

HANDLING AN ANTHRAX OUTBREAK  
in a One Health Approach

Joseph Nkhoma  
MALAWI

# Hippopotamus, livestock, human interface



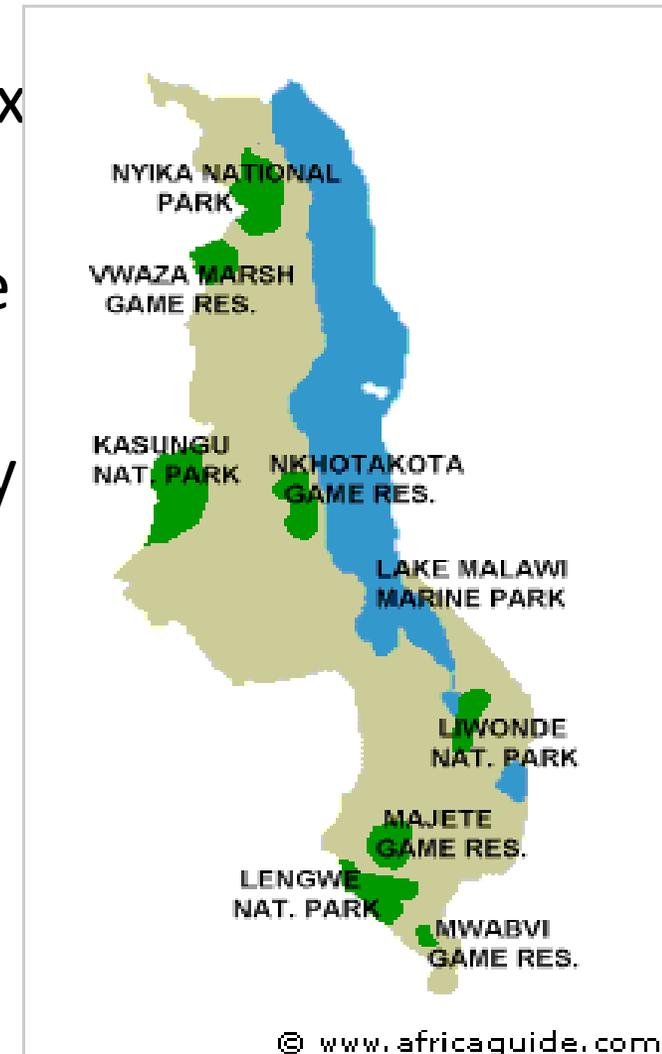
# Introduction

- Liwonde National Park is one of the three parks being managed by Africa Parks in partnership with Department of National Parks and wildlife in Malawi (PPP).
- It is shared by three districts namely, Balaka, Machinga and Mangochi.
- The National Park covers 580 km<sup>2</sup> of land and a stretch of 27 km of Shire River, the only outlet of Lake Malawi, runs through it.
- A 115 km stretch of electrical parameter fence has been constructed to control the incidences of human-wildlife conflict.
- The Park is home to a variety of wildlife including Hippopotami that largely habit the Shire River, Elephants, Leopards, Hyenas, Lions and various birds and fish species.
- The Park was estimated to have 2300 hippos living along the Shire river at the time of the outbreak.
- **Between July 2016 and August 2017, Liwonde contributed to the largest elephant translocation in history.**



# Background Information

- For the first time, Malawi confirmed a case of Anthrax in November 2018
- Only Hippos (*Hippopotamus amphibious*) in Liwonde National Park were affected
- It was reported as a case of (unusually) high mortality of Hippos on 10<sup>th</sup> of October, 2018
- A total of **28** deaths (29<sup>th</sup> November), **38** (9<sup>th</sup> December), **45** by end December and **48** by mid January 2019
- Anthrax spores have been developed and used as biological weapon.

