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Travel medicine for the primary care physician

ABSTRACT

Each year millions of people travel overseas, where they may come into contact with infectious diseases unfamiliar to citizens of the industrialized world. Reviewing the potential risks, and how to avoid them, greatly enhances the chances of an uneventful trip. This article contains specific recommendations including recipes for oral rehydration solutions that travelers can prepare.

KEY POINTS

Basic precautions with food and drinking water are necessary in developing countries. Most cases of traveler's diarrhea respond to a short course of quinolone antibiotics and oral fluid replacement.

Travelers to countries where malaria is endemic should try to avoid contact with mosquitoes and should take chloroquine, mefloquine, or doxycycline prophylactically. Unfortunately, chloroquine resistance is increasing.

With gonorrhea among the top five diseases of international travelers and with HIV infection on the rise, physicians should counsel their patients about the risks and available prophylactic measures for sexually transmitted diseases.

Primary care physicians should make sure that travelers are up to date in their routine immunizations before going abroad; however, immunizations for rare and tropical diseases are best left to experts in travel medicine. Nearly all travelers should be vaccinated against hepatitis A.

INTERNATIONAL TOURISM is a growing industry. The World Tourism Organization estimates there were 425 million international travelers in 1991, with expectations of a 50% increase by the year 2000.[1] Physicians are often called upon to prepare their patients for a trip and to treat them afterward. While most international travel occurs between developed countries, in 1990, 10.7 million persons from the United States and Canada traveled to developing countries,[1] many of which lack pure water systems and disease-control programs.

Travel to these countries requires specific preparation to avoid illness. Primary care physicians can handle some of this preparation, but most travelers to developing countries should go to a travel medicine clinic, usually part of an infectious-disease service. This review focuses on the areas of travel medicine that are commonly encountered, and therefore most practical for primary care physicians.

TRAVEL HEALTH EPIDEMIOLOGY

From 50% to 75% of travelers to the tropics and subtropics report minor medical complaints, some of which are preventable. This high incidence emphasizes the importance of pretravel counseling.[2] Overall, up to 10% of travelers alter their planned activities because of illness (mostly traveler's diarrhea), 5% become ill enough to require medical attention abroad, and 2% are too ill to be able to immediately return to work after their return.[2]

TABLE 1

LEADING HEALTH PROBLEMS OF INTERNATIONAL TRAVELERS*

Motor vehicle accidents
Diarrhea
Malaria
Hepatitis A
Gonorrhea

*Listed in order of frequency

TABLE 2

PATHOGENS ASSOCIATED WITH ACUTE DIARRHEA IN TRAVELERS

Watery diarrhea
- Enterotoxigenic *Escherichia coli*
- *Salmonella* species
- *Shigella* species
- *Campylobacter* species
- *Vibrio* species, including *V cholera*

Dysentery
- *Shigella* species
- *Salmonella* species
- *Campylobacter* species
- *E coli* 0157:H7
- *Entamoeba histolytica*

Boil it, cook it, peel it, or forget it

— CDC

Fatal illness while traveling is extremely rare. Although 1 per 100,000 Swiss travelers to developing countries died while traveling, compared with 0.3 per 100,000 travelers to North America, both of the mortality rates were lower than for persons who did not travel.[3] Such statistics reflect the general good health of most travelers.

GENERAL HEALTH ISSUES

The five leading health problems of travelers are listed in TABLE 1. Motor vehicle accidents are the leading cause of morbidity and mortality in travelers. Traveler's diarrhea and hepatitis A are examples of common food- and waterborne illnesses. Malaria is a vector-borne illness, and gonorrhea is a sexually transmitted disease. Though routes of acquisition clearly vary, most travel-related disorders are preventable, provided travelers:

- Avoid exposure to infectious diseases and disease vectors.
- Receive vaccinations when exposure limitation is difficult.
- Take prophylactic medication when exposure is unavoidable and vaccines are unavailable.

MOTOR VEHICLE ACCIDENTS

The single most important advice to travelers is to wear seat belts if these are available. When renting a car overseas, travelers should specifically request one with seat belts.

