



Health cannot be defined by pathogens alone:

The disconnect between recommendations and reality for zoonotic disease prevention in Zambia

Sociocultural and individual factors affect whether people take precautions to protect themselves and their animals against diseases that spread between animals and people (i.e., zoonotic diseases), such as anthrax or rabies. In Zambia, the prevalence of livestock and the variety of interfaces between humans and animals creates risks for zoonotic disease transmission.

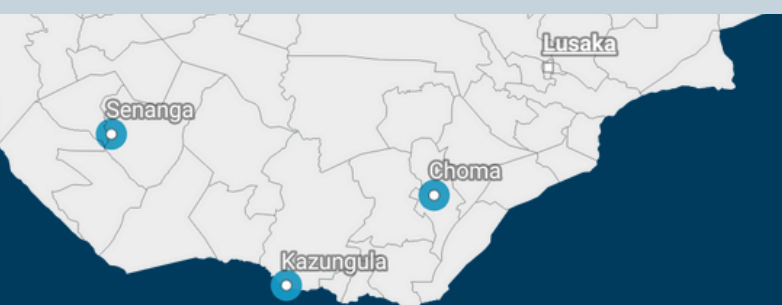
Breakthrough ACTION works through a collaborative, multisectoral approach with relevant Ministries and other key One Health stakeholders to build risk communication and community engagement capacity at the national and sub-national levels. Working closely with the Zambia National Public Health Institute and the Food and Agricultural Organization of the United Nations, the project seeks to effectively address high-risk behaviors associated with priority zoonotic diseases and support the prevention and response to public health threats.

Breakthrough ACTION staff led a qualitative study on prevention and risk behaviors related to One Health topics with a specific focus on anthrax in September–October 2023.

Key research questions

- How concerned are people about zoonotic diseases relative to other health concerns?
- What do people know about how diseases spread from animals to humans?
- What experiences and perceptions do communities have about health workers and veterinary workers?
- What are barriers and facilitators for specific behaviors linked to anthrax?
- Where do people get information about human and animal health?

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Study sites

The research team collected data in Southern province (Choma and Kazungula districts) and Western province (Senanga district). These were implementing districts for Breakthrough ACTION and areas at risk for anthrax outbreaks.

METHODS

Data were collected through focus group discussions (FGDs) and in-depth interviews (IDIs), reviewed and approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board, the ERES Converge ethics committee, and authorized by the National Health Research Authority.

15 FGDs

with cattle farmers and men and women in the general population

18 IDIs

with community leaders, health workers, and veterinary workers

FINDINGS

- Overall, 132 individuals (87 male, 45 female) participated in 15 FGDs and 18 in IDIs.
- **Awareness of zoonotic diseases was low** among the general population FGDs. Cattle herders tended to mention zoonotic diseases as concerns. Members of the general population tended to list other health concerns first before anthrax, rabies, or other zoonotic diseases.
- Knowledge of symptoms and treatments for anthrax was inconsistent. People understood rabies symptoms better, though they still had **misconceptions** about the timeframe for treating rabies and sometimes opted to **self-medicate** for both humans and animals.
- **Close proximity to areas with wild animals or past experiences with zoonotic disease outbreaks** among livestock increased participants' belief that zoonotic diseases are relevant and an important concern.
- **Information gaps** exist for several behaviors such as covering open wounds while handling animals, quarantining new animals, thoroughly cooking meat, and seeking same-day care for rabies exposure.
- Behaviors that can prevent anthrax or rabies are influenced by **individual and community-level factors** such as finances, cultural beliefs, perceived norms, gender, how affordable and easy the behavior is, and beliefs about how effective or important the behavior is in preventing disease.
- **Regulations and policies** play a critical role in supporting or hindering behaviors. Participants listed regulations that are enforced, local commands, and investment of government resources as reasons for a supportive or unsupportive environment. Examples include mass vaccination campaigns, expectations around reporting animals that died of sickness or unknown causes, carcass disposal, and ensuring a supply of diagnostic tests and rabies prophylaxis.

