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Travel Health Implications for Women Traveling Abroad

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ABSTRACT: International travel is increasing each year, and many travelers are female. Travel-related health risks include diseases, accidents, and other safety concerns. Whether traveling for business or pleasure, women should practice appropriate measures that minimize the impact travel can have on their health and well-being. Female travelers can have unique health risks related to pregnancy, lactation, and infectious disease. A large part of pretravel health preparation is often performed by nurses and should include a comprehensive health risk assessment, education, and vaccinations, all of which can help mitigate potential health risks for travelers.

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Editor's note: This article was written before the emergence of the novel coronavirus COVID-19 and therefore does not address it specifically. However, the content within this article remains valuable for any woman traveling, and for those who care for them.

According to the [National Travel and Tourism Office \(2016\)](#), in 2015 there were more than 31 million U.S. international travelers, and 50% of them were women. Of those traveling internationally for leisure, 54% (27,608,000) were women. Of those traveling

internationally for business, 32% (4,918,000) were women. Although many women travel each year safely without incident, addressing potential health and security concerns is essential. Women's travel experiences are likely to be affected by cultural and religious beliefs of the countries they visit, and some travelers may face significant obstacles, such as restrictions on clothing, especially when traveling alone ([Centers for Disease Control and Prevention, 2020](#)).

The World Health Organization ([WHO; 2012](#)) states that international travel could pose various health risks depending on the traveler and the destination. International travelers can

CLINICAL IMPLICATIONS

- Women traveling abroad can be exposed to various health risks, including infectious disease and accidents.
- Travelers should have proper pretravel preparation to mitigate potential health risks.
- Special considerations should be explored for female travelers, such as air travel during pregnancy, the potential effects of malaria chemoprophylaxis medications, and certain vaccinations for women who may be pregnant or are considering pregnancy soon.
- A proper pretravel consultation should include a comprehensive risk assessment, including past and current health of the traveler, health risk based on the mode of transportation and destination, preventive advice provided in written and oral formats, and administration of any recommended/required vaccinations.

be exposed to changes in altitude, infectious disease, accidents, natural disasters, crime, and stress (Steffen, Behrens, Hill, Greenaway, & Leder, 2015). The GeoSentinel is a global surveillance network of travel and tropical medicine clinicians that collects deidentified demographic, diagnostic, and travel information on ill travelers who cross international borders (Harvey et al., 2013). According to data from GeoSentinel for 1997 to 2011, 8% of worldwide international travelers reported becoming ill and had to seek health care during or after a trip, and 14% of those who fell ill were diagnosed with a disease that could have been prevented by the administration of a vaccine (Harvey et al., 2013). Advanced planning, appropriate preventive measures, and careful precautions can often protect travelers' health (WHO, 2012).

Health Risks Faced by Any Female Traveler

Female travelers can face health risks that differ from those of male travelers. Schlagenhauf et al. (2010) reported that female travelers were more likely to be younger, have shorter duration of travel, be tourists, have had pretravel advice, and were less likely to present for inpatient health treatment. Women had a greater increased risk of acquiring gastrointestinal and respiratory infections than men while traveling. Women are also more susceptible to urinary tract infections and are more likely to present with psychological stressors, adverse reactions to medications, and oral and dental conditions (Schlagenhauf et al., 2010). Women with preexisting conditions such as anemia, cardiovascular illness, or sickle cell disease may be at greater risk of air travel complications

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International travelers can be exposed to changes in altitude, infectious disease, accidents, natural disasters, crime, and stress

such as dizziness, fainting, deep vein thrombosis, or a critical health event (Hezelgrave, Whitty, Shennan, & Chappell, 2011). Pretravel health consultations are an excellent opportunity to assess and mitigate the risk of illness and injury for female travelers (Khan et al., 2016).

Common international travel-related communicable diseases not preventable with vaccination include malaria, tuberculosis, diarrhea, and mosquito-related diseases such as dengue, Zika, and chikungunya (Centers for Disease Control and Prevention [CDC], 2020). The prevalence of these diseases varies significantly by region, and travelers should become informed of risks specific to their destination. Gastrointestinal illness is the most common travel-related problem, and travelers should be equipped with antidiarrheal medications and possibly antibiotics to reduce the severity of symptoms (Angelo, Kozarsky, Ryan, Chen, & Sotir, 2017; Baer et al., 2014; Leder et al., 2013). The second most common travel-related health problem is a febrile illness such as malaria, a potentially deadly vector-borne disease that affects about 250 million travelers a year (Leder et al., 2013). Malaria, caused by parasites transmitted through the bites of infected mosquitoes, is curable and preventable with chemoprophylaxis medications and proper vector control (CDC, 2020).

