

# Epidemiology, prevention and Treatment of Leishmaniasis in Afghanistan

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## Abstract

**Introduction:** Leishmaniasis occurs in an infectious disease of Leishmania protozoa in Afghanistan, anthroponotic leishmaniasis and common cutaneous leishmaniasis (ZCL). Anthroponotic skin *leishmania tropica* may cause urban diseases and transmitted by Phlebotomus Sergenti. In different parts of Afghanistan, different species of Leishmania are observed. We report the epidemiological characteristics of prevention and treatment in this study.

**Methods:** This study examines epidemiology and prevention of religious disease in Afghanistan. Knowledge gaps were analyzed and collected with our own data

**Results:** In Afghanistan, most of the Leishmania Tropic seekers are. Four species of Leishmania in northern Afghanistan, including *Leishmania Tropic*, *L. Major* and *L. Donovan*, cause skin lesions, but *L. Donovan* and *L. infantum* are visible. Even combined prevention can significantly reduce the amount of infection

**Conclusion:** Skinny, as well as visceral leishmaniasis, can occur among the returnees from Afghanistan. Unusual and poor skin lesions can be created by *L. Donovan*. In most pathogenic areas, the transmission of common disease between humans and animals. Home dogs are the main reservoir, transferring in some areas such as India and Sudan.

**Keywords:** *Leishmania donovani* • *Leishmania tropica* • Treatment • Disease • pidemiology.

## Introduction

Leishmaniasis is a parasitic infection caused by different species of Leishmania protozoa. Anthroponotic cutaneous leishmaniasis is a major public health problem in Afghanistan (1). The disease is caused by *L. tropica* and transmitted by the sandfly, Phlebotomus sergenti. Kabul is currently the largest focus of anthroponotic cutaneous leishmaniasis worldwide. In Afghanistan, 10 out of 34 provinces are badly affected. The estimated incidence at national level is over 200 000 cases and the total population at risk is estimated to be 13 million (2). Among the 10 targeted provinces, Kabul has the highest burden: 17 425 out of 41 072 new cases reported in 2009 were from Kabul. The disease exhibits strong clustering of cases at the household level, showing a significant correlation with elevation: those living on upper floors of apartment blocks are less likely to have either active lesions or scars. Risk of anthroponotic cutaneous leishmaniasis is also associated to the presence of active lesions among other household members(3). Migration and displacement contribute to increasing numbers of new cases annually. Research conducted in Kabul showed that for a 1% increase of migrants into a district of Kabul, the odds of active lesions being seen rose by 12%. Prevalence increases with age up to 15 years, after which levels

decrease, presumably due to the acquisition of immunity (4). The majority of lesions occur on the head and upper arms, and although rarely fatal cause severe social stigmatization. Mucocutaneous lesions are very rarely seen, but secondary bacterial infection of lesions is common, though figures remain limited (5). Zoonotic cutaneous leishmaniasis, caused by *L. major*, is endemic in the northern rural areas of the country, close to the Amu Darya River. The vector is Phlebotomous papatasi and, possibly, Phlebotomus caucasicus. In 2005, a first outbreak was reported in Mazar-e-Sharif (6). Afghanistan has a high burden of Cutaneous Leishmaniasis (CL), especially in Kabul. Around 23.6 million people are at risk of CL in 24 of 34 provinces that are reporting the disease. Over 27,000 new CL cases were reported in 2017 (7). Kabul has a high burden of CL, with over 13,000 new cases reported in 2017 (48% of total). When leishmaniasis is not promptly treated, it can lead to disfiguration and disability and poses a high social burden, resulting in stigma and marginalization, especially for women (8).

## Prevention of leishmaniasis

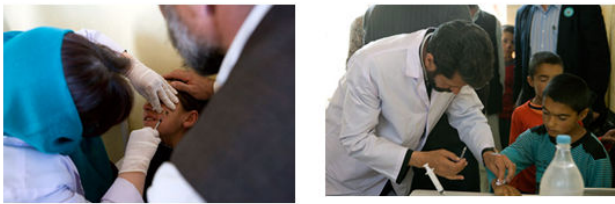
The following methods can be used to prevent and control leishmaniasis Used:

