

## INFORMATION PAPER

Military Vaccine Agency  
25 January 2008

SUBJECT: Pregnancy Discovered After Smallpox Vaccination – IV-VIG

1. Purpose. This paper provides information to help women who discover they are pregnant shortly after receiving smallpox vaccination. This paper describes what is known and not known about the value of taking a medication called intravenous vaccinia immune globulin or IV-VIG. There is no general consensus about whether taking IV-VIG could help a woman who discovers she is pregnant within a few days after receiving smallpox vaccine. This paper is intended to help women decide what steps are right for them in this unusual situation.

2. Facts.

a. Vaccination & Pregnancy. In the 20th century, smallpox vaccine was given to billions of women around the world. During smallpox outbreaks, health officials intentionally gave pregnant women smallpox vaccine to protect them from lethal smallpox infections. During the New York City smallpox outbreak of 1947, an estimated 173,000 pregnant women were given smallpox vaccine. Today, because smallpox does not occur naturally, pregnant women do not receive smallpox vaccination.

b. Fetal Vaccinia. Most women given smallpox vaccine during pregnancy deliver healthy babies. In very rare cases, the vaccinia virus used in the smallpox vaccine can infect an unborn baby (the fetus). When this happens, a condition called fetal vaccinia occurs. This usually causes stillbirth or infant death shortly after delivery. Stillbirth is the birth of a dead fetus after the 28th week of pregnancy. There is no evidence that smallpox vaccine causes spontaneous abortion (miscarriage). There is no evidence that the smallpox vaccine used in the United States has caused birth defects in the past. Fetal vaccinia probably occurs if vaccinia virus moves from the mother's bloodstream, across the placenta, to the fetus. If it happens, vaccinia virus gets into a mother's bloodstream usually 7 to 10 days after smallpox vaccination.

c. Incidence of Fetal Vaccinia. In the 20th century, only three cases of fetal vaccinia were reported in the U.S., and only 47 cases around the world. Other cases probably occurred, but were not reported. Because it is so rare, scientists do not know precisely how this condition happens. They do know that during the New York City smallpox outbreak of 1947, no cases of fetal vaccinia were reported, even though about 173,000 pregnant women were vaccinated. CDC estimates that 1 case of fetal vaccinia might occur for every 10,000 to 100,000 pregnant women getting the smallpox vaccine for the first time. Most women given smallpox vaccine during pregnancy would deliver healthy babies.

d. DoD Experience. As of December 2007, 158,929 women have been vaccinated against smallpox since DoD resumed vaccinating service members in 2003. To date there have been no cases of fetal vaccinia reported.

e. Lowering the Risk. One theory is that giving a medication called intravenous vaccinia immune globulin (or IV-VIG) within a few days after vaccination might reduce the amount of vaccinia virus in the mother's bloodstream and prevent the virus from reaching the unborn baby. This is a theory, not a proven fact. IV-VIG has been given to prevent fetal vaccinia in the past, but not enough women have been treated to know whether it works or not. Two published studies did not show any value of giving IV-VIG but these studies were small.

### 3. A Woman's Choices.

a. We want you to know the facts so you can help guide the care we provide. Fetal vaccinia is possible in women given smallpox vaccine during pregnancy. But the chance of that happening is very small. The CDC says that smallpox vaccination during pregnancy should not ordinarily be a reason to terminate pregnancy.

b. The following sections describe some of the reasons you might want to receive IV-VIG and some of the reasons you might want to decline IV-VIG. Some of these reasons may be more important than others. This is a personal decision based on your personal situation and should be discussed with your doctor.

#### c. Reasons to Use IV-VIG.

(1) Licensed Product. In May 2005, the FDA (Food & Drug Administration) licensed IV-VIG for "the treatment and/or modification of complications resulting from smallpox vaccination." This means that IV-VIG is not an "investigational" product. It has been thoroughly tested and is considered safe.

(2) Neutralization. IV-VIG might stop (neutralize) the vaccinia virus and prevent it from getting into the mother's blood, and then into the fetus, where it might cause harm. Nobody knows if this theory is true or not.

(3) Theory. The theory of IV-VIG neutralizing the vaccinia virus is based on commonly accepted scientific principles.

