

Smallpox (Variola)

Now globally eradicated, smallpox was a serious, sometimes fatal disease caused by the variola virus. Smallpox belonged to the orthopox genus of viruses, which includes cowpox and mpox. Due to worldwide vaccination campaigns, the World Health Organization declared the world free of smallpox in 1980. The last case of naturally occurring smallpox in the world was in 1977 and the last U.S. outbreak was in 1949. Smallpox was fatal in 30% of people infected with the virus, and survivors often were left permanently scarred or blinded by the disease.

Transmission

Before eradication, smallpox was spread by direct face-to-face contact with an infected person over a long period of time. It was also spread by direct contact with the rash, clothing, or bedding of a person with the disease. Human cases of smallpox no longer exist, and the virus does not infect non-human animals. Because samples of the virus exist in laboratories in the world, smallpox is considered a possible bioterror agent.

People who were not previously vaccinated against smallpox are at risk of infection, if exposed to the virus. Routine smallpox vaccination in the U.S. was phased out in the 1970s, because the disease was eliminated in the country prior to this time. Certain groups, such as members of the military and laboratory workers, are vaccinated against smallpox to prevent against infection in the event of a laboratory error or bioterrorism event. Due to the mpox pandemic that began in 2022, many at-risk groups are now vaccinated against orthopox viruses, which includes smallpox.

Symptoms

The first stage of the illness lasts two to five days with symptoms that include a high fever of 102°F-104°F, a general feeling of discomfort, severe headache, backache, abdominal pain, and weakness. Most people will be severely ill and bedridden during this stage. By the third or fourth day of this stage, the fever usually drops. Following this stage, soars appear in the mouth and throat, but they may not be noticed by the infected person. The rash begins less than 24 hours after the sores in the mouth and throat appear. The rash usually begins on the face and quickly moves to the rest of the body. The rash is worst on the face and lower parts of the arms and legs. The rash then develops into raised bumps, filled with pus, which scab over eight to 10 days after the rash appears. The scabs will fall off three to four weeks after the rash appears.

Diagnosis

Laboratory testing is needed to diagnose smallpox. Consultation with the NDHHS and CDC would be required to test and individual for smallpox.

Treatment

Some antivirals may be useful in the treatment of smallpox. Receipt of medical countermeasures such as orthopox vaccine and antivirals must be coordinated through the ND Emergency Preparedness Division and the Administration of Strategic Preparedness and Response through the U.S. Strategic National Stockpile.

Prevention

Smallpox is prevented through vaccination. Groups at-risk for exposure to smallpox or other orthopoxviruses are eligible for vaccination. If smallpox were to be released as a bioagent, post-exposure vaccination (vaccine given after exposure to a pathogen) may help prevent or lessen the disease.

Exclusion Guidance

People with smallpox would need to be excluded from child care, school, work, or other activities. In the event of a smallpox infection, consultation with the NDHHS and CDC would be required.

For additional information about smallpox, please contact the North Dakota Department of Health and Human Services, Disease Control and Forensic Pathology Section, at 701.328.2378.

Suspected cases should be reported immediately to the North Dakota Department of Health and Human Services.

Resources:

1. Centers for Disease Control and Prevention. (2017, July 12). *CDC Smallpox*. Centers for Disease Control and Prevention. Retrieved June 26, 2023, from <https://www.cdc.gov/smallpox/index.html>.
2. Kimberlin, D. W., Barnett, E. D., Lynfield, R., Sawyer, M. H. (2021) Red Book: 2021-2024 Report of the Committee on Infectious Diseases. 32nd ed. American Academy of Pediatrics. [Management and Prevention of Infectious Diseases; Smallpox] [pages 672-676].

 Report Immediately: 800.472.2180 or 701.328.2378  Possible Bioterrorism Agents (CDC classified A, B or C Agent)

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