

INFORMATION PAPER

Military Vaccine Agency
1 March 2007

SUBJECT: Chickenpox and Varicella Vaccine

1. Purpose: To describe chickenpox and the vaccine to prevent it.

2. Facts.

a. Microbiology. Chickenpox is a highly contagious viral infection caused by a herpes virus called varicella-zoster virus (VZV). Although the symptoms can be uncomfortable and limit normal activities, the disease is usually mild and rarely serious. In most healthy children, chickenpox lasts up to 2 weeks and rarely causes serious complications. In adults, newborn babies, and children with weakened immune systems, however, it can be a serious, long-lasting disease. After the initial chickenpox infection, VZV hides in nerve cells and is sometimes reactivated later in life. This reactivated disease, which is often painful, is called herpes zoster or shingles. What triggers reactivation is unclear.

b. Epidemiology. Varicella zoster virus spreads from person to person via airborne respiratory droplets or by direct contact with the fluid inside chickenpox lesions. Epidemics are possible throughout the year, but are most common in later winter and early spring. About 3.5 million cases of varicella occurred annually from 1980 to 1994 in the United States. Children 5 to 9 years of age developed chickenpox more often than people of other ages. About 90% of cases occurred in children younger than 15 years of age. The incidence of chickenpox in the total population was 8.3% to 9.1% per year in children 1 to 9 years of age before vaccine licensing, with about 100 deaths and 9,300 hospitalizations caused by chickenpox complications each year.

c. Vaccine. Varicella virus vaccine is a live, attenuated (weakened) viral vaccine licensed in the United States in 1995. It is marketed as *Varivax*® by Merck. The vaccine does not contain egg proteins or preservatives. In children, a single dose of vaccine is at least 91% effective in preventing chickenpox. Protection may wane somewhat 5 or more years after vaccination. People who contract natural chickenpox after vaccination usually have a much milder form than unvaccinated people. A second varicella virus-containing vaccine which also includes antigens for measles, mumps, and rubella, is marketed as ProQuad® (manufactured by Merck). ProQuad® is indicated for simultaneous immunization against measles, mumps, rubella and varicella in children 12 months to 12 years of age and may be used in the same age group if a second dose of MMR-II® is to be administered.

d. Storage. The viruses within varicella vaccine are fragile and must be handled carefully to maintain the cold chain. To maintain potency, the freeze-dried vaccine must be frozen at an average temperature of +5°F (-15°C) or colder until it is reconstituted for injection. Store the diluent separately at room temperature or in the refrigerator. Discard the vaccine if it is not used within 30 minutes after reconstitution. Protect the vaccine from light at all times because such exposure may inactivate the vaccine viruses.

e. Immunization.

Military Vaccine Agency
SUBJECT: Chickenpox and Varicella Vaccine

(1) Children, adolescents, and adults who have not been vaccinated previously and who do not have a reliable history of chickenpox are considered susceptible. Children 1 to 12 years of age should receive a single 0.5-mL dose administered subcutaneously, preferably before 18 months of age. Adolescents and adults 13 years of age and older should receive two 0.5-mL doses 4 to 8 weeks apart, although the second dose may be administered at any time without repeating the first dose. Try to assure varicella immunity by age 13, because after this age varicella disease is more severe and complications are more frequent. Measles-mumps-rubella (MMR) vaccine and other routine childhood vaccines may be administered simultaneously. If varicella and MMR vaccines are not administered at the same visit, separate them by at least 28 days.

(2) Alternatively, children ages 12 months to twelve years old may receive one 0.5mL dose of ProQuad® administered subcutaneously. At least one month should elapse between a dose of measles-containing vaccine such as MMR-II® and ProQuad®. If for any reason a second dose of varicella-containing vaccine is required, at least 3 months should elapse between administration of the two doses.

f. Cautions. The following people should not receive this vaccine: people with a severe allergic reaction to neomycin or gelatin; people who are immune suppressed due to medications or diseases; and people with cellular immune deficiency. Defer MMR vaccination for people who have moderate to severe acute illness. Administer two doses of varicella vaccine to people with certain immune deficiencies and to children with asymptomatic or mildly symptomatic HIV infection, with a 3-month interval between doses. Because people with impaired cellular immunity are potentially at greater risk for complications after receiving a live-virus vaccine, encourage these vaccinees to return for evaluation if they experience a varicella-like rash after vaccination. Do not administer varicella vaccine to women known to be pregnant or attempting to become pregnant. Advise women to avoid pregnancy for 1 month after varicella vaccination. Advise children to avoid use of salicylates (e.g., aspirin) for 6 weeks after varicella vaccination, as Reye syndrome can follow use of salicylates during natural varicella infection.

g. Adverse Events. The most common adverse reactions after varicella vaccination are fever and injection-site complaints such as pain, soreness, redness, and swelling. Less common reactions include local and generalized rashes.

h. DoD Policy. Use varicella vaccine in accordance with ACIP guidelines.

(1) Basic trainees and other accessions. Administer varicella vaccine to susceptible trainees and other accessions within the first two weeks of training. Serologic screening of trainees is the preferred means of determining those susceptible to varicella infection and in need of immunization. If serologic screening is not feasible, people may be questioned for indicators of pre-existing immunity. Identify those people who do not have a personal history of varicella disease, documentation of prior varicella immunization, or documentation of immunity based on serologic testing as susceptible. Document results of serologic testing in a DoD-approved electronic ITS and on the deployable health record. Adults and adolescents require two doses of varicella vaccine given four to eight weeks apart.

Military Vaccine Agency
SUBJECT: Chickenpox and Varicella Vaccine

(2) Healthcare workers. Administer varicella vaccine to susceptible healthcare workers. Determine susceptibility as noted above for trainees. Routine post-immunization testing for antibodies to varicella is not recommended.

(3) Other susceptible adults. Offer varicella vaccine to other susceptible people, especially non-pregnant women of childbearing age and men living in households with young children.

3. References.

- a. Advisory Committee on Immunization Practices. Prevention of varicella. MMWR 1999;48(RR-6):1-5. Available from www.cdc.gov/mmwr/PDF/rr/rr4806.pdf
- b. CDC disease information. www.cdc.gov/nip/diseases/varicella
- c. Multiple resources (e.g., product insert, Vaccine Information Statements) assembled by Military Vaccine Agency: www.vaccines.mil/chickenpox

CPT Allison Christ/703-681-5101

Approved by LTC Stephen Ford