Study looks at reasons for delayed tuberculosis diagnosis in Uganda
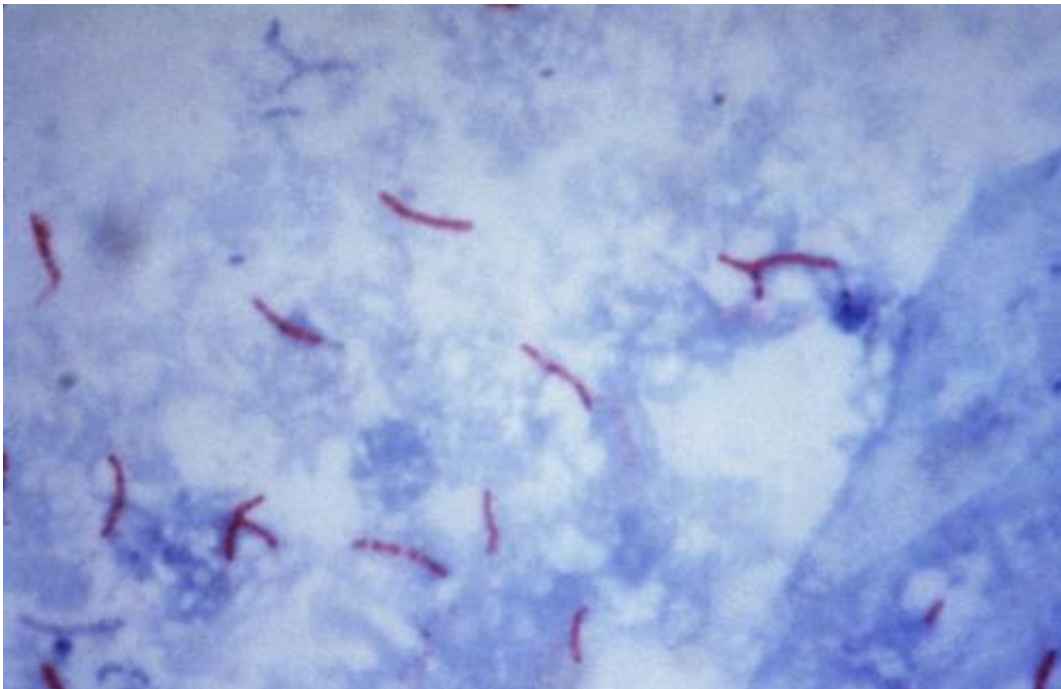
December 28 2015, by Erica Hensley

This photomicrograph reveals Mycobacterium tuberculosis bacteria using acid-fast Ziehl-Neelsen stain; Magnified 1000 X. The acid-fast stains depend on the ability of mycobacteria to retain dye when treated with mineral acid or an acid-alcohol solution such as the Ziehl-Neelsen, or the Kinyoun stains that are carbolfuchsin methods specific for M. tuberculosis. Credit: public domain

Most studies of delayed tuberculosis diagnosis focus on the adverse effect of time elapsed between the onset of symptoms to reaching diagnosis and subsequent patient outcomes and control of community

transmission.

A University of Georgia study takes a new angle on the issue and looks at the potential societal influence and prevention of diagnosis delay.

TB is an infectious bacterial disease that often attacks the lungs and affects 8 million people worldwide and kills 2 million yearly. The largest public health hazard related to TB lies in patients' inability to reach a quick diagnosis, as every step taken before seeking care from a TB provider represents potential transmission of the disease, according to the study's lead author Dr. Juliet Sekandi, who previously practiced medicine and specializes in infectious diseases. She is now a postdoctoral research and teaching associate in the UGA College of *Public Health*.

Sekandi's impetus for this specific research used the degrees of separation theory to study why practitioners see TB patients cycle through repeated diagnoses, defining each "degree" as a "step." The study found that TB patients surveyed in Kampala, Uganda, circled through four separate steps while seeking health care before reaching proper diagnosis and successful treatment and that strong community networks are vital to speeding up the process.

"I had to move away from the clinic and into the community that the TB patients came from to ask why they are coming back even after they've been given effective TB treatment," said Sekandi, who is under the mentorship of Christopher Whalen, the Ernest Corn Professor of Infectious Disease Epidemiology in the college's department of epidemiology and biostatistics.

The study, published in the journal *BioMed Central Infectious Diseases*, used steps as the time variable as it calculated how long patients spent navigating throughout their social networks, community and health care

providers.

The researchers then split the steps into two categories: health professionals who specialize in TB care and those who don't. The latter group was found to represent a larger hurdle in a person's timely diagnosis.

The ideal number of steps is one, from a patient directly to a TB-care provider. However, the extensive and disparate network of the Ugandan health care landscape often results in patients cycling in and out of the health care system, seeing many providers who are not specialized in TB diagnosis or treatment, Sekandi said.

Patients spent 41 percent of the total time between noticing symptoms and diagnosis in the first step. Social networks represented the majority of the second step and ultimately led to a quicker diagnosis than steps to non-TB providers, which exemplifies the importance of community and social network support in minimizing time to diagnosis, she said.

Second to delay in deciding to seek care, the time spent navigating through non-TB providers represented substantial hurdles to a timely diagnosis and comprised 34 percent of total time spent seeking care, according to the study.

Based on the data, the researchers recommend three areas of TB intervention.

First, due to the extended delay in diagnosis represented by the first step—initiating the decision to seek care—the researchers advised that extensive community education campaigns be used in addition to periodic screening and routine outreach programs to increase knowledge of TB symptoms and assess specific needs of communities.

Sekandi said the goal is to create a community with the capacity to aid fellow community members' diagnosis of TB.

"We need to build critical mass of networks that have the right awareness," Sekandi said. "The patients are trying to get help; they are just ending up in the wrong places."

Researchers also suggest that because non-TB providers often cause extra delay in accurate TB diagnosis, they should obtain specialized training to recognize and diagnose the disease, or at the very least, be prepared to send patients to a proper TB-provider.

Lastly, TB providers should receive continuing medical education as well to reinforce existing diagnosis standards and their ability to suspect and avoid missed opportunities for TB diagnosis.

The research serves as a reminder of the necessary holistic approach to combating infectious disease, she said.

"Public health really needs the involvement of the patient, providers and the community," Sekandi said.

diagnosis-uganda.html