



The Threat of Small Pox



By Karen Tait, MD

Vaccinations are underway for a disease that might be spread by bioterrorists.

VACCINATION AGAINST A DISEASE whose eradication in 1980 was declared a major public health victory poses an unusual dilemma to modern medicine. Nonetheless, we are embarking on the "Phase 1" portion of the Bush administration's National Smallpox Vaccination Plan. The plan calls for vaccinating selected public health and hospital employees who make up the core of professional staff expected to investigate and care for initial cases of smallpox, should they occur.

Later on, Phase 2 would vaccinate additional health care professionals and first responders, including emergency medical, law enforcement and fire department personnel. The timing of phase 2 and phase 3 remain uncertain, but could occur in 2003 and 2004, respectively.

Perhaps for the first time in recent history, health professionals are asked to consider vaccination against a disease whose existence remains a theoretical specter, a possible result of an act of terrorism or warfare. Even to those privy to the most classified national security intelligence, the risk of this disease being re-introduced may boil down to an educated guess.

It has been suggested that diseases that are not readily contained make poor weapons compared to agents that produce more focused and time-limited damage, but the logic of terrorists is not always predictable. It has also been suggested that our demonstrated ability to respond to smallpox may, in and of itself, lessen the likelihood of this type of attack. Ultimately, we are left with many uncertainties.

From the perspective of informed consent, individuals being vaccinated under Phase 1 are being asked to accept the risk of smallpox vaccination to benefit society, not themselves personally. A timely response to a smallpox outbreak depends on the availability of pre-trained, pre-immunized staff who can intervene with relative safety. These individuals would then quickly vaccinate additional people as needed to contain the disease.

Those vaccinated for this early response role face the risks of vaccination, which can result in the death of 1–2 people out of every million vaccinated. In addition, there are small, but potentially serious reactions in household contacts that can occur if the live vaccinia virus used in the vaccine is inadvertently transmitted.

The decision to be vaccinated under these circumstances goes beyond the usual medical risk-benefit analysis. Much broader philosophical factors must be carefully weighed by each individual.

Each potential vaccinee must consider a variety of political and ethical issues: What do I believe is the likelihood of a smallpox attack? What are my professional responsibilities to

respond to a disease being used as a weapon? How much risk to myself and my family should I assume to fulfill professional or patriotic duties? Clearly, the answers to these questions require a great deal of personal deliberation and cannot be simply addressed through a one-size-fits-all policy.

In the field of public health, smallpox vaccination planning introduces a variety of challenges. Physicians and nurses must be trained to administer the vaccine, monitor and evaluate its reactions, and recognize and treat vaccine-related complications. Vaccination of hospital-based health professionals requires coordination of local public health departments (which have responsibility for overseeing the vaccination program) with hospital occupational health services.

A variety of specialists — including infectious disease experts, dermatologists, neurologists, and immunologists — need to be identified and prepared to assist with evaluating and managing any vaccination complications. These specialists should be vaccinated in order to provide hands-on care.

Because the risk of smallpox disease remains uncertain, the Public Health Department will carefully select volunteers to maintain the lowest rate of complications possible, even if the result is a smaller pool of pre-immunized professional staff.

Commonly encountered contraindications will screen out many potential vaccinees. These include (but are not limited to) a history of eczema or atopic dermatitis, immune suppressing conditions, pregnancy, or household members with these conditions. A more complete discussion of the vaccine and its contraindications can be found at the Centers for Disease Control website at www.bt.cdc.gov/agent/smallpox/vaccination/facts.asp.

Because experience with the smallpox vaccine over the past 30 years is extremely limited, we have to learn how the experience will play out in today's environment. Compared to 1972 (the last year that smallpox vaccine was routinely given) and the preceding years, we now have many more persons living with various immune-compromising conditions. Although the vaccination does not contain smallpox virus itself, it does contain the live vaccinia virus, which has the potential to spread to other parts of the vaccinated person's body and to other people with whom contact occurs.

Although it is believed that carefully covering the healing vaccination site, coupled with careful handwashing, will reduce the risk of transmission to others, there is a lack of recent data to quantify the current risk for transmission of secondary vaccinia infection. Uncertainties in this area pose particular challenges to health administrators considering whether recently vaccinated health care professionals should continue to care for high-risk patient populations.

The Centers for Disease Control recommends against routine furlough of vaccinated healthcare workers, but individual situations may still require special consideration. A series of articles in the *New England Journal of Medicine* of January 30, 2003 provides an overview of what is known and not known on the subject.

Similarly, there remain a variety of questions about administrative issues relating to this smallpox vaccination program. The Homeland Security Act, Section 304 offers certain liability protections to the vaccine manufacturers and public health entities involved in vaccine administration. Still unresolved in the minds of many administrators are liability and cost issues relating to Workers' Compensation or personal health insurance.

The Sacramento County Department of Health and Human Services continues to work with the California Department of Health Services and local health entities to implement the Smallpox Vaccination Plan as defined by Centers for Disease Control. Recognizing that many factors may influence participation and require adjustments over time, local public health officials view the planning process as beneficial. Improved communication between public health and medical community representatives creates effective linkages that are more widely applicable. Better communicable disease reporting and disease

control measures can be expected, as well as improved public-private coordination in disaster planning. Therefore, regardless of the final outcome of the smallpox planning process, the journey is well worthwhile.

For more information about smallpox and smallpox vaccination, see www.bt.cdc.gov/agent/smallpox/index.asp. For information about Sacramento County Department of Health and Human Services, see www.sacdhhs.com.

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1. See www.bt.cdc.gov/agent/smallpox/vaccination/section-304-qa.asp for questions and answers about this section of the act.

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