- Fight mosquitoes and prevent them from entering the habitat, One of the most important ways to prevent, fight mosquitoes and prevent It enters the living space (9).
- Mechanical and chemical control of rodents and stray dogs mechanical control refers to all actions that prevent rats from reaching food, water and shelter in buildings, places and passages(10). In chemical control, repellents, sterilizers and poisons are used to kill mice. By eliminating stray dogs in the late hours of the night or using poisons and burying them in landfills, dogs can be fought to some extent (11).
- **Environmental health and environmental improvement:** Another way to prevent this disease is to reduce the growth conditions and reproduction of mosquitoes by observing the health and improvement of the environment (12). Despite their frequency and great global importance, there are still no vaccines available for the prevention of leishmaniasis. There is also no effective chemoprophylaxis - comparable to malaria chemoprophylaxis. This reduces the prevention options to all available measures to prevent the infectious sand fly bite and / or to remove the primary reservoirs of the respective chain of infection through therapy or eradication (13). The available preventive measures against leishmaniasis include, above all, personal protective measures against sand fly bites with the combined use of skin repellants with insecticide-impregnated work clothing and vector control, which is mostly undervalued (14). Due to specific chains and conditions of infection, a comprehensive and synergistic prevention strategy must therefore include The leishmania and phlebotomic species involved, the habitat conditions, the seasonality and the geographical and ecological peculiarities are taken into account in detail (15).

## Treatment

Pentavalent antimony is the drug of choice for the treatment of leishmaniasis, which has been used for more than 70 years. Sodium stibogluconate and antimony meglumine are used to treat various types of leishmaniasis. These two drugs are very toxic and cause serious side effects such as cardiac arrhythmia and pancreatitis, and their use can be life-threatening. In addition, drug resistance has become widespread due to non-standard use and abuse. Amphotericin b, Miltofungin, paramomycin, and cytamacin are other drugs that have gradually replaced antimony and are used alone or in combination (16). Injection of 2% sulfate into the lesion has a direct anti-leishmaniasis effect on *L. Major* and *L. Tropic* species both in vitro and in vivo. Intralesional interferon-gamma injection has been used to treat leprosy, some cancers,

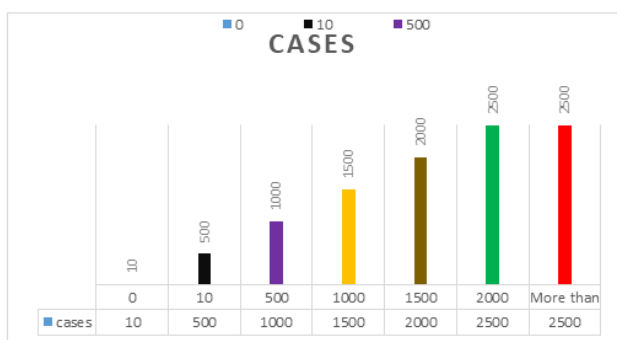
AIDS, and CGD1 granulomatous disease (17). In laboratory studies, the use of this compound has been shown to increase the lethal capacity of the leishmaniasis parasite in human monocytes in vitro. Other therapeutic drugs are also used to treat leishmaniasis, including nitric oxide (NO), protonic solutions of sodium chloride, Buparvaquone (18-21).



**Figure 1:** High quality anti-leishmaniasis drugs are essential to prevent infection and transmission. More than 20000- treatment vials have been distributed in Kabul and the southern region, treating more than 5,000 patients annually.

In this review, more than 83 articles as well as reports of the World Health Organization in the period 1990-2021 in Pubmed, Google Scholar databases were searched using the keywords leishmaniasis, epidemiology, treatment, Afghanistan. Unrelated articles were deleted and articles related to epidemiology, prevention and treatment were selected and the desired content was collected from them.

Between 2003 and 2009, 148,945 new cases of leishmaniasis were reported in 20 provinces across Afghanistan. In general, Logar has the highest number of Leishmanias and Kunduz, Samangan, Herat, Takhar, Kunar, Nangarhar, Faryab, Helmand have the lowest number of Leishmanias in the cities of Afghanistan. There were 148,945 new cases of leishmaniasis recorded in a total of 20 provinces across Afghanistan between 2003 and 2009.



**Figure 2:** shows the nationally aggregated monthly number of cases per 100,000 for the years 2003-2009.

## Conclusion

Leishmania is a major problem in Afghanistan that affects a large number of people in different cities every year. The highest rate of Leishmania is in Logar city and the lowest is in Helmand, Takhar, Herat, Samangan, Faryab, Kunduz and Nangarhar. Most pathogenic areas are the transmission of a common disease between humans and animals. For the treatment of leishmaniasis, amphotericin b, miltofuscin, paramomycin, and cytamycin are other drugs that have gradually replaced antimony and are used alone or in combination.

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