(4) Timing. There might be more value in using IV-VIG if you just received the first (primary) smallpox vaccination in your life. There might be more value if less than 7 to 10 days have passed since you received smallpox vaccine.

(5) Safety. IV-VIG is in a category of medications called antibodies or immune globulins. Antibodies are naturally present in the human body. Millions of pregnant women have been successfully treated for other conditions with antibody injections during their pregnancy without harming the fetus.

(6) Personal Situation. There may be personal reasons for you. For example if you have gone to great effort to become pregnant (such as with in vitro fertilization), you may want to receive IV-VIG.

d. Reasons Not to Use IV-VIG.

(1) Timing. The theoretical value of IV-VIG preventing fetal vaccinia decreases as more time passes since your smallpox vaccination. Beyond 10 to 14 days after smallpox vaccination, IV-VIG would not be expected to be effective. This is because the vaccinia virus would already have gotten into the mother's bloodstream if it were going to do so.

(2) "Mild" Vaccine. The type of smallpox vaccine used in the United States is considered "milder" than the smallpox vaccine that was used in other parts of the world. By milder, we mean that the US-licensed smallpox vaccine appears to cause fewer serious adverse reactions than other kinds of smallpox vaccine. This difference may account for the low number of fetal vaccinia cases seen in the US, compared to other developed countries.

(3) Side Effects. All medications cause side effects. IV-VIG is given in a solution into the vein (intravenous). With IV-VIG, the most common side effects expected would be mild and temporary symptoms. These might include back pain, headache, muscle pain, itching, malaise, fever, palpitations, and rashes. In rare cases, maybe 1 in 100,000 people, you could have a serious allergic reaction to IV-VIG. These reactions are usually treatable, but there is a small chance the allergic reaction could kill you or your fetus.

(4) The Unknown. There is a small chance that giving IV-VIG could cause problems for the mother or fetus we don't know about. One way this could happen is if the fetus is already infected when IV-VIG is given. Again, we don't know for sure.

e. Natural Course of Pregnancy. We will do everything we can to help you deliver a healthy baby. In the United States, if six women recognize they are early in their pregnancy, one will have a miscarriage due to natural causes. And some babies (2% to 5%) will be born with birth defects. Unfortunately, the risk exists regardless of whether a mother received the smallpox vaccine or not.

4. How to Get Help.

a. The doctors and nurses taking care of you will help explain your situation in more detail and answer your personal questions. Various technical resources are available to help them and you. You might also want to talk with your family, your friends, or a chaplain or other advisor of your choice.

b. The Smallpox Vaccine in Pregnancy Registry was established to collect important confidential information from women who received smallpox vaccine in pregnancy.

Military Vaccine Agency  
SUBJECT: Pregnancy Discovered After Smallpox Vaccination

Professionals from the Registry can answer many questions from participants and their healthcare providers. The Registry may be contacted at:

National Smallpox Vaccine in Pregnancy Registry  
c/o DoD Birth and Infant Health Registry,  
NHRC Dept 164, 140 Sylvester Road, San Diego, CA 92106  
Phone: 619-553-9255 (DSN 553-9255)  
Fax: 619-553-7601  
Email: NHRC-BirthRegistry@med.navy.mil

5. For additional assistance, contact the following resources:

a. Vaccine safety issues, case management, ethical advice: Vaccine Healthcare Centers Network, c/o Walter Reed Army Medical Center, Washington, DC, 202-782-0411 (DSN 662)

b. Maternal-fetal medicine expertise: Department of Obstetrics & Gynecology, Division of Maternal-Fetal Medicine, Madigan Army Medical Center, Tacoma, WA, (253) 968-1406 (DSN 782).

c. CDC VIG information website: [ww.bt.cdc.gov/agent/smallpox/vaccination/vig.asp](http://ww.bt.cdc.gov/agent/smallpox/vaccination/vig.asp)

d. CDC disease information website. [www.bt.cdc.gov/agent/smallpox/index.asp](http://www.bt.cdc.gov/agent/smallpox/index.asp)

e. Multiple resources (e.g., product insert, Vaccine Information Statements) assembled by Military Vaccine Agency: [www.vaccines.mil/smallpox](http://www.vaccines.mil/smallpox)

Mr. William Watson/(703) 681-5101

Approved by: LTC Patrick Garman