

# Counsel Select Travelers on Malaria Prevention

BY JEFF EVANS  
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WASHINGTON — Long-term travelers to countries with high risk for malaria should use personal protective measures and chemoprophylactic regimens based on the risk factors they are likely to encounter, Patricia Schlagenhauf-Lawlor, Ph.D., said at the annual meeting of the American Society of Tropical Medicine and Hygiene.

Long-term travelers—defined by some guidelines as those who travel for more than 6 months—include people visiting friends and relatives, expatriates, occupational travelers such as military personnel, backpackers, and missionaries. These people can use precautions that range widely in their ability to prevent infection, including personal protection measures, stand-by emergency treatment, rapid tests for malaria, seasonal chemoprophylaxis, and continuous chemoprophylaxis, said Dr. Schlagenhauf-Lawlor of the World Health Organization Collaborating Centre for Travellers' Health at the University of Zürich (Switzerland).

## Personal Protection Measures

A review of randomized trials concluded that insecticide-treated nets are effective in reducing childhood mortality and morbidity due to malaria (Cochrane Database Syst. Rev. 2005;www.thecochranelibrary.com [doi:10.1002/14651858.CD000363]).

Clothing that has been impregnated with insecticides such as permethrin remain effective for several months. Shoes and protective (white or brightly colored) clothing also help to fend off mosquitoes, she added.

Among the mosquito repellents that are available in the United States, DEET (*N,N*-diethyl-m-toluamide) is still considered the best because it has been widely used and tested and is effective for more than 5 hours at concentrations of 20%. Children older than 2 months of age can use DEET, but it should be at concentrations of 10% or less.

The repellent picaridin (Bayrepel) at 19.2% concentration has been shown to cause less skin irritation while providing a

level of protection similar to DEET, especially against the mosquito *Anopheles gambiae*. Picaridin has been approved by the Environmental Protection Agency and is safe for children older than 2 years, but studies have shown that the level and duration of protection varies between individuals, Dr. Schlagenhauf-Lawlor said.

Clinicians should avoid recommending natural oils such as citronella and eucalyptus because these oils provide only short-term protection, she said.

Mosquitoes generally prefer to bite adults rather than children, men rather than women, and large rather than small people. Some mosquitoes bite more often on the feet and ankles (*A. gambiae*) or face (*A. atroparvus*).

Travelers should learn what time of day the malaria-vector mosquitoes bite in the region they are traveling to. Bed nets may be ideal for travelers to Africa where *A. gambiae* is present, which prefers to feed indoors late at night. In the Amazon, repellents may work best against *A. darlingi*, which bites mostly in the early evening, she said.

But most long-term travelers have poor compliance with personal protection measures, Dr. Schlagenhauf-Lawlor noted. Experts consider a combination of at least four such measures to be adequate to protect against mosquito bites in high-risk areas for malaria. In a study of business travelers to high-risk areas in Africa, only 4% used four recognized methods of prevention, which include long clothes, air conditioning, repellents, insecticides, mosquito nets, and burn coils (J. Travel Med. 2003;10:219-24). Nearly all other travelers used some personal protection measures: Forty-three percent of the travelers used three measures, 25% used two, and 21% used one. Only 2% of tourists to high-risk areas in Africa used four personal protection measures (J. Travel Med. 1998;5:188-92).

## Standby Emergency Treatment

The WHO defines standby emergency treatment (SBET) of malaria as the use of antimalarial drugs when malaria is suspected and prompt medical attention is unavailable within 24 hours.

For travelers in some areas, German and Swiss guidelines now recommend wider use of SBET instead of continuous prophylaxis.

"We recommend chemosuppression only when the benefit is 10 times greater than the risk of adverse effects," Dr. Schlagenhauf-Lawlor said. "That means for most of our travelers, except for those in sub-Saharan Africa, we're recommending stand-by treatment and antimosquito measures." This may be at odds with what American

physicians would recommend.

Chloroquine and quinine have "very limited use" for SBET, while drugs such as mefloquine, atovaquone and proguanil (Malarone), and sulfadoxine plus pyrimethamine (Fansidar) are acceptable for SBET. Halofantrine

(Halfan) is now contraindicated for SBET because of potential cardiac complications, she said.

The German and Swiss guidelines advise that chloroquine can be used for SBET in parts of Central America and the Middle East. The guidelines recommend that travelers to India use mefloquine. Travelers to the Southeast Asian countries of Myanmar, Thailand, Laos, Cambodia, and Vietnam should use Malarone for SBET because of multidrug resistant malarial strains, according to the guidelines.