Awareness and knowledge

- Individuals were more familiar with rabies than anthrax and knew that rabies is a risk for children in particular.
- The most common risk factor mentioned for anthrax was eating meat from a sick animal.
- Participants lacked concrete knowledge of anthrax symptoms in humans or in some cases recognized anthrax symptoms but not the disease's name.
- Some people were unaware that anthrax can be treated.

"If a person gets infected by rabies at some point, if that dog was not vaccinated, he or she can even die."

FEMALE COMMUNITY MEMBER,
SENANGA

"Anthrax, we don't take it that it kills. We just take it that it is a story. Because it has never hit us here ..."

MALE COMMUNITY MEMBER, KAZUNGULA

"Most people at least they have the little knowledge about rabies. So, you find even when someone is bitten by a dog, at least they make an effort to go to the veterinary personnel to go and check if the dog is fully vaccinated."

HEALTH WORKER, CHOMA

Risk perception

- Participants found anthrax to be frightening and deadly, though certain individuals felt it was too rare to worry about or questioned whether it really existed.
- Study sites with recent or ongoing anthrax outbreaks tended to be more concerned.
- People worried about illnesses in their animals without necessarily worrying about zoonotic becoming infected themselves.
- Financial issues increased concern about diseases in animals, as livestock (and dogs) contributed to people's livelihood.

What did we learn about the key behaviors?



Vaccinate cattle

- Viewed as an acceptable, well-known behavior.
- Perceived as cheaper than treatment and a way to improve animal health.
- Viewed as expensive and sometimes unavailable.
- Concerned about vaccine quality.
- Considered an investment that may be neglected by people who do not have a “business” mindset about their cattle.



Cover wounds while handling live or dead animals

- Was not well-known or common.
- Challenged by expense and accessibility of protective clothing or equipment.
- Lacked conviction that covering wounds is important.

“Most people do not protect themselves because they do not know that they have to.”

FEMALE CATTLE HERDER, CHOMA



Avoid eating meat from animals that died of sickness or unknown causes

- Widespread awareness of this behavior as risky.
- Viewed as uncommon by some; people felt that most others would eat the animal even it was sick or died of unknown causes.
- Imbalance between “distant” threat of disease and present threat of hunger or loss of income.
- Involved many people in decision making about eating, selling, sharing, or throwing out the carcass.



Burn or bury carcasses

- Not mentioned as an important precaution but acceptable once the decision is made to dispose of the carcass.
- Influenced by neighbors and veterinary workers.
- Considered time consuming to burn carcasses to ashes or bury them as deeply as recommended.
- Burning preferred so that animals or other people cannot dig them back up.



Cook meat thoroughly

- Perceived as a gendered behavior for which women tend to be responsible.
- Viewed as an important and acceptable behavior to avoid illnesses (including the belief that cooking eliminates vaccines or medicines).
- Inconsistently understood what “thorough” cooking means or how people determine if the meat has been cooked well enough to be safe.
- Other benefits listed as more relevant than health, such as making meat soft for people without teeth.



Separate animals from the herd (when sick or new)

- Not perceived as a necessary or common behavior for new animals.
 - Viewed as interfering with cattle getting used to one another.
 - Perceived as more useful for sick animals though not very common, but without consensus on the length of time or distance needed.
- “[A sick animal] is supposed to be alone so that you can take care of it properly, but here we don't do that here. But that is a good idea.”

MALE CATTLE HERDER, CHOMA



Safely slaughter animals and process hides by wearing appropriate gear and cleaning instruments

- Not seen as a critical or well-known behavior overall.
- Perceived as useful by some male cattle herders who felt blood was a threat and mentioned boots, gloves, and aprons as means to protect themselves.
- Listed accessibility and affordability of gear as a barrier.
- Had low self-efficacy for sterilizing utensils due to lack of cleaning products.



Seek care for anthrax signs in humans or animals

- Viewed care-seeking for symptoms such as fever, sores, chest pain, or gastrointestinal distress as important and acceptable. Certain symptoms in animals trigger a call to the vet.
- Deterred by uncertainty about what will happen, such as losing the sick animal due to forced confiscation or death, or being required to get treatments or tests.
- Preferred self-medication as an alternative for illness in humans at times, particularly when people suspect the illness has supernatural or relational origins.



