

Trends in Antimicrobial Resistance of *Salmonella* Species Isolated from Scepticaemic Patients in Kampala, Uganda 2010 - 2015

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Background: Ciprofloxacin is the treatment of choice for typhoid in Uganda. The country is prone to large-scale salmonella outbreaks amidst reports of increasing antibiotics resistance (ABR) yet systematic ABR surveillance is weak. We studied ABR patterns among patients with salmonella septicemia in Kampala, Uganda from 2010 to 2015

Methods: We abstracted culture and sensitivity data from laboratory registers and laboratory request forms for all blood specimens cultured from 2010 to 2015 at 7 public and private laboratories in Kampala using a standardized data abstraction form. We defined high ABR as $\geq 50\%$ of species resistant to a drug annually; “moderate” ABR as 10-49% resistant and “low” ABR as $< 10\%$ species resistant. Multi-drug resistant (MDR) salmonella was defined as species resistant to Cotrimaxazole (CTX), Chloramphenicol (CAF) and Ampicillin (AMP).

Results: Salmonella species was the second commonest organism isolated in 21% (247/1176) of gram negative organisms. 60% (140/247) were typhoidal and 40% non-typhoidal species. From 2010 to 2016 resistance to traditional first-line drugs for Salmonella (CAF, AMP, and CTX) reduced from high to moderate levels. Specifically, reduced ABR to the following antibiotics was noted: Ampicillin, from 87% to 34%; CAF, from 73 to 32%; CTX, from 80% to 31%. The range of MDR salmonella was 0-20%. 18% (49/247) of isolates had Intermediate resistance to Ciprofloxacin, a preferred first line alternative drug; intermediate ABR to Ciprofloxacin increased from 0 in 2010 to 39% in 2015. Overt Ciprofloxacin resistance range was 0-17%; all of which were Nalidixic acid resistant. ABR to Ceftriaxone ranged 0-17%. All species tested susceptible to Cefepime.

Conclusion and Recommendation: ABR to Ciprofloxacin and Ceftriaxone have increased rapidly. However, susceptibility to first line antibiotics has gradually returned during the study period. We recommend rational use of antibiotics guided by ABR patterns to address the changing salmonella ABR picture.