Plague

Plague is a Class A disease. It must be reported to the state within 24 hours.

Plague is an acute, febrile, zoonotic disease caused by *Yersinia pestis*, a gram-negative cocco-bacillus in the family *Enterobacteriaceae*. Due to its high potential for use as a biological weapon, particularly for pneumonic plague, it remains a disease of high concern. The infectious dose and incubation period may range anywhere from 10 to 500 organisms and one to eight days respectively, depending on the type of disease and mode of transmission.

In the United States, the principal epizootic hosts are ground squirrels, prairie dogs and chipmunks and a variety of burrowing rats that dwell near humans. Two varieties of rodents, the common black or roof rat (*Rattus rattus*) and Norway rat or the sewer rat (*Rattus norwegicus*), serve as excellent hosts for the rat fleas. Although plague is more commonly maintained in enzootic cycles among wild rodent populations from a large area spanning the Pacific coast to Texas, Oklahoma, Kansas and Dakotas, human cases occur in two focal regions, mainly the southwestern states of New Mexico, northern Arizona, southern Colorado and Utah and the Pacific coast region of California, southern Oregon, and western Nevada. Sporadic cases occur annually.

Between 1900 and 2012, 1006 confirmed or probable cases of plague occurred in the United States, of which over 82% had the bubonic form, followed by septicemic (10%), and pneumonic (8%). An average of seven human plague cases (range: 1-17 cases per year) have been reported each year, affecting people of all ages, though 50% of cases occur in the 12 to 45-year old age group. Median age of the patient was 29 years (range <1-94 years), and 65% of infected patients were male. White non-Hispanics accounted for 55% of all cases; 16% of cases were seen in American Indian and Asian persons.

While the last urban plague epidemic in the U.S. occurred in 1924-25 in Los Angeles, with no person-to-person transmission of plague reported since then, a recent report by the Centers for Disease Control and Prevention identified the first case of possible human-to-human transmission during the plague outbreak in Colorado in June 2014.

Most cases of plague in Louisiana, if any, are reported from travel, either to western part of the U.S. or imported infections from international sites.

Although no longer available in the United States, an inactivated whole-cell *Y.pestis* vaccine has been approved in the past; it is recommended only for persons above 18 years of age whose occupation regularly places them at high risk for exposure to the bacillus, or plague-infected rodents. Prophylaxis is also indicated for people with close exposure to cases of pneumonic plague. Infection control and prevention activities include standard and droplet precautions with PPE.

Taking personal protection precautions such as use of repellents containing DEET/permethrin, rodent and insect control, and taking steps to reduce rodent habitat around homes are necessary to reduce infection and transmission of plague.

Outbreak in Louisiana

All cases of human plague infection in Louisiana occurred during 1900-1925 period, when cases were restricted exclusively to port cities on the Pacific and Gulf coasts. No cases have been reported so far in Louisiana since the last plague outbreak in New Orleans that ended in 1921. Early recognition of the importance and severity of the disease, together with implementation of strong preventive and control measures resulted in the control of epidemic. Some preventive measures in the form of a rat-trapping campaign were already in place since 1912 following detection of first case of bubonic plague in the United States. Historically, Louisiana has witnessed two plague outbreaks during the period 1900-1925 as a result of increased trade and commerce between the port cities in the United States and other countries. Both of the outbreaks occurred in the city of New Orleans.

The first outbreak was reported in the year 1914-1915; it resulted in 31 cases, of which 10 were fatal. The index case was identified as a Swedish sailor who arrived to New Orleans and died as a result of bubonic plague. An epidemiological investigation indicated that the deceased was a resident of the Volunteers of America Home located at 713 St. Joseph Street in New Orleans when he developed symptoms and was later treated at Charity Hospital. More cases of plague were identified thereafter, at the rate of one case every three days, with a peak month in August.

To limit transmission of plague, a number of preventive measures were taken and ordinances were passed to strengthen the efforts. Residents were evacuated from the Volunteers of America Home and quarantined outside the city limits. All furnishings inside the home were burned in a bonfire. Infected patients were treated with anti-plague serum in an isolated ward. Other measures included implementation of a three-pronged prevention strategy for the entire city which consisted of reducing the rat population through massive trapping campaign, destruction of breeding sites, transformation of city landscapes, ‘rat-proofing’ of buildings and enforcing the use of closed garbage cans. Housing codes were also enacted that enforced the raising of dwellings above ground. Infected houses were subjected to fumigation, burning and complete leveling. This control and prevention activities proved to be very successful which later served as a model to control plague outbreaks elsewhere in the country.

The second outbreak occurred in New Orleans during 1919-1921 causing 25 cases and 11 deaths. In the late 1920s, New Orleans was declared free of bubonic plague.