CHAPTER 18

Pre-Travel Assessment and Advice for Expatriates and Volunteers

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EXPATRIATES

Definitions

Expatriates are defined as travelers who reside abroad for work or volunteer reasons but intend to return eventually to their home country, in contrast to immigrants, who intend to stay in the destination country. They typically spend longer durations abroad than tourists or short-term business travelers.

Type of Expatriate

Exposures depend largely on the nature of work. This may range from executives in large cities to missionaries or relief workers in rural settings or disaster sites. Working in healthcare facilities, refugee camps, or orphanages increases infectious risks.

Expatriates employed by well-established organizations have better access to pre-travel preparation and may have extensive medical resources, including evacuation policies. By contrast, self-sponsored travelers or those sent by smaller organizations may limit their pre-travel preparation due to cost constraints and may have inadequate support if they fall ill abroad.

Destination

The most important factor to consider in pre-travel preparation is destination. Health exposures vary greatly by continent; for example, the risk of malaria is generally higher in sub-Saharan Africa compared with Asia or Latin America. Urban versus rural settings also modify exposure risks and access to care.

Decisions about vaccinations and advice about malaria prophylaxis also depend on which other countries or areas the expatriate is likely to go to while abroad, other than the stated destination country. This can include official or recreational side trips to rural areas, such as might occur for consular staff responding to emergencies.

Duration

Long-term residence abroad (>3-6 months) puts expatriates at risk for an extended range of health problems. First, longer duration mathematically increases exposure opportunities. Second, compliance with precautions becomes challenging to sustain over time. Third, long-term expatriates may have higher risk for specific exposures, depending on their work (humanitarian relief, medical, orphanages), and living conditions may approximate that of local or poorer populations (missionaries).

Emerging Trends

Although "expatriate" may conjure images of white-collar executives, it encompasses lower-income migrant workers from developing countries. These may include Indonesian domestic helpers in Hong Kong, Filipino nurses in Saudi Arabia, or Bangladeshi construction workers in Singapore. An emerging trend is south-to-south work migration, for example, the large

influx of Chinese investment and construction in Africa. Pre-travel preparation and access to healthcare resources for these workers may be minimal.

PRE-TRAVEL CARE

Expatriates should undergo a comprehensive health assessment ideally 4-12 weeks pre-departure to identify previously undiagnosed disease, stabilize chronic illnesses, evaluate fitness for travel and risks, provide routine and travel-specific vaccinations, and educate regarding prevention and management of health issues while abroad.

History

A detailed medical and surgical history should be obtained with attention to those that need to be stabilized. Review of systems should include symptoms that may indicate undiagnosed problems, psychiatric issues, and substance abuse, because these may be exacerbated by the stress of travel abroad. Social history should elicit tobacco, alcohol/drug use, and sexual practices to guide advice about risk behaviors, with reference to the destination country.

Document medication allergies and review medications the patient is taking, their availability abroad, and any testing required. Patients on warfarin, insulin, injectable agents, or controlled substances will require detailed counsel on making prior arrangements for monitoring, safe supply, and legal access in the destination country.

Complete immunization records are required in order to provide appropriate advice about vaccinations. Specific forms, tests, or vaccinations may be required by the organization or the destination country. If accompanying children will attend school at the destination country, there may be additional school-related requirements.

Physical Exam

Perform a comprehensive physical examination, including vital signs, height, weight, and body mass index. Preventive health screening for women should include a breast exam (if ≥30 years), and a Pap smear for the sexually active or those ≥21. Men should have a testicular exam and, if ≥50 years, a digital rectal exam. A dental exam is recommended if dental care overseas may not be readily accessible.

Laboratory Tests

There are few evidence-based recommendations for screening laboratory tests for long-term expatriates. Health screening guidelines appropriate for age and occupation would be a minimum starting point. Additional screening tests for tuberculosis, human immunodeficiency virus (HIV), or syphilis may also be required by the destination country for long-term travelers.

