ISDS One Health Surveillance (OHS) Case Study

CASE STUDY TITLE

Modeling surveillance networks for Human African Trypanosomiasis control in Northern Uganda

PROJECT/ACTIVITY TITLE

Tracing Trypanosomiasis. A critical epidemiology of zoonotic *T.b. rhodesiense* in Northern Uganda

CONTACT INFORMATION

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WHAT DOMAIN(S) DO YOU WORK IN?	__X_ Human health	__X_ Animal health	_X__ Environmental health
OHS AREA(S) OF FOCUS ADDRESSED BY CASE STUDY	_X__ Cross-Agency Communication and Collaboration	_X__ Training and Resources	_X__ Technologies and Methodologies
	___Other: Epidemiological evidence construction in One Health landscapes		

PROBLEM DESCRIPTION (150 word maximum)

Summarize the problem/situation that was addressed with a OHS approach.

The multiple forms of Human African Trypanosomiasis (human *T.b. gambiense* and zoonotic *T.b. rhodesiense,* as well as the several strains which cause disease in animals) that occur in Uganda make coordinating the scientific and developmental, human and animal, social and economic systems influencing their control particularly complex. Uganda is one of the only countries in Africa that has experienced large-scale, debilitating outbreaks of HAT, and co-ordinated major control programmes. A major challenge to One Health Surveillance is poor integration of services, sectors and disciplines toward achieving shared goals. Effective OHS relies on cross-sector collaboration and communication, however this process is hampered by complex social, political, and economic networks spanning across the entire surveillance and control system from the point of care up to policy level. To date, these networks and their influence in shaping the epidemiological landscape of the disease and its control have yet to be described in detail.

ACTION TAKEN (500 word maximum)

Describe how the problem was addressed and how the action taken was measured. Please include a description of the collaborators and the data sources used.

As Human African Trypanosomiasis (also known as 'Sleeping Sickness') has been targeted for elimination by 2020, this study aims to explicitly map the HAT surveillance and control network in Uganda, and address how flows of data, resources, and communication across sectors can be improved. My doctoral research broadly aims to develop a critical epidemiology of HAT giving a social constructivist, ethnographic account of epidemiological evidence production and HAT control and in Uganda. This will include a mixture of qualitative ethnographic and quantitative Social Network Analyses (SNA), using epidemiological case data as the subject of analysis. SNA can also be used to model treatment seeking pathways of patients, a highly important driver of low case-detection in some regions and therefore a major challenge to HAT surveillance. I have also used this method to model livestock trade in Northern Uganda, tracing the spread of *T.b. rhodesiense* northward through cattle re-stocking programmes implemented over the past decade. While constructed using scant data acquired from market trade permits, the network transmission model remains – in premise – a tool that could potentially benefit One Health Surveillance strategies across many Sub-

Saharan African contexts. However, while livestock trading practices are a significant driver of HAT epidemiology, these are largely unregulated and occur outside of official market places, and are therefore undocumented quantitatively. I intend to trace these practices as they occur outside of the public sector so as to better current understandings of their role in spreading zoonoses in both animal and human populations, and to further inform models and policy to this end.

Furthermore, I aim to model and illustrate the extent to which various disease surveillance, control, and policy networks are connected, and how the structure of these shapes the landscape in which evidence is produced and public health policy is written. This could help to identify key areas where particular groups could be collaborating more closely, or where key departments or individuals who are not connected can be identified and subsequently brought together or have datasets linked. The study is conducted in collaboration with all actors ranging across the HAT surveillance and control system, including but not limited to patients, farmers, healthcare workers, animal health workers and veterinarians, public health officials, policy makers, researchers and programme facilitators.

Data from the Ministries of Health and Agriculture are used to examine case and referral data from both active and passive screening in human populations, as well as animal case data made available from on-going prevalence surveys being conducted in cattle across 37 endemic districts. Fieldwork is conducted across three major referral hospitals across the newly affected regions of Northern Uganda, where zoonotic *T.b. rhodesiense* has become recently established and threatens to close the geographical corridor currently separating the two deadly strains of HAT in the country. Further large-scale, cattle-mediated intervention campaigns are planned to commence over the coming year, and I intend to follow and document this programme and its integration with existing networks of surveillance and its engagement with target populations at community level.

