# Hasten Vaccine Schedule for International Travelers

*If travel to a measles-endemic area is planned, consider giving MMR beginning at 6 months of age.*

BY DAMIAN McNAMARA
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MIAMI BEACH — Accelerated immunizations for pediatric travelers can optimize disease prevention before international travel, Elizabeth D. Barnett, M.D., said at the annual meeting of the American Society of Tropical Medicine and Hygiene.

Hepatitis A, typhoid fever, yellow fever, Japanese encephalitis, meningococcal infection, and rabies infection are some of the leading concerns for pediatric travelers, according to Dr. Barnett, director of the International Clinic, Maxwell Finland Laboratory for Infectious Diseases, Boston Medical Center.

The good news is that most traveling children have already received vaccines for hepatitis B and pneumococcal disease.

Age is important in terms of immune system maturation. For example, efficacy of polysaccharide vaccines will be limited until age 2 years because of impaired T-cell function. "The solution is development of conjugate vaccines," Dr. Barnett said. In addition, maternal antibodies can impair response to some vaccines in very young infants, such as the measles, mumps, and rubella (MMR) and hepatitis A vaccines. "Balance the lower age limit of the vaccine with risk of disease and vaccine efficacy."

If travel to a measles-endemic area is planned, consider giving MMR beginning at 6 months of age, Dr. Barnett suggested. If the patient is traveling to a region where a polio outbreak is possible, he or she should receive a full course of polio vaccination beforehand.

Dr. Barnett made some specific recommendations:

► **Hepatitis A.** Hepatitis A vaccine should be given 2-4 weeks prior to departure for children traveling to all international destinations except Australia, Canada, Japan, New Zealand, Western Europe, and Scandinavia. Children at least 1 year old can receive the vaccine; the only option for younger travelers is immune globulin. "If the time to departure is short, consider giving immune globulin and vaccine at the same time as MMR or varicella vaccines at different sites," Dr. Barnett said. However, there is a theoretical risk that immune globulin may impair vaccine activity for weeks or months, so the ideal situation is to give the vaccine first, followed at least 2 weeks later by the immune globulin.

"The benefit really outweighs the risks with hepatitis A vaccine," Dr. Barnett said.

► **Typhoid.** Vaccination is indicated for travel to areas where exposure to contaminated food or water is possible. Risk is not dictated by length of trip but by behaviors and exposure. The vaccine's efficacy is limited compared to hepatitis A, Dr. Barnett said. "We generally tell patients the efficacy is 65%-85%."

For infants under 2 years, there are only food and water precautions. From ages 2-5 years, the same precautions plus a polysaccharide vaccine are recommended. For children 6 years and older, the parenteral polysaccharide vaccine, Ty21a oral vaccine, and food and water precautions are recommended. Adverse events with the parenteral vaccine include local reactions (7%), headache (1.5%-3%), and fever (0%-1%).

Dr. Barnett said, "In most settings, the benefit for typhoid vaccine is there, limited by incomplete vaccine efficacy."

► **Yellow fever.** Vaccination for yellow fever is only a consideration for travel to Africa and South America. There are an estimated 0.4-4.3 cases of yellow fever per million U.S. travelers to endemic areas. The vaccine is very efficacious, with a single vaccination usually providing lifetime coverage.

"Encephalitis is a rare adverse event following yellow fever vaccine, occurring primarily in infants," Dr. Barnett said. "The vaccine, therefore, is absolutely contraindicated in infants under 6 months."

"The bottom line is, those who are at risk for yellow fever going to high transmission areas, and who cannot guarantee mosquito protection, should receive yellow fever vaccine unless there are specific contraindications," Dr. Barnett said.

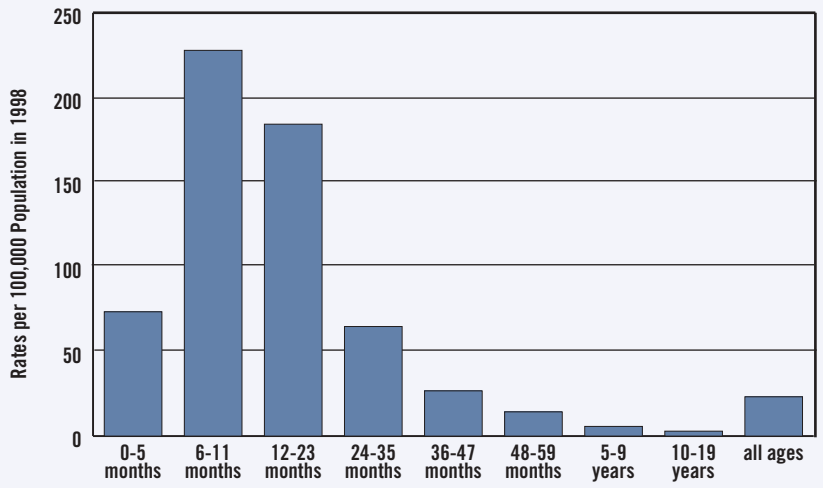
► **Japanese encephalitis.** There is an effective vaccine, and it is indicated for some travel to higher-risk areas, Dr. Barnett said. "We have to again balance risks and benefits." The risk is greater in rural farming areas, during transmission season, and during outbreaks.

