RECOMMENDATIONS FOR THE DIAGNOSIS, TREATMENT AND MANAGEMENT OF TUBERCULOSIS (*Mycobacterium tuberculosis*) IN ELEPHANTS IN HUMAN CARE

Prepared by the Stakeholders Task Force on Management & Research Priorities of Tuberculosis in Elephants

Who Are the Stakeholders?

- Veterinarians, public health specialists, epidemiologists, animal managers
- Pharmacologists, physicians, immunologists
- Professionals working with elephants in zoos, circuses & private facilities
What organizations are part of the Stakeholders?

- American Association of Zoo Veterinarians (AAZV)
- International Elephant Foundation (IEF)
- Elephant Managers Association (EMA)
- Feld Entertainment, Inc
- Animal Managers, Private Owners

Our Mission was given to us by the USDA!

- Create evidence-based guidelines for diagnosis & treatment of Mt.b in elephants
- Bring transparency to the Mt.b elephant debate
- Address best practices for elephant care
- Create an easy-to-read, easy-to-access format for vets, managers, regulatory officials, and the public
The results

• Now over 6 years of work
• Five annual meetings
• Attendees included USDA vets, state vets, zoo vets, public health vets, epidemiologists, elephant managers, human infectious disease specialists and TB scientists
• Last meeting was July 2016 with AAZV in Atlanta.

The results

• RECOMMENDATIONS
  Current as of February 2015
  Meeting in July 2016
  Update for 2017 is coming
Much to our surprise:

• Federal Register October 16, 2015

  “After careful evaluation, the US Department of Agriculture’s Animal and Plant Health Inspection Service (APHIS) has determined that the US Animal Health Association’s (USAHA) 2010 “Guidelines for the Control of Tuberculosis in Elephants” continue to represent the best standards of care for elephants that may be exposed to TB or test positive for the disease, and APHIS is strongly encouraging licensees and registrants who own elephants to voluntarily comply with the Guidelines…….”

Incorrect statement

• All stakeholder organizations strongly disagreed with the use of the 2010 Guidelines and sent multiple, well-referenced comments to the USDA during 2012 federal comment period.

• The stakeholder recommendations clearly point out problems with the 2010 Guidelines

• Meeting with USDA’s head of AC to express concerns. Waiting for response.
## Why Are Stakeholder Recommendations Better?

### 2015 Stakeholder Recommendations
- Up-to-date information
- Use of current, peer-reviewed scientific sources
- Effective treatment options that are less harmful to elephants
- Public health and occupational health information accurately defined using NASPHV input

### 2010 USDA Guidelines
- Out-of-date treatment information based on human recommendations
- No distinction between public health and occupational health risks
- Inaccurate unreferenced public health statements & information

## Stakeholder Recommendations

### 2015 Recommendations
- Consideration of herd history, TW & serology
- Uses results of population-wide epidemiological surveys to Mtb.
- Survey results:

### 2010 USDA Guidelines
- Heavy reliance on serology
- Serology sensitivity and specificity was not based on a living population
- Accredited veterinarians could not take samples without federal supervision.
No test we currently have available is both 100% sensitive or specific

- Old Asian Elephant
- Decade of TW culture negative
- 3 years of Stat pak negative tests.
- DPP negative at time of euthanasia for kidney failure
- Latent inactive Tb granulomas
- Basic TW has poor sensitivity but new modifications are helping

Stakeholder Recommendations

2015 Recommendations
- Clearly separates Public Health Risks vs Occupational Health Risks
- Gives State Vets and others easy to follow FAQs
- Referenced information from scientific sources
- Developed with NASPHV and other PH expert input and guidance.

2010 Guidelines
- Erroneous information:
  - Touching or riding an elephant is a Mtb exposure
  - High risk to the public
  - African & Asians have same risk
- Absence of scientific references
- Forces State Veterinarians to act as public health officials due to misguided public or extremist pressure
FAQs for State Veterinarians

- What paperwork should accompany an elephant(s) when they enter a state?
- What if the elephant is TW negative but reactive on a serological test?
- Elephants are traveling to a livestock arena/venue in my state; what precautions are needed to prevent transmission of Mtb to other livestock?
- Is there a public health threat from riding or feeding an elephant, or from visiting a circus or zoo elephant exhibit?

Tables of Diagnostics pages 11-12

Direct Tests: Ante & Postmortem
- Trunk Wash Culture
- qPCR on TW - *currently in final validation at NVSL!
- Postmortem Culture various tissues
- All organism based
- False negatives possible
- False positives less likely
- TW is Gold Standard of DX

Indirect Tests
- Serology-DPP, StatPak, MAPIA
- Cytokine Assays
- Gamma interferon
- BTB
- Intra-dermal skin test
- All immune system dependent
- Many not available*
- Many are still research based
- False Positive and Negatives possible
Elephant Risk/Management Categories

• Risk categories based on TW and herd history

• Categories allow clinical veterinarians to monitor risk by increasing the number of trunk washes and serology

• Serological tests for use by clinical veterinarians, not for regulatory use since they are NOT considered a primary diagnostic method

Example CVI
Take Home Points

- Written by experts in multiple fields
- Defined and accurate public health vs occupational health points
- Improved elephant treatment recommendations based on science
- Statements are Referenced to peer reviewed publications

Stakeholder Recommendations

- User-friendly, fully-referenced, evidence-based, and up-to-date.
- Easily accessible and linked to the AAZV Website
- Go To: AAZV.org
- Updated version coming in 2017
Final considerations

• Stakeholder recommendations are meant to foster cooperation & open lines of communication for state & public health officials when dealing with elephants

• USAHA Public Health and Rabies Committee a natural place for elephant Mtb issue to advance

• Stakeholders group focused on this disease in elephants to disseminate information to veterinary and regulatory community
Thank you for your attention

- Questions
- Contact:
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- Recommendations can be found on
  - AAZV.org