

## PHN GUIDELINE: YELLOW FEVER VACCINE

### I. DEFINITION:

Yellow fever vaccine is a live attenuated viral vaccine made from the 17D-204 yellow fever virus strain grown in chick embryos. There is only one yellow fever vaccine licensed for use in the United States, YF-Vax®, manufactured by Sanofi Pasteur. Yellow fever vaccine may only be administered at state-approved yellow fever vaccination centers. The vaccine is effective in almost 99% of recipients.

### II. ETIOLOGY AND EPIDEMIOLOGY:

Yellow fever is a mosquito-borne viral disease. Illness varies in severity from a flu-like syndrome to severe hepatitis and hemorrhagic fever. The overall case-fatality rate among indigenous populations in endemic regions is 5%, but may reach 20% - 40% in individual outbreaks.

### III. MANAGEMENT PLAN:

#### A. Criteria for Administration:

1. See PHN ORDER: YELLOW FEVER VACCINE.
2. Recommendations for vaccine usage:
  - a. All persons  $\geq 9$  months of age living or traveling in areas of South America and Africa where yellow fever infection is officially reported.
  - b. Those traveling outside of urban areas in countries that do not officially report the disease but lie in the yellow fever endemic zones, see maps in the latest publication of the "Yellow Book" which can be found at <http://wwwn.cdc.gov/travel/content/yellowbook/home-2010.aspx>. Travel itineraries should be carefully reviewed including the province or area of the country and compared to the "Yellow Fever Vaccine Requirements and Information on Malaria Risk and Prophylaxis, by Country" chapter in the latest edition of Health Information for International Travel, the "Yellow Book" published by CDC on the CDC website at <http://wwwn.cdc.gov/travel/content/yellowbook/home-2010.aspx> and the Travel Notices section at <http://wwwn.cdc.gov/travel/notices.aspx>. Because of potential reactions, the vaccine should be administered only to persons truly at risk for exposure to yellow fever. Persons at risk should receive the vaccine because in recent years fatal cases of yellow fever have occurred among unvaccinated tourists visiting rural areas within the yellow fever endemic zone.
  - c. Travelers to countries that require a certificate of vaccination against yellow fever.
  - d. Laboratory personnel who might be exposed to virulent yellow fever virus or to concentrated preparations of the 17D vaccine strain by direct or indirect contact or by aerosols should also be vaccinated.

#### B. POTENTIAL REACTIONS:

1. Reactions to yellow fever vaccine are generally mild. Vaccinees have reported mild headaches, myalgia, low-grade fevers, or other minor symptoms that may begin within days after vaccination and last 5 to 10 days.

2. Immediate hypersensitivity reactions are uncommon (an estimated incidence of 1 case per 130,000–250,000 vaccinees) and occur principally in people with histories of allergies to egg or other substances.
3. Yellow fever vaccine-associated neurologic disease (formerly known as postvaccinal encephalitis) has been reported rarely. All patients with yellow fever vaccine associated neurologic disease had onset of illness 4-27 days after vaccination. All cases were in first-time vaccine recipients. The risk does not appear to be limited to infants and the overall reported rate in the U.S. is estimated at 0.5 per 100,000 doses distributed.
4. Yellow fever vaccine-associated viscerotropic disease has also been reported rarely (estimated reported incidence of 2.5 per 1,000,000 or 1 per 400,000 doses distributed) among vaccine recipients. This syndrome was previously reported as febrile multiple organ system failure. This serious adverse reaction has occurred in vaccine recipients 2-5 days after receiving YF-VAX and ranges from moderate illness with focal organ dysfunction to severe disease with overt multiple organ system failure and death. Mounting evidence exists that persons are most at risk for yellow fever vaccine-associated viscerotropic disease after their first vaccination.
5. SPECIAL CONSIDERATION:  
  
The PHN must ensure that a competent adult other than a client family member is present before any medication is administered. This individual should be CPR certified if at all possible.

C. Contraindications and Precautions:

1. Age
  - a. Age <9 months. Travelers with infants younger than 9 months of age should be strongly advised against traveling to countries in yellow fever endemic zones or to countries experiencing an epidemic
    1. Vaccination of infants aged <9 months should be avoided because of the risk for encephalitis, and travel should be postponed or avoided, whenever possible.
    2. In unusual circumstances, physicians considering vaccinating infants aged <9 months should contact the Division of Vector-Borne Infectious Diseases or the Division of Global Migration and Quarantine at CDC by telephone for advice.
    3. **Because of the risk for encephalitis, in no instance should infants aged <6 months receive yellow fever vaccine.**
  - b. Age >60 years: People 65 years of age and older may be at increased risk for serious systemic adverse events, and should be encouraged to discuss with their physicians the risks and benefits of vaccination in the context of the destination-specific risk for exposure to yellow fever.
2. History of Thymus Disease; History of thymus disease is a contraindication to yellow fever vaccine. Health-care providers should screen potential vaccinees about a history of thymus disorder, including myasthenia gravis, thymoma, or prior thymectomy.
3. Hypersensitivity to eggs or gelatin; generally, people who are able to eat eggs or egg products may receive the vaccine. However, some egg-sensitive people are not allergic to cooked eggs and may not know they are susceptible to allergic reactions following raw eggs or egg-containing vaccines.