These are screening tests to consider, based on age, risk factors, and destination:

- Complete blood count (CBC), chemistry, liver function tests, and fasting glucose and lipids
- Mammograms for women age >40
- Colonoscopy for men and women age >50
- Tuberculin skin test (TST) or interferon gamma release assay (IGRA)
- Baseline electrocardiogram (EKG) for persons age >45 and those with cardiovascular risk factors
- Baseline chest radiograph for patients with positive TST or pulmonary conditions
- HbA1c for diabetics
- HIV serology
- Hepatitis B and C serologies (HBsAg, HBsAb, HBcAb total, HCV Ab)
- Rapid plasma reagin and *Treponema pallidum* hemagglutination

For patients with specific risk factors or medical history, some of the following tests may also be required:

- β-human chorionic gonadotropin
- Thyroid stimulating hormone, free thyroxine
- Cardiac stress testing
- Pulmonary function testing

Test results should be reviewed, follow-up discussed, and a copy of the results provided. Baseline EKG or chest radiograph may be needed for comparison when residing abroad long term.

Assessing Fitness for Travel

Assessing fitness for travel may be required by the organization or requested for personal health reasons. Employer or country visa requirements can be quite specific. Information from the history, physical exam, and laboratory tests will help determine this. Stabilize newly diagnosed or pre-existing medical illness before departure.

Complex medical conditions in travelers should prompt a careful evaluation of availability at the destination for access to modern medical resources:

- Bleeding or clotting disorders (requiring blood products)
- Cancer (requiring treatment in the past 5 years or ongoing monitoring)
- Cardiovascular disease (symptomatic)
- Diabetes (HbA1c >8, end-stage organ disease)
- HIV (symptomatic or CD4 count <200)
- Renal failure (requiring renal replacement therapy)
- Rheumatologic disease (symptomatic in the last 6 months, on immunosuppression)
- Solid organ or bone marrow transplant recipient (within 2 years from transplant)
- Psychiatric disorder (symptomatic within the last 12 months)

These need not preclude travel. But if travel or assignment is to a remote location with poor access to appropriate medical care, travelers and their organizations should be made aware of the potential risks and options to mitigate those risks.

Depending on resources available, long-term travelers may need to make arrangements for medical follow-up at destination or else return home for this. Travelers need to check on availability of medications in the destination country. Local regulations may restrict the use of benzodiazepines and narcotics, and purchasing medications in-country may risk counterfeit medications or treatment interruptions due to stock-outs.

VACCINE-PREVENTABLE DISEASES (VPD)

For VPD, vaccine risk and cost should be balanced against a discussion of the risk of disease acquisition. **Figure 18.1** outlines the framework for risk assessment.

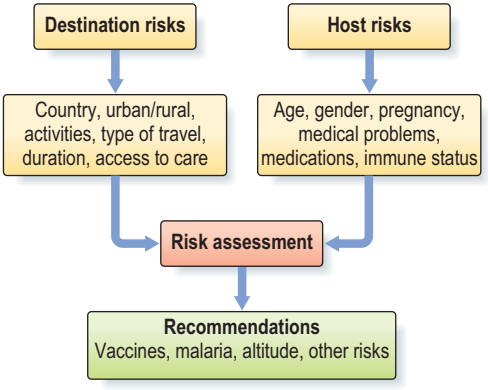

Fig. 18.1 **Expatriate pre-departure assessment.**

For long-term expatriates on their first extended posting abroad, the list of vaccines may be long and daunting. A useful framework for discussion is to group the vaccines into the following categories:

- Routine: vaccines they should be getting even if not traveling
- Recommended: vaccines appropriate for their exposure risk at the destination
- Required: vaccines required by the country or organization

These will vary based on the traveler's age, medical conditions, destination, work, or recreational exposures, and organizational policy. Another useful framework to discuss vaccines is by the main route of transmission:

- Food- and water-borne: hepatitis A, typhoid, rotavirus, polio
- Respiratory: measles, mumps, rubella (MMR), diphtheria, pertussis, chickenpox, influenza, pneumococcal, meningococcal
- Vector-borne: yellow fever, Japanese encephalitis
- Contact: tetanus, rabies
- Blood and body fluids/sexual: hepatitis B, human papillomavirus (HPV)

A careful vaccination history should be taken for travelers born in developing countries where vaccine uptake may be sub-optimal or for elderly travelers who were born before routine childhood vaccination programs.

