EVIDENCE BRIEF

Leishmaniasis

(DCP4 ID: NTD03-04-01 & 03-04-02)
Cluster: Neglected Tropical Diseases

FairChoices
DCP Analytic Tool

Early detection and treatment of nationally important NTDs: Cutaneous and mucocutaneous leishmaniasis; Visceral leishmaniasis

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Description of condition and intervention

Leishmaniasis can manifest three main forms namely cutaneous leishmaniasis (CL), visceral leishmaniasis (VL), also known as kala-azar, and mucocutaneous leishmaniasis (MCL). Of these, CL is the most common form and VL is the most severe form. and MCL is the most disabling form of the disease. The causative organism for this disease is the infected female phlebotomine sandfly and key mode of transmission to humans is vector-borne. Every year an estimated 30 000 new cases of VL and more than 1 million new cases of CL occur globally. Poor socio-economic conditions, malnutrition, population mobility, environmental changes are some of the risk factors for this disease. Presence of clinical signs along with serological and parasitological tests help in early detection of condition. However, leishmaniasis is a treatable and curable disease (WHO 2021).

In this evidence brief we assess the effects and cost of early detection and treatment for cutaneous and visceral leishmaniasis.

International guidelines

Organization	Indications/recommendations	Applicability in LIC & Lower MIC settings
World Health Organization	Control of leishmaniasis	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 cutaneous and mucocutaneous leishmaniasis or visceral leishmaniasis in the age group of 0 to 99 years and gender are eligible to receive the intervention. Several prospective studies have documented the ratio of incident asymptomatic infections with L. donovani or L. infantum (known as L. chagasi) infection to incident clinical cases demonstrating that many people infected with Leishmania species develop an effective immune response and do not manifest clinical disease (Singh OP et al 2014). The treated fraction is assumed to 0.2 for this intervention.

Affected population: The affected population includes those with the condition in the age-group of 0 to 99 years, both genders. The affected fraction is same as treated fraction.

Disease states addressed

These interventions target cutaneous and mucocutaneous leishmaniasis and visceral leishmaniasis.

Intervention effect and safety

Table 1: Effect and safety of early detection and treatment of leishmaniasis

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

Model assumptions

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

Category	**Model parameter**		**Notes**
Intervention	Cutaneous and muco-cutaneous leishmaniasis	Visceral leishmaniasis	
Cost calculation			
Treated population	Based on prevalence of cutaneous and	Based on prevalence of visceral leishmaniasis	Global Burden of disease study 2019

	muco-cutaneous leishmaniasis		
Gender	Both	Both	
Age	0 to 99 years	0 to 99 years	
Treated fraction	1	1	
Effect calculation			
Affected Population	Those with condition	Those with condition	
Affected gender	Both	Both	
Affected fraction age	0 to 99 years	0 to 99 years	
Affected fraction	1	0.2	
Comparison	placebo or other care	placebo or other care	
Mortality reduction (RRR)	0	0.85	
Disability reduction (RRR)	0.85	0	

Intervention Cost

The cost for early detection and treatment of Cutaneous and Mucocutaneous Leishmaniasis was estimated to be 432.71 USD per patient in Colombia in 2015 (average of the median cost of care) (Castillo-Rodríguez L 2019).

The cost for early detection and treatment of Visceral Leishmaniasis was estimated to be 52.1 USD per treated patient in Brazil in 2014. The estimate is based on the cost meglumine antimoniate (MA) vials (all traded costs) (de Carvalho IPSF et al 2019).

References

WHO 2021: World Health Organization. Chagas disease (also known as American trypanosomiasis) [Internet]. [cited 2021 Dec 2]. Available from: https://www.who.int/news-room/fact-sheets/detail/chagas-disease-(american-trypanosomiasis)

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Appendix

Literature Review for effectiveness & safety

This literature search is an example of a level 1 search of literature for the interventions.

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, meta-analysis, systematic review, clinical practice guidelines)