



Hansen's Disease (also known as Leprosy)

Disease Plan

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Questions about this disease plan?

Contact the Utah Department of Health Bureau of Epidemiology: 801-538-6191.

✓ WHY IS HANSEN'S DISEASE IMPORTANT TO PUBLIC HEALTH?

Hansen's disease, commonly known as Leprosy, has been recognized as a condition of public health importance since biblical times. In the U.S., in 1894, the first sanatorium for the isolation of patients was established just south of Baton Rouge, and came to be known as Carville. Later, another facility was also established on the island of Molakai, Hawaii. In the early 1970's the U.S. Public Health Service announced an end to the need for prolonged isolation, but the disease was still felt to be a public health risk if left untreated. It causes nerve damage, skin sores and eventual tissue destruction if left untreated. It is believed that prolonged close contact with an infected person's nasal secretions or weeping skin lesions are the likely means of transmission. It is curable with multi-drug therapy, and infectiousness is believed to be eliminated after just the first dose. Most cases in the U.S. are imported, but it is still endemic in California, Hawaii, Louisiana, Texas, and Puerto Rico.

✓ DISEASE AND EPIDEMIOLOGY

Clinical Description

The disease presents along a clinical spectrum between two forms: lepromatous and tuberculoid leprosy. Borderline leprosy has features of both, with a tendency to shift toward the lepromatous form in the untreated patient and toward the tuberculoid form in the treated patient. Indeterminate leprosy is an early form that may develop into any of the other forms.

Lepromatous

The lepromatous form of leprosy usually exhibits extensive skin lesions, which may present as nodules, papules, and/or macules, as well as diffuse infiltration of the face, hands, and feet. In the early stages, these lesions may not exhibit loss of sensation. Nasal mucosa and ocular involvement may lead to obstructed breathing and eye inflammation, and significant anesthesia can develop, but motor nerve function is usually well preserved.

Tuberculoid

The tuberculoid form of leprosy usually exhibits a limited number of well demarcated skin lesions with spreading edges and a clearing center. The lesions are anesthetic or hypaesthetic (have absent or reduced sensation) and may be self-healing.

In both cases, significant peripheral nerve involvement may occur. Loss of sensation resulting from nerve involvement can lead to serious consequences, including ulcerations, fractures, and bone resorption; but patients seldom feel ill.

Causative Agent

Hansen's disease (also called leprosy) is a chronic infectious disease caused by the bacterium *Mycobacterium leprae*.

Differential Diagnosis

The differential diagnosis usually involves differentiation of the lesions from those caused by yeast/fungi, sarcoid, lupus, etc.

Laboratory Identification

Leprosy is generally identified through a pathologist's analysis of a skin biopsy, and/or recovery of acid-fast bacilli (AFB) from a skin smear (although this is often not possible).

UPHL: UPHL does not have capability to detect or confirm leprosy, but can facilitate confirmatory testing through the Centers for Disease Control and Preventin (CDC), or the National Hansen's Disease Programs (NHDP) in Baton Rouge, at 1-800-642-2477, www.hrsa.gov/hansens.

Treatment

Treatment usually includes long-term (usually 12-24 months) therapy with dapsone, rifampin, and/or clofazimine.

Case Fatality

With appropriate treatment, Hansen's disease is a chronic illness and fatality would be extremely rare.

Reservoir

Humans are the only reservoir of proven significance for leprosy. There have been reports suggesting that leprosy in armadillos may be naturally transmitted to humans.

Transmission

The exact mechanism for the acquisition and transmission of leprosy is not known. However, household contact and prolonged close contact may result in transmission. Large numbers of the organism are shed in the nasal discharge of untreated patients with lepromatous leprosy, and the bacilli may remain viable in dried nasal secretions for at least seven days. Large numbers of bacilli are also shed in the skin lesions in the lepromatous form of leprosy.

