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INFECTIONS IN A TERTIARY REFERRAL HOSPITAL INTENSIVE CARE UNIT IN RWANDA

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Introduction: Infections contribute a significant proportion of morbidity and mortality worldwide. While many infections are successfully managed with antimicrobial therapy, there are increasing rates of antimicrobial resistance (AMR) with higher rates in certain patient populations such as those admitted to intensive care units (ICU). The global threat of AMR is especially concerning in low resource environments where there are limited antibiotic options.

Methods: We conducted a retrospective, observational study of all patients hospitalized in the ICU of a tertiary referral hospital in Rwanda over a two-year period (January 2015 – December 2016). We collected data on diagnosis, ICU length of stay, mortality and hospital length of stay. We collected data on microorganism, site of culture, antimicrobial resistance pattern and antibiotics prescribed.

Results: Over a two-year period, 307 patients were admitted to the ICU. The mean age was 36 years (standard deviation (sd) 18.6 days) and 171 (56%) patients were male. Most patients were admitted from the main operating theater (n=138, 45%) or emergency department (n=97, 32%). The most common admitting diagnoses were sepsis (n=116, 34%), head trauma (n= 91, 27%), polytrauma (n= 27and obstetric complications (n=26, 8%). The most common antibiotics administered were cephalosporins (n=277, 97%) and metronidazole (n=156, 55%). The mean length of ICU stay was 6.2 days (sd- 7.2 days) and the mean length of hospital stay was 21.0 days (sd- 30.4 days). The ICU mortality was 45% and in-hospital mortality was 51%. A total of 244 samples were collected from 331 patients. The samples were from blood (n=95, 39%), tracheal aspirate (n=12, 0.5%), wound (n=39, 16%), urine (n=76, 31%), and other (n=24, 10%). There were 104 (43%) positive samples. The most common organisms isolated were *Klebsiella* (n=30, 29%), *Acinetobacter* (n=20, 19%), *E.coli* (n=16, 15%), *Proteus* (n=15, 14%), *Citrobacter* (n=8, 8%), *S.aureus* (n=7, 7%), *Pseudomonas* (n=5, 5%), and other (n=9, 9%). Of Klebisella isolates, 100% and 76% were resistant to ceftriaxone and cefotaxime, respectively. Of E.coli isolates, 86% and 71% were resistant to ceftriaxone and cefotaxime, respectively. All *Acinetobacter* isolates were resistant to ceftriaxone and cefotaxime, respectively.

Conclusion: There is an alarming rate of antimicrobial resistance to commonly used antibiotics in the ICU. Expanding antibiotic options and strengthening antimicrobial stewardship are critical for patient care.

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