Texas Preventable Disease NEWS

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contents:

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HANSEN'S DISEASE

As Texas remains one of the few states in which Hansen's disease (leprosy) is endemic, it is important for public health professionals to be familiar with this historic disease. Professional public health workers must serve to offset the ignorance regarding Hansen's disease which is still prevalent in some segments of the general population. The attitudes and ineptitudes sometimes facing Hansen's disease patients are based more on fiction than fact. Here are the facts and some of the new thoughts concerning this infectious disease which dates back to man's earliest recorded history.

Texas is one of the five states (also California, Florida, Hawaii, and Louisiana) with endemic Hansen's disease. Currently almost 400 patients are carried on the Texas Department of Health Hansen's Disease Register of active cases (either on treatment or under surveillance). Twenty-five to 35 new cases are added each year. Currently about one half of the new cases reported each year are imported, and one half are infected within the state. Many imported cases are diagnosed prior to arrival in Texas, are under treatment, and are not infectious. About half of the cases residing in Texas live in South Texas, with many others living in Houston, Dallas, and San Antonio.

Hansen's disease, is a chronic disease caused by the *Mycobacterium leprae* bacillus. Although exact modes of transmission have not yet been established, it is theorized generally that prolonged and intimate contact with an infectious case is usually necessary for transmission to occur. Presumably, bacilli from nasal discharges of infectious patients gain entrance through the skin or respiratory tract of susceptible individuals. More recent data also suggest that exposure to non-human environmental sources of *M. leprae* may play an important role in the transmission of this infection, especially in those situations for which no known exposure to a human case can be identified.[1]

Susceptibility to the development of Hansen's disease is limited to an estimated five percent of the population. Because of genetically derived immunity, the vast majority of people (90% - 95%) will never get this disease under any circumstances, no matter how extensive or prolonged their exposure might be. Hansen's disease is not inherited, but, because of the part played by an individual's own immune system, there is reason to believe that susceptibility may be genetically transmitted and could be inherited. There are aggregations of cases within certain families that suggest inherited susceptibility. Also, for reasons yet unknown, males are diagnosed almost twice as often as are females.

Although *M. leprae* is generally considered to be a bacterium of low to moderate communicability, a recent study suggests that the organism is transmitted more efficiently than the level of clinical disease would indicate, and that in endemic areas, clinical cases of Hansen's disease arise from a large pool of individuals with subclinical infections rather than a few individuals exposed to an index case.[2]

M. leprae bacteria appear to reproduce very slowly. Biochemical studies concerning the growth dynamics of *M. leprae* suggest that the organisms may in fact reproduce much more rapidly than the clinical picture would indicate, due to a large rate of die off among the bacteria. (Hastings--personal communication). The exact incubation period from onset of infection to clinical

disease is not known, but it generally is thought to average from three to five years. This long incubation period contributes to problems in determining the time and source of infection of cases and in following contacts.

Although there is only one organism that causes Hansen's disease, the type (or spectrum) of disease that develops in a susceptible individual depends upon the response of the individual's immune system to the invading bacteria. The first stage of infection, "indeterminate," usually is not recognized as an *M. leprae* infection. It either heals spontaneously (usually without diagnosis or treatment) or progresses to one of five other spectra of the disease. Susceptible individuals with the greatest resistance to infection with this organism generally develop the tuberculoid type commonly referred to as "tuberculoid tuberculoid" (TT), a more localized infection. Those with the least resistance develop "lepromatous lepromatous" (LL), the systemic presentation of the disease. Those cases which fall between these two polar types are classified as "borderline tuberculoid" (BT), "borderline lepromatous" (BL), or "borderline borderline" (BB) depending on which characteristics predominate. Cases can evolve from one type to another during the course of this infection.

The parts of the body primarily affected are the skin, mucous membranes, peripheral nerves, eyes, and bones. Progressive disease signs and symptoms may include skin lesions, peripheral nerve involvement, loss of perspiratory ability (anhidrosis), loss of eyebrows and eyelashes (madrosis), nasal congestion, epistaxis, laryngeal problems, eye lesions, renal involvement, testicular atrophy, and secondary gynecomastia.

Early skin lesions may be either hypopigmented or erythematous and may or may not demonstrate sensory loss. If the disease progresses to the tuberculoid type, lesions become more numerous (but usually fewer than five), having defined borders and characteristic hypesthesia or anesthesia (loss of feeling). The sensations of light touch, temperature, and pain are impaired in that order. Skin lesions of the lepromatous type are even more numerous and have a tendency to lose defined margins and coalesce.

The deformities of the hands and feet associated with Hansen's disease result from sensory and motor impairment of peripheral nerves. Sensory loss leads to the development of traumatic injuries that can become infected secondarily. This, in turn, can contribute to further development of osteomyelitis, bone absorption, and partial or total loss of digits.

The prognosis for Hansen's disease is dependent upon the spectrum of the disease, the time of diagnosis relative to disease onset, and the course of therapy. The indeterminate type responds well to treatment, with cures being effected after as little as one year of therapy. Tuberculoid disease can become inactive within two years following initiation of treatment. However, depending upon the length of infection prior to diagnosis and the degree of neurological loss, some residual disability may remain. Failure of patients with lepromatous Hansen's disease to mount an effective immune response necessitates prolonged and usually lifelong therapy. These patients may still harbor viable organisms and must continue to take medications to prevent reemergence of the disease.