TRAVELER'S DIARRHEA

Not a specific disease, traveler's diarrhea is defined as three or more loose or watery stools within 24 hours, associated with one or more additional constitutional symptoms.[5] Most cases are acute, watery, and self-limited, without dysenteric or chronic symptoms. Causes of watery diarrhea include bacteria (more than 80% of cases), viruses, and parasites. Dysentery or bloody diarrhea accounts for up to 15% of traveler's diarrhea. Enterotoxigenic *Escherichia coli* is the leading bacterial pathogen (TABLE 2). Other causes vary by geographic location and time of year.

Avoiding food- and waterborne illnesses

Some precautions can make eating overseas much safer. Travelers should:

- Choose foods that are thoroughly and recently cooked, not reheated.
- Wash all fruits and vegetables with clean water before slicing them, to avoid carrying bacteria into the otherwise-clean inside layers. Raw fruits and vegetables peeled by the traveler are usually safe.
- When dining out (where one has less control over food preparation), avoid raw meat, fish, and vegetables—especially salads.

Street vendor food is risky unless properly prepared in front of you. Caution must even be exercised regarding airline food prepared in lesser-developed countries.

- Avoid drinking tap water—even hotel tap water used for tooth brushing can be a source of infection. Ice should be considered contaminated, including ice cubes used on flights that originate in developing countries. Commercially prepared bottled or canned beverages are usually safe alternatives to water.
- Purify drinking water by boiling it, treating it with halogens, or filtering it when reliably clean water is not available. Water just brought to a boil before cooling is generally as safe as water boiled for several minutes.[5] Compared with boiling, halogen (chlorine or iodine) treatment is less likely to remove parasites. Because halogens are more effective in clear water, cloudy water should first be allowed to settle until clear. Filters are somewhat expensive, but effective.

In summary regarding food and water precautions, the CDC has developed a simple rule of thumb: "boil it, cook it, peel it, or forget it."

Prophylactic antibiotic use should generally be discouraged, for several reasons.[6] Widespread medication use increases the likelihood of side effects, including photosensitivity, vaginal and superficial fungal infections, and severe drug reactions such as Stevens-Johnson syndrome. It is a nuisance to take a medication every day for a condition that may not develop. Prophylactic medication use may also lead to a false sense of security, resulting in decreased compliance with the more important and effective general recommendations on food and water precautions. Finally, antibiotic resistance is a growing problem with well-documented examples among diarrheal pathogens. Prophylactic antibiotic use is more likely to induce resistance than the occasional treatment regimens outlined below.

Prophylactic antibiotic use should generally be discouraged

Treating traveler's diarrhea

Dehydration is the most significant medical concern, and the primary focus of therapy.

TABLE 3 ADVICE TO COPY AND DISTRIBUTE TO TRAVELERS

HOW TO USE ORAL REHYDRATION SOLUTIONS

If you have more than 3 to 4 episodes of diarrhea per day, you may be in danger of becoming dehydrated. In this situation, you should seek medical attention, or take the medication your physician has already provided to stop the diarrhea. In addition, you should replenish your body fluids by drinking an oral rehydration solution, which you can buy ready-made or prepare yourself.

CEREAL-BASED RECIPE (preferred)

1 to 2 cups rice cereal for infants (eg, Gerber)
4 cups clean water (boiled or chemically purified)
1/2 teaspoon table salt
Mix salt and water in a clean container. Gradually stir in rice cereal.

GLUCOSE-BASED RECIPE (use if rice cereal is not available)

4 1/2 cups clean water (boiled or chemically purified)
1/4 teaspoon salt substitute that contains potassium
1/2 teaspoon baking soda
1/2 teaspoon table salt (increase to 1 teaspoon table salt if the salt substitute and baking soda are not available)
2 to 3 tablespoons glucose (table sugar, honey, or corn syrup)
Mix all the ingredients together in a clean container.

With either recipe, you may need to drink up to 3 to 6 quarts over 2 to 4 hours to counteract dehydration. Be sure to drink 8 to 12 ounces after each watery stool. If you are nauseated, begin with 1-ounce sips every 5 to 10 minutes, and increase the amount as tolerated.

