

LEPROSY (Hansen Disease)

REPORTING INFORMATION

- **Class B:** Report by the end of the next business day after the case or suspected case presents and/or a positive laboratory result to the local public health department where the patient resides. If patient residence is unknown, report to the local public health department in which the reporting health care provider or laboratory is located.
- Reporting Form(s) and/or Mechanism: The Ohio Disease Reporting System (ODRS) should be used to report lab findings to the Ohio Department of Health (ODH). For healthcare providers without access to ODRS, you may use the Ohio Confidential Reportable Disease Form (HEA 3334, rev. 1/09 <http://www.odh.ohio.gov/pdf/forms/hea3334.pdf>)
- [National Hansen Disease Program's Hansen Disease Surveillance Form](#) (rev. 06/14) is available for use to assist in local health department disease investigation and contact tracing activities. This form should be sent to the Ohio Department of Health (ODH), and information collected from the form should be entered into ODRS where fields are available.
- Key fields for ODRS reporting include: the specimen type and test name under the Laboratory Information module, and Imported and country/state of exposure under the Clinical Information module.

AGENT

Mycobacterium leprae (Hansen's bacillus). *M. leprae* grows and multiplies in humans, footpads of mice, armadillos and immunosuppressed rodents. It is the slowest growing bacterial pathogen and is not cultivated in vitro.

CASE DEFINITION

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 disease represent a spectrum reflecting the cellular immune response to *M. 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:

- **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 progresses to thickening of the skin, possibly with reduced sensation.
- **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 may also occur.
- **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 a definite identification of acid-fast bacilli in Fite stained sections.

Laboratory Criteria for Diagnosis

Demonstration of acid-fast bacilli in skin or in dermal nerve, obtained from the full-thickness skin biopsy of a lepromatous lesion, without growth of mycobacteria on conventional media (if done).

OR

Identification of noncaseating granulomas with peripheral nerve involvement, without growth of mycobacteria on conventional media (if done).

Case Classification

Suspect*: A clinically compatible case that is not laboratory confirmed.

Confirmed: A clinically compatible case that is laboratory confirmed.

Not a Case: This status will not generally be used when reporting a case, but may be used to reclassify a report if investigation revealed it was not a case.

*This case classification can be used for initial reporting purposes to ODH as the Centers for Disease Control and Prevention (CDC) has not developed a classification.

SIGNS AND SYMPTOMS

The bacteria that cause Hansen's disease grow very slowly. It may take 2-10 years before signs and symptoms appear.

Symptoms mainly affect the skin, nerves, and mucous membranes (the soft, moist areas just inside the body's openings). The disease can cause:

- Skin lesions that may be faded/discolored
- Growths on the skin
- Thick, stiff or dry skin
- Severe pain
- Numbness on affected areas of the skin
- Muscle weakness or paralysis (especially in the hands and feet)
- Eye problems that may lead to blindness
- Enlarged nerves (especially those around the elbow and knee)
- A stuffy nose
- Nosebleeds
- Ulcers on the soles of feet

Since Hansen's disease affects the nerves, loss of feeling or sensation can occur.

When loss of sensation occurs, injuries (such as burns or fractures) may go unnoticed. You should always try to avoid injuries. But, if you experience loss of sensation due to Hansen's disease (or another cause), you may not feel pain that can warn you of harm to your body. So, take extra caution to ensure your body is not injured.

DIAGNOSIS

There are no established laboratory tests for leprosy. Diagnosis is based on clinical findings, histopathologic findings (i.e. acid-fast bacilli on a biopsy specimen) or both. A skin biopsy is needed to make a definitive diagnosis. For information regarding this disease, contact the National Hansen's Disease (Leprosy) Clinical Center at 800-642-2477.

EPIDEMIOLOGY

Source

Humans are the only reservoir of proven significance. Recent research suggests that armadillos may be a source of leprosy in the southern United States.

Occurrence

Over the past 20 years, more than 14 million leprosy patients have been cured. Elimination of leprosy globally was achieved in the year 2000 (prevalence rate of leprosy

less than 1 case per 10,000 persons at global level). Pockets of high endemicity still remain in some areas of many countries but a few are mentioned as reference: Angola, Bangladesh, Brazil, China, Democratic Republic of Congo, Ethiopia, India, Indonesia, Madagascar, Mozambique, Myanmar, Nepal, Nigeria, Philippines, South Sudan, Sri Lanka, Sudan and the United Republic of Tanzania. Indigenously acquired leprosy is concentrated primarily in Louisiana and Texas. Leprosy is rarely reported in Ohio and is almost always seen among immigrant or refugee populations.

