

**IDENTIFICATION AND DETERMINATION OF ANTIMICROBIAL RESISTANCE  
PROFILES OF *Mycobacterium tuberculosis* COMPLEX ISOLATES FROM HIV  
POSITIVE PATIENTS IN KISUMU COUNTY, KENYA**

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## Abstract

*Mycobacterium tuberculosis* complex are important pathogens to man and causative agents of tuberculosis. Tuberculosis is one of the diseases that continue to be a public health concern in the world. Earlier, tuberculosis was considered controlled, but with emergence of HIV the disease has been fuelled in varied proportions worldwide with high incidence in sub-Saharan Africa. Kenya ranks 15<sup>th</sup> among 22 highest burdened TB countries in the world and 5<sup>th</sup> in Africa. The Ministry of Health indicates that numbers of tuberculosis cases have increased from 10,000 in 1994 to 106,000 in 2004 with 132,000 new cases in 2009. World Health Organization indicates that there were 300 TB cases per 100,000 people in 2011. Tuberculosis remains a serious health threat especially for people living with HIV who are more likely than others to contract the disease. The disease is the leading cause of death among people living with HIV, accounting for one in four HIV-related deaths. People living with HIV face emerging threats to drug resistant tuberculosis such as multi-drug resistant TB (MDR TB) and extensively drug resistant TB (XDR TB). Treatment for tuberculosis requires the use of anti-tuberculosis drugs which include Rifampicin, Isoniazid, and Streptomycin. However, there have been cases of recurrence of disease, drug resistance and emergence of multidrug-resistant Tuberculosis (MDR TB). The aim of this study is to isolate and identify the *Mycobacterium tuberculosis* complex prevalent in HIV patients seeking treatment for tuberculosis in Jaramogi Oginga Odinga Teaching and Referral Hospital in Kisumu County. In this study, 379 sputum samples will be obtained from consenting HIV patients between October and December 2013. GeneXpert testing will be used to detect the TB bacilli. The samples will be cultured in Lowenstein-Jensen media and blood agar media and identified by observation of rate of growth, colony morphology, pigmentation and biochemical profiles. *Mycobacterium tuberculosis* complex will also be identified by molecular probes using PCR. The isolated microorganisms will then be tested for susceptibility to Isoniazid and Rifampicin. Descriptive statistics will be used to summarize data and proportions compared using Chi-square ( $\chi^2$ ). Multiple logistic regression will be used to evaluate relationship between age and most prevalent mycobacteria and ANOVA used to determine the most resistant tubercle bacilli to the commonly used antimicrobials. The findings of this study will indicate the incidence and prevalence of drug resistance within the community and provide data as to what drug should be used for treatment of tuberculosis. The information will be handy in the future management of TB in Kisumu County.