

Early detection and treatment of nationally important NTDs: African trypanosomiasis

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Description of condition and intervention

African trypanosomiasis or sleeping sickness, is a parasitic infection caused by trypanosome parasites that are transmitted by tsetse flies. This disease is primarily confined in sub-Saharan Africa and may be life-threatening. Disease transmission occurs through interaction between humans, tsetse flies and parasite reservoirs. Disease could be fatal in those who are untreated. Sustained efforts for control and surveillance were started by WHO in 2001. New guidelines to treat this condition were issued by WHO in 2019. (WHO 2021)

International guidelines

Organization	Indications/recommendations	Applicability in LIC & Lower MIC settings
World Health Organization 2019	World Health Organization. WHO interim guidelines for the treatment of gambiense human African trypanosomiasis. 2019.	Yes

Intervention attributes

Type of interventions

Curative

Delivery platform

This intervention is delivered at the first level hospital.

Equity

In addition to considerations like cost-effectiveness and health systems factors, dimensions of equity can be relevant for priority setting. The opportunity for a long and healthy life varies according to the severity of a health condition that individuals might have, so there are inequities in individuals' opportunities for long and healthy lives based on the health conditions they face. Metrics used to estimate the severity of illness at an individual level can be used to help prioritize those with less opportunity for lifetime health. FairChoices: DCP Analytics Tool uses Health adjusted age of death (HAAD), which is a metric that estimates the number of years lived from birth to death, discounting years lived with disability. A high HAAD thus represents a disease less severe in terms of lifetime health loss, while a low HAAD represents a disease that is severe on average, causing early death or a long period of severe disability. It is also possible to estimate the distribution of HAAD across individuals with a health condition. FairChoices shows for each intervention an average HAAD value of the conditions that are affected by respective interventions that have health effects. Additionally, a plot shows HAAD values for around 290 conditions (Johansson KA et al 2020).

Time dependence

High level of urgency. Treatment outcomes may be affected by some days of delay.

Population in need of interventions

Treated population: All individuals (prevalent cases) of African trypanosomiasis disease in the age group of 0 to 99 years and gender are eligible to receive the intervention. The treated fraction is assumed to 10% for this intervention.

Affected population: The affected population includes those with the African trypanosomiasis disease in the age-group of 0 to 99 years, both genders. The affected fraction by this intervention is assumed to be 100%.

Disease states addressed

This intervention targets African trypanosomiasis disease state.

Intervention effect and safety

(DCP4 ID: NTD03-02)

Cluster: Neglected Tropical Diseases

Table 1: Effect and safety of early detection and treatment of African trypanosomiasis

Effect of intervention		Certainty of evidence
Mortality (due to condition)	0.85 (relative risk reduction) with the intervention (assumed)	See appendix

Model assumptions

Table 2: Summary of model parameters and values used in FairChoices – DCP Analytical Tool

Category	Model parameter	Notes
Intervention	African trypanosomiasis disease	
Cost calculation		
Treated population	Based on prevalence of African trypanosomiasis disease	Global Burden of disease study 2019
Gender	Both	
Age	0 to 99 years	
Treated fraction	1	
Effect calculation		
Affected Population	Those with condition	
Affected gender	Both	
Affected fraction age	0 to 99 years	
Affected fraction	1	
Comparison	placebo or other care	
Mortality Reduction (RRR)	0.85	

Intervention Cost

The cost for early detection and treatment of African Trypanosomiasis was estimated to be 773.5 USD per patient in 2005 in Angola. The unit cost was calculated as an average cost per patient of melarsoprol and Efloranthine treatment (Robays J et al 2008).

References

WHO 2021: WHO. Health topics- Human African trypanosomiasis (sleeping sickness). World Health Organization 2021. Available at https://www.who.int/health-topics/human-african-trypanosomiasis#tab=tab_1 (accessed on 3 December 2021).

Johansson KA et al 2020: Johansson KA, Coates MM, Økland JM, Tsuchiya A, Bukhman G, Norheim OF, Haaland Ø. Health by disease categories. Distributional Cost-Effectiveness Analysis: Quantifying Health Equity Impacts and Trade-Offs. 2020 Sep 30:105.

Robays J, Raguenaud ME, Josenando T, Boelaert M. Eflornithine is a cost-effective alternative to melarsoprol for the treatment of second-stage human West African trypanosomiasis in Caxito, Angola. Trop Med Int Health. 2008 Feb;13(2):265-71. doi: 10.1111/j.1365-3156.2007.01999.x. PMID: 18304274.

Appendix

Literature Review for effectiveness & safety

This literature search is an example of a level 1 search of literature and guidelines for early detection and treatment of African trypanosomiasis disease.

Level 1: intervention inputs taken from DCP3 or generated in an ad hoc manner (e.g., quick google search found one study of cervical cancer screening cost-effectiveness that was used to create an effectiveness parameter for that intervention).

Level of evidence of efficacy studies:

1. low (expert opinions, case series, reports, low-quality case control studies)
2. moderate (high quality case control studies, low quality cohort studies)
3. high (high quality cohort studies, individual RCTs)
4. very high (multiple RCTs, metaanalysis, systematic review, clinical practice guidelines)