Mode of Transmission

Leprosy is not highly communicable. The mode of transmission remains uncertain, however, most investigators think that *M. leprae* is usually spread from person to person in respiratory droplets. Only approximately 5% of spouses living with a patient with leprosy develop the disease. Because *M. leprae* remains viable in dried secretions for up to seven days, fomites may play a role. Long-term, personal, skin-to-skin contact is considered the most common mode of transmission. Bacilli enter the body by way of the mucous membranes of the nose or mouth or through abrasions in the skin. Close contact of patients with untreated, active, predominately multibacillary disease, and persons living in countries with highly endemic disease are at risk of contracting Hansen's disease.

Period of Communicability

Infectiousness is considered possible as long as morphologically normal bacilli are demonstrated. Infectiousness is lost in most instances within a day of beginning treatment with a multi-drug therapy (MDT).

Incubation Period

The estimated period is 9 months to 20 years (approximately 4 years average).

PUBLIC HEALTH MANAGEMENT

Case

Investigation

The ODH Outbreak Response and Bioterrorism Investigation Team (ORBIT) may be contacted at 614-995-5599 for assistance in follow-up.

Treatment

Hansen's disease is easily treatable. It's treated for 6 months to 2 years with a combination of antibiotics. For people treated for Hansen's disease, it's important to:

- tell your doctor about any potential nerve damage take extra care to prevent injuries that may occur (especially if you experience numbness or a loss of feeling in certain parts of the body).
- take the antibiotics until your doctor says treatment is complete (otherwise you may get sick again)

In the U.S., people with the disease may be treated at special clinics run by the National Hansen's Disease Program. The Program receives Federal funds to run 11 clinics in 7 states and Puerto Rico. The clinics provide medical care for the diagnosis and treatment of Hansen's disease-related conditions. Consultation and free medication may be obtained by contacting the National Hansen's Disease (Leprosy) Clinical Center at 800-642-2477.

Following are the general National Hansen's Disease Program (NHDP) recommendations. NHDP recommendations are for daily rifampin, and for longer duration of treatment than

the WHO recommendations, largely due to WHO's cost considerations for developing countries. Treatment that is more intensive and of longer duration is medically preferable.

Treatment guidelines for immunologically competent individuals, (e.g. those without immunodeficiency, immunosuppression, prolonged corticosteroid use, etc.) are as follows,

Adults		
Tuberculoid (TT & BT) (WHO classification Paucibacillary, "PB")		
Agent	Dose	Duration
Dapsone	100 mg daily	12 months, and then therapy discontinued
Rifampicin	600 mg daily	

Adults		
Lepromatous (LL, BL, BB) (WHO classification Multibacillary, "MB")		
Agent	Dose	Duration ^a
Dapsone	100 mg daily	24 months, and then therapy discontinued
Rifampicin	600 mg daily	
Clofazimine ^b	50 mg daily	

- a. The recommended durations of treatment are sufficient, even though large numbers of dead bacilli may remain in the tissues for several years, before they are eliminated by physiological processes. There is no evidence that additional, prolonged treatment hastens the elimination of these dead organisms.
- b. Clofazimine, used for decades to treat HD around the world, is no longer available on the open market. Because it is no longer distributed commercially, the only way we can obtain the drug in the U.S. is to once again treat it as an investigational new drug (IND). The NHDP holds this IND for its use in treating HD in the U.S.

Alternative anti-microbial agents

Minocycline, 100 mg daily, can be used as a substitute for Dapsone in individuals who do not tolerate this drug. It can also be used instead of Clofazimine, although evidence of the efficacy of its anti-inflammatory activity against Type 2 reactions is not as substantial as the evidence for Clofazimine.

Clarithromycin, 500 mg daily is also effective against *M. leprae*, and can be used as a substitute for any of the other drugs in a multiple drug regimen.

Ofloxacin, 400 mg daily, may also be used in place of Clofazimine, for adults. This is not recommended for children.

In the United States, the occurrence of leprosy in children is rare. Consultation with the NHDP is strongly recommended for management of leprosy in children. The following are general guidelines,

Treatment for children
Tuberculoid (TT & BT) (WHO Paucibacillary, "PB")

Agent	Dose	Duration
Dapsone	1 mg/ Kg daily	12 months, and then therapy discontinued
Rifampicin	10-20 mg/ Kg daily (not > 600)	
Treatment for children		
Lepromatous (LL, BL, BB) (WHO Multibacillary, "MB")		
Agent	Dose	Duration
Dapsone	1 mg/ Kg daily	24 months, and then therapy discontinued
Rifampicin	10-20 mg/ Kg daily (not > 600)	
Clofazimine	1.0 mg/ Kg daily ^c	

c. As there is no formulation less than 50 mg, and the capsule should never be cut open, alternate day dosing may be used at 2 mg/kg.

As soon as patients start treatment, they are no longer able to spread the disease.