All long-term expatriate travelers should receive routine vaccines. In today's increasingly mobile and globalized world, this sometimes requires discussion about whether to follow the national recommendations of:

- Their country of citizenship
- The country where they are receiving pre-travel care
- The destination country (for visa and school requirements)

For example, a healthy American family with two children (ages 5 and 13) seen in Singapore before their move to Mumbai for 3 years will need a nuanced discussion of influenza vaccine (universal in the United States but not in Singapore), meningococcal and HPV vaccine for the 13-year-old, and MMR number two for the 5-year-old (given at 15-18 months in Singapore but at 4-6 years in the United States), in addition to whatever the international school in Mumbai may require of incoming students.

For recommended vaccines, long-term expatriates should receive as a minimum the same recommendations that short-term travelers get. However, the following vaccines deserve more detailed mention for long-term expatriates.

Typhoid Vaccine

Typhoid fever from *Salmonella typhi* is acquired by contaminated food or water. This risk is higher in developing countries, with the highest risk in South Asia (the Indian subcontinent). The incidence of typhoid among travelers is estimated at 3/100,000 per month. A longer duration of travel confers higher risk, although those who travel less than a week can still acquire typhoid infection.

Typhoid vaccine is available in the United States as a live attenuated oral vaccine and an injectable Vi polysaccharide vaccine. Protective efficacy is ~70%, so patients should be counseled to maintain food and water precautions. Duration of protection is about 2-3 years for the injectable vaccine and 5 years for the oral vaccine. Neither vaccine confers protection against *Salmonella paratyphi*.

Hepatitis B

Hepatitis B infection is transmitted via blood and body fluids (sexual intercourse, contaminated needles, or blood transfusions). It is present worldwide but endemic in Asia and the developing world. Expatriates may be exposed when seeking medical or dental care abroad. All long-term expatriates should receive hepatitis B vaccine at 0, 1, and 6 months. A four-dose rapid schedule of 0, 1, 2, and 12 months can be used as an alternative or the accelerated schedule of 0, day 7, day 21, and 12 months (not approved by the US Food and Drug Administration [FDA]). Checking antibody titers is not routine but may be considered for

travelers with immunocompromise, on dialysis, with risk factors of being nonresponders, and with occupational exposures. Nonresponders should undergo a second primary series and have titers rechecked.

Japanese Encephalitis (JE) Vaccine

JE is a flavivirus infection transmitted by *Culex* mosquitoes. Incidence is estimated at 50,000 per year with transmission occurring in Asia, especially rural areas. There are four JE vaccines in use worldwide, but availability varies by country. We will discuss these so long-term expatriates can understand how newer vaccines compare with previous vaccines.

JE-MB Vaccine

This was a three-dose vaccine, given at 0, 7, and 28 days. Derived from mouse brain (MB), the Biken vaccine was discontinued in 2008. However, an equivalent JE-MB vaccine from Green Cross in South Korea was in use until 2015.

JE-VC Vaccine

A Vero cell (VC) vaccine, Ixiaro™, is FDA approved in the United States and available in Europe, Australia (Jespect™), and several sites in Asia (Singapore, Hong Kong). It is a two-dose series, given at 0 and 28 days. A booster is recommended at 12-15 months, with data suggesting immunogenicity for several years thereafter.

JE-CV Vaccine

A chimeric vaccine (CV), Imojev™ has been registered for use in Australia, Singapore, and several other countries (as of April 2015). It is a live attenuated vaccine approved for individuals 9 months of age and older. Protection is thought to be several years, but there are no recommendations for booster or timing at this time.

JE SA-14-14-2 Vaccine

This is a live attenuated viral vaccine using the SA-14-14-2 strain, produced by the Chengdu Institute of Biological Products in China. The schedule in China is a subcutaneous dose at age 8 months, followed by a booster at age 2 years, and another dose at 6-7 years.

