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**Prevalence, Antimicrobial Susceptibility Patterns of Bacterial Isolates and Risk Factors of Access Related Infection among Hemodialysis Patients at Benjamin Mkapa Hospital**

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**Abstract**

**Background**: Patients suffering from chronic kidney diseases (CKD) on dialysis are at risk of dying mainly due to cardiovascular complication or infections. Infections are the second leading cause of death and hospitalization among hemodialysis (HD) patients. Blood stream infection is the main source of infection through the vascular access. Factors attributed to this are mainly patient characteristics and principle of Infection Prevention and Control (IPC) of the Hospital or unit. The risk of bacteremia in hemodialysis patients is 26-fold higher than in the general population, and gram-positive bacteria are the causative organisms. The most common site of infection causing bacteremia is internal prostheses. Infection control principle is recommended by the Center for Disease Control and Prevention (CDC) in reducing bacteremia in hemodialysis patients with either a Central Venous catheter (CVC) or Arterio venous Fistula (AVF). Objectives: To determine prevalence, Antimicrobial Susceptibility Testing Pattern sand risk factors of Access related infection among hemodialysis patients at Benjamin Mkapa Hospital (BMH).

**Methodology**: Across-sectional prospective study conducted for the period of six (6) months. A swab from the site of vascular access site and venous blood sample was collected. The data was entered in the SPSS for analysis.

**Results**: We studied 35 individuals who were on maintenance hemodialysis services at our hemodialysis unit of which 57% were male. The majority of participants (40%) were aged above 60 years. The prevalence of vascular access bacterial infection was 28.6%. Most patients with swab and blood culture infections were those on CVC by 87.5% and 90% on swab and blood cultures respectively. Staphylococcus aureus was 87% from the swab culture and 80% from the blood culture. The sensitivity tests showed that staphylococcus aureus was sensitive to all antibiotics but more sensitive to Ceftriaxone and vancomycin by 85% in the swab culture and 87.5% by 75% in the blood culture for ceftriaxone and vancomycin respectively. Metronidazole and azithromycin sensitivity was 57% and 71% in the swab culture while in the blood culture was 50% and 71% respectively. Staphylococcus aureus was less sensitive both in the swab (28%) and blood culture (37.5%). Escherichia coli (E. coli) was very sensitive to ceftriaxone meropenem (100%) and less sensitive (100%) to azithromycin and metronidazole.

**Conclusion**: Gram positive cocci (Staphylococcus aureus) were the most identified bacteria in patients on hemodialysis from both swab and blood culture and indeed the source of infection in the blood is from the site infection due to contamination or improper care of the site especially those with CVC. So having CVC as the vascular access for hemodialysis bears a high risk of acquiring infection. Staphylococcus aureus was found to be highly sensitive to ceftriaxone and vancomycin and less sensitive to meropenum. Recommendation: Improve IPC practice in haemodialysis unit and health education about access care will reduce the risk of infection in haemodialysis patients.

**Keywords**: *Prevalence; antimicrobial susceptibility patterns; bacterial isolates; risk factors; access related infection; hemodialysis patients; Benjamin Mkapa Hospital.*