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## **Overview**<sup>(1, 2, 5)</sup>

Hansen's disease, or leprosy, is caused by the organism *Mycobacterium leprae*. It primarily effects the skin, peripheral nerves, eyes, testes and (in lepromatous patients) the upper airway. It causes nerve damage, loss of sensation and loss of or decrease in strength. Hansen's disease is difficult to transmit and has a long incubation period, anywhere from 1 to 20 years, making it difficult to determine where or when the disease was contracted. Children are more susceptible than adults to contracting the disease.

Some symptoms include:


- One or more light colored spots or discolorations that have decrease feeling.
- Spots that do not heal after several weeks to months.
- Numbness or absent sensation in the hands and arms, or feet and legs.
- Muscle weakness or loss in strength.

If detected early, in the initial stages Hansen's disease is curable, reducing the risk of permanent damage. If not detected early enough, permanent nerve damage, scarring of the skin, damage to the limbs or blindness can occur.

Worldwide, 1-2 million persons are permanently disabled as a result of the disease. Newly recognized cases in the United States are few and are diagnosed mainly in Louisiana, Texas, California, Florida, Hawaii and New York City. Most of these cases are in refugees and immigrants that acquired their disease in their native country. The disease remains endemic, however, in Hawaii, California, Texas, Louisiana and Puerto Rico.

For a more complete description of Hansen's disease, please refer to the following texts:

- ♦ *Control of Communicable Diseases Manual*. (CCDM), American Public Health Association. 19<sup>th</sup> ed. 2008.
- ♦ American Academy of Pediatrics. *Red Book: 2009 Report of the Committee on Infectious Diseases*. 28<sup>th</sup> ed. 2009.
- ♦ *Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases*. 7<sup>th</sup> ed. 2010.

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## **Case Definition** <sup>(3)</sup>

### ***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:

- *Tuberculoid*: one or a few well-demarcated, hypopigmented, and 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.
- *Borderline (dimorphous)*: skin lesions characteristic of both the tuberculoid and lepromatous forms.
- *Indeterminate*: early lesions, usually hypopigmented macules, without developed tuberculoid or lepromatous features.

### ***Laboratory criteria for diagnosis:***

- Demonstration of acid-fast bacilli in skin or dermal nerve, obtained from the full-thickness skin biopsy of a lepromatous lesion.

### ***Case classification:***

*Confirmed*: a clinically compatible case that is laboratory confirmed.

## **Information Needed for Investigation**


**Verify the diagnosis.** What laboratory tests were conducted and what were the results? Was Hansen's disease confirmed?

**Describe the clinical illness.** Tuberculoid lesions may not typically have identifiable organisms in the initial laboratory examination.

**Determine the travel history.** Even if travel is not recent, exposure outside the US should be noted.

## **Notification**

- Contact the [District Communicable Disease Coordinator](#), or the [Senior Epidemiology Specialist](#), or the Department of Health and Senior Services' Situation Room (DSR) at 800-392-0272 (24/7) immediately if an outbreak\* of Hansen's disease is suspected.
- Contact the Bureau of Environmental Health Services at (573) 751-6095 and the Section for Child Care Regulation at (573) 751-2450, if a case is associated with a child care center.

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- Contact the Section for Long Term Care Regulation at (573) 526-8524, if a case is associated with a long term-care facility.
- Contact the Bureau of Health Services Regulation at (573) 751-6303, if a case is associated with a hospital, hospital-based long-term care facility, or ambulatory surgical center.

\*Outbreak is defined as the occurrence in a community or region, illness(es) similar in nature, clearly in excess of normal expectancy and derived from a common or a propagated source.