4. Pregnancy: Yellow fever vaccine should be administered to pregnant women only if travel to an area with risk of yellow fever is unavoidable.
5. Breast-feeding: As a precautionary measure, vaccination of nursing mothers should be avoided because of the theoretical risk for transmission of the vaccine virus to the breast-fed infant. When travel cannot be avoided or postponed, these women should be vaccinated.
6. Immunosuppression: Immunosuppressed patients who are unable to effectively resist viral infections should not be vaccinated. Yellow fever vaccination should be based on a physician's evaluation of the traveler's state of immunosuppression weighed against the risk of exposure to the virus.

D. Simultaneous administration of other vaccines:

1. Yellow fever vaccine may be administered simultaneously with all other currently available vaccines.
2. Yellow fever vaccine and inactivated vaccines may be administered at any time before or after each other with any interval between doses.
3. Injectable or nasally administered live virus vaccines (MMR, varicella, live attenuated influenza vaccine,) not administered on the same day as yellow fever vaccine should be administered at least 4 weeks (28 days) apart.

E. Vaccination Certificate Requirements:

1. International regulations require proof of vaccination for travel to and from certain countries. Under the revised International Health Regulations (2005), effective December 15, 2007, all countries are required to issue a new International Certificate of Vaccination or Prophylaxis (ICVP). This is intended to replace the former International Certificate of Vaccination against Yellow Fever (ICV). Persons who received a yellow fever vaccination after December 15, 2007, must provide proof of vaccination on an ICVP. If the person received the vaccine before December 15, 2007, the original ICV is still valid, provided that the vaccination was given less than 10 years previously. Vaccinees should receive an ICVP - completed, signed, and validated with the center's stamp where the vaccine was given. An ICVP must be complete in every detail; if incomplete or inaccurate, it is not valid. The certificate is valid 10 days after vaccination to meet entry and exit requirements for all countries, and is good for 10 years. For information on obtaining "stamp", contact the Immunization Service at 405-271-4073.
2. For medical contraindications, a physician who has decided to issue a waiver should fill out and sign the Medical Contraindications to Vaccination section of the ICVP. The physician should also give the traveler a signed and dated exemption letter on the physician's letterhead stationery clearly stating the contraindications to vaccination and bearing the stamp used by the yellow fever vaccination centers to validate the ICVP.

Reasons other than medical contraindications are not acceptable for exemption from vaccination. The traveler should be advised that issuance of a waiver does not guarantee its acceptance by the destination country. On arrival at the destination, the traveler may be faced with quarantine, refusal of entry, or vaccination on site. To potentially improve the likelihood of acceptance of a

waiver upon arrival at the destination country, the provider can suggest that the traveler take the following additional measures before initiating travel: Obtain specific and authoritative advice from the embassy or consulate of the country or countries he or she plans to visit. Request documentation of requirements for waivers from embassies or consulates and retain these along with the completed Medical Contraindication to Vaccination section of the ICVP.

**NOTE:** An updated list of countries that require an international certificate of vaccination is in the “Yellow Book”. For the most current information, review online information at <http://wwwn.cdc.gov/travel/yellowbook/2010/chapter-2/yellow-fever-vaccine-requirements-and-recommendations.aspx> and at <http://wwwn.cdc.gov/travel/notices.aspx> in the “Travel Notices” section.

F. Client Education:

Prior to administration of vaccine, the client or parent should read the “Yellow Fever Vaccine Information Statement”. After all questions are answered, consent in writing will be obtained. Refer to the “Yellow Book” for answers to client questions.

G. Referral:

Severe reactions should be referred to a physician and reported to the District Nurse Manager. A Vaccine Adverse Event Reporting System (VAERS) form should be completed promptly on line at <http://www.vaers.org>. (A copy will be sent to the OSDH Immunization Service by CDC at a later date if the reaction requires additional follow-up.)

RESOURCES:

APHA, Control of Communicable Diseases Manual, 17<sup>th</sup> ed., pp. 553-558.

CDC. Health Information for International Travel, (“Yellow Book”), 2010.

General Recommendations on Immunization: Recommendations of the Advisory Committee on Immunization Practices (ACIP)

MMWR, December 1, 2006, Vol. 55, RR-15.

Yellow Fever Vaccine Recommendations of the Immunization Practices Advisory Committee (ACIP), MMWR, November 8, 2002, Vol. 51, RR-17.

Yellow Fever Vaccine, YF-VAX®, manufactured by Sanofi Pasteur Inc., Product Information, as of December, 2005.

### PHN ORDER: YELLOW FEVER VACCINE

I. Dosage and Schedule:

Doses	Dose Volume*/Mode of Administration	Comments
Primary: 1	0.5 mL S.Q.	Not applicable
Booster	0.5 mL S.Q.	1 dose every 10 years

\*Older than 9 months of age.

Notes:

- Immunity develops by the 10<sup>th</sup> day after primary vaccination.
- Reconstitute the vaccine using only the diluent supplied. The vaccine appears slightly opalescent and light orange in color after reconstitution.
- Use vaccine within 60 minutes following reconstitution.
- Storage:
  - The vaccine should be stored at temperatures of 2°C-8°C (35°F-46°F). Do not freeze.
  - The diluent must not be frozen, and may be stored either in the refrigerator or at room temperature not to exceed 77° F.