SOURCE: ADAPTED FROM ROSE, REFERENCE 5

TABLE 4

RECOMMENDED MEDICATIONS FOR ACUTE TRAVELER'S DIARRHEA

Medication	Age group	Dosage*
Ciprofloxacin (Cipro)	Adults	500 mg twice daily
Ofloxacin (Floxin)	Adults	400 mg twice daily
Furazolidone (Furoxone)	Adults	100 mg four times a day
	5–17 years	25–50 mg four times a day
	1–4 years	15–25 mg four times a day
	1 month–1 year	7–15 mg four times a day

*All medications are recommended for 3 days for this indication (range 1 to 5 days)

†Furazolidone duration is 7 to 10 days when treating *Giardia lamblia*

Oral rehydration solutions containing both sugar and salt are optimum as fluid replacement. Patients can prepare their own inexpensive solutions, using simple available ingredients (TABLE 3). The cereal-based formula provides four times as many calories as the glucose-based recipe, and may help decrease the stool volume and duration of diarrhea.[5] Ricelyte, a fully prepared cereal-based rehydration solution, can be purchased over-the-counter.

The principle behind oral rehydration is that glucose facilitates water absorption, and sodium absorption is coupled with glucose. Too much sugar inhibits water absorption and can actually cause water loss via osmotic diarrhea. An ideal glucose concentration for water absorption is about 2.5%. Many drinks such as apple juice, cola drinks, sport drinks, and flavored gelatin contain about 6% glucose. These drinks can be diluted by adding approximately one and a half volumes of water. It is important to dilute with clean (bottled, boiled, or chemically treated) or sterile water to avoid an increased infectious burden or secondary infection.

I currently recommend either ciprofloxacin or ofloxacin empirically for traveler's diarrhea

Empiric treatment. Untreated, traveler's diarrhea usually spontaneously remits in 3 to 5 days. Antibiotics often diminish the symptoms of traveler's diarrhea to approximately 1 day, and the addition of loperamide may further reduce the duration of symptoms to less than 1 day.[7] However, loperamide therapy should be avoided if the diarrhea is bloody or fever is present. These symptoms should also be used as indicators to seek local medical attention, as they may indicate a more serious medical condition. Empiric antibiotic treatment is usually effective when taken for 1 to 5 days.[6]

Several options for therapy exist, including bismuth subsalicylate, ciprofloxacin, ofloxacin, trimethoprim-sulfamethoxazole, and furazolidone.[5] While bismuth subsalicylate can be effective as prophylaxis and treatment, the large doses required make it less practical. It also binds to antibiotics and limits their effectiveness. Many diarrheal pathogens are resistant to trimethoprim-sulfamethoxazole. The quinolones are highly and rapidly effective for the common causes of traveler's diarrhea. Furazolidone is not as rapidly effective as the quinolones, but can be given to children and has anti-*Giardia* activity (when given for 7 to 10 days) not seen with the other antibiotics. It may not be as readily available as ciprofloxacin.

Recommendations. I currently recommend either ciprofloxacin or ofloxacin, twice a day for 3 days, as empiric treatment for traveler's diarrhea in adults.[5–7] The newer quinolones sparfloxacin and levofloxacin may induce more photosensitivity, making them less attractive for use in travelers. Furazolidone is an alternative for children or for persons unable to tolerate quinolones (TABLE 4).

Chronic diarrhea

Rarely, travelers experience chronic diarrhea, often with weight loss and malabsorption.[8] Because the pathogens responsible are often not self-limited and not sensitive to quinolone antibiotics (TABLE 5), further medical care is necessary. These patients typically present to their primary care physicians after returning home. Physicians should identify the etiologic agent and give pathogen-specific therapy in this situation.

MALARIA

Each year, 7 million Americans travel to countries in which malaria is common.[5] Most mosquitoes that transmit malaria are found in rural areas, in contrast to those that transmit yellow fever. Hence, travel to major urban areas usually does not pose a risk for malaria, but even short trips to rural areas may place patients at risk.

Avoiding mosquitoes is the first objective. Travelers should use repellents and mosquito nets and stay indoors in the evening—the peak biting time for malaria-carrying mosquitoes. Early enthusiasm for Skin-So-Soft as an insect repellent has not been borne out. Given the potential severity of malaria, additional measures are prudent.

