Participatory Approaches in Conservation Medicine:
A Case Study in Anthrax Management Near Queen Elisabeth National Park, Uganda

Jeanne Coffin¹, Fred Monje², Grace Asiimwe-Karimu², Janetrix Hellen Amuguni¹
¹Tufts University, ²Makerere University

Introduction
Anthrax is enzootic within Uganda’s Queen Elizabeth National Park (QENP) and the surrounding area, affecting wildlife, domestic animals, and humans. In just the last decade, outbreaks have caused deaths in wild animals in the parks, humans, and cattle.

A multi-disciplinary team of investigators from Makerere University African Field Epidemiology Network (AFENET) fellowship program, a biologist and TIE* Fellow in the Masters in Conservation Medicine program worked together with senior veterinarian-scientists (see Acknowledgements) to assess the impact of anthrax on humans, wildlife, and domestic animals around QENP. Using a One Health approach, they focused on how humans and animals interact and how anthrax impacts the livelihoods and therefore the perceptions of conservation and public health efforts in the QENP area.

Background
Anthrax is an ancient and virulent zoonotic disease caused by Bacillus anthracis. It has a complex natural ecology (1) involving sporulation, possible replication within amoebas (2) under specific climatic conditions, herbivorous consumption, and carnivore dispersal. Outbreaks are sporadic, but can be devastating as the bacteria can kill most non-carnivorous mammals.

The 2004/2005 QENP outbreak killed 306 hippopotamuses, 143 other wild animals, and 405 domestic animals (3); a 2010 outbreak in QENP killed 154 wild animals (132 hippopotamuses); and a 2011 outbreak in Sheema district temporarily halted local beef sales and killed 2 humans and 7 cattle. (4)

Methods
- Mixed participatory epidemiology (PE) (5) and individual survey approach
  - Focus groups with mapping, ranking, and proportional piling exercises
  - Individual surveys
- Comparing results between participatory epidemiology and surveys to cross-check
- Assess perceived disease impacts, current surveillance efforts, and local conservation efforts in order to investigate anthrax’s relative impact on livelihoods in the QENP area.
- Design future disease surveillance and management strategies

Participatory Techniques

Focus Groups

Mapping

Proportional Piling

Components of a Future Surveillance

Survey for Immunology
- Start in areas where anthrax has been reported, and look for titers in carnivores and/or people
- Expand to rings around it, and/or to areas implicated during PE sessions

Survey for Environmental Risk Factors
- Soil chemistry pH, moisture, calcium
- Presence of amoebas – needs further study
- Presence of spores

PE for knowledge of environmental risk factors
- Educational
- Immediate feedback on local risk factors/areas

Note: Variety of detail captured through the techniques.

Photo credits to Grace Asiimwe-Karimu and Fred Monje

Literature Cited


Expected Results

These findings will be used to propose a One Health approach to the management and prevention of anthrax through a network of stakeholders.

These proposals will be submitted to research partners, but portions are also intended for the participants.

Acknowledgements

*TIE: Tufts Institute of the Environment

Gretchen Kaufman - Tufts Cummings School of Veterinary Medicine 2011
Terence Odoch - Makerere University
Jeffery Mariner - International Livestock Research Institute
David Owiny - Makerere University
Patrick Atimnedi - Uganda Wildlife Authority