



Leishmaniasis

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Key facts

To better understand public health terms included in this Disease Tool (e.g. What is a case definition? or What is an infectious agent?), consult our page on Key concepts in epidemiology.

Importance

Leishmaniasis is a significant global health concern due to its widespread impact, especially in tropical and subtropical regions. It is endemic in more than 90 countries, mainly affecting some of the world's poorest communities in Asia, Africa, the Americas, and the Mediterranean region. It is associated with malnutrition, population displacement, poor housing, a weak immune system and poverty. The World Health Organization (WHO) estimates that 700,000 to 1 million new cases occur annually, with over 20,000 to 30,000 deaths.

This disease is caused by parasitic protozoa, *Leishmania*, which is transmitted to humans through the bites of infected female phlebotomine sandflies. There are three forms of Leishmaniasis:

- Visceral: the most severe form which is often fatal without treatment. It affects the internal organs such as spleen, liver and bone marrow
- Cutaneous: the most common form, usually causing skin sores or lesions
- Mucosal: which causes sores in the mouth, nose or throat. It can be life threatening too

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Case definition

A **case definition** is a set of uniform criteria used to define a disease for public health surveillance. It enables public health officials to classify and count cases consistently.

*The following are standard case definitions to allow national health authorities to interpret data in an international context. However, during an outbreak case definitions may be adapted to the local context and the Red Cross Red Crescent should use those agreed/established by national health authorities. NB: Consider that during community-based surveillance, **volunteers** should use broad (simplified) case definitions (referred to as community case definitions) to recognize most or all possible cases, provide relevant risk communication and appropriate actions and encourage them to seek care. Other actors such as **healthcare workers or investigators** studying the cause of a disease, on the other hand, can use more specific case definitions that may require laboratory confirmation.*

As with other zoonotic diseases, control of leishmaniasis among humans is highly dependent on the integration of the human health and veterinary surveillance and control systems. The following include

case definitions for human surveillance and exclude case definitions for veterinary surveillance. For more information on veterinary surveillance or clinical presentations, please visit [WOAH's](#) page on leishmaniasis.

Clinical description: An illness with two major forms: Visceral Leishmaniasis (VL) and Cutaneous Leishmaniasis (CL).

Visceral Leishmaniasis (VL)

Suspected Case: A person with prolonged fever (more than two weeks), low levels of red blood cells, white blood cells and platelets which may be evidenced by anemia and excessive bleeding, enlargement of the spleen and liver, and weight loss in an endemic area.

Confirmed Case: A suspected case with demonstration of Leishmania parasites in tissue samples (e.g., bone marrow, spleen, lymph node) by microscopy, culture, or PCR; or positive serology (e.g. direct agglutination test, rK39 rapid test).

Cutaneous Leishmaniasis (CL)

Suspected Case: A person with one or more skin lesions (e.g., papules, nodules, ulcers) in an endemic area.

Confirmed Case: Identification of Leishmania in tissue samples from skin lesions by microscopy, culture, or PCR.

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Alert / epidemic threshold

An **alert threshold** is the pre-defined number of alerts that suggest the beginning of a possible disease outbreak and therefore warrant immediate notification.

Epidemic thresholds are the minimum number of cases indicating the beginning of a particular disease's outbreak.

If Leishmaniasis is endemic in the community, previous data of up to 5 to 10 years should be compared to the data of the similar duration (month), to assess if there is a sustained increase up to at least double the number of the previous cases.

Risk factors

- People living in communities with poor housing, improper waste management, and open sewage systems, as all these create ideal breeding conditions for sandflies.
- Malnourished persons with deficiencies in protein, energy, iron, vitamin A, and zinc.
- Individuals with compromised immune systems including those with HIV/AIDS.
- Migration and displacement, especially into endemic areas, increase exposure to the parasite.

- Activities that increase exposure to sandflies, like sleeping outside or working in forests.

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Attack rate (AR)

The **attack rate** is the risk of getting a disease during a specific time period (such as during an outbreak).

