Setting a Model for Elimination of *Trypanosoma brucei rhodesiense* Human African Trypanosomiasis

Enock Matovu
College of Veterinary Medicine, Animal Resources and Biosecurity
Makerere University
P. O. Box 7062 Kampala, Uganda
matovue@vetmed.mak.ac.ug Tel: +256 772 550 226
HAT in Uganda
HAT Elimination

- WHO has included *T. b. gambiense* on list of diseases set for elimination
- *T. b. rhodesiense* elimination generally not considered feasible
- A complex epidemiology involving an animal reservoir
Uganda’s Unique Scenario

HAT endemic in areas where:

- There are no game parks, game reserves
- Hardly any forest reserves
- Human population expansion decimates wild animals
- Domestic animals (mainly cattle) the most important reservoir
- A concerted elimination campaign likely to succeed
Our Argument

We can achieve *T. b. rhodesiense* HAT elimination by incorporating ultrasensitive diagnostics into routine disease surveillance, to detect cases that are usually missed by conventional methods.
The Study Area: Kaberamaido
Kaberamaido District is Most Suited to Explore this Model

- Lwala Hospital has state-of-the-art facility for diagnosis of sleeping sickness
- New techniques for diagnosis have been established and evaluated at Lwala for the first time at a sleeping sickness treatment centre in Uganda
New Techniques at Lwala

- **iLED fluorescence microscopy**
  - An efficient microscope run with solar power

- **LAMP**
Methodology

- Actively screen the domestic animal reservoir for trypanosomiasis
- Treat infected animals with Isometamidium chloride (Samorin)
  - Curative + prophylactic (3 months)
- Apply deltamethrin pour-ons to animals, to keep tsetse in check
- Repeat this after every 3 months for 15 months
Diagnostic strategy: Animals

HCT on Blood

Tryps –ve
Normal PCV

Tryps –ve
PCV<25%

iLED –ve

LAMP –ve

Species specific PCR

Tryps +ve

iLED +ve

LAMP +ve
What About the Vector?

At Every Visit

- Trap the tsetse flies to determine infestation levels
And the Humans?

Strategically screen the human population to detect those cases that might missed at the peripheral health centres

- Prepare slides from people with malaria-like symptoms but not responding to antimalarial treatment (ACT)
- Send them to Lwala for iLED microscopy
- Or even LAMP if highly suspected but negative by iLED microscopy
Results

HAT Cases from Kaberamaido since September 2012

Only 1 case detected from 214 slides collected from peripheral Health Centres
Results

Coverage and AAT Prevalence in Oculoi Parish since September 2012

Tsetse densities remain largely constant 1.8-2.3FTD
Contributors to Low PCVs

- Trypanosomiasis >60%
- Babesiosis
- Anaplasmosis
- Babesiosis
- Unknown (Helminths?)
Key Recommendations so far

- Need to HAT suspicion at peripheral Health centres
  - More slides to Lwala
- Improve animal coverage
- Need a more aggressive tsetse control approach
What is unique with this project

- Sustain activities in 1 place over time
- Scientifically demonstrate the impact of our interventions
- Prepare to roll out to other districts if strategy proves successful
- We have brought the techniques to the field where they are needed
- Trained and Involved local experts in these exercises
Acknowledgements