Rabies behaviors

- Saw vaccinating dogs as important but not affordable or a financial priority.
- Fearful of the presence of stray dogs and uncertainty about the vaccination status of dogs in the neighborhood.
- Expressed concern about stray dogs and lack of community norm on confinement.
- Lacked awareness of the need to seek rabies prophylaxis in a specific timeframe after a bite.
- Perceived inaccessibility of rabies prophylaxis in nearby health centers.
- Deterred from immediate care-seeking by misconceptions and local remedies.

What did we learn about the cross-cutting factors?

ENVIRONMENTAL

- Food and water scarcity and changing weather patterns act as drivers pushing people to move into protected animal areas.
- Fears of exposure to contaminated water, people, and domestic animals being exposed to diseases from insects and wild animals, and wild animals killing people or livestock existed.
- Displacement of wild animals through human encroachment and cross-border migration are seen as spreading disease.

“These people have problems because in the game park, they must fight with wild animals, and that also affects us because then they displace the wild animals they move from the game and get here to us—like the elephants.”

MALE CATTLE HERDER, CHOMA

STRUCTURAL

- Meat at small abattoirs or butchers may be sold without being inspected by animal health officers.
- Community leaders want more political will to prioritize zoonotic diseases and control efforts.
- Animal medicines and vaccines need to be made more widely available.
- Participants felt veterinary health work is understaffed and suggested expanding livestock auxiliary worker positions.

“We only have one person from vet and the person moves to a lot of places ... we ask if it’s possible for them to bring another person so that they work together.”

FEMALE COMMUNITY MEMBER, SENANGA

ECONOMIC

- Lack of fee transparency and inconsistent charges block people from seeking veterinary care for sick animals.
- Fear of economic loss drives people to eat or sell meat from sick animals rather than disposing safely of carcasses.
- Scarce resources lead people to divert resources intended for disease prevention toward farming.
- Certain community initiatives that contribute funds to prepare for health emergencies were appealing to participants.

“After I see the cow has died on its own, the first priority is the loss that I have incurred. After thinking about it, you say let me just skin it and give it to people to buy it.”

MALE COMMUNITY MEMBER, KAZUNGULA

HEALTH SYSTEM AND TRUST

- Trust between cattle herders and veterinary staff is generally strong, with telephone communication bridging the distance gap.
- Participants trusted the competence and care of human health staff. Complaints tended to relate to stockouts of tests or medications, referrals to other facilities, or being treated by interns.
- Participants feared not having the ability to make their own decisions about tests, treatments, or other outcomes.
- Veterinary and human health staff wanted more technical training on zoonotic diseases, support for transportation, and coordination.

SOCIOCULTURAL AND GENDER

- Religion was not listed as an important facilitator or barrier for most behaviors, but religious leaders were mentioned as potential partners in sensitizing communities.
- Cattle ownership was seen as prestigious, with people looking to them as a resource and believing that cattle owners were more easily able to solve their own and others’ problems.
- Perceived norms influenced the decisions people made about animal and human health.
- Gender influenced behaviors such as cooking meat, and some female cattle herders felt information was less accessible for them.

“Cooking is a woman’s job. So, it is the women who can tell whether the meat is ready or not.”

MALE COMMUNITY MEMBER, SENANGA

INFORMATION ENVIRONMENT

- Veterinary staff or health workers were top sources of information, but experience with animals and specific diseases was highly valued even without formal training.
- Radio was the most common mass media source, but television and phones were also useful.
- Adapting the media examples to local contexts was seen as necessary.
- Misinformation and myths played a role in several key behaviors.

“When you have a TV, there are channels there that are for taking care of animals. So when you watch you will be able to say huh, I should do this to my cow. But where we lack is that we cannot reach the standard of those people ... but I will reach my standard that I can afford, where I feel here I can do.”

MALE COMMUNITY MEMBER, SENANGA

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