TABLE 5

CAUSES OF CHRONIC DIARRHEA IN TRAVELERS

Pathogens

- *Giardia lamblia*
- *Entamoeba histolytica*
- *Cryptosporidium*
- *Cyclospora*
- *Schistosoma mansoni*
- *Schistosoma japonicum*

Malabsorption

- Tropical sprue

Prophylactic drugs for malaria

No vaccines against malaria are currently available, but prophylactic medications dramatically reduce the risk. To select these medications, physicians need up-to-date data on the resistance patterns and relative risk of malaria in the country where the traveler is going, and knowledge of side effects and contraindications. The complexity of these considerations is one reason to refer international travelers to a travelers' clinic. Drug resistance is the major reason to choose one medication over another.

Chloroquine is the oldest, safest, and best tolerated of the available medications. It is safe throughout pregnancy (although pregnant women should avoid malaria-infested areas, if at all possible). Unfortunately, chloroquine-resistant strains of malaria are increasing, nearly all of them in *Plasmodium falciparum*, the most deadly of the parasites that cause malaria. Consequently, the areas of the world where chloroquine is still useful are continually shrinking and now include only Central America, the Caribbean, and the Middle East.

Mefloquine is the drug of choice in areas of chloroquine resistance; otherwise, chloroquine and mefloquine are approximately equally effective. Mefloquine can have unpleasant side effects of dizziness, anxiety, insomnia, and nightmares, which have been much publicized in recent travel literature.[12] However, a similar incidence of central nervous system reactions was noted among Peace Corps volunteers who took chloroquine.[13] Mefloquine reactions are more common in young adults than in older adults and children and are potentiated by alcohol. The drug should be avoided in patients with a history of seizures or psychiatric disorders. Because mefloquine can prolong cardiac conduction, it should be avoided in patients who are also receiving beta blockers. Fairly extensive worldwide use has documented that it is safe to use in the second and third trimesters of pregnancy.

Chloroquine resistance is increasing

Doxycycline is the most common alternative for patients traveling to areas with chloroquine resistance who are unable or unwilling to take mefloquine.[5,10] However, it must be taken every day, compared with once a week for mefloquine, making it less convenient. In addition, doxycycline causes a higher incidence of photosensitization reactions, which can be particularly troublesome in sunny tropical countries. It also causes a slightly higher incidence of vaginal yeast infections. On the other hand, it may prevent traveler's diarrhea. Of note, doxycycline is contraindicated throughout pregnancy.

In view of the severity of malaria, the side effects of current medications, and the lack of effective vaccines, newer antimalarial prophylactic regimens are being investigated.

TABLE 6

IMMUNIZATIONS FOR TRAVELERS

Routine vaccines

Inactivated

- Diphtheria-tetanus (Td vaccine for persons 7 years and older)*
- Hepatitis A*
- Influenza†
- Pneumococcal†
- Poliomyelitis (inactivated)*

Live-attenuated

- Measles-mumps-rubella†

Travel-specific vaccines

Inactivated

- Anthrax‡
- Hepatitis B†
- Japanese encephalitis‡
- Meningococcal*
- Plague‡
- Rabies‡
- Typhoid (Vi antigen)†

Live-attenuated

- Typhoid (Ty21a)†
- Yellow fever*

*Frequently recommended
†Occasionally recommended
‡Rarely recommended

HEPATITIS A

Hepatitis A is highly prevalent and is spread via contaminated food and water. Nearly all international travelers should receive the recently developed hepatitis A vaccine. This inactivated-virus vaccine achieves 80% to 98% immunity 15 days after one intramuscular dose.[9] A booster dose at 6 months provides prolonged immunity up to 10 years. This vaccine eliminates the need for passive immunization with immunoglobulin in most cases, and is less expensive, less risky, and has a lower side-effect profile. Minimal arm soreness at the site of injection and self-limited headaches are occasionally reported. Safety and efficacy have been shown in patients as young as 2 years. Travelers who present within 2 weeks of departure can receive both immunoglobulin and the new vaccine and still expect the vaccination to be at least partially effective.

Some former Soviet states are experiencing diphtheria outbreaks

SEXUALLY TRANSMITTED DISEASES

With gonorrhea among the top five diseases of international travelers and with HIV infection on the rise,[14] physicians should counsel their patients about the risks and available prophylactic measures for sexually transmitted diseases.

