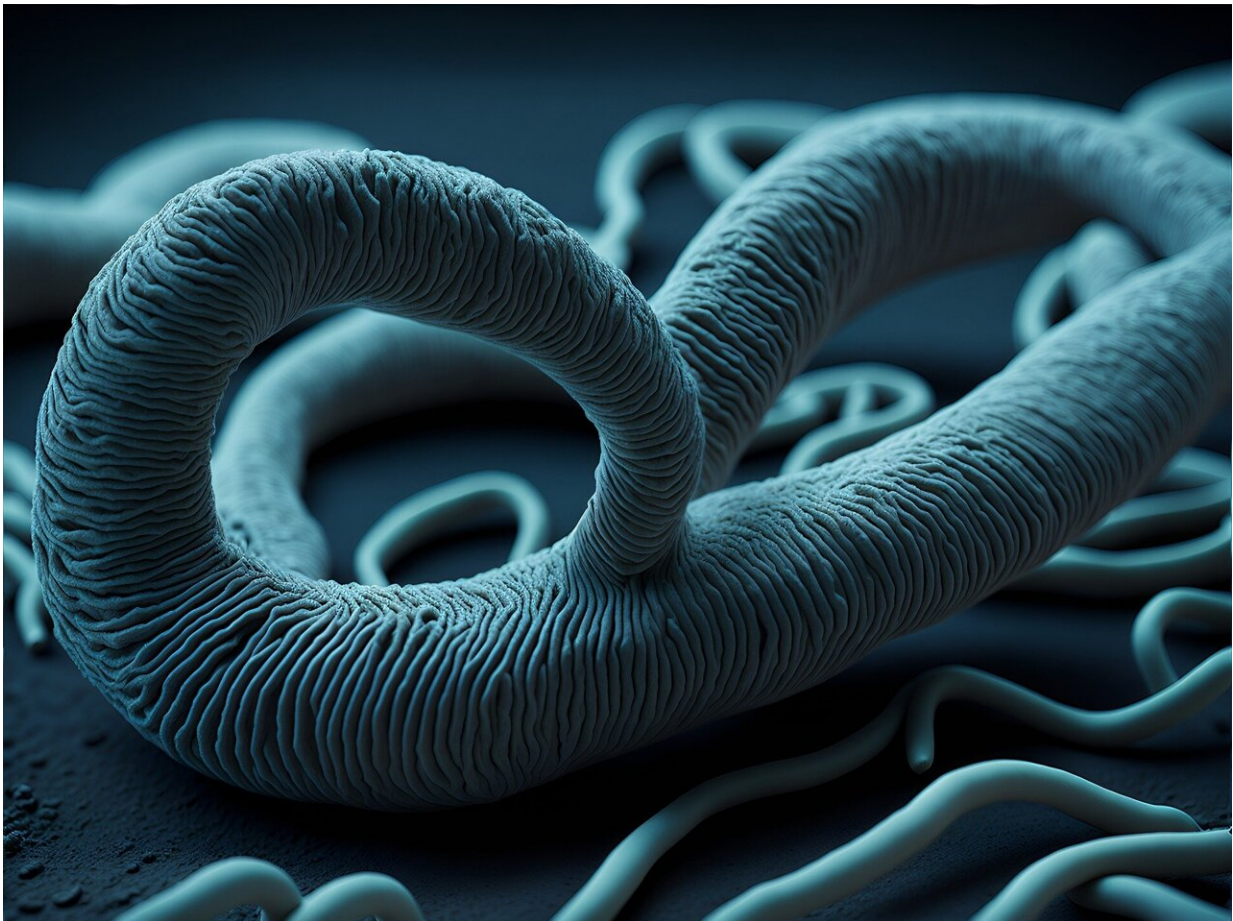


# Tapeworm is spreading in Kenya—demand for meat brings parasite to new areas

October 19 2023, by Titus Mutwiri, Eric Fèvre and Laura Falzon

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*Echinococcus granulosus*, a type of tapeworm, is a harmful parasite that

affects [1 million people](#) worldwide.

The parasite can grow slowly in people for years to form thick-walled cysts in vital organs, such as the liver and lungs. Known as cystic echinococcosis, or hydatid [disease](#), it can cause abdominal pain, nausea and vomiting. And if not treated, it can be fatal.