Susceptibility

Host response appears to play a role in the development of disease. Thus, consanguineous relatives are at highest risk of disease acquisition/transmission. It is believed that 95% of the world's population is naturally immune.

Incubation Period

The incubation period is unclear but seems to range from nine months to 20 years (average 2-10 years).

Period of Communicability

The infectious period depends on the type of leprosy and treatment. This can range from a few days to up to three months, and it is questionable whether the tuberculoid form of leprosy is infectious at all. Patients are generally presumed non-infectious after their first dose of medication.

Epidemiology

During 2013, 215,000 persons were diagnosed with leprosy worldwide, with Angola, Brazil, Central African Republic, Democratic Republic of Congo, India, Madagascar, Mozambique, Tanzania, and Nepal reporting the vast majority of the cases. In 2010 (the most recent year for which statistics are published), a total of 294 cases of Hansen's disease were reported in the U.S. In the last 30 years (1980-2010), 7,124 new cases have been reported. The number of cases reported per year peaked at 456 in 1983 and, since 1988, has remained relatively stable. Cases in the U.S. typically occur in immigrants or refugees whose disease was acquired in their native countries. However, there are pockets of endemicity in California, Hawaii, Louisiana, Texas, and Puerto Rico (65 cases were reported in U.S. born). Although leprosy affects people of all ages and gender, cases in individuals under three years of age are rare. Worldwide, 1-2 million people are permanently disabled as a result of leprosy. Those receiving antibiotic treatment or having completed treatment are considered free of active infection.

✓ PUBLIC HEALTH CONTROL MEASURES

Public Health Responsibility

- Investigate all suspect cases of disease and fill out and submit appropriate disease investigation forms.
- Provide education to the general public, clinicians, and first responders regarding disease transmission and prevention.
- Education of the case should stress the availability and efficacy of therapy. Additionally, education of the case's household contacts should include modes of transmission and referral to a health care provider for follow-up.
- The local health department shall ensure supervision of the case (or ensure that a private provider is accepting responsibility), including patient education regarding the importance of medication compliance, side effects, and monthly medication distribution and patient evaluation. Typically, this can be accomplished with a once-a-month contact with the patient. A current chart must be maintained in UT-NEDSS.

- Guidance, including tools for patient and contact assessment and education, is available from the Utah TB/Hansen's disease nurse consultant and/or the NHDP (1-800-642-2477). In addition, arrangements can be made for referral to a state-sponsored physician for clients without sufficient resources.
- Antibiotics are provided at no charge by the NHDP.
- UDOH may offer incentives for patients, such as food coupons, on a case-by-case basis.
- **Preapproval is required before UDOH will consider funding any clinical services.**

It is important to convey to the case and to the contacts the very low communicability of this disease and the availability of effective treatment and prevention regimens.

Prevention

Community and individual perceptions about leprosy may reflect inaccurate concerns about communicability and about the health implications for those diagnosed. These concerns may not be valid with regard to the nature of the disease, treatment, and prevention methods. It is important to convey to all concerned parties, the low communicability of this disease and the availability of effective treatment and prevention regimens. Similarly, it is important to strictly enforce confidentiality of case information; information should be released only to appropriate agencies and individuals, who need to know, and to the greatest extent possible, with the knowledge and consent of the case.

Chemoprophylaxis

None.

Vaccine

None.

Isolation and Quarantine Requirements

Isolation: If under appropriate medical care, patients need not be isolated.

Hospital: No special isolation precautions required; use standard body substance precautions (BSP). Patients with multiple draining lesions should be placed into a private room. Use personal protective equipment, such as gloves, gown, and mask, as needed to prevent contact with secretions and excretions.

Quarantine: None.