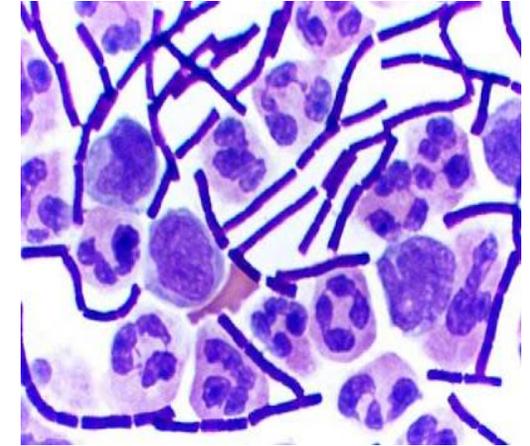


# Brief about the Disease

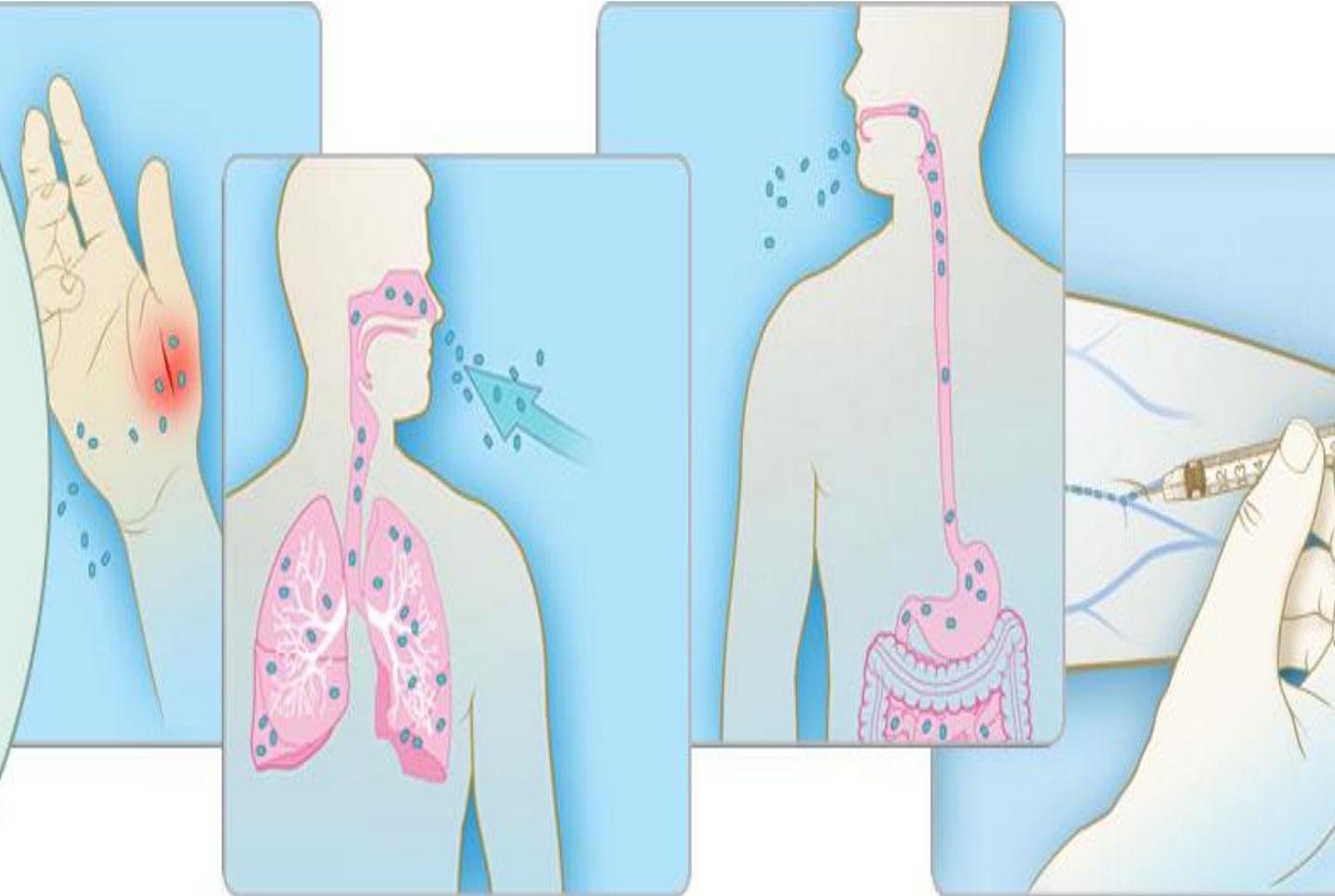
- Anthrax is an acute infectious bacterial disease of animals, caused by the spore-forming *Bacillus anthracis*.
- The name of the bacteria derives from the Greek word for coal, because of the ulcers with dark centres that develop on the skin of affected people.
- It most commonly occurs in wild or domesticated warm-blooded grazing animals such as cattle, goats, sheep, buffalo and hippos
- **It is a serious zoonosis.**
- Animals get infected when they ingest spores or vegetative form when grazing in contaminated areas.
- Once exposed to air, the bacteria produce spores that are extremely hardy and withstand extremes of temperature, humidity including common disinfectants and remain in the environment for decades.
- Anthrax is an [OIE\( now WOAH\)-listed](#) disease and must be reported to the WOAH as indicated in its [Terrestrial Animal Health Code](#).

