher in the *A. baumannii* group (85.3%) compared to NBA (21.4%). Aside from minocycline, *A. baumannii* isolates showed higher resistance to essentially all tested antibiotics relative to NBA. Within the NBA group, the ACB complex (excluding *A. baumannii*) had significantly higher carbapenem and gentamicin resistance than the non-ACB complex

◊ *A. baumannii* bacteremia had a 30-day survival of 41.6%, whereas NBA bacteremia showed a higher survival of 77.4%. Subgroup analysis showed no major survival differences between ACB (excluding *A. baumannii*) and non-ACB complexes among NBA species

◊ Carbapenem resistance emerged as a key independent risk factor for 30-day mortality, regardless of whether isolates were *A. baumannii* or NBA

◊ *A. baumannii* is more strongly linked to high resistance rates and worse outcomes, but mortality is driven mostly by carbapenem resistance rather than the *A. baumannii* species itself. Need for enhanced surveillance of non-baumannii Acinetobacter and targeted management strategies, particularly in settings with high *A. baumannii* carbapenem resistance.

AST

Pooled antibiotic susceptibility testing performs within CLSI standards for validation when measured against borth microdilution and disk diffusion AST of cultured isolates - 2024 - *antibiotics*

◊ High concordance with standard methods and minor errors indicating reliable diagnostic

◊ Heteroresistance Detection: by incorporating additional tests (disk diffusion, high antibiotic concentration plates), P-AST identified 65 cases where standard isolate-based methods missed subpopulations with low-frequency resistance

◊ Strong performance across various organisms: future reasearch will evaluate P-AST in polymicrobial infections, where standard culture methods can become less reliable

◊ Unlike disk diffusion, P-AST provides MIC values quickly (incubation of 12-16h + 6h enrichment), shortening turnaround times, informing clinicians about dosing and therapy for complicated or recurrent UTIs.

Comparison of carbapenem MIC of OXA-48-like *Klebsiella pneumoniae* by Sensititre, Vitek 2, MicroScan, and Etest - 2024 - *Clin Microbiol Infect*

◊ For OXA-48-like *K. pneumoniae*, there was substantial variation in carbapenem MICs (imipenem, meropenem, ertapenem) depending on whether Sensititre, Vitek 2, MicroScan, or Etest was used

◊ Inconsistent ertapenem categorization, imipenem & meropenem susceptibility discrepancies

◊ Many hospitals lack newer agents (e.g., CAZ-AVI), relying on high-dose carbapenem regimens for treatment if the carbapenem MICs are ≤8 mg/L. The choice of AST platform can critically impact treatment decisions and patient outcomes in OXA-48-like CPE infections

◊ Need for method verification & standardization: given the poor categorical agreemen, microbiology labs should verify performance of each commercial AST system against locally prevalent carbapenemase-producing strains. Laboratories and clinicians must remain aware of method-dependent variations in MIC reporting - especially because minor differences can influence critical treatment decisions.

Comparison of carbapenem MIC for NDM-producing Enterobacterales by different AST methods - 2024 - *JAC Antimicrob Resist*

◊ Comparative methods: 3 MIC-based testing approaches were evaluated: broth microdilution (BMD), Vitek 2, and ETEST

◊ Consistency of MIC values: Vitek 2 consistently yielded higher MICs (geometric means up to 7- to 9-fold greater than ETEST), while ETEST produced lower MIC results than BMD. This discrepancy is clinically relevant, especially in borderline resistant isolates where therapy decisions hinge on the exact MIC

◊ Accurate carbapenem MIC data is crucial for NDM-producing Enterobacterales, especially in settings with limited availability of newer anti-CPE agents