



# Immunological Foundation of Human African Trypanosomiasis

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## DESCRIPTION

Human African trypanosomiasis (sleeping sickness) is a parasitic infection that is almost always fatal if left untreated. Human African trypanosomiasis caused a devastating epidemic in the 20th century. The number of reported cases has fallen to historically low levels. With fewer than 3000 reported cases in 2015, the disease is set to be eradicated by WHO. Despite these recent successes, the disease remains endemic in parts of sub-Saharan Africa, placing a particularly heavy burden on rural areas of central Africa. Cases from non-endemic countries have also been reported, so human African trypanosomiasis should be considered in the differential diagnosis of travellers, tourists, immigrants, and expatriates who have visited or lived in endemic areas. In the absence of a vaccine, disease control relies on detection and treatment of infected individuals and vector control. The drugs available are not optimal, but on-going clinical trials offer hope for safer and easier treatments.

The first stage of the disease is characterized by fever, headache, itching and joint pain, beginning 1 to 3 weeks after the bite. After a few weeks to months, Stage 2 begins and presents with confusion, incoordination, numbness, and sleep disturbances. Diagnosis is by detecting the parasite in a blood smear or lymph node fluid. A spinal tap is often required to distinguish between stages 1 and 2 diseases. If the disease is not treated quickly, it can be fatal.

Prevention of serious disease includes screening at-risk populations with blood tests for tuberculosis. Disease is detected early, making it easier to treat before neurological symptoms appear. The first stage was treated with the drugs pentamidine or suramin. Phase 2 therapy included eflornithine or a combination of nifurtimox and eflornithine for Tb G. Fexinidazole is a novel treatment that can be taken orally for both stages of tuberculosis. Melarsoprol acts on both types, but is usually only used for Tb R because it has serious side effects. Sleeping sickness is usually fatal without treatment.

The disease occurs regularly in parts of sub-Saharan Africa, with approximately 70 million people at risk in 36 countries. An

estimated 11,000 people are now infected with 2,800 new infections in 2015. In 2018, there were 977 new cases. In 2015, about 3,500 died from his 34,000 in 1990. More than 80% of his cases involve the Democratic Republic of the Congo. In recent history, there have been three major eruptions: one mainly in Uganda and the Congo Basin between 1896 and 1906, and two in several African countries in 1920 and 1970. It is classified as a neglected tropical disease. Other animals such as cattle can transmit the disease and become infected. In this case, it is known as Nagana, or animal trypanosomiasis.

There are two types of disease. They are named after the region of Africa where they were found. West African sleeping sickness is caused by the parasite *Trypanosoma brucei gambiense*. This long-term (chronic) infection can last for years. East African sleeping sickness is caused by *Trypanosoma brucei rhodesiense*. It is a short-term (acute) illness that can last weeks to months. Americans traveling to Africa are rarely infected. On average, one US citizen becomes infected each year. Individuals typically become infected at game parks in East Africa.

Symptoms may vary slightly from person to person. However, symptoms usually appear within 1 to 4 weeks after infection. Early symptoms include fever, skin lesions, rash, swelling, and swollen lymph nodes in the neck. Over the course of many weeks, the infection can progress to meningoencephalitis. This is an infection of the brain and fluids that surround the brain and spinal cord. As the disease worsens, the following symptoms may appear:

- Severe headache
- Personality change
- Weight loss
- Irritability
- Loss of concentration
- Progressive confusion
- Slurred speech
- Seizures
- Difficulty walking and talking
- Sleeping for long periods of the day
- Insomnia at night

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