## **Control Measures**

### **General**

- Determine the source of infection to prevent other cases.
- Most cases occur in immigrants and refugees. Due to the long incubation period, determining the source may be difficult.
- Verify if case has been in contact with a known or suspected infectious individual
- Determine if the case is receiving appropriate medical treatments.
- Instruct patient and all household contacts to use good hand hygiene. <sup>(2)</sup>
- Disinfection of nasal secretions, handkerchiefs, and other fomites until treatment is established. <sup>(2)</sup>
- Household contacts, particularly contacts of patients with multibacillary disease, should be examined initially and then annually for 5 years. <sup>(1, 2, 5)</sup>
- Postnatal transmission can occur during breastfeeding. <sup>(2)</sup>


## **Laboratory Procedures**

**Specimens:** The only laboratory tests used routinely for diagnosis of leprosy are skin smears and skin biopsies. <sup>(4)</sup> The Missouri State Public Health Laboratory (SPHL), Tuberculosis Reference Laboratory does not culture for *M. leprae*. All laboratory specimens should be submitted with prior approval from and through the SPHL to CDC.

## **Reporting Requirements**

Hansen's Disease (Leprosy) is a Category 3 disease and shall be reported to the local health authority or to the Missouri Department of Health and Senior Services within three (3) calendar days of first knowledge or suspicion.

1. For confirmed and suspected cases complete a "[Disease Case Report](#)" (CD-1)
2. For a confirmed case, complete a "[Hansen's Disease Surveillance Form](#)" (DHNDP-8/2010).
3. Entry of the completed CD-1 into the WebSurv database negates the need for the paper CD-1 to be forwarded to the District Health Office.
4. Send the completed "[Hansen's Disease Surveillance Form](#)" to the District Health Office.

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5. All outbreaks or "suspected" outbreaks must be reported as soon as possible (by phone, fax or e-mail) to the District Communicable Disease Coordinator. This can be accomplished by completing the “[Missouri Outbreak Surveillance Report](#)” (CD-51).
6. Within 90 days from the conclusion of an outbreak, submit the final outbreak report to the District Communicable Disease Coordinator.

### **References**

1. *Control of Communicable Diseases Manual*. Leprosy (Hansen’s Disease.) In: Heymann DL, ed. 19<sup>th</sup> ed. Washington, D.C.: American Public Health Association; 2008: 347-351.
2. American Academy of Pediatrics. Leprosy. In: Pickering LK, ed. *Red Book: 2009 Report of the Committee on Infectious Diseases*. 29<sup>th</sup> ed. Elk Grove Village, IL: American Academy of Pediatrics; 2009: 423-426.
3. Center for Disease Control-and Prevention. Epidemiology Program Office, Division of Public Health Surveillance and Informatics, *Nationally Notifiable Infectious Diseases United States, 1997 Hansen’s Disease*, [http://www.cdc.gov/osels/ph\\_surveillance/nndss/casedef/hansen\\_disease\\_current.htm](http://www.cdc.gov/osels/ph_surveillance/nndss/casedef/hansen_disease_current.htm) (4/12)
4. Jacobson, R.R., and Yoder, L.J. eds. Leprosy. In *Bacterial Infections of Humans Epidemiology and Control*. Leprosy 3<sup>rd</sup> ed. Alfred S. Evans and Philip S. Brachman. New York: Plenum, 1998:380
5. Levis, WR and Ernst, JD. Leprosy, Hansen’s disease. In: Mandell GL, Bennett JE, Dolin R, eds. *Mandell, Douglas, and Bennett’s Principles and Practice of Infectious Diseases*. 7<sup>th</sup> ed. Philadelphia, Pa.: Elsevier Churchill Livingstone; 2010: vol.2: 3165-3176.

### **Other Sources of Information**

1. U.S. Department of Health and Human Services, Health Resources and Services Administration <http://www.hrsa.gov/hansensdisease/> (4/12)
2. Center for disease Control “Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008”. [http://www.cdc.gov/hicpac/Disinfection\\_Sterilization/acknowledg.html](http://www.cdc.gov/hicpac/Disinfection_Sterilization/acknowledg.html) (4/12)
3. Center for Disease Control – “Hansen’s Disease“. [http://www.cdc.gov/nczved/divisions/dfbmd/diseases/hansens\\_disease/technical.html/](http://www.cdc.gov/nczved/divisions/dfbmd/diseases/hansens_disease/technical.html/) (4/12)