Rabies

Rabies is an acute viral encephalitis that is primarily transmitted by mammal bites; dog bites are the most common mode of transmission. Long-term expatriates are at increased risk because of longer duration of exposure; they may also acquire pets, including stray animals. Young children may be at increased risk for high-risk animal bites to the head and neck region.

Pre-exposure vaccination consists of three doses given at day 0, 7, 21, or 28. This simplifies management after a bite—patients should be counseled to wash the wound with soap and water, then get two doses of vaccine: on the day of the bite and 3 days later. In those who have not received the pre-exposure vaccination, the patient receives four doses of rabies vaccine, on days 0, 3, 7, and 14 (US Advisory Committee on Immunization Practices schedule), or five doses of rabies vaccine on days 0, 3, 7, 14, and 30 (World Health Organization [WHO] schedule); a single dose of rabies immunoglobulin is also required, but this may not be readily accessible in low-income nations. There are currently no recommendations for routine boosters, unless the patient has frequent contact with animals, such as working as or with a veterinarian.

Yellow Fever

Yellow fever is an acute flavivirus infection, transmitted by infected *Aedes aegypti* mosquito bites. The International Health Regulations were amended in 2014 based on recommendations from the Strategic Advisory Group of Experts to WHO that a single dose of yellow fever vaccine would be sufficient to confer long-term protection. This change comes into effect in July 2016. For long-term expatriates moving to countries with yellow fever transmission, yellow fever vaccine should be recommended because of potential travel in-country during the extended period of their assignment.

On the Horizon

Several vaccines are in development for endemic populations but are not currently available commercially. Travel medicine practitioners should keep watch for these vaccines in late development:

- Inactivated yellow fever
- Dengue
- Malaria
- Hepatitis E

OTHER HEALTH PROBLEMS: INFECTIOUS

Nonvaccine-preventable illnesses, as applicable, should be discussed with individual travelers.

Malaria

Expatriates moving to malaria-endemic regions to work or live for extended periods are at risk for this protozoal infection transmitted by infected *Anopheles* mosquitoes. The risk of acquiring malaria depends on the country, rural versus urban location, duration of stay, seasonal transmission rates, practice of personal protective measures, and compliance with malaria prophylaxis. The risk of severe complications or death from malaria depends on patient and destination factors; children under 5 years, pregnant women, and asplenic patients are at higher risk. Access to medical care, antimalarial medications, and blood supply safety are other considerations. Glucose 6-phosphate dehydrogenase (G6PD) deficiency may also make the use of primaquine more difficult if infected with *Plasmodium vivax* or *Plasmodium ovale*.

Expatriates may opt not to take chemoprophylaxis because they perceive that malaria risk is low or because of concerns about side effects when taken for months or years or by very young children or women who may wish to conceive.

When prescribing chemoprophylaxis for long-term expatriates, the following factors should be considered: tolerability of side effects, frequency of dosing that affects compliance, interaction with concomitant medications, and comorbidities. Expatriates who wish to minimize their risk in malaria-endemic regions, who have limited access to care, or who are at risk of severe disease should be offered continuous prophylaxis. If the expatriate has access to good medical care and is in an area with seasonal risk of malaria, it may be possible to take prophylaxis only during seasons with highest transmission risk. However, it would be prudent to prescribe prophylaxis for the first several months until the traveler can establish a good local healthcare provider and learn about malaria transmission locally. Malaria medications should be supplied from home because of problems with counterfeit antimalarials in some developing countries. Chloroquine resistance is widespread, so in areas with resistance, options for prophylaxis include mefloquine, doxycycline, and atovaquone-proguanil. Primaquine is used by some clinicians for prophylaxis in areas where *P. vivax* is predominant, but G6PD levels should be checked before prescribing it.

Dengue

Dengue is an acute viral infection transmitted by infected *Aedes aegypti* mosquitoes. Expatriates relocating to dengue-endemic regions should be counseled about personal protective measures. Severe dengue infection is rare (<5% of all cases), but access to excellent supportive care is essential for such cases. There are four serotypes of dengue virus. Infection with confer serotype-specific protective immunity; more severe disease may occur if the traveler acquires an infection with another serotype.