Attack rates will vary from one outbreak to another. In case of an outbreak, consult the latest information provided by health authorities.

Generally low and depends on the type of exposure.

Groups at increased risk of severe illness (most vulnerable)

- Children, especially malnourished ones
- Older people.
- People with weakened immune systems.
- Immunosuppressed persons such as those receiving chemotherapy, transplant recipients or HIV carriers.
- People with chronic diseases such as renal disease, cancer, chronic lung or liver disease and diabetes.

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Infectious agent

Infectious agents are bacteria, viruses, fungi, prions and parasites. A disease caused by an infectious agent or its toxic products is defined as an infectious disease.

Leishmania is a genus of the causative protozoan parasites for leishmaniasis. The parasites are transmitted through the bite of infected female phlebotomine sandflies. Currently, there are over 20 different species of *Leishmania* that can infect humans. The complexity of its life cycle and interaction with hosts makes it a significant public health challenge.

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Reservoir / host

A **reservoir of infection** is a living organism or material in or on which an infectious agent lives and/or usually multiplies. Reservoirs include humans, animals and the environment.

A **susceptible host** is a person at risk of being infected. The level of susceptibility depends on age, sex, ethnicity and genetic factors, specific immunity also depends on other factors that affect an individual's ability to resist infection or to limit its ability to cause infection.

A **zoonotic disease** or **zoonosis** is an infectious disease that has jumped from a non-human animal to humans.

Leishmania parasites have two primary hosts in their lifecycle:

Mammalian Hosts (including Humans): Leishmania parasites infect humans and other mammals such as dogs, rodents, and wild animals. Humans can become accidental hosts and are often considered the primary host in areas where leishmaniasis is endemic.

Phlebotomine Sandflies: The sandfly acts as the vector and definitive host. The parasite exists in the sandfly's gut and is transmitted to the mammalian host when the sandfly takes a blood meal.

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How disease is spread (modes of transmission)

Categorisation of **modes of transmission** varies from one agency to another. In addition, some infectious agents can be transmitted by more than one mode. A list of modes of transmission can be found in the key concepts to serve as guidance to better understand the diseases included in this website.

Leishmania is transmitted primarily through the bites of infected female phlebotomine sandflies. When an infected sandfly bites a mammalian host, it injects the parasite into the skin. Inside the host, the parasites transform and multiply, eventually spreading to other cells and tissues. Transmission can also occur through other routes, such as blood transfusions, sharing of needles, organ transplants, or from mother to child, although these modes are less common.

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Incubation period

This time from when infection occurs to the onset of symptoms is called the **incubation period**. It is a range of days and it can be different for each disease.

L. major: At least one week. Usually less than 4 months.

L. tropica: At least one week. Usually 2–8 months.

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Period of infectiousness

Period of infectiousness is the time interval during which an infected person can transmit the infection to other susceptible persons.

Not directly transmitted from reservoir to person, but infectious to sandflies as long as parasites remain in lesions in untreated cases, usually a few months to 2 years.

Clinical signs and symptoms

The clinical signs and symptoms of leishmaniasis vary depending on the form of the disease:

- Visceral Leishmaniasis (VL) or Kala-azar: prolonged fever, significant weight loss, enlargement of the spleen and liver (splenomegaly and hepatomegaly), and severe anaemia. It is often fatal without treatment.
- Cutaneous Leishmaniasis (CL): skin lesions, which typically appear as painless ulcers at the site of the bite.
- Mucocutaneous Leishmaniasis (MCL): It often begins as cutaneous lesions before progressing to the nose, mouth, and throat.

Other diseases with similar clinical signs and symptoms

Cutaneous leishmaniasis may look like other skin conditions including pyodermitis, psoriasis, venous leg ulcer, wart, sarcoidosis, cutaneous tuberculosis, skin cancer, etc.

Diagnosis

- Stained smear or culture from the skin lesion, especially in patients presenting atypical lesions or needing systemic treatment.
- There is no rapid diagnostic test that could assist in reaching the diagnosis.

