



**ENVIRONMENTAL CONTAMINATION AND RISK DRIVERS OF THE  
PERSISTENT TYPHOID FEVER IN KASESE DISTRICT, UGANDA**

**BY**

**MIREMBE BERNADETTE BASUTA**

**2014/HD17/1117U**

**209011566**

**A DISSERTATION SUBMITTED TO THE DIRECTORATE OF RESEARCH AND  
GRADUATE TRAINING IN PARTIAL FULFILLMENT FOR THE AWARD OF  
MASTER OF SCIENCE IN VETERINARY PREVENTIVE MEDICINE  
(VETERINARY FIELD EPIDEMIOLOGY) DEGREE OF  
MAKERERE UNIVERSITY.**

**JANUARY 2017**

## ABSTRACT

Kasese district in Uganda experienced a prolonged typhoid fever outbreak from 2007 – 2011 with significant numbers of patients having intestinal perforations. Ninety two percent of the case fatalities had intestinal perforations. The most significant risk factor associated to *S. Typhi* infections is ingestion of water and food contaminated with faecal matter from the environment. This inherently means that the environment is a critical factor in maintaining and acting as a source of *Salmonella* hence gist of this study. The study aimed at determining *Salmonella* contamination in the environment and risk drivers to the persistent typhoid fever in Kasese district. A case-control study design was used where cases had been confirmed by laboratory diagnosis with typhoid fever and controls selected from the same geographical area the cases reside. Cases were selected from three major hospitals namely: Bwera, Kagando and Kilembe Mines and were tracked down to their residences. Environmental samples were taken and cultured for *Salmonella* in the laboratory and Kirby-Bauer disk diffusion test for antibiotic susceptibility was performed on the isolates. A questionnaire was administered at the cases and controls' households and the quantitative data collected was analysed in form of frequencies, bar graphs, maps and Odds Ratios with the help of Epi-info 7 and R software Version 3.1.2. A total of 45/478 samples were found contaminated with *Salmonella enterica*. All the isolates belonged to serovar Enteritidis. Thirty-three isolates that were subjected to antibiotic susceptibility were 87.88%, 81.82% and 96.97% susceptible to ciprofloxacin, trimethoprim and gentamicin respectively. The significant variables identified were attainment of primary education (OR=3.19, 95%CI 1.19-9.85), secondary education (OR=6.47, 95%CI 2.06-22.92) and lack of firewood as a reason to not treat drinking water (OR=3.24, 95%CI 1.39-7.73). Multidrug resistant *Salmonella* was found in the environment in Kasese district. Scarcity of fuel affects the feasibility of boiling water as a form of treatment thus being a risk driver to typhoid fever. In addition, attainment of formal education cannot be used as a measure for attainment of healthy behaviours in prevention of typhoid fever.

Health education of households should be enhanced and a more feasible and less economic means of water treatment that is acceptable by this community should be identified.