Gastrointestinal (GI) Infections

GI infections are common among long-term expatriates, although some studies indicate that actual incidence may be lower compared with short-term travelers. Strict food and water precautions are difficult to maintain over a long period. Missionaries, Peace Corp volunteers, and humanitarian workers may be exposed to more risks. GI infections transmitted via food

and water include cryptosporidiosis, giardiasis, amebiasis, liver flukes, tapeworms, salmonellosis, brucellosis, listeriosis, norovirus, and hepatitis E.

Safe water supplies can be ensured by bringing water to a rolling boil for 1-3 minutes, disinfecting with chlorine drops, or using water filtration systems (e.g., a 1-micron filter). Chlorination while killing bacteria and viruses has low to moderate efficacy in killing *Giardia* and *Cryptosporidium*; filtration does not remove viruses. Home-cooked food with attention to good sanitation and hygiene is generally safer. Household help should be instructed how to prepare, cook, and store food safely. Travelers should avoid undercooked meat and poultry and unpasteurized dairy products.

Sexually Transmitted Infections

Sexually transmitted infections include short incubation diseases, such as syphilis, gonorrhea, and chlamydia, or chronic infections such as HIV, hepatitis C, or HPV infection. Advice about abstinence, condom use, or pre-exposure prophylaxis may need to be addressed based on traveler risk factors.

Tuberculosis (TB)

TB is an airborne mycobacterial infection. Multidrug-resistant TB has increased in a number of developing countries. Expatriates going to countries with high TB prevalence should be tested for TB infection using a Mantoux test or IGRA pre-travel, on exposure to active TB, and after return. If the test is positive, perform a chest radiograph to exclude active disease. Isoniazid prophylaxis should be offered to travelers with latent TB infection. Household employees from countries with high TB incidence should be evaluated for active TB, especially if symptomatic.

Viral Hemorrhagic Fevers

In 2014, there was an unprecedented Ebola outbreak in West Africa, mainly in Guinea, Liberia, and Sierra Leone, with more than 28,000 cases and more than 11,000 deaths as of March 2016. This outbreak had a devastating impact on the economy and health services of the Ebola-affected countries. Long-term expatriates, especially healthcare workers, to countries at risk for Ebola and viral hemorrhagic fevers (such as Lassa and Marburg) need to be counseled about transmission risks and protective measures.

OTHER HEALTH PROBLEMS: NON-INFECTIOUS

Safety and Security

Personal safety from violent crime may be an issue depending on destination. Humanitarian workers in conflict areas may need more detailed evacuation and emergency plans. All doors and windows should have functioning locks. After arrival, expatriates should register with their respective embassies for travel warnings and security advisories. Missionaries need to be increasingly aware of religious conflict or ransom demands.

Traffic and Trauma

Road traffic accidents pose a serious health risk in many developing countries. Seat belts should be used at all times. Young children should travel in car seats where possible and not in the front passenger seat. If riding a motorcycle or bicycle, helmets should be worn. Expatriates should keep their windows up and doors locked when driving in higher risk neighborhoods.

Mental and Emotional Health

Psychiatric issues may be exacerbated or develop as a result of stresses related to living abroad, requiring repatriation home. Posttraumatic stress disorders may occur in volunteers in conflict areas and disaster zones. Competent psychiatric evaluation and medication access may be limited in certain settings. See Chapter 17.

Dental Problems

Dental-care needs for expatriates can range from emergency root canals to routine dental cleaning or orthodontics for accompanying children; high-quality dental care and disinfection for instruments may not be readily accessible at some destinations.

Cardiovascular

Cardiovascular events may occur in long-term expatriates. Individuals with risk factors such as diabetes, smoking, hypertension, or a strong family history should be advised regarding risk mitigation and should establish care with a competent healthcare provider at their destination.