# Transmission and spread

- *B. anthracis* does not typically spread from animal to animal or from person to person.
- The bacteria produce spores on contact with oxygen.
- These spores are extremely resistant and survive for years in soil, or on wool or hair of infected animals.
- Then if ingested or inhaled by an animal, or on entering through cuts in the skin, they can germinate and cause disease.
- Because the blood of infected animals sometimes fails to clot and may leak from body orifices, insects can spread the bacteria to other animals.
- **Carnivores and humans can become infected by eating meat from an infected animal.**
- **But typically, animals become infected by ingesting spores which are in the soil or in feed.**



The type of illness a person develops depends on how anthrax spores enter the body. All types of anthrax can cause death if they are not treated with antibiotics.



# Clinical Signs: Public health risk

- Tragically people who lose their animals may also lose their lives trying to salvage something and consuming the meat.
- **In humans**, anthrax manifests itself in three distinct patterns
  - Cutaneous (skin) form,
  - Gastrointestinal (abdominal) form and
  - Inhalational (pulmonary) form.
- Over 95% of cases take the cutaneous form and result from handling infected carcasses, hides, hair, meat or bones from such carcasses.
- At high risk are animal health workers, livestock producers butchersmen or agricultural workers dealing with sick animals, or when infection has been spread by wool or hides.



# Public health risk cont.

- The digestive form occurs when the spores are eaten.
- Potentially the most deadly form is by inhalation.
- This has been called '**wool sorters disease**' since spores on hides or hair could be inhaled.
- Clearly, preventing the disease in animals will protect human health.

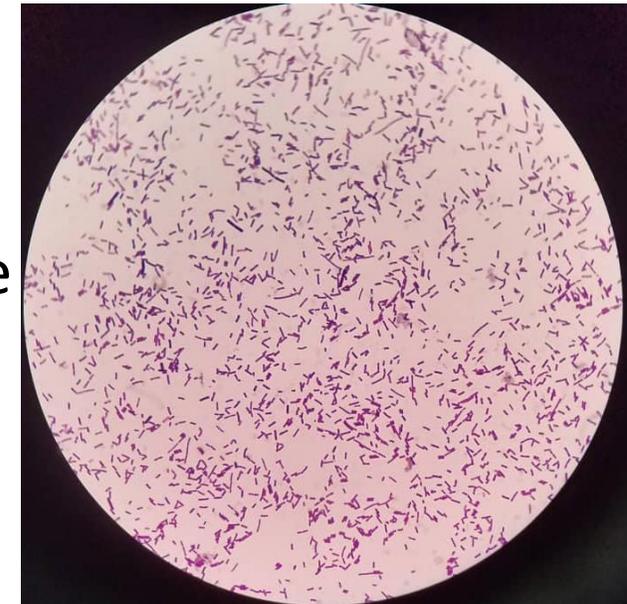
# Clinical signs in Animals

- Peracute, acute, subacute and, rarely, chronic forms of the disease are reported.
- clinical signs may be virtually absent in peracute and acute forms of the disease. Meanwhile, the only sign in chronic form may be enlarged lymph glands.
- **Ruminants** are often found dead with no indication that they had been ill.
- In **acute form**, there may be high fever, muscle tremors and difficult breathing seen shortly before the animal collapses and dies.
- **Subacute form** may be accompanied by progressive fever, depression, inappetence, weakness, prostration and death.
- In **carnivores** when the animal feeds on an infected source there may be an **intestinal form of the disease with fever and cramps from which animals sometimes recover**.
- Unclotted blood may exude from body openings and the body may not stiffen after death.



# Lab Diagnosis

- Avoid opening a suspect carcass, cut ear to prepare slide
- Need a BSL3 lab
- Anthrax is diagnosed by examining blood (or other tissues) for the presence of the bacteria.
- Samples must be collected carefully to avoid contamination of the environment and to prevent human exposure to the bacteria.
- Blood samples from relatively fresh carcasses will contain large numbers of *B. anthracis*, which can be seen under a microscope, cultured and isolated in a laboratory, or detected by rapid tests, e.g. polymerase chain reaction (PCR).