Vaccine or treatment

Please refer to the appropriate local or international guidelines for clinical management. All clinical management including the administration of a treatment or vaccine should be conducted by a health professional.

- All types of leishmaniasis can be prevented and treated.
- There is no vaccine yet.

<https://www.who.int/publications/i/item/9789240048294>

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Immunity

There are two types of immunity:

- **Active immunity** results when exposure to an agent triggers the immune system to produce antibodies to that disease.
- **Passive immunity** is provided when a person is given antibodies to a disease rather than producing them through his or her own immune system.

Recovery from a primary infection of leishmaniasis leads to long-term immunity to reinfection. The immunity is mediated mainly by CD4⁺ T cells.

<https://doi.org/10.1038/nri.2016.72>

Which interventions are most effective for prevention and control?

The following is a list of activities considered for Red Cross Red Crescent volunteers to take part in. It is not an exhaustive list of all prevention and control activities for the specific disease.

- Communicate risks about the disease or epidemic, not only to share information on prevention and mitigation measures, but also to encourage informed decision-making, positive behaviour change and maintenance of trust in the Red Cross Red Crescent response. This includes the identification of rumours and misinformation around disease—frequent during health emergencies—to manage them appropriately. Volunteers should use the most context-appropriate communication techniques (ranging from social media to face-to-face interactions).
- Community education and engagement activities to encourage the adoption of protective behaviours including:
 - Since leishmaniasis is primarily transmitted by sandflies, vector control will help control outbreaks. This includes the use of insecticide sprays and insecticide-treated nets, environmental management and personal protection (including using bed nets, insect repellents, and wearing protective clothing).
 - Due to the complexity of its transmission cycles and varieties of animal hosts, the control of animal reservoir hosts should be tailored to the local situation.
- Social mobilization to educate the community on effective behavioural change interventions should be done. Also, vector control for leishmaniasis should be integrated into other vector-borne disease control programmes alongside partnership and collaboration with various stakeholders.

Epidemic characteristics and RCRC indicators and targets

The first table below includes data that should be gathered from health authorities and relevant non-governmental actors to understand the progress and characteristics of the epidemic in the specific country and area of intervention. The second table includes a list of suggested indicators that can be used for monitoring and evaluating Red Cross Red Crescent activities; wording of indicators may be adapted to specific contexts. Target values for a specific indicator can vary widely from one context to another and therefore managers should define them based on the specific population, area of intervention and programmatic capacity. Exceptionally, some indicators in this website may include target values when these are globally agreed as a standard; e.g. 80 percent of individuals who slept under an insecticide-treated net (ITN) the previous night—the normative World Health Organization benchmark for universal coverage with ITNs.

Epidemic characteristics and progression

Suspected cases per week (disaggregate by age, sex)

Confirmed cases per week (disaggregate by age, sex)

Case fatality rate

Indicators for Red Cross Red Crescent activities

Number of volunteers trained on a specific topic (e.g. Epidemic Control for Volunteers (ECV); Community-based surveillance (CBS); WASH training; CBHFA training, etc.)

Numerator: Number of volunteers trained

Source of information: Training attendance sheets

Suspect cases detected by volunteers who were encouraged to seek healthcare and who arrived at a health facility

Numerator: Leishmaniasis suspect cases detected by volunteers in a determined period preceding this survey (e.g. two weeks) for whom advice or treatment was sought from a health facility

Denominator: Total number of people who are leishmaniasis suspect cases in the same period preceding the survey

Source of information: Survey

Percentage of people recognizing at least one transmission route and at least one measure for preventing it

Numerator: Total number of people who recognized at least one transmission route and at least one measure for preventing it during the survey

Denominator: Total number of people surveyed

Source of information: Survey

Percentage of people who know the cause, symptoms, treatment or preventive measures

Numerator: Number of people who cite the cause, symptoms, treatment or preventive measures

Denominator: Number of people surveyed

See also:

- For Community Engagement and Accountability (CEA) indicators for activities accompanying ECV actions, please refer to:

IFRC CEA toolkit (Tool 7.1: Template CEA logframe, activities and indicators). Available at:

<https://www.ifrc.org/document/cea-toolkit>

- For community-based surveillance guidance please see:

IFRC, Norwegian Red Cross, Croix-Rouge de Belgique (2022), *Community Based Surveillance Resources*. Available at: www.cbsrc.org/resources.