Isolation

Contact isolation for lepromatous leprosy. No isolation required for tuberculoid leprosy. No restrictions in employment or attendance at school are indicated for patients receiving adequate treatment and regarded as noninfectious. Compulsory segregation of patients with leprosy is no longer required in the United States.

Contacts

Household contacts of people with Hansen's disease should have a thorough physical examination annually for five years after the last contact with an infectious case. If they develop a questionable skin rash, they should notify their healthcare providers and have the skin rash biopsied to determine whether or not Hansen's disease is present.

Prevention and Control

The best way to prevent the spread of leprosy is the early diagnosis and treatment of people who are infected. For household contacts, immediate and annual examinations are recommended for at least five years after last contact with a person who is infectious.

For additional information, see: <http://www.hrsa.gov/hansensdisease/>.

What is Hansen's disease?

Hansen's disease, also known as leprosy, is a complex infectious disease caused by a bacterium. The disease is often mistakenly identified as the "leprosy of the Old Testament," which has been clearly shown not to be Hansen's disease. Hansen's disease is not highly contagious and 95 percent of the human population has a natural immunity. It responds well to treatment and, if diagnosed and treated early, does not cause disability.

The Hansen's disease bacteria infect skin and sometimes other tissues, including the eye, the mucosa of the upper respiratory tract (nose) and the testes. Hansen's disease always involves the peripheral nerves. If untreated, nerve damage can result in crippling of hands and feet and blindness. Early diagnosis and treatment are the keys to preventing Hansen's disease-related disabilities. A person with HD can continue to work and lead an active life.

Who gets Hansen's disease?

Those at greatest risk are the family of a person who has the disease, but is not being treated. This could be because they are genetically susceptible and/or because they have prolonged contact with the infected individual. A spouse is the least at-risk family member. At greatest risk are children, brothers or sisters, or parents of an individual with untreated Hansen's disease.

Hansen's disease is not passed on from a mother to her unborn baby during pregnancy. Neither is it transmitted through sexual contact.

How is Hansen's disease spread?

It is not clear how Hansen's disease is transmitted, but household and prolonged close contact is important. The germs probably enter the body through the nose and possibly through broken skin. Close contact of patients with untreated, active, predominately multibacillary disease, and persons living in countries with highly endemic disease are at risk of contracting Hansen's disease.

What are the symptoms of Hansen's disease?

The first signs of Hansen's disease are usually pale or slightly red areas or a rash on the trunk or extremities. Frequently, but not always, there is an associated decrease in light touch sensation in the area of the rash. A loss of feeling in the hands or feet may also be the first signs of Hansen's disease. These changes in sensation are a valuable clue to diagnosis.

Nasal congestion may be a sign of infection, but infection is more often associated with changes of the skin on the face, such as thinning of the eyebrows or eyelashes.

How soon after exposure do symptoms appear?

It usually takes about four years for tuberculoid leprosy symptoms to appear and about eight years for lepromatous leprosy symptoms to appear.

When and for how long is a person able to spread Hansen's disease?

In most cases, a person will not infect others after a few days after starting treatment. Treatment rapidly renders the disease non-communicable by killing nearly all the bacilli within a few days.

What is the treatment for Hansen's disease?

Hansen's disease is curable using antibiotics. The three most commonly used are Dapsone, Rifampin and Clofazimine. Other antibiotics, such as Clarithromycin, Ofloxacin, Levofloxacin and Minocycline also work well against *M. leprae*. Dapsone and other Sulfone drugs were discovered to be effective in treating HD at the National Hansen's Disease Program in 1941. These medications continue to be an important weapon against this disease.

Treatment regimens differ depending upon the form of the disease (see Treatment under Public Health Management). The National Hansen's Disease Programs recommends treatment for 12 months to two years, depending on the form of disease. Treatment rapidly renders the disease non-communicable by killing nearly all the bacilli within a few days. These dead bacilli are then cleared from the body slowly, within a variable number of years, so that these dead bacilli may continue to be found in skin biopsies for several years.

The National Hansen's Disease Programs in Baton Rouge, Louisiana, is the only institution in the U.S. exclusively devoted to Hansen's disease. The center functions as a referral and consulting center with related research and training activities. Most patients in the U.S. are treated at National Hansen's Disease Programs Ambulatory Care Clinics in major cities or by private physicians.

How can Hansen's disease be prevented?

The best way to prevent the spread of leprosy is the early diagnosis and treatment of people who are infected. For household contacts, immediate and annual examinations are recommended for at least five years after last contact with a person who is infectious.

For more information please visit the following websites:

CDC Hansen's Disease - <http://www.cdc.gov/leprosy/index.html>

National Hansen's Disease Program - <http://www.hrsa.gov/hansensdisease/>