► **Meningococcal infection.** Sub-Saharan Africa has frequent epidemics and outbreaks. "The overall risk of disease for travelers to sub-Saharan Africa is very low, but the vaccine is safe, effective in children over 2, and offers some protection at home," Dr. Barnett said. Although conjugate vaccines are available in Canada and Europe, only polysaccharide vaccines are available in the United States. With polysaccharide vaccines, there is superior efficacy in children aged 2 years and older.

► **Rabies.** Although the benefits of prophylaxis are greatest for travel to high-risk areas and areas far from medical care, and for travel of long duration, "I believe we should be discussing prevention with all families traveling to a destination that is not rabies-free," Dr. Barnett said.

It is very important to tell families that additional doses are required after exposure. "We call it pre-exposure prophylaxis, we do not call it a vaccine, because medical care should still be sought if [a person is] bitten," she emphasized. ■

**DATA WATCH**




KEVIN FOLEY, RESEARCH/ANDREA L. BUDD, DESIGN

# Exotic Pets Can Transmit Serious Dermatologic Diseases

BY DEBRA WOOD
*Contributing Writer*

ORLANDO, FLA. — A growing number of Americans choose exotic animals as pets without knowing that even handling these unusual creatures may result in serious dermatologic diseases, Dr. Ted Rosen said at the annual meeting of the Florida Society of Dermatology and Dermatologic Surgery.

"Pets can cause significant difficulties," said Dr. Rosen, a professor in the department of dermatology at Baylor College of Medicine in Houston.

About 60% of U.S. households own at least one pet. One million to 2 million of those homes harbor an exotic pet—exotics that can carry pathogens that result in human disease.

Dr. Rosen highlighted disease concerns associated with some of the more common exotic pets:

► **Hedgehogs.** About 40,000 hedgehogs live in U.S. homes. The most popular species fits in the palm of the hand. Hedgehogs have quills, are vicious, and eat cockroaches.

"The most important thing about hedgehogs is they carry a very specific subspecies of *Trichophyton mentagrophytes* that is incredibly inflammatory," Dr. Rosen said. "It is absolutely, astonishingly horrible. You get this from contacting the hedgehog."

Some people are allergic to hedgehogs. They may develop contact urticaria related to hypersensitivity to the animal's saliva. Hedgehogs spit on their quills. These little animals are associated with human salmonellosis, and they carry various mycobacteria.

► **Chinchillas.** About 80,000 households own chinchillas, which carry *Microsporum gypseum* and *Trichophyton mentagrophytes* associated with inflammatory tinea capitis. These animals also harbor *Aspergillus niger*. They are susceptible to infections with gram-negative pathogens.

► **Iguanas.** About 750,000 iguanas are in U.S. homes. They shed *Salmonella* associated with human salmonellosis. Iguanas carry *Serratia marscens* in their oral flora, which can cause cellulitis after a playful nip or bite. The cellulitis may be bullous and present similarly to streptococcus or staphylococcus infection. However, iguana-associated *S. marscens* inhibits the activity of many drugs and is resistant to cephalosporins. The drug of choice is a quinolone or trimethoprim-sulfamethoxazole. Compounding the problem is the fact that breeders administer broad-spectrum antibiotics to keep the flora down and alter the reptile's color.

Allergic reactions to iguanas include allergic rhinitis and urticaria.

► **Flying squirrels.** Flying squirrels carry *Rickettsia prowazeki*, which is associated with typhus fever. The pet's owner can inhale the bacteria. Symptoms include fever; an extensive, nonspecific, blanching erythema eruption; headache; nausea and vomiting; myalgia; and photophobia.

Flying squirrels also carry unusual species of *Staphylococcus* that can be transmitted to people through wounds or small cuts. The infections are not easily treated and can cause sepsis.

► **Gerbils.** More than a million of these animals live in the United States. In nature, they are a major reservoir of *Leishmania* and *Giardia lamblia* and *S. aureus*.

As pets, they harbor avian mites, often acquired at the pet store. The bird infects the gerbil, which in turn infects humans.

► **Prairie dogs.** These animals are now banned as pets in the United States, after an outbreak of monkeypox in humans last year. The prairie dogs likely acquired the infection from Gambian rats. Prairie dogs can also carry plague and tularemia.

► **Cockatoos and macaws.** These birds are natural hosts for *Cryptococcus neoformans,* which may or may not make the pet sick. The bacteria can be transmitted to humans, with immunosuppressed patients at greatest risk. One of Dr. Rosen's patients died from a *C. neoformans* infection that he picked up from his pet cockatoo. ■