

Public Lecture by Dr. Samuel A. Bozzette
“Smallpox: Possibility of Vaccination for You?”
December 3, 2003 at 6:00 p.m. in the Garren Auditorium, Basic Science Building
Sponsored by the Sam & Rose Stein Institute for Research on Aging, UCSD

The new reality of biologic terrorism and warfare has ignited a debate within U.S. medical and policy circles about whether to reintroduce smallpox vaccination among the public at large. Smallpox is a serious, contagious, and often fatal infectious disease. Outbreaks have occurred periodically for thousands of years, but the natural disease was eradicated after a successful worldwide campaign initiated in 1967 by the World Health Organization. The last documented case of smallpox in the United States was in 1949. The last naturally occurring case in the world was in Somalia in 1977. Currently, there is no specific treatment for smallpox, and the only prevention is vaccination. While it is effective against the disease, the smallpox vaccine is made with a live virus and can cause serious illness and even death among a small proportion of people who receive it. Those vaccinated also may infect people who are excluded from receiving the vaccine because they are vulnerable to serious complications, a group that includes pregnant women, infants younger than a year old, people with HIV or other immune disorders, and people with some types of cancer, organ transplants, or histories of skin problems such as eczema.

The challenge in formulating a national smallpox vaccination policy is thus to consider the probability and nature of an attack, and then to balance the potential for saving lives against the likelihood of losing lives from complications of the vaccine itself. To study the risks and benefits of smallpox vaccination in the context of biologic terrorism, Dr. Samuel A. Bozzette and his team of UCSD, VA San Diego, and RAND researchers comprehensively reviewed historical smallpox outbreaks and mortality rates, developed a number of feasible smallpox attack scenarios ranging in intensity from an accidental laboratory release to a major bioterrorist attack on a large airport, and created a computer model that estimates the number of people who might be killed in each of the attacks under varying policy options. Based on their findings, they conclude that widespread vaccination of Americans against smallpox is too dangerous to justify unless the likelihood of a major biological attack on the United States is substantial, but it is prudent to vaccinate health care workers and emergency personnel now against the deadly disease. The risk of vaccinating health care workers is justified because they would be particularly vulnerable during smallpox outbreaks. They could come into close contact with those sick with smallpox, often before the disease is recognized. If health care workers themselves became sick, it could threaten our ability to keep our hospitals open and our health care system running. For this study, health care workers were defined to include everyone working in health and related services that would come into direct contact with sick people. This includes doctors, nurses, and others working in and around health care facilities, such as paramedics, ambulance drivers, and hospital security guards.

In addition, Bozzette and his colleagues urge that priority be given to developing improved methods of detecting and treating smallpox outbreaks. Early response requires investment in education, surveillance, and response capabilities.

Dr. Bozzette has briefed the findings of this study to a wide range of Washington policymakers, including Executive Branch staff. In December 2002, President Bush ordered smallpox vaccinations for 500,000 members of the U.S. armed forces, and offered vaccinations to civilian health care and emergency workers. However, the President strongly recommended against smallpox vaccinations for the remainder of the population at this time. He said there is no evidence of an imminent smallpox attack against the United States.