✓ CASE INVESTIGATION

Reporting

Report any case with demonstration of AFB in skin or dermal nerve obtained from a full-thickness skin biopsy. In addition, recovery of AFB from a skin smear should be reported as a suspect. Typically, the diagnosis of leprosy is made by a pathologist rather than a microbiology lab. Public health needs to work with pathologists to assure a reporting mechanism exists for this disease. Those cases that have been identified in Utah have occasionally had lengthy delays in reporting. All individuals with knowledge of disease have the responsibility to report.

All cases of Hansen's disease are reportable to the USPHS National Hansen's Disease Program. The reporting form is available at the following link:

http://health.utah.gov/epi/diseases/hansens_disease/form.pdf.

Criterion	Reporting	
<i>Clinical Presentation</i>		
Diagnosis of Hansen's disease		N
Placement on an anti-leprosy drug regimen, or anti-leprosy drug regimen is indicated		O
<i>Laboratory findings</i>		
Using Fite stain: Acid fast bacilli demonstrated in skin	S*	
Acid-fast bacilli in dermal nerve	S*	
Identification of noncaseating granulomas with peripheral nerve involvement	S*	
Mycobacterial growth on conventional media, if done	A	

Notes:

Meeting the criteria listed under any single column of this table is sufficient to identify a case for reporting.

S = This criterion alone is sufficient to report a case

N = This criterion in conjunction with all other "N" and any "O" criteria in the same column is required to report a case.

O = At least one of these "O" (Optional) criteria in each category (e.g., clinical evidence and laboratory evidence) in the same column—in conjunction with all "N" criteria in the same column—is required to report a case.

A = This criterion must be absent (i.e., NOT present) for the case to meet the reporting criteria.

* A requisition or order for any of the "S" laboratory tests is sufficient to meet the reporting criteria.

Case Definition

Hansen's Disease (2013)

Clinical Description

A chronic bacterial disease characterized by the involvement primarily of skin as well as peripheral nerves and the mucosa of the upper airway. Clinical forms of Hansen's

disease represent a spectrum reflecting the cellular immune response to *Mycobacterium leprae*. The following characteristics are typical of the major forms of the disease, though these classifications are assigned after a case has been laboratory confirmed:

- *Tuberculoid*: one or a few well-demarcated, hypopigmented, and hypoesthetic or anesthetic skin lesions, frequently with active, spreading edges and a clearing center; peripheral nerve swelling or thickening also may occur.
- *Lepromatous*: a number of erythematous papules and nodules or an infiltration of the face, hands, and feet with lesions in a bilateral and symmetrical distribution that progress to thickening of the skin, possibly with reduced sensation.
- *Borderline (dimorphous)*: skin lesions characteristic of both the tuberculoid and lepromatous forms.
- *Indeterminate*: early lesions, usually hypopigmented macules, without developed tuberculoid or lepromatous features but with definite identification of AFB in Fite stained sections.

Laboratory Criteria

Confirmatory:

- Demonstration of AFB in skin or dermal nerve, from a biopsy of a skin lesion using Fite stain, without growth of mycobacteria on conventional media (if done).
OR
- Identification of non-caseating granulomas with peripheral nerve involvement, without growth of mycobacteria on conventional media (if done).

Case Classification

Confirmed: a clinically compatible illness with confirmatory laboratory results.

Criterion	Case Definition
	Confirmed
<i>Clinical Presentation</i>	
Skin lesions that are well-demarcated, hypopigmented, and hypoesthetic or anesthetic-one or a few	○
Skin lesions with active, spreading edges and a clearing center	○
Erythematous nodules	○
Erythematous papules	○
Skin lesions which infiltrate the face, hands, and feet in a bilateral and symmetrical distribution with or without reduced sensation	○
Thickening of the skin	○
Peripheral nerve swelling	○
Peripheral nerve thickening	○
Hypopigmented macules, without developed tuberculoid or lepromatous features	○

Laboratory Findings	
Using Fite stain: Acid-fast bacilli in dermal nerve	S
Using Fite stain: Acid-fast bacilli demonstrated in skin	S
Mycobacterial growth on conventional media, if done	A
Identification of noncaseating granulomas with peripheral nerve involvement	S

Notes:

Meeting the criteria listed under any single column of this table is sufficient to identify a case for reporting.