# How Malawi Managed the anthrax outbreak

- The aim of the response is to manage the outbreak in a **One Health approach** and specifically to:
  - (i) create and strengthen local multi-sectoral teams for outbreak response
  - (ii) determine the magnitude of anthrax outbreak in humans, livestock, and wild animals,
  - (iii) assess the outbreak local response capacity, and
  - (iv) mount effective control and preventive strategies using One Health approach in the affected areas.
- Some of the activities might include:
  - (i) Active searching of suspected human cases at health facilities and community level,
  - (ii) physical counting and disposal of wild animal carcasses in the affected area,
  - (iii) collection of specimens from suspected human cases and animal carcasses for laboratory analysis, and
  - (iv) meetings with local animal and human health staff, political, and traditional leaders at local levels.
- The rapid outbreak response by multi-sectoral teams using a One Health approach has proven vital in management of anthrax outbreak.
- The teams should compose of animal, wildlife and human health experts from national to village levels to control the outbreak.



PRESS STATEMENT BY MINISTER OF HEALTH AND POPULATION HON. ATUPELE MULUZI ON ANTHRAX OUTBREAK DELIVERED ON DECEMBER 6, 2018 AT THE CENTRAL OFFICE OF INFORMATION

Good afternoon Ladies and Gentlemen from the media.

Welcome to this news conference.

We value the work that you do and we are proud of you. We called for this news conference to inform the public through you that we have an outbreak of a disease called Anthrax.

The country has been experiencing deaths of Hippos in the Shire River segment of Liwonde National Park in the country from 10<sup>th</sup> October 2018. Following this observation, the government conducted investigations by collecting samples for laboratory analysis. Through culture, it has been confirmed that the Hippos are dying from Anthrax. As of 5<sup>th</sup> December, 2018, 33 hippos had died from the disease. This is the first time that Malawi has recorded cases of Anthrax.

Anthrax is a serious infectious disease caused by a type of bacteria known as *Bacillus anthracis*. Anthrax can be found naturally in soil and commonly affects

# Management....

- Held a press brief on the unusual deaths of hippos in Liwonde national park floating along the shire river- DNPW
- Collected and analyzed samples from the hippos-DAHLD & DNPW
- Anthrax confirmed at PHIM – higher level lab
- One health meeting composed by MoH to strategies on response (working team formed)
- Working team drafted anthrax message and conducted sensitization meetings in the affected districts
- Response plans were drawn in a one health approach

## Anthrax Fact Sheet

### 1. Introduction

The country has been experiencing deaths of Hippos in the Shire River segment of Liwonde National Park in the country from 10<sup>th</sup> October 2018. Following this observation, the government conducted investigations by collecting samples for laboratory analysis. Through culture, it has been confirmed that the Hippos are dying from a disease called Anthrax. As of 30<sup>th</sup> November 2018, 28 Hippos had died from the disease. This is the first time that Malawi has recorded cases of Anthrax.

### 2. What is Anthrax?

Anthrax is a serious infectious disease caused by a type of bacteria known as *Bacillus anthracis*. Anthrax can be found naturally in soil and commonly affects domestic and wild animals around the world. Although it is rare, people can get sick with anthrax if they come in contact with infected animals or contaminated animal products.

### 3. What is the mode of transmission?

#### • Mode of transmission in animals

Domestic and wild animals such as buffaloes, hippos, antelope, cattle, sheep,



# Management.....

- Sell and consumption of bush meat was immediately banned
- District response plan drawn in a one health approach
- Intensified disease surveillance in communities to trace those who came in contact with the meat and in health institutions
- Workers in the Park who had handled carcasses and were deemed at a high risk were put on appropriate prophylaxis
- Defence Force was deployed to prevent communities from scavenging carcasses

# Prevention and control

- antibiotic therapy immunization (animals), specific control procedures are necessary to contain the disease and prevent its spread.

In particular:

- the proper disposal of dead animals is critical;
- the carcass should not be opened, since exposure to oxygen will allow the bacteria to form spores
- premises are to be quarantined until all susceptible animals are vaccinated and all carcasses disposed of preferably by incineration or alternatively by deep burial with quick lime.
- cleaning and disinfection are important.



Thank you

