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# Oncology Nursing Implications Related to Smallpox Bioterrorism Preparations

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**B**ioterrorism has been a word on everyone's lips since the horrific attacks on the World Trade Center on September 11, 2001. Bioterrorism is one type of terrorist act that specifically uses biologic agents, such as bacteria or viruses, as the instrument of terror. Other potential weapons of terror include chemicals, radiation, and explosives. Agriterror (when the agricultural system is the primary target of attack) and cyberterror (use of computers and the Internet to create economic chaos) are two other potential mediums for a terrorist attack (American Medical Association, 2003a).

Bioterrorism involves the use of disease pathogens by a terrorist entity (an individual, group, or nation) for the purpose of killing large numbers of people and causing fear and social disruption. The underlying purpose of terrorism is to create chaos and panic. Often, the level of fear is out of proportion to the actual damage done by the terrorist act. A clear example of this is the level of panic and paranoia following the anthrax-tainted letters delivered to Florida; Washington, DC; and New York City in October 2001: Only 11 people developed inhalational anthrax, 5 of whom died, and 7 people developed cutaneous anthrax with no deaths. Yet, throughout the country, people were afraid to open mail, many people reported being concerned about powdery residue left over from obviously innocuous sources, and symptoms of the common cold sent people to the emergency departments requesting Cipro® (ciprofloxacin, Bayer Corporation, West Haven, CT) for anthrax prophylaxis.

The Centers for Disease Control and Prevention (CDC) has identified six agents, referred to as "Class A agents," that pose par-

Although smallpox was globally eradicated in 1977, the current threat of smallpox as a bioterrorism agent is unknown. Based on intelligence reports, the U.S. government and public health sectors have recommended smallpox vaccination for very select individuals. Patients with cancer are at particular risk for complications from the smallpox vaccine because of potential immunosuppression. Vaccinated nurses caring for these patients also need to take special precautions because of the possibility of secondary transmission of this live vaccine to patients. This article reviews background information on bioterrorism, the presentation and clinical features of smallpox, contraindications to the smallpox vaccine, and implications for oncology nurses.

**Key Words:** bioterrorism, smallpox, variola virus, smallpox vaccine

ticular risk in the event of a bioterrorist act. These include anthrax, smallpox, plague, tularemia, botulinum toxin, and viruses that cause viral hemorrhagic fevers such as the Ebola virus. As a group, these agents can be lethal, are easy to disseminate, can cause public panic and social disruption, and require specific actions on the part of the public health community for preparedness. This article focuses specifically on smallpox.

The specific threat of smallpox as a weapon of bioterrorism is unknown. Following the successful global eradication of smallpox in 1977, two known repositories of the virus were left in reserve for research purposes: one at the Vector Institute in Novosibirsk, Siberia, in the former Soviet Union, the other at CDC in Atlanta, GA. The World Health Organization recommended that all supplies of the virus be destroyed in 2000. However, before the viral stores were destroyed, reports from Russian defectors indicated that efforts to weaponize smallpox were ongoing and, thus, the resolve to destroy remaining viral samples was lost.

Since the fall of the communist government in the Soviet Union, intelligence agencies have had concerns that knowledge of viral manipulation and, possibly, samples of the virus itself have been sold on the black market to individuals with terrorist intentions (Alibek, 1999).

## Smallpox: The Disease

Smallpox is a viral illness. Historically, it had a seasonal pattern similar to that of chicken pox or the measles, with peak incidences in winter and early spring. Through natural epidemics, it has claimed more lives than any other infectious illness, more than 500 millions deaths in the 20th century alone (CDC, 2003c).

Smallpox is a highly contagious and potentially deadly disease. Estimates suggest that it has a disease multiplier of 10–20 (i.e., each person who develops the illness will infect another 10–20 people) (Henderson et al., 1999). Therefore, if 10 people developed smallpox, within a period of two to three weeks (the natural incubation period), an additional 100–200 people who were exposed to the original 10 would develop smallpox. In another few weeks, the number would be 1,000–4,000, and so forth. The numbers of potentially contagious people would become unmanageable very quickly.

*Submitted June 2003. Accepted for publication August 5, 2003. (Mention of specific products and opinions related to those products do not indicate or imply endorsement by the Clinical Journal of Oncology Nursing or the Oncology Nursing Society.)*

Digital Object Identifier: 10.1188/04.CJON.51-55