FACILITATORS AND BARRIERS (100 words max each)

Please list and describe any factors that contributed positively to this project/activity.

- Collaboration with The Coordinating Office for the Control of Trypanosomiasis in Uganda (COCTU) – a coordinating body seated in the Ministry of Health, founded in 1992 after a major outbreak of HAT and appointed by the government to oversee the cross-sector coordination of all HAT control programmes in the country. This body has implemented a One Health approach in linking ministries, human and animal health sectors, and various research programs operating in the country together toward integrated surveillance and concerted effort toward elimination.
- Local collaboration with Makerere University and the University of Busitema, who have initiated many of the present studies collaborative relationships on the ground across both human and animal health sectors, from District Ministry of Health Supervisors and District Veterinary Officers, to local level Village Health Teams and frontline health facilities and staff.
- Cooperation from the Intensified Sleeping Sickness Elimination Programme (ISSEP), which has been operating since 2013. The Ministry of Health and District Supervisors made all existing data on HAT case detection and referral available.
- Cooperation from ongoing intervention campaigns operating in Uganda, such as the Liverpool School of Tropical Medicine's '*Tiny Targets*' vector control campaign, and the Foundation for Innovative New Diagnostics (FIND) *T.b. gambiense* Rapid Diagnostic Test implementation programme in the West Nile region.
- Previous and ongoing collaboration with the Stamp Out Sleeping Sickness (SOS) programme, a Public-Private Partnership established spearheaded by the University of Edinburgh, Makerere University, and CEVA Sante Animale, and overseen in-country by COCTU.

Please list and describe any factors that were a challenge or barrier to overcome.

- Highly political landscape involving a range of public and private stakeholders that makes accessing and sharing information regarding ongoing research and intervention projects extremely contentious and ethically problematic.
- Lack of up-to-date data, and poor management and reporting systems operating both within and across public sectors
- Lack of regulation and record keeping in livestock sector, particularly regarding trade and treatment at point of sale
- Community awareness of HAT at local level makes the passive surveillance system less effective in detecting cases among populations at risk

LESSONS LEARNED (250 word maximum)

Please describe any lessons learned or best practices identified by this project/activity.

As the study is still ongoing, many recommendations for best practice have to be identified. However, based on experiences thus far, the following lessons have been learned:

- Data management and reporting must be a centrally mediated and rigorously maintained element of surveillance across the entire network – too many cases of poor record-keeping practices and out of date or incomplete report forms being compiled and reported late have hampered attempts to trace cases through the referral and treatment process. This makes any analysis and evaluation of prevalence in both human and animal populations difficult, and therefore any attempts to analyse these across both sectors for improved surveillance problematic.
- Communication between sectors needs improving, as surveillance in the animal health sector could inform public health strategies and help to target intervention campaigns more cost-effectively. However very little information regarding cases in cattle populations is communicated from one ministry to another.
- Economic and logistical constraints limit the resources available to mount a coordinated response and intervention across sectors. Ministries all have budgets which need to be allocated according to priorities which at times undermine the necessary cross-sector coordinated efforts required to sustain HAT surveillance and sensitisation to achieve elimination.
- Increased community engagement and education regarding HAT is essential to influencing perceptions of risk and treatment seeking behaviours that will lead to enhanced case detection at local levels in remote areas at most risk.
- More frequent training of health staff at front-line facilities is needed to recognise symptoms of HAT and test promptly. Staff and District Supervisors have all cited regular Continued Medical Education (CME) as having a significant impact on health worker sensitization and improved syndromic suspicion of HAT in patients. Health workers educated on symptoms and risk of HAT in their area can also increase community sensitisation through education and outreach programmes.

ADDITIONAL COMMENTS (75 words max)

Summarize the problem/situation that was addressed with a OHS approach.

HAT surveillance in Uganda faces multiple challenges that make effective One Health Surveillance problematic in an elimination setting. Low awareness among health staff and communities mean passive surveillance is largely insufficient in detecting cases at population level, while data reflecting case referral through the control network is poor and disjointed across sectors. This study maps the OHS HAT network seeking to identify gaps in the system that can be targeted for improved linkage and coordination.