

YELLOW FEVER: Notes about the Disease

Yellow fever (YF) is a mosquito-borne flavivirus disease of the tropics, currently limited to parts of Africa and Latin America. However, there were alarming outbreaks of the disease affecting predominantly port cities in the United States (including North Carolina) from colonial times through the nineteenth century. Documentation at the turn of the twentieth century, followed by the implementation of mosquito abatement and development of an effective vaccine, identified it as a vector-borne disease and paved the way for better control in the US. Internationally, however, there is little use of YF vaccine in endemic areas, and the World Health Organization estimates that there are 200,000 cases with 30,000 deaths each year in these unvaccinated populations.

In its endemic tropical habitats, the virus is maintained in two different cycles. Jungle (sylvatic) YF involves circulation of the virus between non-human primates and mosquitoes, and the urban cycle—when established—involves transmission in a mosquito (predominantly *Aedes aegypti*)-human-mosquito cycle. NC's *A. aegypti* populations have been largely replaced by importation of the Asian tiger mosquito, *A. albopictus*, which has been shown to be at least a potential competent vector of the YF virus.

Clinically, YF varies widely in its severity. The most severe cases are those that advance to hemorrhagic manifestations, including hematemesis (“black vomit”), epistaxis, and renal and liver failure. YF takes its name from the jaundice of this stage of illness.

Protection of NC's citizens from YF requires a two-pronged attack. First, there is much to be said for mosquito control, particularly since the most likely vectors here (*A. aegypti* and *A. albopictus*) can also transmit diseases other than YF (e.g., dengue and West Nile viruses). Since these mosquitoes are container breeders with short flight ranges, ridding residential areas of standing water is an effective control measure.¹

Secondly, travelers to countries where YF is endemic need to be immunized with YF vaccine, unless contraindicated.^{2,3} Protection lasts 10 years, and this live viral vaccine is administered only at approved YF vaccination centers. NC has over 50 of these centers distributed across the state; a list of them is maintained on the CDC Travelers' Health Page.⁴

1. “Asian Tiger Mosquitoes,” *NC Department of Environment and Natural Resources: Public Health Pest Management*, 2004, www.deh.enr.state.nc.us/phpm/Asian_Tiger.pdf.
2. Centers for Disease Control and Prevention. [Yellow fever vaccine recommendations of the Advisory Committee on Immunization Practices]. *MMWR* 2002;51(No. RR-17):[1-10], www.cdc.gov/mmwr/preview/mmwrhtml/rr5117a1.htm.
3. Centers for Disease Control and Prevention. [Adverse Events Associated with 17D-Derived Yellow Fever Vaccination -- United States, 2001-2002]. *MMWR* 2002;51:[989-93]. www.cdc.gov/mmwr/preview/mmwrhtml/mm5144a1.htm.
4. “Traveler's Health,” *Centers for Disease Control and Prevention*, 31 May 2007, www.cdc.gov/travel/index.htm.