

F a c t s

Bioterrorism

Since the terrorist attacks on September 11, 2001 and heightened media attention respecting recent anthrax infections in the United States, the public has become increasingly concerned about bioterrorism.

What is it?

Bioterrorism can be described as the use of a microorganism with the deliberate intent of causing infection in order to achieve certain goals. An expert panel convened by the CDC in 1999 considered that the six microorganisms posing the greatest public health threat were *Variola major* (smallpox), *Bacillus anthracis* (anthrax), *Yersinia pestis* (plague), botulinum toxin (botulism), *Francisella tularensis* (tularemia), and filovirus/arenavirus (hemorrhagic fevers).

Of these, anthrax and smallpox have received the most attention due to their ability to be released in an aerosol cloud over densely populated areas. More detailed information regarding these microorganisms and illnesses can be obtained from Public Health.

Anthrax

Anthrax is caused by *Bacillus anthracis*, a bacterium. It is not transmitted from person to person. Anthrax organisms can cause infection to the skin, gastrointestinal system, or lungs. To cause infection the organism must be rubbed into abraded skin, swallowed or inhaled as a fine, aerosolized mist. Disease can be prevented after exposure to the anthrax spores by early treatment with the appropriate antibiotics.

Pulmonary anthrax has been a concern owing to its potential for bioterrorism; however, for anthrax to be an effective agent it must be aerosolized into very small particles. This is difficult to do and requires a great deal of technical skill and special equipment. If these small particles are inhaled, life threatening lung infection can occur but prompt recognition and treatment are effective. There is currently no evidence of anthrax in Ontario.

Smallpox

Smallpox is caused by a virus. It was once worldwide in scope but due to vaccination efforts it has been eradicated. Smallpox vaccinations were discontinued in 1972 and the last naturally occurring human case worldwide occurred in Somalia in 1977. It is spread from person to person, primarily by droplets or aerosols expelled from the mouth and by direct contact. Contaminated clothing and bed linens can also spread the virus. The time between exposure to the virus and symptoms is 10-14 days. Symptom onset can be

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sudden and may include fever, malaise, headache, prostration, sever back ache, and occasionally abdominal pain and vomiting. After 2- 4 days there is a reduction in fever and a deep-seated rash develops. Lesions appear on the face, extremities and subsequently the trunk.

Public concerns

Public concerns and fear of a bioterrorist attack may remain heightened in the coming days. The likelihood of a large-scale bioterrorist event is currently thought to be low given the technical sophistication required to develop and effectively disperse most biological weapons. Public Health strongly opposes prescribing prophylactic antibiotics and/or purchasing gas masks in the absence of any surveillance or laboratory evidence of a bioterrorist event in Grey Bruce. Use of prophylactic antibiotics is not without risk as inappropriate use of antibiotics will lead to increased antibiotic resistance among microorganisms causing common bacterial infections (ie. otitis media, pneumonia) and may result in serious adverse effects (ie. Clostridium difficile colitis, allergic reactions, interactions with other medications).

Public Health also strongly recommends that physicians not prescribe antibiotics for their patients to stockpile for future use. Stockpiling of antibiotics could lead to inappropriate patient decisions to self-medicate, incomplete courses of antibiotics that might select for resistant organisms, the eventual use of expired medications, and the depletion of national supplies for medically indicated uses.

Purchasing of gas masks for protection against biologic agents is likewise discouraged. Gas masks would only be protective if worn at the exact moment a bioterrorist attack occurred. It is impractical to wear masks continuously as a protective measure against the possibility of a covert release of a biologic agent. Moreover, masks need to be fitted properly as improper use of gas masks can cause serious injury and death, especially among persons with underlying heart or lung disease.

Vaccines

There is currently no indication for the use of anthrax or smallpox vaccine. Both vaccines are in short supply and not available to the general public or the medical community. Anthrax vaccination currently requires 6 shots over an 18 month period with periodic boosters. At this time, the anthrax vaccine is in limited supply and only available for military personnel thought to be at higher risk for potential exposure to anthrax in combat settings.

The smallpox vaccine is no longer a licensed product in Canada and was removed from the commercial market in 1983 as a result of the successful eradication of smallpox. According to the CDC, the US Public Health Service maintains an emergency stockpile of approximately 15 million doses. At the present time, smallpox vaccine is supplied only to certain laboratory research workers who are at risk of infection with smallpox-like viruses (orthopoxviruses) as a result of their occupation.

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If you require any additional information please contact Public Health at 376-9420 or 1-800-263-3456.

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