However, not all patients will follow your advice: a recent survey of more than 3,000 Swiss travelers to developing countries who sought pretravel advice at the Swiss Tropical Institute Travel Clinic found that 87% complied with recommended malaria chemoprophylaxis, but, remarkably, 50% of the same travelers engaged in casual sex abroad, usually with a partner from the host country.[15] Of the sexual encounters, 38% were unprotected, even though the travelers shared a similar knowledge base about the risks of HIV virus and other sexually transmitted diseases compared to malaria. Of note, those who engaged in high-risk sexual practices were not the same group who were noncompliant with malaria protective measures.

WHAT VACCINATIONS DO TRAVELERS NEED?

More than a dozen vaccines are available for diseases with a high prevalence in developing countries. Some are the familiar vaccines recommended for all Americans, while some are for diseases mostly found in the developing world or in specific travel destinations. They are further subdivided into inactivated and live-attenuated varieties (TABLE 6). Which vaccines a traveler needs depends on the itinerary and the patient's current immunization status.

Vaccines the primary care physician can give

The primary care physician should make sure that international travelers are up to date in their routine immunizations,[10] given that vaccine-based immunity to tetanus, diphtheria, polio, and measles wanes over time, and these diseases are highly prevalent abroad.

Tetanus-diphtheria. After the first series, boosters should be given every 10 years. Many of the newly independent Soviet states have been experiencing a diphtheria outbreak, which can be life-threatening, but is vaccine-preventable.

Influenza vaccine should be given every fall to persons older than age 65 or younger people with chronic disease. Of note, the peak influenza incidence in the southern hemisphere is during their winter season—June through August.

Pneumococcal vaccine should be given to all persons older than age 65.

Polio. A single booster of inactivated polio virus vaccine provides lifelong protection in adults who have received the primary series. The absence of reported wild-type polio in the Western hemisphere makes the vaccine optional for travel there.

Measles. For travelers born after 1957 a second measles booster should be considered, given the high prevalence of measles in the developing world.

Hepatitis A vaccine is highly recommended for nearly all international travelers. A single dose provides excellent protection in 2 weeks. A booster at 6 to 12 months is reported to extend protection to more than 10 years.

General issues related to travel vaccination

Adults who have not completed primary vaccination series need to complete them for full protection. Pregnant or immunocompromised travelers should seek specific advice from a travel medicine specialist.

Multiple vaccinations are often recommended for travel to developing countries. This raises important practical issues about vaccine co-administration. Inactivated vaccines can be given on the same day without altering their immunogenicity,[10] although local reactions such as arm soreness may be greater when this is done. Studies have revealed that diphtheria, pertussis, and tetanus; inactivated poliomyelitis vaccine (or oral poliovirus vaccine); *Hemophilus influenzae*, type b; measles, mumps, and rubella; and hepatitis B vaccines may all be given on the same day with consistent efficacy.[11]

In theory, live-virus vaccines may impair the immune responses of each other, and it is suggested that they be given more than 30 days apart.

Immunoglobulin. If it is necessary to give immunoglobulin for passive antibody protection, inactivated vaccines may be given at the same time with no impact on their efficacy. The live-attenuated yellow fever and oral poliovirus vaccines are not affected by co-administration. Measles-mumps-rubella vaccine is best given at least 14 days after immunoglobulin, and 6 months after whole blood or red blood cell transfusion.

Adverse reactions. The most common adverse vaccine reaction is an egg protein allergy, because the influenza vaccine is developed in embryonic chicken eggs, as is the yellow fever vaccine (see below). Also, measles and mumps vaccines are developed in chicken embryo cell culture. In general, if patients can eat eggs and egg products without reaction they can receive the vaccines without reaction. Protocols exist to enable vaccination of patients with significant allergy.[11]

Hepatitis A vaccine is recommended for nearly all international travelers

Rare patients are allergic to the vaccine antigen, animal proteins, antibiotics, preservatives, or stabilizers used in vaccine preparation. No currently recommended vaccines contain penicillin or penicillin derivatives. Measles-mumps-rubella vaccine contains trace amounts of neomycin. However, nearly all people with neomycin "allergy" actually show a delayed-type hypersensitivity contact dermatitis rather than a systemic allergic response.[10] This reaction is not a contraindication to receiving the vaccine.