Many high-risk diseases faced by international travelers, such as diphtheria, tetanus, polio, influenza, measles, hepatitis A, hepatitis B, Japanese encephalitis, meningococcal disease, rabies, tick-borne encephalitis, typhoid, and yellow fever, are preventable with vaccinations (Steffen et al., 2015). Surveillance by GeoSentinel showed that with vaccine-

preventable diseases such as hepatitis A, even having a single dose of the two-part vaccination series can provide nearly 100% protection against infection (Leder et al., 2013).

Special Considerations for Pregnant Travelers

Hagmann et al. (2017) found that 0.8% of all international female travelers of childbearing age who were seeking pre-travel care were pregnant. Although there are no restrictions that preclude pregnant women from traveling abroad, even to areas with substandard sanitation, some areas may have limited access to health care services. Most commercial airlines have specific regulations addressing air travel during pregnancy, often restricting women from flying after 36 weeks gestation because of the possibility of preterm birth or other late-term pregnancy complications. Limited evidence suggests that cosmic radiation, vibration, or noise may pose some risk to pregnant women, but air travel is generally considered to be safe for the fetus (Petrikovsky, Terrani, & Sichinava, 2018). Pregnant air travelers are at greater risk for developing deep vein thrombosis, effects from changes in cabin pressure, and, when visiting tropical climates, can be more affected by the hot climate (Korzeniewski, 2018).

Many infectious diseases, such as respiratory, urinary, vaginal, and gastrointestinal infections, are more likely to occur during travel and often are more severe in pregnant women (CDC, 2020). The greatest risk for pregnancy-related complications during travel is during the first and third trimesters; pregnant travelers should consider identifying a health care facility at their travel destination (CDC, 2020). Also, consideration should be paid to the destination's level and availability of medical services because many rural and underdeveloped countries have limited services.

Zika Virus

Zika virus presents with an estimated 1% to 13% risk of microcephaly in the newborn of a woman infected in the first trimester of pregnancy (CDC, 2020). Pregnant women should avoid travel to areas with Zika transmission. Because Zika can be transmitted by sexual contact in men and women, it is recommended that couples potentially exposed use condoms or abstinence for 3 months if the man was exposed and for 2 months if the woman was exposed (CDC, 2019; Hamer & Chen, 2019). Men who visit a Zika-endemic area should use condoms or abstain from having sex with a pregnant partner for the remainder of the pregnancy. Pregnant women who are preparing for travel to tropical destinations that are endemic for malaria, dengue, or yellow fever should use an Environmental Protection Agency–recommended insect repellent, such as those that contain *N,N*-diethyl-meta-toluamide (commonly called *DEET*), and other types of mosquito bite prevention are very important for this population (CDC, 2020).

Malaria

Surveys found that only half of the pregnant travelers going to a malaria risk area had received a prescription for malaria prophylaxis (Hagmann et al., 2017). Malaria can be more severe in pregnancy, and no prophylactic regimen provides complete protection. However, there are no contraindications for the use of antimalarials in pregnant women who are traveling to areas with a low to moderate risk of transmission (Korzeniewski, 2018). Consideration should be given to the identified chemoprophylaxis for the destination of travel and the safety level of medications taken during periods of pregnancy and lactation. The only options for malaria chemoprophylaxis in pregnant women are chloroquine and melfoquine, because the most commonly used medication, atovaquone–proguanil, is not recommended for use in this population because of potential fetal risks (Mayer, Tan, & Gutman, 2018).

Nursing Practice Implications for Women's Travel

The CDC and WHO publish evidence-based guidelines on pre-travel vaccine recommendations, destination-specific health advice, and reference maps with updates on a regular basis, all of which are free to access (CDC, 2020; WHO, 2012). Nurses and health care providers who offer travel health services should take the time to be familiar with established guidelines to prepare travelers to encounter travel risks appropriately (CDC, 2020; WHO, 2012). There are several travel health resources available for nurses listed in Table 1.

