

Is there a risk of a plague pandemic after the death of a laboratory technician in Russia?

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On September 29, a 28-year-old female working in a research laboratory in Siberia was hospitalized with pneumonia. She died 2 days later. She may have developed a pulmonary infection caused by the bacterium *Yersinia pestis* after inhaling material from a broken test tube in a research laboratory 4 days earlier (Wise J. *BMJ* 2026).

Russian authorities have provided little information and have stated that the infection is, to date, of unknown origin. However, some 200 people who had been in contact with the patient - including health care personnel - have been isolated and quarantined.

The research laboratory in Irkutsk is located in the Lake Baikal region of Southern Siberia. Three months ago, a group of researchers, including authors from the Russian research institution, published an article in *Nature* describing the isolation of *Yersinia pestis* from human remains dating back 5500 years (McLeod et al. *Nature* 2026). Plague was already present at that time in Siberia and caused high mortality among early human populations.

There have been three major plague pandemics in history:

- The Plague of Justinian (541 AD). It affected the Byzantine Empire and caused millions of deaths between the 6th and 8th centuries.
- The Black Death (1347 AD). It caused the death of approximately one-third of the European population in the fourteenth century. Poor hygienic conditions, together with a high concentration of rats and fleas in urban areas, contributed to its rapid spread and high mortality. The term "Black Death" has

traditionally been associated with the dark discoloration that could occur in the skin of terminally ill patients.

- The Chinese Plague (1855). It began in the Yunnan Province, China, and subsequently spread to other parts of the world, causing outbreaks in Asia, Africa, and the Americas.

There are three main clinical forms of plague:

- Bubonic plague. It is transmitted through flea bites. The natural reservoirs of the bacterium are different species of rodents, including rats. It is therefore a zoonotic disease. Skin lesions and lymphadenopathy (buboes) occur, typically in the groin, armpits, or neck. If left untreated with antibiotics, the infection can progress and may be fatal.
- Pneumonic plague. The bacterium is acquired directly through inhalation, usually following exposure to infected people with cough and respiratory secretions. It can also occur accidentally in laboratory settings where the bacterium is cultured.
- Septicemic plague. This is the most severe form and may occur as a terminal manifestation of the disease when the bacterium enters the bloodstream and causes bacteremia. Mortality is very high.

The 2017 plague outbreak in Madagascar is the most important modern reference for plague on an epidemic scale. The World Health Organization described it as "unprecedented in the African region" because of its magnitude and urban nature. There were 2417 cases (498 confirmed, 793 probable, and 1126 suspected) and 209 deaths. One-third of the cases were

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pneumonic. The overall case-fatality rate was 8.6% (Vallés *et al.* *PLoS Negl Trop Dis* 2020).

Yersinia pestis, the plague bacterium, is susceptible to several antibiotics, including aminoglycosides, doxycycline, sulfonamides, and quinolones (Godfred-Cato *et al.*, *Clin Infect Dis* 2020). These drugs are often

administered prophylactically to people who have been exposed to a suspected case (chemoprophylaxis). For this reason, along with the short interval of symptoms, it is very unlikely that the case of pneumonic plague in Russia, apparently resulting from an occupational accident, will produce an outbreak.