Rare anaphylactic reactions to diphtheria and tetanus vaccines have been seen. Skin testing to tetanus toxoid is available to determine if a patient truly has this sensitivity.

It is often helpful to take acetaminophen regularly for 2 to 3 days after vaccine administration to diminish local arm soreness.

Vaccinations that are best left to travel-medicine experts

Some travelers to high-risk areas need vaccinations against meningococcus, typhoid, and yellow fever. Knowing when to give these vaccines requires expertise, and as such is a reason to refer a patient to a travel clinic.

Meningococcal vaccination is recommended for the "meningitis belt" of sub-

Saharan Africa and other focal areas, depending on disease prevalence. Physicians must review travel health advisories frequently to stay abreast of this critical information. Because of crowded conditions and extensive international mingling, this vaccine is recommended for all pilgrims on the Hajj.

Yellow fever occurs throughout most of urban and rural South America and Africa. The live-attenuated vaccine is highly effective, but can only be given at an approved center. While direct travel to nonendemic areas requires no vaccinations, some countries require proof of vaccination before entry if the travelers' itinerary includes any areas of possible yellow fever exposure.[7] Hence, most travelers to South America and Africa need to go to a travel clinic that can give yellow fever vaccine.

Melatonin shows a small, inconsistent reduction in jet lag symptoms

Typhoid. The recommendation for typhoid vaccination is itinerary-specific. The original inactivated vaccine had a high incidence of bothersome local reactions. Currently, an oral live-attenuated vaccine (Ty21a), and an improved inactivated injectable vaccine (Vi antigen) are available. Special instructions are needed for the oral vaccine, including avoiding co-administration of the vaccine and mefloquine.

Hepatitis B vaccine was recently added to the routine vaccine schedule for children. However, unvaccinated adults typically receive this vaccine only when they expect high-risk exposure to blood or body fluids. The schedule (three shots over 6 months) does not make this vaccine "travel-friendly." Travelers planning extended travel to developing countries may benefit from vaccination, a decision best made in consultation with a travel specialist.

Uncommon diseases such as anthrax, rabies, plague, and Japanese encephalitis are also preventable with immunizations. However, the rarity of these diseases and the fairly significant local side effects of their vaccines are reasons to use these vaccines only in travelers at especially high risk.[10]

ADVICE FOR PATIENTS WITH MEDICAL CONDITIONS

If a patient with a pre-existing medical condition is planning an international trip, the physician should ask about the destination and type of trip to decide if special considerations are necessary. Examples include high-altitude destinations and adventure travel experiences. In addition, some patients, such as persons with diabetes, need special diets.[5] APPENDIX A includes helpful references for travelers with special medical needs, including where to find dialysis centers abroad.

A checklist for patients

In general, patients with medical conditions should:

- Keep their medications in their original containers to avoid customs delays.
- Take along an epinephrine injection kit if they have severe allergies to insect stings, unless this is otherwise contraindicated.
- Consider taking a copy of their electrocardiogram, a recent medical summary, and the phone number of their primary care physician in case a treating physician abroad needs to contact them. (A list of English-speaking physicians around the world is available from the International Association for Medical Assistance to Travellers, 417 Center St, Lewiston, NY 14092; 716-754-4883.)
- Investigate exactly what their insurance policies cover during travel overseas. Medicare, for example, does not cover medical expenses outside the United States. Supplemental insurance is usually available and is wise to consider. Most pretravel medical evaluations and vaccinations are not covered by medical insurance plans. However, updating patients on routine immunizations, which further protect them overseas, may be covered.

Special considerations for bypass surgery patients

Of note, a growing number of international travelers have previously undergone coronary artery bypass grafting (CABG). A survey of 10,000 post-CABG patients found that 40% had traveled recently to either a domestic or a foreign location.[4] There was a very low incidence of myocardial infarction or hospitalization during the trip. The only identified health concern was that older post-CABG patients had slightly more shortness of breath when they traveled to Mexico and South America compared with other destinations.

