Fact Sheet
What is Human African Trypanosomiasis?

Human African Trypanosomiasis (HAT or sleeping sickness) is a parasitic, neglected tropical disease transmitted to humans by the tsetse fly. Historically, HAT has occurred in the poorest rural areas of Africa, where weak health systems and political instability make disease surveillance and management difficult. Seventeen sub-Saharan Africa countries reported cases of HAT to the WHO in 2009. The Democratic Republic of Congo alone, recorded 74% of all cases, and 97% of cases occurred in a total of seven countries.

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HAT was long a scourge in Africa, but major efforts by the colonial powers last century meant that by the 1960s it was thought to be a plague of the past. However, from the 1970s onwards there have been several serious epidemics. Since the 1990s, renewed efforts to actively detect and treat HAT within specific control programs resulted in a decrease in numbers of reported cases—from over 26,000 cases in 2000 to below 7,200 cases in 2010. However, "hot spots" still occur in areas of conflict or instability and large areas in endemic countries ("blind spots") are not covered by active surveillance.

Transmission and Diagnosis

HAT is caused by two sub-species of parasites--*Trypanosoma brucei (T.b.) gambiense*, which is found in western and central Africa, and *T.b.rhodesiense*, which is present in eastern and southern Africa. A demarcation line of sorts runs through the Rift Valley.

The most common form of HAT, on which this fact sheet is focused, stems from *T.b. gambiense*. The sickness occurs in two stages. The first stage is marked by fever, headache and joint pain. The second stage, the neurologic phase, occurs when the parasite crosses the blood-brain barrier and infects the central nervous system. The patient can suffer from confusion and reduced coordination, along with bouts of fatigue punctuated with periods of agitation. The sickness makes it so people cannot stay awake during the day but cannot sleep at night. Their mental faculties deteriorate and they eventually fall into a coma. Without treatment, the disease is always fatal. Even after successful treatment, the neurological phase can lead to chronic sequelae.

Currently the diagnosis and staging of the disease requires a complicated series of tests, including painful and invasive procedures such as lumbar punctures. It requires trained staff and can be difficult to perform in remote areas where the disease occurs. There is a pressing need for simpler, better diagnostic tools and algorithms.

Treatment

The treatments currently available are few in number, dated and stage-specific. Stage 1 treatments, Pentamidine (dating from 1941) and Suramin (dating from 1921) are fairly well-tolerated but require injections. They do not, however, pass the blood-brain barrier and are thus ineffective for the treatment of advanced (stage 2) HAT.

The current first-line therapy for stage 2 HAT is NECT (nifurtimox-eflornithine combination therapy), which replaced eflornithine monotherapy and melarsoprol.

Melarsoprol (dating from 1949) is an arsenic derivative that is highly toxic. The treatment consists of 10 days of painful intravenous injections. It is increasingly ineffective with up to 30% treatment failure in some areas, and the drug itself kills up to 5% of those who receive it. In 2008, half of stage 2 HAT patients were still receiving it as first-line treatment; in 2010 this figure was reduced to 10%. Melarsoprol use should be restricted to second-line therapy in *T. b. gambiense* HAT, but is still the only choice for stage 2 *T.b. rhodesiense*.

Eflornithine monotherapy (used from 1980 on compassionate basis, and WHO recommended in 1985) is far safer than melarsoprol and is effective, but it is also resource-intensive and difficult to administer because it requires complex logistics, trained health staff, 56 intravenous (IV) infusions over a period of 14 days and constant follow up. The potential for resistance when used in monotherapy is an additional concern.

NECT (nifurtimox-eflornithine combination therapy): In May 2009, the WHO added NECT to the Essential Medicines List (EML) for the treatment of stage 2 HAT. NECT was developed by MSF, Epicentre, the Drugs for Neglected Diseases initiative (DNDi), the Swiss Tropical and Public Health Institute (Swiss-TPH) and control programs from most affected countries. NECT is a simplified combination treatment of eflornithine with nifurtimox. This improved treatment is a step in the right direction; it combines oral nifurtimox for 10 days and reduces the number of infusions necessitated by eflornithine treatment from 56 over 2 weeks to 14 over 7 days. The NECT rollout has been very successful in endemic countries since 2010, with an estimated 60% of patients receiving the new combination.

MSF and sleeping sickness

Since 1986, MSF has been a leading organization working in the diagnosis and treatment of HAT patients, particularly in war-torn areas. Between 1986 and 2010, MSF screened more than 2.8 million people and treated more than 51,000 cases of HAT in seven countries (Uganda, Southern Sudan, Central African Republic, Republic of Congo, Democratic Republic of Congo, Chad and Angola). Current projects are being implemented in the Central African Republic (and cross-border in Chad), Democratic Republic of Congo, Uganda and South Sudan, where MSF teams screened around 123,000 patients and treated 1,197 cases in 2010. A regional mobile HAT team was made available by MSF in 2011 to provide additional screening and treatment activities in central African countries.

Challenges

Global control of HAT is currently constrained by (i) a lack of simple-to-use diagnostic and treatment tools, (ii) high disease prevalence in some remote and often insecure contexts, (iii) wide areas where HAT is potentially endemic with little or no active surveillance, (iv) a lack of skilled human resources in remote endemic areas and (v) shrinking international financing of HAT programmes. MSF is concerned by the current optimism that global elimination of HAT is feasible. Sustainable elimination will not be possible without improved diagnostic and treatment tools and stronger surveillance systems. Moreover, the current donor policy to integrate HAT diagnosis and treatment into existing health structures is somehow premature and poses a serious risk of leaving out people who live in places with little or no access to health care. These policies could give rise to a neglect of the most at-risk areas and lead to new outbreaks—as has been the case in the past.

MSF is calling for increased support to control programmes:

- **Sustained funding for surveillance and control activities:** Lack of disease surveillance leads to an underestimation of disease burden and a risk of upsurge in areas where HAT was previously controlled. Mobile teams remain needed to control HAT in the remaining areas of high prevalence and to respond early to local or regional outbreaks.

MSF is calling for increased funding of more needs-driven R&D:

- **Improved and more practical treatments:** While the development of NECT is a real breakthrough, it is still far from an ideal treatment. A treatment that is oral, safe, effective in both stages of the disease and easy to use in remote primary health care centers is urgently needed.
- **New and simplified diagnostic tools:** Current diagnostic tests and algorithms need to be simplified (e.g. rapid diagnostic tests) to allow their integration in primary health care.
- **Less-invasive staging tools:** Lumbar puncture is still needed for staging of the disease and for post-treatment follow-up. A new biomarker that allows staging of HAT and assessment of cure using whole blood or serum would remove the need for lumbar puncture.