Treatment of uncomplicated Hansen's disease is carried out on an outpatient basis. The primary drug regimen is Dapsone 100 mg (a sulfone derivative) plus rifampin 600 mg daily. The duration of treatment varies according to the spectrum of disease. Alternative drugs such as clofazimine are available which may be used in the event of sulfone resistance or reactive states which may develop during the course of therapy. Medical follow-up of these patients is necessary to determine the development of drug resistance. Experimental drugs continue to be investigated as well.

Neither the indeterminate nor tuberculoid disease is considered contagious (*M. leprae* is seldom found in the skin or nasal secretions of patients with these types of Hansen's disease). In the borderline and lepromatous types, communicability generally ceases within three months of drug therapy, though the presence of organisms may be documented for many years, requiring continued therapy. Recommended lengths of therapy (barring unusual circumstances) for the

different types of Hansen's disease are: indeterminant to tuberculoid tuberculoid -- three years beyond negativity (no bacilli found on skin smear and no new lesions for 12 months); borderline tuberculoid -- five years beyond negativity; borderline borderline -- ten years beyond negativity; and borderline lepromatous to lepromatous lepromatous -- for life.

Hansen's disease is a slowly progressing disease of the skin and nerves caused by the *Mycobacterium leprae* organism. It is a rare disease in the United States, difficult to acquire and relatively easy to treat. Public health education activities can assist people in distinguishing fact from fiction so that unreasonable fears associated with this disease may be eliminated. For additional information concerning Hansen's disease, contact the Hansen's Disease Program at (512) 458-7455 or STS 824-9455 or write 1100 West 49th Street, Austin, Texas 78756.

Editorial Note: In 1986, there were 32 new cases of Hansen's disease reported in Texas. Sixteen (50.0%) of these were diagnosed as lepromatous, 12 (37.5%) as tuberculoid, three (9.4%) as borderline, and one (3.0%) was indeterminate. Ages ranged from 9 to 68 years, the average being 38.7. Sixteen cases (40.6%) were ≤35 years of age. The ethnic distribution included 20 (62.5%) Hispanics, seven (21.9%) Asians, four (12.5%) whites, and one (3.0%) black. On the average, the period between onset of symptoms and year of diagnosis was 2.2 years, primarily because *M. leprae* is slow-growing, and early symptoms of Hansen's disease can be mistaken for other conditions.

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REFERENCES:

1. Blake LA, West BC, Lary CH, Todd JR IV. Environmental nonhuman sources of leprosy. Rev Inf Dis 1987; 9(3):562-77.
2. Reich CV. Leprosy: cause, transmission, and a new theory of pathogenesis. Rev Inf Dis 1987; 9(3):590-4.

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MEASLES ALERT

Currently, an outbreak of measles is occurring in Copperas Cove in Coryell Country and in Killeen in Bell County. Approximately 40 cases are being investigated. The cases are occurring in pre-school age children, with several cases being reported from a licensed day-care center. Public health employees are screening for measles vaccine status in area day-care centers.

Public health officials recommend that unimmunized children 12 months of age and older receive measles, mumps, and rubella (MMR) vaccine. Infants six months through 11 months of age who are exposed to a measles case should receive single-antigen measles vaccine. (Infants who receive single-antigen measles vaccine should receive MMR vaccine at the recommended age of 15 months.)

Please investigate all reported rash/fever illnesses immediately. If the rash/fever illness resembles measles, outbreak control measures should be implemented without delay. "Available data suggest that live measles virus vaccine, if given within 72 hours of measles exposure, may provide protection." (*Report of the Committee on Infectious Diseases*, 1986, pg. 235).

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TUBERCULOSIS CONTROL DIVISION NOTES

Isoniazid Recall: Isoniazid tablets manufactured by Duramed, 100 mg, 100 tablets per bottle, Lot No. 6315 (expiration date 7/88) should not be distributed and, if possible, should be recalled from patients. Further information regarding this recall and its replacement will be forthcoming by the Tuberculosis Control Division.

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PUBLICATION ANNOUNCEMENT

Preparations for *Reported Morbidity and Mortality in Texas - 1986 Annual Summary* are now in the final stages, and the report is expected to be ready for distribution in October.

This publication is an annual project of the Epidemiology Division and contains the final figures on the reported incidence of reportable diseases in Texas. Epidemiological descriptions of infectious disease activity, summaries of the reportable occupational diseases, numerous illustrations, and an overview of special surveillance activities are also included in this report. The report is further supplemented by epidemiologic data provided by the Sexually Transmitted Disease Control Division, Immunization Division, and Tuberculosis Control Division, and by mortality data provided by the Bureau of Vital Statistics.

The report will be automatically provided to regional and local health departments, TDH program managers, selected hospital infection control practitioners and selected libraries. Other interested individuals can request copies on a "first come - first served" basis by submitting a request in writing to: Jan Pelosi, Infectious Diseases Program, Epidemiology Division, Texas Department of Health, 1100 West 49th Street, Austin, Texas 78756-3180.

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