MEDICAL CARE ABROAD

The most commonly reported problems that lead expatriates to seek medical care abroad include GI disorders, respiratory infections, and febrile illness with short incubation periods, such as influenza, dengue, or malaria. Acute injuries, including animal bites, road traffic accidents, and criminal violence, may require urgent medical attention.

In many developing countries, healthcare resources may be substandard. Seeking care may require navigating language and cultural barriers. Medication quality and blood transfusion safety may be considerations when deciding if one should seek medical care abroad. The adequacy of vaccine cold chains is a concern in developing countries where power outages occur frequently.

Medical evacuation home or to a regional center with advanced medical capabilities may become necessary in certain situations, depending on urgency, severity, and complexity. Expatriate volunteers should purchase insurance that provides access to a medical assistance company that can locate and coordinate quality healthcare and arrange for an evacuation if appropriate medical care is unavailable for life-threatening situations.

If expatriates die abroad, help from their embassy will be needed to address repatriation or burial abroad, notification of family, or care of accompanying children.

POST-TRAVEL CARE

When expatriates return home, they should receive a comprehensive history, exam and laboratory testing on their post-travel visit. History of exposure, destinations, and illnesses abroad will help guide further testing (**Table 18.1**). Screen for travel-related infections that

TABLE 18.1 Risk Exposures for Consideration at Post-Travel Visit

Risk Exposure	Diseases Possible	Screening and/or Treatment after Exposure
Food and water	Typhoid	Stool and blood culture
Unpasteurized dairy	Brucellosis	Brucella serology, blood culture
Respiratory	Influenza	Influenza PCR/DFA
Contact with ill persons, healthcare workers, or incarceration	Tuberculosis	Screening: IGRA, PPD Treatment: isoniazid for latent TB infection
Mosquito bites (endemic)	Malaria	Blood film for malaria
	Filariasis	Blood film for filaria, filarial serology
Fresh water contact	Schistosomiasis	Stool microscopy, *Schistosoma* serology
Walking barefoot	Hookworm	Stool microscopy
	Strongyloidiasis	Stool microscopy, *Strongyloides* serology
Animal bites	Rabies	Treatment: rabies post-exposure prophylaxis

Continued

TABLE 18.1 Risk Exposures for Consideration at Post-Travel Visit—cont'd

Risk Exposure	Diseases Possible	Screening and/or Treatment after Exposure
New sexual partners, contaminated needles, or blood transfusions	Hepatitis B	HBsAg, HBcAb, HBsAb
	Hepatitis C	HCV serology
	HIV	HIV serology
New sexual partners	Syphilis	RPR, TPHA, Syphilis IgG
	Gonorrhea	Urine or urethral swab for gonorrhea PCR
	Chlamydia	Urine or urethral swab for chlamydia PCR

DFA, Direct fluorescent-antibody; *HCV*, hepatitis C virus; *HIV*, human immunodeficiency virus; *IgG*, immunoglobulin G; *IGRA*, interferon gamma release assay; *PCR*, polymerase chain reaction; *PPD*, purified protein derivative; *RPR*, rapid plasma reagin; *TPHA*, *T. pallidum* hemagglutination.

may be asymptomatic or have long-term sequelae (TB, schistosomiasis, filariasis), address routine medical problems that have been diagnosed during their time abroad (e.g., diabetes, hypertension), update vaccinations, and reassess risk and preventive strategies for malaria and other issues if further travel is planned. A CBC should be performed for all returning travelers. Anemia may require evaluation for malaria, and stool microscopy may be required for hookworm and other GI parasites. Eosinophilia should prompt investigations for schistosomiasis, strongyloidiasis, and other causes. Eosinophilia may not be present in all cases, so all travelers who have had fresh water contact in endemic regions should be evaluated for schistosomiasis with stool microscopy and serology. More details about testing and treatment are available in other chapters.

FURTHER READING

Almuzaini, T., Choonara, I., Sammon, H., 2013. Substandard and counterfeit medicines: a systematic review of the literature. BMJ Open 3 (8), e002923. doi:10.1136/bmjopen-2013-002923.
Prevalence of counterfeit or substandard medications is 28.5%, highlighting a safety issue for long-term expatriates abroad.

