

Plague as a weapon

by Bend_Weekly_News_Sources

Scientists are worried that a disease associated with devastating epidemics may make a comeback as a weapon. An article in this week's issue of the medical journal *The Lancet* discusses the possibility that the bacterium responsible for plague, known in the Middle Ages as the Black Death, could serve as a bioterrorism agent.

Infections from the microbe, *Yersinia pestis*, take several forms. In the article, Mike Prenice of University College in Cork, Ireland and Li-la Ra-hal-i-son of the Pasteur Institute in Antananarivo, Madagascar, reviewed the bacterium's genetic makeup, history and modes of transmission. Shootingly arrows, a shadowy figure of death seals the fates of plague victims in this anonymous 15th-century painting, Allegory of the Plague.

The microbe multiplies in fleas that have fed on infected animal blood. This causes blockage in the flea's feeding system that makes the flea continually regurgitate and feed again, delivering the germ into the blood of whatever it is biting of a rodent or a human. Bubonic plague, the most common form, has a sudden onset and causes dizziness, high fever, painful swellings and hemorrhages. These sometimes turn black, accounting for the name Black Death. The most widespread epidemic is estimated to have killed three quarters of the population of Europe and Asia after starting in Constantinople in 1334. Another form of infection, pneumonic plague, is quickly fatal and is the only type directly transmissible from person to person, by air droplets released during coughing or sneezing. Plague's ability to spread via droplets makes possible aerosol-based weapons capable of causing widespread pneumonic plague outbreaks, according to Prenice and Ra-hal-i-son. Eradicating the danger, they added, is the bacterium's wide distribution, ease of culturing, and availability of expert advice from former scientists. The disease still prevails in parts of Asia and sporadically elsewhere; an estimated 2,500 cases are reported annually. Untreated bubonic plague kills 50 to 90 percent of victims, the researchers said, though timely diagnosis and therapy cut those percentages to between five and 15. Antibiotics are effective, but a *Y. pestis* strain in Madagascar shows disturbing signs of having evolved resistance to some of these, they added. Some vaccines are in development, one of which has reached phase II trials, the middle stage in the clinical trials process. Plague control efforts involve monitoring and reducing rodent populations where plague persists, the researchers wrote. But removal of the fleas, normal food supply by poisoning their usual hosts can increase human contact with starving fleas, they added. Thus, flea control by application of insecticides in

plague outbreak areas is also important.

Courtesy The Lancet and World Science staff

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