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N = This criteria in conjunction with all other "N" and any "O" criteria in the same column is required to report a case.

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A = This criteria (if done) must be absent (e.g., NOT present) for the case to meet the reporting criteria.

* A requisition or order for any of the "S" laboratory tests is sufficient to meet the reporting criteria.

Case Investigation Process

- Fill out morbidity and investigation forms (attached)
- Hansen's disease is usually imported, so an important part of the investigation is to determine where the disease transmission occurred.

Outbreaks

An outbreak will be defined as: any case of Hansen's disease in a Utah resident without a readily explainable travel history.

Identification of Case Contacts

Public health should identify household contacts and others with prolonged close contact with the patient. This disease is not easily transmitted.

Case Contact Management

All household contacts should receive an examination consisting of a complete body skin exam, peripheral nervous system exam, and a history of neurologic symptoms. This may be done by a Public Health Nurse or non-public health provider (a state-sponsored physician can be made available for families without sufficient resources), and guidance is available through the UDOH TB/Hansen's disease Nurse Consultant and/or the NHDP. At this time, routine dapsone prophylaxis is not recommended.

✓ REFERENCES

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✓ VERSION CONTROL

Updated 04.15 – Updated case definition and statistics. Added Classification table for defining a case of Hansen's disease. Updated references.

✓ UT-NEDSS Minimum/Required Fields by Tab

Demographic

- Parent/Guardian
- City
- County
- State
- Street
- Unit Number
- Zip Code
- Date of Birth
- Birth Gender
- Ethnicity
- Primary Language
- Race
- First Name
- Last Name
- Middle Name
- Area Code
- Email Address
- Extension
- Phone Number
- Phone Type
- Was the patient US-born?
- If no, Country of Birth:
- When did the patient arrive in the US?
- If yes, State of Birth:
- County of Birth:
- Residential History Town
- Residential History County
- Residential History State
- Residential History Country
- Residential History From (Mo/Yr)
- Residential History To (Mo/Yr)
- Is there an additional place of residence?

Clinical

- Type of Leprosy:
- Classification, if known:
- Does patient have sensory loss in their hands?
- Does patient have sensory loss in their feet?

- Does patient have hand deformities?
- Does patient have feet deformities?
- Does patient have lagophthalmos?

Laboratory

- Was biopsy performed?
- Date:
- Result:
- Was skin smear done?
- Date:
- BI: Positive
- BI: Negative

Epidemiological

- Index case if known:

Investigation

Contacts

- contact_disposition
- contact_date_diagnosed
- contact_disease_onset_date
- contact_hospitalized
- contact_pregnant
- contact_address_postal_code
- contact_address_state
- contact_address_street_number
- contact_address_street_name
- contact_address_unit_number
- contact_hospital_admission_date
- contact_hospital_discharge_date
- contact_hospital_medical_record_no
- contact_birth_date
- contact_birth_gender
- contact_date_of_death
- contact_ethnicity
- contact_language

- contact_race_1
- Contact Treatment Date
- Contact Treatment End Date
- Contact Treatment Given
- Contact Treatment Notes
- contact_address_county
- contact_age_at_onset_in_years
- contact_approximate_age_no_bir
thdate
- contact_clinician_phone_area_c
ode
- contact_clinician_phone_extensi
on
- contact_clinician_phone_number
- contact_event_created_date
- contact_hospitalization_facility
- contact_pregnancy_due_date
- patient_clinician_phone_area_co
de
- patient_clinician_phone_extensi
on
- contact_phone_area_code
- contact_phone_extension
- contact_first_name
- contact_last_name
- contact_phone_phone_number
- contact_middle_name
- Contact Type

Reporting

Administrative

- State case Status