Chen, L.H., Wilson, M.E., Davis, X., et al., GeoSentinel Surveillance Network, 2009. Illness in long-term travelers visiting GeoSentinel clinics. Emerg. Infect. Dis. 15 (11), 1773–1782.
Analysis of illness spectrum among returning travelers who spent 6 months or longer abroad.

Chen, L.H., Wilson, M.E., Schlagenhauf, P., 2006. Prevention of malaria in long-term travelers. JAMA 296 (18), 2234–2244.
Classic paper summarizing considerations for long-term malaria chemoprophylaxis.

Cunningham, J., Horsley, J., Patel, D., et al., 2014. Compliance with long-term malaria prophylaxis in British expatriates. Travel Med. Infect. Dis. 12 (4), 341–348.
This survey indicates that even well-informed employees self-reported poor adherence to malaria prophylaxis beyond the first 3 months.

Dahlgren, A.L., Deroo, L., Avril, J., et al., 2009. Health risks and risk-taking behaviours among International Committee of the Red Cross (ICRC) expatriates returning from humanitarian missions. J. Travel Med. 16 (6), 382–390.
Survey of Red Cross volunteers showing exposure to work stress, violence, and unprotected sexual contact.

Guse, C.E., Cortes, L.M., Hargarten, S.W., et al., 2007. Fatal injuries of US citizens abroad. J. Travel Med. 14 (5), 279–287.
Cross-sectional report of deaths in US citizens abroad with a higher proportion of fatalities from injuries, including motor-vehicle accidents and drowning.

Hoge, C.W., Shlim, D.R., Echeverria, P., et al., 1996. Epidemiology of diarrhea among expatriate residents living in a highly endemic environment. JAMA 275, 533–538.

Holtz, T.Z., Salama, P., Lopes Cardozo, B., et al., 2002. Mental health status of human rights workers, Kosovo, June 2000. J. Trauma. Stress 15 (5), 389–395.
Survey of emotional impact of hostility and violence on expatriate humanitarian relief workers.

Lim, P.L., Han, P., Chen, L.H., et al., for the GeoSentinel Surveillance Network, 2012. Expatriates ill after travel: results from the GeoSentinel Surveillance Network. BMC Infect. Dis. 12, 386.
Findings on post-travel illness for 2883 expatriates compared with 11,990 non-expatriate travelers presenting at GeoSentinel sites, showing exposure differences by destinations and type of expatriate traveler.

Pierre, C.M., Lim, P.L., Hamer, D.H., 2013, Expatriates: special considerations in pre-travel preparation. Curr. Infect. Dis. Rep. 15 (4), 299–306.
Review of literature on pre-travel preparations for expatriate travelers.

Shepherd, S.M., Shoff, W.H., 2014, Vaccination for the expatriate and long-term traveler. Expert Rev Vaccines. 13 (6), 775–800.
Review article on travel patterns and data on exposures to guide vaccinations for long-term expatriates.

Teichman, P.G., Donchin, Y., Kot, R.J., 2007. International aeromedical evacuation. N. Engl. J. Med. 356 (3), 262–270.
Review of medical evacuations.

Toovey, S., Moerman, F., van Gompel, A., 2007. Special infectious disease risks of expatriates and long-term travelers in tropical countries. Part I: malaria. J. Travel Med. 14, 42–49.
An excellent review of the challenges of malaria prophylaxis in the long-term expatriate.

Vaid, N., Langan, K.M., Maude, R.J., 2013. Post-exposure prophylaxis in resource-poor settings: review and recommendations for pre-departure risk assessment and planning for expatriate healthcare workers. Trop. Med. Int. Health 18 (5), 588–595.
Review of occupational exposures to blood-borne pathogens and recommendations for pre-departure planning of post-exposure prophylaxis.

Visser, J.T., Edwards, C.A., 2013. Dengue fever, tuberculosis, HIV, and hepatitis C virus conversion in a group of long-term development aid workers. J. Travel Med. 20 (6), 361–367. doi:10.1111/jtm.12072; Epub 2013 Oct 9.