The guidelines recommend continuous prophylaxis in Papua New Guinea, nearly all of sub-Saharan Africa, and in several provinces of Brazil. Continuous prophylaxis with mefloquine, doxycycline, or Malarone can be more than 90% effective if they are chosen correctly, but they cause "perceived or real" adverse events in more

than 80% of patients. Many patients also fail to adhere to the dosing regimen for continuous prophylaxis and find it difficult to get the drug they need if they are traveling for more than a year, Dr. Schlagenhauf-Lawlor said.

The nonspecific symptoms of malaria make it difficult for patients to self-diagnose the disease, Dr. Schlagenhauf-Lawlor said. In a study of 1,187 Swiss travelers who carried medication for SBET, about 10% became ill with fever while traveling. Even though only nine of the travelers were out of the reach of medical attention, most of those who were ill reacted to their illness contrary to SBET instructions and delayed in seeking medical attention (Bull. World Health Organ. 1995;73:215-21).

A combination of SBET and rapid malaria tests "could be useful for certain selected long-term travelers," she said. Studies have reported that 68%-91% of travelers were able to use the tests successfully. But the tests can generate false-positive results and have been difficult for travelers to read at low levels of parasitemia.

## Seasonal Prophylaxis

In all but a few countries "it's almost impossible for an adviser to say in advance how the season will be at the destination," Dr. Schlagenhauf-Lawlor said.

In the sub-Saharan countries of South Africa, Namibia, and Botswana, the transmission seasons are fairly stable, but can shift. In South Africa, travelers may want to use continuous prophylaxis during the high-risk season of October through May and revert to SBET during the low-risk season of June through September. But travelers should always use personal protective measures.

The high-risk season of November through June in Namibia and Botswana warrants continuous prophylaxis, while SBET and personal protective measures could be used at other times. In cases where seasonal prophylaxis may be possible, she advised that it may be best for travelers to take continuous prophylaxis for at least 6 months and then seek local advice afterward regarding the seasonal threat of malaria. ■



Blood-feeding *Anopheles gambiae* mosquitoes are a leading malaria vector.

# Few American Travelers Bother With Hepatitis B Prevention

BY JEFF EVANS  
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WASHINGTON — Most American travelers to regions endemic for hepatitis B do not receive pretravel health advice and are underimmunized, according to an anonymous survey of 618 adult travelers to such areas.

In the survey of people who traveled to countries with moderate to high rates of hepatitis B from 2000 onward, 31% of respondents visited a health practitioner to get pretravel health advice, 13% saw a travel medicine specialist, and 18% saw other health care providers, Dr. Bradley

A. Connor reported during a poster session at the annual meeting of the American Society of Tropical Medicine and Hygiene.

The strongest predictor of not seeking medical advice was travel duration of less than 20 days. Income of less than \$100,000 per year also was a strong predictor of not seeking advice from a travel medicine specialist, wrote Dr. Connor, medical director of the New York Center for Travel and Tropical Medicine.

The survey respondents were international travelers identified from commercially available mailing lists; they received the survey by mail.

Respondents were significantly more likely to report having a domestic or travel-related risk factor for hepatitis B if they were age 40 years or younger, unmarried and male, or had traveled for more than 20 days. The 150 travelers who were aged 18-40 years reported significantly higher rates of domestic risk factors for hepatitis B than did the 468 older travelers (43% vs. 17%).

Compared with patients older than 40 years, younger patients also were more likely to participate in activities that were of high risk (12% vs. 7%) or potential risk (48% vs. 27%) for hepatitis B during their most recent trip.

High-risk activities were defined as an accident or illness that required invasive medical attention, a skin-perforating cosmetic procedure, or sexual intercourse with a native who was unknown to the respondent prior to travel.

Activities of potential risk for hepatitis B included sharing personal grooming items, participation in certain sporting or adventure activities, cosmetic activities with risk of skin perforation, or an accident or illness that did not require invasive care.

Hepatitis B vaccination rates on departure declined with increasing age from 33% among travelers aged 18-40 years to 19%

among those aged 41-59 years and 9% among travelers aged 60 years or older.

Of the travelers who had not previously completed hepatitis B vaccination, the percentage who actually received the vaccine during their pretravel visit was 40% for those who saw a travel medicine specialist and 19% for those who visited other practitioners.

Dr. Connor reported that he is on the speaker's bureau and receives grant support from Glaxo-SmithKline, which funded the study, and is on the speaker's bureau for Sanofi Pasteur; both companies manufacture hepatitis B vaccines. ■