

**Molecular characterization of antimicrobial resistance in non-typhoid *Salmonella*
from patients with bacteraemia admitted at the Aga Khan University Hospital**

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ABSTRACT

In Africa, non-typhoid *Salmonella* (NTS) infections are common and self limiting, however, they present life-threatening complications especially in children and adults who are immunosuppressed. In these individuals, antimicrobial treatment maybe required. The increasing antimicrobial resistance in NTS contributes to its spread and threatens the use of commonly available and clinically important antimicrobial agents. Over the last decade or more, resistance to commonly available antimicrobials including ampicillin, cotrimoxazole, streptomycin, chloramphenicol and tetracycline rose remarkably.

This study used 116 culture confirmed isolates of NTS from bacteremic patients admitted in the medical ward of Aga Khan University Hospital, examined over a 12-month period, 2007. NTS isolates were identified by culture methods, and confirmed by slide agglutination tests according to Kauffmann-White scheme utilizing the *Salmonella* poly-O, H1 and H2 agglutination antisera. Antimicrobial susceptibility tests were done using the disk diffusion method. Conjugation experiment was done to determine genetic basis of resistance and polymerase chain reaction was done to detect presence of genes encoding the quinolone resistance-determining region.

Resistant isolates contained plasmids of various sizes. Some isolates had only one plasmid while others had up to five plasmids of varying sizes. The large plasmids extracted ranged from 90 kb to slightly over 147 kb in size; while the small size plasmids ranged from about 2.1 kb to 5.6 kb. The isolates that had

plasmids all had a 43.5kb plasmid size. Some isolates in *Salmonella* serotype group B and group C3 had the largest plasmid size, slightly above 147 kb. The gyrB, parC and parE had 500bp products.

The resistance to ampicillin, tetracycline, cotrimoxazole and chloramphenicol was low, but there was an increase in quinolone and fluoroquinolone antimicrobials.

The study concluded that, there is a decrease in resistance to conventional drugs of choice for treatment of invasive NTS in Kenya, but there is an increase in resistance to quinolone and fluoroquinolone; and a new resistance to cefotaxime and ceftriaxone.