

SMALLPOX: Notes about the Disease

Why should North Carolinians be concerned about a disease that was eradicated globally in 1977? It is because the smallpox (variola) virus makes an attractive agent of bioterrorism to terrorists, particularly considering that the entire world's human population is more susceptible to infection now than it has ever been in the history of mankind.

Immunization against smallpox has an ancient history, dating back centuries before Edward Jenner's work with cowpox virus in the late 1700s. "Variolation"—inoculation with infectious material taken from smallpox victims—was a procedure practiced in several countries (including the United States) long before today's vaccinia virus vaccine, presumably evolved from the cowpox virus-derived vaccine developed by Jenner. As one might imagine, variolation was accompanied by serious complications. However, smallpox vaccine of the modern era has its own set of complications, and routine immunization of the citizenry ended in this country in the early 1970s when the risk of complications from vaccination exceeded the risk of disease. Thus, there is no "natural" smallpox immunity extant in humans from many of us having acquired and survived smallpox disease, nor is there a large number of us who are immune from routine vaccination.

The variola virus is a high priority BT agent for several reasons: it is capable of being transmitted by aerosolization and, once introduced into a population, from person to person; it is difficult to diagnose; it has no effective treatment; and there is high morbidity and mortality. Prompted by the events of 9/11/01, the federal government announced a plan in late 2002 to vaccinate about 500,000 military personnel and 500,000 civilian health care and public health workers over a short period of time. This was intended as a step in preparing the US for a possible terrorist attack using smallpox virus, stocks of which are still held by both the US and Russian governments (and perhaps other parties). However, after a year, while the military had achieved its goal, less than 40,000 civilians had been vaccinated. The reasons for this poor acceptance by civilians may be multiple, but the potential for adverse reactions and liability issues, combined with doubts about the likelihood of such a BT attack happening, undoubtedly figured large in the response.¹

Currently, the CDC and state and local health departments are trying to educate health care professionals about the clinical spectrum of smallpox and how to differentiate it from such diseases as chickenpox. A quite detailed "Smallpox Response Plan and Guidelines" developed by the CDC is available online,² and public health workers might do well to review at least the executive summary of this document. Also, NC's smallpox response plan warrants a review.³

1. EP Richards, KC Rathbun, and J Gold, "The Smallpox Vaccination Campaign of 2003: Why Did it Fail and What are the Lessons for Bioterrorism Preparedness?" *Louisiana Law Rev* 64 (2004): 851-904, <http://biotech.law.lsu.edu/Articles/smallpox.pdf>.
2. "Smallpox Response Plan and Guidelines (Version 3.0)," *Centers for Disease Control and Prevention*, 26 November 2002, www.bt.cdc.gov/agent/smallpox/response-plan/.
3. "Smallpox vaccination," *NC Public Health Preparedness and Response Branch*, 5 October 2004, www.epi.state.nc.us/epi/phpr/smallpox.html.