Bioterrorism:
Class A Agents and Their Potential Presentations in Immunocompromised Patients

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A bioterrorism attack would be particularly challenging for medical professionals caring for patients with cancer who often have weakened immune systems. Knowledge of the class A agents and the potential variable presentations in immunocompromised patients is key to early recognition of an outbreak and prompt reporting. The purpose of this article is to present the class A agents: *Bacillus anthracis* (anthrax), botulinum toxin (botulism), variola virus (smallpox), *Yersinia pestis* (pneumonic plague), and *Francisella tularensis* (tularemia). The variable signs and symptoms that may be present in immunocompromised patients with cancer will be discussed with a focus on assessment and early recognition of an outbreak. The availability of vaccines and the implications for patients with cancer receiving these vaccines also will be discussed.

The attacks of September 11, 2001, alerted the United States to the threat that the country faces from terrorism. With the anthrax attacks on Florida and New York City, the risks associated with the dissemination of a biologic weapon and the ease of doing so became evident. The Centers for Disease Control and Prevention ([CDC], 2001a) recommended heightened surveillance for any unusual disease occurrence or increased numbers of illness that might be associated with a bioterrorism attack. Surveillance begins with every healthcare worker who is in contact with patients. Oncology nurses must stay informed of bioterrorism and its implications for their patients. Because oncology nurses work in a variety of settings (e.g., urban and rural, inpatient and outpatient), knowledge about bioterrorism agents and disease presentation and ability to recognize clusters of outbreaks is essential to the identify a potential attack (Buehler, Berkelman, Hartley, & Peters, 2003). Rapid identification is the first line of defense; it can prevent further exposure and offer early treatment to affected patients.

The World Health Organization (2004) defined a biologic agent as one that produces its effect through multiplication within a target host and is intended for use in war to cause disease or death in human beings, animals, or plants. In 1999, the CDC reclassified biologic agents into classes A, B, and C. Class A agents have a moderate to high likelihood for large-scale dissemination or a heightened general awareness that could cause mass fear and civil disruption. Class B agents generally cause less illness and death and therefore would be expected to have lower medical and public health impact. Class C agents are not believed to present a high bioterrorism risk to public health (Rotz, Khan, Lillibridge, Ostroff, & Hughes, 2002). This article will focus on the five class A agents that have the greatest potential for mass casualties: *Bacillus anthracis* (anthrax),

At a Glance

✦ When compared with the general population, immunocompromised patients may show variations if infected with a class A agent.

✦ Surveillance of potential infection with class A agents begins at the bedside.

✦ Recognition of an acute-onset illness among many patients within a short time period should alert healthcare professionals to a potential outbreak.

Clostridium botulinum toxin (botulism), *Francisella tularensis* (tularemia), *Variola major* (smallpox), and *Yersinia pestis* (plague). Class A agents have a moderate to high likelihood for large-scale dissemination or a heightened general awareness that could cause mass fear and civil disruption (Rotz et al.). The class A agents' modes of transmission, incubation periods, and infection control precautions are presented in Table 1.

A bioterrorism attack would be particularly challenging for medical professionals caring for patients with cancer who often have weakened immune systems secondary to malignancy,

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