

Molecular typing and antimicrobial susceptibility testing of Group B Streptococcus clinical isolates in Pretoria.

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Background: Group B Streptococcus (GBS) remains a major cause of neonatal morbidity and mortality worldwide and is increasingly recognised as an opportunistic pathogen in pregnant women and immunocompromised adults. In South Africa, the burden of GBS disease is likely underestimated due to limited surveillance, while resistance to alternative antibiotics for penicillin-allergic patients is increasing. This study investigated the distribution of capsular polysaccharide types, antimicrobial susceptibility patterns, and resistance-associated genes among clinical GBS isolates from North Tshwane.

Methods: A total of 87 archived clinical GBS isolates collected between June 2024 and November 2025 from NHLS-DGMTL were phenotypically confirmed using standard microbiological methods. Antimicrobial susceptibility to erythromycin, clindamycin, cotrimoxazole, and penicillin was determined by disk diffusion and E-test in accordance with CLSI and EUCAST guidelines. Multiplex conventional PCR was used for capsular typing (Ia–V) and detection of macrolide/lincosamide resistance genes (*ermB*, *ermTR*, and *mefA*).

Results: High resistance rates were observed for erythromycin (87%) and clindamycin (95%). Penicillin MICs ranged from 0.012 to 1.5 µg/mL, with most isolates remaining within susceptibility thresholds, although a small proportion demonstrated elevated MICs. Capsular typing was successful in 79% of isolates, with type Ia predominating (41%), followed by type V (12%) and type II (10%); 20% were non-typable. The most frequently detected resistance gene was *mefA* (26%), followed by *ermTR* (22%) and *ermB* (15%).

Conclusion: The high prevalence of macrolide and lincosamide resistance highlights challenges for prophylaxis in penicillin-allergic patients and underscores the need for ongoing molecular surveillance to inform treatment guidelines, intrapartum prophylaxis strategies, and future vaccine development in South Africa.