It's a [zoonotic disease](#), meaning it spreads from animals to people, with a [life cycle](#) involving humans, dogs and ruminant livestock. It's also considered a [neglected disease](#) by the World Health Organization (WHO). It needs greater attention because of how dangerous it can be and because treatment can be invasive and expensive. It costs [US\\$3 billion a year](#) globally to treat cases and compensate for losses to the livestock industry.

In Kenya, the disease has [long been endemic](#)—meaning present over a long period of time at a relatively low level—in pastoralist communities who live and work closely with livestock, in north-western Kenya and Maasailand.

Traditional pastoralist livestock farming in Kenya's north, for example in Turkana, has [concentrated](#) the risk of disease in communities there. But populations in other parts of Kenya [are increasing](#), and thus so is the demand for meat. As a result, more animals are being driven south for slaughter, bringing tapeworm infections with them.

We're part of a collaboration between the [International Livestock Research Institute](#), [Jomo Kenyatta University of Science and Technology](#), the [University of Liverpool](#) and the [Kenya Medical Research Institute](#). We've tracked the spread of Echinococcus tapeworm into populations in a non-endemic area for the first time. This work is important so that steps can be taken to prevent the spread of such diseases, particularly from animals to humans.

We conducted four pieces of research which covered how prevalent Echinococcus tapeworm was in livestock being brought for slaughter, how it spread to people and how great the human disease burden was.

We've found that the parasite is highly prevalent in livestock moving into these non-endemic areas and is now spreading, via dogs, into [human populations](#).

Our findings highlight how important it is to carry out disease surveillance, particularly as populations grow and dynamics change.

## Mapping the spread

Our studies focused on Busia and Bungoma counties, which border one another and which previously didn't have the tapeworm disease, cystic echinococcosis, among humans and livestock.

For our [first study](#) we assessed how prevalent tapeworm was in livestock being brought for slaughter. Over two years, we collected over 16,000 reports in both counties and [found](#) a very high infection rate in the samples we collected—32% of the livers of cattle and goats, 74% of lungs in cattle and 58% of lungs in goats.

Our [second](#) and [third](#) studies sought to understand how Echinococcus tapeworm might spread to humans in the counties. We hypothesized that local dogs could be acting as the vector.

Dogs congregate at slaughter facilities and consume whatever is discarded. For instance, we saw that often lungs from slaughtered animals were being discarded because of hydatid cysts. Dogs could get tapeworms from eating meat like this.

We tracked the movements of 73 dogs using GPS collars over five days

each and saw that they regularly visited slaughterhouses. Through examining their fecal samples, we saw that the parasite was present, and 16% were positive for Echinococcus antigens in feces. This meant they could bring the disease to households and people.

The parasite matures in the dogs' intestines, and the dog sheds eggs in feces, contaminating the environment. People get infected when inadvertently parasite eggs from the environment are eaten, usually due to poor household hygiene.

Our [final study](#) was to examine how great the human disease burden was in Bungoma county. Using [ultrasound technology](#), we found cystic lesions which may indicate Echinococcus infection among a small number (around 1%) of the community members.

While we did not find the population extensively suffered from this disease, we detected early signs of the establishment of a local transmission cycle. This means that the parasite has been introduced and is spreading slowly in groups of people and dogs which have not been exposed before. This slow-moving outbreak could soon represent a much more significant public health problem if left unchecked.

Unfortunately, very few people in the area can access the tools necessary to diagnose and treat the condition. Ultrasound imaging is the most effective way to screen for and monitor infections, allowing health care providers to offer people the necessary treatment. By the time human infections are advanced, expensive operative procedures to remove hydatid cysts are the only treatment available.

Routine [ultrasound imaging](#) over time also helps monitor treatment and surgical outcome. However, many health facilities lack ultrasound services.

## A public health risk

The intersection of infected [livestock](#) from endemic tapeworm regions and dogs scavenging for disposed animal by-products creates conditions under which it is more likely that humans become infected.

As Africa's agricultural systems face increasing demands from [population growth](#) and demographic changes, rapid unplanned growth can have devastating unintended consequences.

To protect populations, systems of surveillance must keep up with the changing world. Tracking the spread of disease, as we have done with *Echinococcus granulosus* in a non-endemic region, is an essential step to prevent future outbreaks of public health concern.

Madison Spinelli, Princeton in Africa Fellow at the International Livestock Research Institute, contributed to the writing of this article.

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