

PLAGUE: Notes about the Disease

The disease plague, caused by the Gram-negative bacterium *Yersinia pestis* (formerly *Pasteurella pestis*), has plagued mankind for centuries.

The combined effects of Nero and Kublai Khan, of Napoleon and Hitler, all the Popes, all the Pharaohs, and all the incumbents of the Ottoman throne are as a puff of smoke against the typhoon blast of fleas' ravages through the ages.¹

It is no wonder that a disease credited with the deaths of a quarter to a third of the entire population of Europe during the 14th century still strikes dread when it is mentioned in modern society. When its potential as an agent of bioterrorism is considered, there would seem to be much about which to be concerned.

Clinically in humans, plague can occur in three forms. Bubonic plague, which has a 50-60% case-fatality ratio without treatment, is characterized by enlarged regional lymphadenopathy and accounts for the great majority of plague cases seen in the US. Septicemic and pulmonic forms of plague carry worse prognoses than the bubonic form and each can be either primary or secondary to infection at another site.

The maintenance of *Y. pestis* in a rodent-flea-rodent cycle in nature, sometimes for years without evidence of spillover into the human population, explains the insidious persistence of plague. In the American southwest, it exists in a sylvatic (wild) cycle that at times even involves domestic cats. In recent decades there has been enough human encroachment into the natural environment that human cases have been occurring yearly. With the extent to which Americans travel nowadays, it should not be surprising that cases of plague can occur in non-endemic states like New York² and South Carolina.³ Who knows when it might show up in NC?

When and if plague does turn up here, from a public health standpoint, several matters have to be considered quickly. The form of disease and the case patient's travel and animal contact history are of paramount importance. An isolated case of bubonic plague presenting in someone who just returned from a vacation in Arizona that included attempts at petting ground squirrels would strongly suggest acquisition of infection from an endemic sylvatic source. However, several cases of primary pneumonic plague suddenly developing among residents of a NC community who haven't traveled recently would mean that a terrorist act involving an aerosol dissemination of *Y. pestis* must be excluded. In either case, public health workers should be aware of the contagious nature of pulmonic plague and be prepared to advise health care personnel about necessary isolation measures.

1. Brendan Lehane, *The Compleat Flea: A Light-hearted Chronicle, Personal and Historical, of One of Man's Oldest Enemies* (Viking Press, 1969).
2. Centers for Disease Control and Prevention. [Imported plague—New York City]. *MMWR* 2002;52:[725-8], www.cdc.gov/mmwr/preview/mmwrhtml/mm5231a1.htm.
3. Centers for Disease Control and Prevention. [Plague—South Carolina]. *MMWR* 1983;32:[417-8], www.cdc.gov/mmwr/preview/mmwrhtml/00000124.htm.