Smallpox outbreak: How long would it take for vaccines to protect people? Would it work?

April 30 2007

In the event of a smallpox outbreak in the United States, how long would it take for a vaccinSLU scientist leads national studye to start protecting Americans by stimulating an immune response?

A new national study led by Saint Louis University School of Medicine will attempt to answer this question.

General routine vaccinations for smallpox were stopped in the United States in 1971, and the world was declared free of smallpox in 1980. But because of the recent concern about biowarfare and bioterrorism throughout the world, the U.S. government is making efforts to improve its ability to protect its citizens in the event of a bioterrorist attack involving the smallpox virus (Variola major virus).

This study at Saint Louis University will look at the ability of an investigational vaccine made by Bavarian Nordic to stimulate the immune system against smallpox.

"Vaccines prevent disease by giving the body a jump-start at recognizing the infecting virus or bacteria," said Sharon Frey, M.D., the principal investigator for the study at Saint Louis University. "After successful vaccination, the body experiences a quicker fighting response to the infection, which lessens or completely avoids the symptoms of illness."

Unlike some other diseases, getting vaccinated following exposure to smallpox could provide protective effects. For example, for the flu vaccine to work, people need to get vaccinated before being exposed to influenza. The currently licensed smallpox vaccine, however, provides benefits post-exposure, and may be useful in further preventing the spread of the disease.

"If there were a release of the smallpox virus, we would vaccinate people immediately after the release," Frey said. "We'd move in and vaccinate people to prevent the spread."

Frey said this research compares the ability of a new investigational smallpox vaccine called IMVAMUNE® to produce a strong immune response against smallpox disease with another vaccine called Dryvax®, the currently licensed vaccine. The new vaccine will be given either alone or in combination with Dryvax.

"Another purpose of the study is to see how quickly people can be protected against smallpox after a release of smallpox into the environment," Frey said.

Dryvax® vaccine is the original Food and Drug Administration (FDA) licensed vaccine that was used to protect humans against smallpox disease. In this study, the Dryvax® vaccine is being used as a research vaccine because its use in this study is different than the FDA approved current recommended use of this licensed vaccine.

The Dryvax® vaccine is made from a live virus called vaccinia. The only people who presently receive this vaccine are people who work with viruses associated the risk of similar "pox" diseases; these are called by names like vaccinia, orthopox and monkeypox virus. (This group includes some government employees, some emergency workers military personnel and researchers).

Source: Saint Louis University