Impact on other sectors

Sector	Link to the disease
WASH	<p>Human-to-human transmission is rare and only reported for cutaneous leishmaniasis. Therefore, the main WASH considerations for leishmaniasis include animal hygiene before, during and after exposure to potentially infected livestock and environmental hygiene.</p> <p>Effective sanitation measures, including waste disposal and reduction of standing water, can reduce sandfly breeding sites and lower transmission risks. Also, in many local communities, water is stored in open containers, potential breeding sites for sandflies. Hence, the need for proper water management and covering of water storage containers.</p> <p>Furthermore, clearing vegetation and maintaining cleanliness around living areas can reduce sandfly habitats and exposure.</p>
Food security	<p>There are no records of food-borne transmission yet</p>
Nutrition	<p>Malnutrition increases the risk for severe leishmaniasis.</p>
Shelter and settlements (including household items)	<p>People living in houses located close to forests, stagnant water bodies and dirty environments can be exposed to leishmaniasis as the surroundings can function as breeding sites of sandflies, the primary vector.</p>
Psychosocial support and Mental health	<p>Leishmaniasis is a stigmatized disease and can have negative impacts on psychological, social and emotional aspects of the patient's life, apart from its physical effects. Because of the stigma and lack of reporting at community level, most cases go undetected, putting many more at risk. Psychological reactions may include fear of social stigma, anxiety, social withdrawal, and depressive symptoms.</p> <p>Source : The psychological impact of cutaneous leishmaniasis</p>

Sector	Link to the disease
Sex and Gender	<p>In many regions, men are more likely to be exposed to leishmaniasis due to outdoor work such as farming, herding, or military service, where contact with sandflies is frequent. However, women are also at risk, especially in areas where they carry out outdoor tasks like collecting water, gathering firewood, or farming. However, Gender roles can limit women's access to health information, diagnosis, and treatment. Cutaneous leishmaniasis can lead to visible scarring, often resulting in greater stigma and psychosocial consequences for women and girls. In the case of visceral leishmaniasis, infection during pregnancy is associated with risks such as miscarriage, stillbirth, or congenital transmission of the parasite to the newborn. Biological sex differences may also play a role in disease progression, with some studies indicating more severe outcomes in men.</p>
Education	<p>Importantly, schools and other facilities dedicated to children and youth can offer an important space for them to engage, mobilize and raise awareness around health education issues. With support, trust and appropriate capacity-building, young people can be effective advocates for the adoption of preventive measures during an epidemic and are those best placed to mobilize their peers.</p>
Livelihoods	<p>Although <i>Leishmania</i> seldomly infects live stocks, they remain potential hosts and are considered for culling during reservoir control in endemic regions. Hence, livelihoods based on livestock breeding or work with animal products can be significantly affected during outbreaks (quarantine of herds, slaughtering of livestock). This can lead to a loss of income due to the reduction in work activity and to the diversion of resources to seek medical treatment when sick.</p>

Resources :

- WHO (2023) *Leishmaniasis*. Available at: <https://www.who.int/news-room/fact-sheets/detail/leishmaniasis>
- WHO (2022). *WHO guideline for the treatment of visceral leishmaniasis in HIV co-infected patients in East Africa and South-East Asia*. Available at: <https://www.who.int/publications/i/item/9789240048294>
- Leishmaniasis (Cutaneous and Visceral). 2022, The Center for Food Security and Public Health <https://www.cfsph.iastate.edu/Factsheets/pdfs/leishmaniasis.pdf>