

## **Abstract:**

Four thousand nine hundred and seventy-one trypanosomosis-surveillance records from an open population of Orma Boran cattle raised under natural trypanosomosis challenge in Galana Ranch, Kenya between the years 1990 and 2000 were analysed. The objective of the analysis was to identify epidemiological factors that influenced time-to-treatment of trypanosomosis cases. Under the surveillance programme, blood was being examined fortnightly for trypanosomosis using buffy coat technique. Infected animals were treated when their packed cell volumes (PCV) fell to 25% or lower. The number of days between the first diagnosis and treatment of trypanosomosis cases was obtained from the difference between diagnosis and treatment dates. Days-to-treatment clustered around the screening periods; therefore, time-to-treatment was represented by a series of time points 0-8 at 14-day intervals. Factors postulated to affect the outcome (time-to-treatment) were age of an animal at time of diagnosis, sex, number of trypanosome infections, trypanosome species and season of the year. Five animal generations were generated from birth dates and treated as nuisance parameters. Conditional logistic regression and Cox proportional hazards models were fitted to the data, the former to analyse factors that influenced treatment after time 0 (outcome dichotomised as time 0 or >0) and the latter to analyse factors that influenced time-to-treatment for cases that were treated after time 0, excluding all cases treated on time 0. The majority of the cases (89.5%) were treated on the same day of diagnosis. Trypanosome infections were more likely to be treated after time 0 in dry than in wet season. Similarly, the rate of treatment was lower in the dry than the wet season. An increase in number of previous trypanosome infections reduced the odds of an animal being treated after time 0. Animals that had been exposed to many infections before had higher rates of treatment than those that had minimal experiences. We offer possible reasons for these observations and conclude that selection of animals for breeding purposes in programmes geared towards improving trypanotolerance should take into consideration the environmental factors that affect classification of an animal as being resistant or susceptible