Vector management for 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.

In this evidence brief we assess the effects and cost of vector management for leishmaniasis, being analyzed in FairChoices:DCP Analytical tool.

International guidelines

Organization	Indications/recommendations
	Leishmaniasis

Source:

Intervention attributes

Type of interventions

Curative

Delivery platform

This intervention is an example of population-based intervention and may be delivered at the community level.

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

Moderate 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 leishmaniasis in the age group of 0 to 99 years and gender are eligible to receive the intervention. The treated fraction is assumed to 100% for this intervention.

Affected population: The affected population includes those with leishmaniasis 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 leishmaniasis infection.

Intervention effect and safety

Table 1: Effect and safety of vector management of leishmaniasis

Effect of intervention		Certainty of evidence
Mortality (due to condition)	0.2 relative risk reduction (assumed)	See appendix

Model assumptions

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

Category	Model parameter	Notes
Intervention	**Vector management of leishmaniasis**	
Cost calculation		
Treated population	Based on prevalence of leishmaniasis	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)	0.2	

Intervention Cost

The cost for vector management for Chagas disease, visceral leishmaniasis, dengue, and other nationally important causes of nonmalarial fever is 284.66 per case in 2004 USD in Argentina. The unit cost is calculated based on the study by Gonzalo M. et al. 2009 https://journals.plos.org/plosntds/article/authors?id=10.1371/journal.pntd.0000363 which reported the cost of the horizontal program and the number of cases of Chagas disease in Argentina based on retrospective (1993–2004) records from the Argentinean Ministry of Health for the Moreno Department, Northwestern Argentina. Based on the estimates provided by the study, we calculated the unit cost per case by dividing the direct price for the horizontal program for vector management by the number of cases.

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)

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.

Appendix

Literature Review for effectiveness & safety

This literature search is an example of a level 1 search of literature and guidelines for vector management of leishmaniasis infection.

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)