The higher altitude of many of the destinations in Central and South America probably explains this finding.[4]

ADVICE FOR ALL TRAVELERS

The importance of sunscreen and insect repellent should be stressed. It is good to reinforce food and water precautions, including brushing one's teeth with purified or bottled water and avoiding ice in drinks.

Jet lag is a common, unavoidable condition without any specific therapy. Over the years many remedies have been sought, but no "magic bullet" found. Adequate hydration and avoidance of excess alcohol are two of the most useful tips.[5] Melatonin is involved in the circadian cycles in many animals, leading to considerable interest in its potential role in treating jet lag. Studies in travelers showed small and inconsistent reductions in jet lag symptoms.[16,17] The safety of melatonin has not been established, although it is widely available in health food stores. Some evidence supports exposure to outdoor sunlight at the travel destination, which may speed acclimatization.[16,17] Important events and meetings are best scheduled at least 48 hours after arrival.

Electronic resources. Patients with access to the Internet can review helpful information about medical preparation for foreign travel from several sources. One of the most notable is the CDC travel information section (www.cdc.gov/travel). The World Health Organization also posts information related to international travel health concerns (www.who.ch/programmes/ctd). A particular advantage of these sources is that they allow the patient to review information related to their specific travel plans which will generate focused questions for review during pretravel counseling.

SUMMARY

The goal of travel medicine is to allow the patient to enjoy a long-awaited vacation, or perform productively on an important business trip overseas. The needs of international travelers to developing worlds are unique. To insure a safe and enjoyable trip, special pretravel counseling and vaccines are usually necessary. The primary care physician is often the first to be apprised of plans for international travel. Therefore, they can initiate care and select those needing referral to a travel medicine clinic. Understanding the background issues related to the international traveler will facilitate patient care and the referral process. Bon voyage.

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APPENDIX A: RESOURCES FOR TRAVELERS

Books about travel medicine

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Dawood R, editor. Travelers' health: how to stay healthy all over the world. New York: Random House, 1994.
Forgey WW. Traveler's medical resource: a guide to health and safety worldwide. Merrillville, IN: ICS Books, 1990.
Rose SR. International travel health guide, 8th Edition. Northampton, MA: Travel Medicine, Inc, 1997.
Wolf MS, editor. Health hints for the tropics, 11th edition. Washington, D.C.: American Society of Tropical Medicine and Hygiene, 1993.
John EC, McMullen R, editors. The travel and tropical medicine manual. Philadelphia: W.B. Saunders, 1995.

Electronic resources

Centers for Disease Control and Prevention. Automated fax line 404-332-4565 (toll-free 888-232-3299). Internet web site http://www.cdc.gov/travel/travel.html.
World Health Organization. Internet web site www.who.ch/programmes/ctd.

Newsletters and periodicals

The Diabetic Traveler Newsletter. Box 8223 RW, Stamford, CT 06905; 203-327-5832.
Consumer Reports Travel Letter. Consumers Union, 101 Truman Ave, Yonkers, NY 10703; 914-378-2000 or 800-234-1645.

Kidney dialysis abroad

International directory of dialysis centers. Creative Age Publications, 7628 Densmore Ave, Van Nuys, CA 91406; 800-442-5667 or 818-782-7328.

Business travel

Shales M, Rosser M, Redding K, Harrington R. The traveler's handbook. Chestern, CN: Globe Pequot, 1988.
World business travel guide. Toronto: Summerhill Press, 1987.

Personal safety

Travel safety: don't be a target! Helena, MT: Uniquest Publications, 1992.
Savage P. The safe travel book, a guide for the international traveler. New York: Lexington Books, 1993.
Scotti AJ. Executive safety and international terrorism: a guide for travelers. Englewood Cliffs, NJ: Prentice-Hall, 1986.

Wilderness medicine

Auerbach PS. Medicine for the outdoors: a guide to emergency medical procedures and first aid. Boston: Little, Brown, 1991.
Kennedy B. Caring for Children in the Outdoors. Adventure Medical Kits Publishing, 1994.
Auerbach PS, editor. Management of wilderness and environmental emergencies. St. Louis: CV Mosby Company, 1995.
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SOURCE: APPENDIX A ADAPTED FROM ROSE, REFERENCE 5

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