

## INFORMATION PAPER

Military Vaccine Agency

6 January 2005

SUBJECT: Yellow-Fever Infection and Yellow-Fever Vaccine

1. Purpose. To describe yellow fever and the vaccine to prevent it.

2. Facts.

a. Microbiology. Yellow fever is a disease of short duration caused by the yellow-fever (YF) virus. It can range in severity from mild to serious and can be fatal. Symptoms evolve through three stages from a nonspecific illness with fever, headache, muscle aches, weakness, nausea and vomiting, through a period of feeling better, to a severe illness with jaundice (liver malfunction leading to yellow skin or eyes) and bleeding from the gums or gastrointestinal tract. People with yellow fever usually need hospitalization for supportive care. No specific treatment exists.

b. Epidemiology. Yellow fever is spread through the bite of an infected mosquito and cannot spread directly from person to person. YF is found in certain parts of Africa and South America. Although some countries are free of the virus, they harbor mosquitoes that could transmit yellow fever if infected. So those countries take precautions at their borders to prevent introduction of the virus.

c. Vaccine. Yellow-fever vaccine is marketed as *YF-Vax* by Aventis Pasteur. The vaccine contains live attenuated 17D-strain yellow-fever virus. The virus is grown in chicken eggs and the vaccine contains the highest quantity of egg proteins of any FDA-licensed vaccine. A single 0.5-mL dose is administered subcutaneously. Immunity develops by the tenth day after vaccination. Booster doses are required every 10 years to sustain immunity. In clinical studies, 100% of vaccinated people developed protective antibodies against YF virus. The vaccine powder must be stored continuously between 5° and -30°C (41° and -22°F) until reconstituted. Reconstituted vaccine must be used within 60 minutes.

d. Immunization. Give YF vaccine to people 10 months or older traveling to or living in areas where YF infection is reported or where vaccination is required. Immunize infants 4 to 9 months of age and pregnant women only if travel to high-risk areas cannot be postponed and protection from mosquitoes cannot be assured. Infants younger than 4 months of age should not be vaccinated because they are at increased risk of encephalitis. Vaccination is recommended for travelers passing through or living in countries in Africa and South America where YF infection is officially reported. It is also recommended for travel outside the urban areas of countries that do not officially report YF, but lie in endemic zones. Vaccination is required when entering certain countries regardless of the travelers' itinerary. Other countries require proof of vaccination when travelers enter from endemic areas. Current requirements can be obtained from health departments or [www.cdc.gov/travel](http://www.cdc.gov/travel). Laboratory personnel who may be exposed to virulent YF virus by contact or aerosol also should be vaccinated.

e. Cautions. Under most circumstances, the following people should not receive YF vaccine, unless the personal risk of infection exceeds the small risk associated with vaccination: pregnant women, people allergic to eggs, and people with suppressed immune systems (e.g., AIDS, leukemia). In most cases, these people should obtain a physician's letter waiving vaccination before travel, or they should delay travel to a YF area. Before vaccination, evaluate the health status of people 65 years or older who travel to areas with epidemic yellow fever; carefully monitor these people for adverse events for 10 days after vaccination. There is a possible increased risk of a serious adverse reaction to YF vaccine in older adults. Balance this possible risk with the risk of potentially fatal exposure to YF virus. Defer vaccination for people who have moderate to severe acute illness.

f. Adverse Events. YF vaccine has been used for more than 50 years and has few side effects. Fewer than 5% of vaccinees develop mild headache, muscle pain, or other minor symptoms 5 to 10 days after vaccination. Fewer than 0.2% curtail their regular activities after vaccination. Immediate hypersensitivity reactions, with rash, urticaria, or asthma, are uncommon and occur mainly in people allergic to eggs. Although several serious illnesses and a few deaths (primarily in older adults) have been reported within 2 weeks after vaccination, no cause-and-effect relationship with vaccination has been established. Anaphylaxis may occur after YF vaccination.

g. DoD Policy. YF vaccination is required for military personnel during deployment or travel to YF-endemic areas. It is also required for Navy and Marine Corps personnel after initial entry training, as well as designated reserve-component units.

### 3. References.

a. Advisory Committee on Immunization Practices. Yellow fever vaccine. MMWR 2002;51(RR-17):1-10. [www.cdc.gov/mmwr/PDF/rr/rr5117.pdf](http://www.cdc.gov/mmwr/PDF/rr/rr5117.pdf)

b. CDC disease information. [www.cdc.gov/ncidod/dvbid/yellowfever/](http://www.cdc.gov/ncidod/dvbid/yellowfever/)

c. CDC Vaccine Information Statements: [www.cdc.gov/nip/publications/VIS/](http://www.cdc.gov/nip/publications/VIS/)

d. Package insert: YF-Vax: [www.vaccineshoppe.com/US\\_PDF/915-01\\_4283.pdf](http://www.vaccineshoppe.com/US_PDF/915-01_4283.pdf)

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