

**DIVERSITY AND ANTIBIOTIC SUSCEPTIBILITY OF BACTERIA  
SPECIES ISOLATED FROM BLOOD OF FEBRILE PATIENTS IN  
ALUPE, WESTERN KENYA**

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**156/64025/2010**

**A thesis submitted to the School of Biological Sciences, University of Nairobi,  
in partial fulfillment of the requirement for the award of Master of Science  
degree in Microbiology.**

**FEBRUARY 2013**

## ABSTRACT

Bacterial pathogens cause significant number of deadly diseases and widespread epidemics in man. The mortality associated with these diseases is higher in developing countries where the impact is difficult to estimate as symptoms are similar to other non-bacterial febrile illnesses. Bacteria are transmitted through deep unclean wounds, minor skin breaks or bruises, eyes, oral fecal route, respiratory tract, bites from arthropods and urinary tract. The objective of this study was to determine the diversity of bacteria isolated from the blood of patients presenting with febrile illness seeking health care at Alupe District Hospital and KEMRI CIPDCR clinic in Alupe, Western Kenya. The antibiotic susceptibility profile of drugs commonly used in Alupe was also determined using a standard interpretative table. A total of 200 patients were recruited and their social demographic data collected after obtaining their consent. Thereafter, their blood samples were collected. Laboratory analysis was done at KEMRI-CIPDCR laboratory to identify and characterize bacteria pathogens by conventional methods using microbial culture on various agars and biochemical tests. The youngest and oldest patients were 2 and 82 years, respectively. The proportion of male patients was 38.5% while 61.5% were female. Five bacterial species were detected in 7 of the 200 blood samples. Of the total isolates, 57.1% were Gram-negative whilst 42.9% were Gram-positive. The five bacteria species isolated were *S. aureus* (3 isolates), *E. coli* (2 isolates), *P. mirabilis* and *K. pneumoniae* (1 isolate each). No blood sample yielded more than one species. Data were subjected to analysis using Stata version 10.0 and a standard interpretative table was used for comparison of antimicrobial resistance patterns of the isolates. The odds of bacteremia increased in patients who had a heart murmur (OR = 15.9,  $p = 0.0047$ ), rash (OR = 6.6,  $p = 0.0162$ ), severe headache (OR = 4.8,  $p = 0.0305$ ) and swollen lymph nodes (OR = 28.2,  $p = 0.0000$ ). The odds of bacteremia were significantly lower in patients who had mild headache (OR = 0.2,  $p = 0.0338$ ). Overall, all the isolates were 100% susceptible to chloramphenicol and gentamicin with the highest resistance being to erythromycin (71.4%), ampicillin-cloxacillin (57.1%) and cefuroxime (57.1%). The isolates were relatively susceptible to amoxyllin-clavunic acid, ceftazidime and nitrofurantoin and showed the lowest susceptibility to nalidixic acid (14.3%). Bacteremia was not common in febrile patients visiting the two health facilities in Alupe, Western Kenya. This study provided data on specific causative and prevalent bacterial species that presented febrile illness as a symptom and provides guidelines on antibiotic use in the management of bacteremia in Alupe where malaria is endemic. If bacteremia is suspected on admission or at any later stage in management of patients, initial antibiotic therapy with chloramphenicol should be undertaken.

Key words: Age groups, Antibiotic susceptibility, Bacteremia, Bacteria spp., Febrile patients