



## **Bioterrorism Background September 2003**

This presentation is designed to provide clinicians with the essential and practical information needed to properly recognize, diagnose and manage illnesses associated with bioterrorism.

Bioterrorism is the use or threatened use of a micro-organism or the product of a micro-organism in order to generate fear, morbidity or mortality in a population.

Although there are potentially hundreds of organisms that could be used as a biological weapon, the Centers for Disease Control (CDC) has given the highest priority to six diseases that have been designated as Category 'A', or the most likely to be encountered in a biological attack. Agents within this category have several features in common including a high morbidity or mortality and relative ease to produce, store and disperse. This presentation will focus on these six Category A diseases, which are: Anthrax, smallpox, plague, tularemia, botulism and the viral hemorrhagic fevers.

Release of biological weapons could be accomplished in a number of ways. However, it is expected that an aerosol release is the most likely to be encountered in a large-scale bioterrorism event if the goal is to sicken or kill large numbers of people. This is because aerosols are odorless, colorless and relatively easy to disperse over vast areas, and for most of the diseases, it is the route that is most contagious and causes the most severe disease. Many of these agents could theoretically be used to target food or water supplies, however, the psychological impact would likely be more of a concern than the clinical effect because of water purification processes, dilution of infectious material into large volumes, stability of the organisms and the logistical difficulties of dispersion.

As the first responders in this new kind of terrorism, clinicians played a critical role during the 2001 outbreak of anthrax related to contaminated letters. Because of this new threat, all physicians who might see patients at the first presentation of a bioterrorism-related illness should be able to recognize, manage and report such diseases. There are a couple of concepts that are important for the recognition of any bioterrorism event,

regardless of the etiology. First, a reasonably high level of suspicion is needed to keep bioterrorism-related illnesses in the differential diagnosis because most of the likely agents are rare, or non-existent as naturally-occurring diseases. The old adage of “When you hear hoofbeats, think horses instead of zebras” needs to be amended to say “...think horses but don’t forget to consider the zebras”. Secondly, physicians should be conscious of any unusual epidemiologic trends that might suggest a biological weapons release or a naturally emerging infectious disease. For example, an unusual clustering of cases in a geographic area or among persons with common exposures should raise suspicion. Other red flags include a large number of otherwise healthy people presenting with severe disease, the identification of diseases that are typically not found in the geographic area, and a sudden increase in sick or dead animals, as many of the potential bioterrorism-associated diseases are zoonoses.

Clinicians should be able to recognize the typical disease syndromes that would be encountered for the Category A diseases and know how to make a preliminary diagnosis. Physicians should also know how to appropriately treat and provide post-exposure prophylaxis for each of the major pathogens. Finally, it is vital that all physicians know how to immediately report any suspected bioterrorism-related illnesses to the appropriate authorities. Generally this will be the local and/or state health departments, as well as the hospital epidemiologist, infectious disease consultants and infection control specialists. The local health departments will be able to provide information on specific samples needed for appropriate diagnostic tests.