INFORMATION PAPER

Military Vaccine Agency 6 January 2005

SUBJECT: Poliomyelitis and Poliovirus Vaccine

1. Purpose. To describe poliomyelitis and the vaccine to prevent it.

2. Facts.

a. Microbiology. Poliomyelitis is a viral disease caused by poliovirus types 1, 2, or 3. It is an acute infection that involves the gastrointestinal tract and, occasionally, the central nervous system.

b. Epidemiology. Poliovirus is primarily spread by the fecal-oral route, but may also be spread by the oral-oral route. Poliovirus enters through the mouth. The virus multiplies primarily in the pharynx or gastrointestinal tract, depending on where it enters the body. The virus is usually present in the throat and in the stool before symptoms develop. The virus invades local lymph nodes, enters the blood stream, and then may infect cells of the central nervous system. If polioviruses reach the brain stem, cell destruction causes the typical paralysis of poliomyelitis. Although 90% to 95% of poliovirus infections occur without symptoms, infection can cause paralysis and death if the muscles of respiration are affected. Before the licensing of inactivated poliovirus vaccines in 1955, large outbreaks of poliomyelitis occurred each year in the United States.

c. Vaccine. Poliovirus vaccine inactivated (*Ipol*), distributed by Aventis Pasteur, is a sterile suspension of all three types of inactivated polioviruses. It should be administered by either subcutaneous or intramuscular injection. *Ipol* is also referred to as inactivated poliovirus vaccine (IPV). Oral poliovirus vaccine, which contained live attenuated (weakened) polioviruses, is no longer distributed in the United States. Pediarix (GlaxoSmithKline) contains DTaP, hepatitis B, and inactivated polivirus vaccines.

d. Immunization. Three 0.5-mL doses of IPV are required to complete a primary series. Routinely vaccinate all infants, unimmunized children, and adolescents against poliomyelitis. All children should receive four doses of IPV at ages 2, 4, 6-18 months and 4-6 years of age. Routine vaccination of people 18 years of age and older who reside in the U.S. is not necessary or recommended. Some adults are at increased risk of infection with poliovirus, including travelers to areas where poliomyelitis is endemic or epidemic (currently limited to South Asia and Africa), laboratory workers handling specimens that may contain polioviruses, and healthcare workers in close contact with patients who may be excreting wild polioviruses. For unvaccinated adults who are at increased risk of exposure to poliomyelitis, primary immunization with IPV is recommended (0, 1 to 2 months, 6 to 12 months). Give adults who completed a primary series of at least 3 doses and who are at increased risk of exposure to poliomyelitis one more dose of IPV. Give adults who did not complete their primary series and who are at increased risk of exposure to poliomyelitis the remaining doses of IPV, regardless of the

interval since the last dose or the type of vaccine previously given. Give IPV to all patients with immune-deficiency diseases and to members of such patients' households when vaccination of such people is indicated.

e. Cautions. The following people should not receive this vaccine: anyone who has ever had a life-threatening allergic reaction to the antibiotics neomycin, streptomycin, or polymyxin B; anyone who has a severe allergic reaction to a previous polio vaccination; and people with severe latex allergy. Defer vaccination of people with a moderate to severe acute, febrile illness until after recovery. No causal relationship between Ipol and Guillain-Barré syndrome (GBS) has been established. Give IPV to a pregnant woman, if clearly needed.

f. Adverse Events. The most common adverse reactions after IPV are injection-site complaints, such as pain and redness. No serious adverse reactions to IPV have been documented. Because IPV contains trace amounts of streptomycin, polymyxin B, and neomycin, a spectrum of allergic reactions may occur among people sensitive to these antibiotics. A serious allergic reaction (e.g., anaphylaxis) is a bar to future vaccination.

g. DoD Policy. Only IPV is used in the DoD. Per Service policy, all military accessions, officer candidates, and Reserve component personnel on initial active duty receive a single dose of IPV. This adult booster dose meets the readiness requirement for potential travel to areas where poliomyelitis remains endemic. For people who have completed a primary vaccine series with IPV or oral poliovirus vaccine (OPV), IPV is used for the adult booster dose. An all-IPV schedule is used for military accessions and other adults who have not completed a primary series of poliovirus vaccine. For other adults and children, DoD follows guidelines of the Advisory Committee on Immunization Practices (ACIP).

3. References.

a. Advisory Committee on Immunization Practices. Poliomyelitis prevention in the United States: Updated recommendations. MMWR 2000;49(RR-5):1-22. ftp://ftp.cdc.gov/pub/Publications/mmwr/rr/rr4905.pdf

b. CDC disease information. www.cdc.gov/nip/publications/pink/polio.pdf

c. CDC Vaccine Information Statements: www.cdc.gov/nip/publications/VIS/

d. Package inserts:
Ipol: www.vaccineshoppe.com/US_PDF/860-10_4305_4308.pdf
Pediarix: us.gsk.com/products/assets/us_pediarix.pdf

Approved by COL Grabenstein