

# Elephant-to-Human Transmission of Tuberculosis

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[Tanya Johnson] Hello. I'm Tanya Johnson. With me today is Dr. Rendi Murphree, Epidemic Intelligence Service Officer at the Centers for Disease Control and Prevention and Vanderbilt University Visiting Scholar. We're talking about a paper in the March 2011 issue of CDC's Journal, Emerging Infectious Diseases. The article looks at the transmission of TB from elephants to humans at an elephant refuge in Tennessee. Welcome Dr. Murphree.

[Rendi Murphree] Thank you, Tanya. It's good to be here.

[Tanya Johnson] Dr. Murphree, is this the first time that transmission of elephant-to-human tuberculosis has been documented?

[Rendi Murphree] Well, concern about tuberculosis, or TB, transmission among human and elephants was raised in the late 1990s and it was suspected that elephants gave TB to their handlers. But ours is the first study to clearly document TB transmission from an elephant with TB disease to humans. Fortunately, none of the eight infected employees developed active TB disease, and the elephant is receiving treatment for her condition.

[Tanya Johnson] Would you explain the difference between being infected with TB and having what you call "active TB disease?"

[Rendi Murphree] Yes. TB bacteria can live in your body without making you sick. This is called TB infection. In most people who breathe in TB bacteria and become infected, the body is able to fight the bacteria and stop them from growing. People with TB infection don't feel sick and they don't have symptoms. If your immune system can't stop the TB bacteria from growing or if you don't take preventive medicine, the TB bacteria can activate and begin multiplying in your body. This is called TB disease, and TB disease makes people sick.

[Tanya Johnson] Dr. Murphree, would you explain why people who did not have close contact with the elephants also got TB?

[Rendi Murphree] Yes. An elephant with TB disease expelled TB bacteria while housed in a barn at the refuge. The barn was swept and washed daily with a high-pressure water sprayer. These procedures likely kept the bacteria suspended in air much longer than usual, providing plenty of time for barn air to mix with unfiltered air in areas next to the barn. This is where three employees, who never got close to the infected elephant, probably inhaled the TB bacteria.

[Tanya Johnson] Are the methods used to test for TB in elephants reliable and efficient?

[Rendi Murphree] That's a very important question and a difficult one to answer. There are culture methods and blood tests to detect TB in elephants. But these methods often produce false negative results. This means TB infection or active disease can't be ruled out if the test is

negative. Therefore, guidelines for the control of TB in elephants rely on test results and the elephant's history of exposure to TB.

[Tanya Johnson] It seems that clinicians and the public are not aware of elephants as a source of TB. Do many elephants actually have TB?

[Rendi Murphree] At last count, there were approximately 500 captive elephants in North America. It's estimated that at least 12 percent have TB, but this is surely an underestimate because, as I just explained, methods to detect TB in elephants are often inaccurate. So we really need improved methods for detecting TB in elephants.

[Tanya Johnson] Dr. Murphree, are there steps the elephant refuge could have taken to prevent this transmission?

[Rendi Murphree] The refuge has an important mission of caring for sick, abused, and needy elephants. Their cooperation throughout the course of our study helped us understand the limitations of elephant TB testing and the need for extra precautions to protect humans and other elephants from TB transmission at the refuge and throughout the elephant community. What happened at the refuge is an unusual circumstance but human tuberculosis is a serious and sometimes life-threatening illness that we deal with every day at the health department. TB transmission can be prevented and TB disease can be cured with early detection and treatment so it's important that clinicians ask about possible exposure to TB disease when evaluating patients with weakness, weight loss, fever and night sweats, and a bad cough. More information can be found at [www.cdc.gov/tb](http://www.cdc.gov/tb).

[Tanya Johnson] Thank you, Dr. Murphree. I've been talking with CDC's Dr. Rendi Murphree about a paper that appears in the March 2011 issue of CDC's journal, Emerging Infectious Diseases. You can see the entire article online at [www.cdc.gov/eid](http://www.cdc.gov/eid). If you'd like to comment on this podcast, send an email to [eideditor@cdc.gov](mailto:eideditor@cdc.gov). That's e-i-d editor – one word - at-c-d-c dot gov. I'm Tanya Johnson, for Emerging Infectious Diseases.

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