Nurses provide 41% of the care to travelers daily, and they play a key role in the alignment of woman-focused services with current professional evidence-based knowledge to improve the quality of travelers' health and safety (Rogers, Bunn, & Connor, 2016; Stevens, 2013). The pretravel consultation should take place 4 to 8 weeks before the planned travel, if not earlier. However, even last-minute travelers can benefit from travel health advice (Khan et al., 2016; WHO, 2012). Completion of a pretravel risk assessment by a qualified health professional at least 14 days before a trip was positively associated with less illness among international travelers (Balaban et al., 2014).

Use of a pretravel checklist will help organize and streamline the consultation process, ensure consistency in the application of guidelines, and reduce errors of omission. Critical elements of a travel risk assessment consist of

Gastrointestinal illness is the most common travel-related problem, and travelers should be equipped with antidiarrheal medications and possibly antibiotics to reduce the severity of symptoms

TABLE 1 SELECTED RESOURCES FOR HEALTH CARE PROVIDERS

Resource	Description
American Travel Health Nurses Association www.athna.org	This site provides valuable resources for all facets of travel health practices, including policies and procedures, standing orders, intake forms, conferences, and travel health updates.
CDC: Medical Tourism https://www.cdc.gov/features/medicaltourism	This site provides information on the risks of medical tourism and how to minimize those risks.
CDC: Pregnancy and Travel Site https://wwwnc.cdc.gov/travel/page/pregnant-travelers	This site provides information regarding pregnancy and travel.
CDC Yellow Book https://wwwnc.cdc.gov/travel/page/yellowbook-home	CDC Health Information for International Travel (commonly called the “Yellow Book”) is published every 2 years as a reference for health professionals providing care to international travelers and is a useful resource for anyone interested in staying healthy abroad.
Health-Tourism.Com https://www.health-tourism.com	Health-Tourism.com is a consumer resource that offers a searchable medical tourism guide and a directory of medical centers.
International Healthcare Research Center (IHRC) http://www.healthcareresearchcenter.org	The IHRC promotes and provides transparency and improves global health care quality, population health management, expanded access to care, and the consumer health care experience. IHRC is a 501c(3) nonprofit research center headquartered in the United States.
International Society of Travel Medicine www.istm.org	This is an international organization of travel medicine. This site provides a listing of conferences, member benefits, and expert opinions, as well as a list of approved travel clinics.
Medical Tourism Association http://www.medicaltourismassociation.com	This is a global nonprofit association for the medical tourism and international patient industry.
Patients Beyond Borders https://patientsbeyondborders.com	Patients Beyond Borders has a mission to connect consumers with internationally accredited hospitals, clinics, Ministries of Health, Ministries of Tourism, private hospital associations, and other health initiatives.
World Health Organization statement of Patient Safety and Medical Tourism http://www.who.int/global_health_histories/seminars/kelley_presentation_medical_tourism.pdf	This is a slide presentation with data and information on international travel and medical tourism.

examining health status, destinations, duration, purpose of travel, mode of transportation, standards of accommodation, food, hygiene, and behaviors associated with health risk (WHO, 2012). The pretravel consultation is the critical element in assessing potential travel health risks and includes providing education and vaccinations for female travelers (Rogers et al., 2016).

Health education should include strategies to reduce some common issues such as respiratory infections, urinary tract infections, psychological stressors, adverse reactions to medications, and oral conditions, as well as strategies such as staying hydrated, proper hand-washing, and avoiding fatigue. Mosquito-related disease such as

malaria, Zika, dengue, yellow fever, and chikungunya can be prevented by avoiding mosquito bites with insect repellents, wearing long-sleeved shirts and pants, choosing hotels with screens, and sleeping under mosquito nets (CDC, 2020).

Women should be encouraged to know the location of the closest U.S. embassy or consulate for their destinations in case they need assistance while traveling abroad. Female travelers should be aware of websites for every country they will visit to locate information about visa requirements, safety concerns and security conditions, crime, health, medical considerations, local laws, and areas to avoid, among others (U.S. Department of State, Bureau of Consular Affairs, 2018).



Travelers should be prepared to be aware of their surroundings at all times and understand the cultural norms of the country they will be visiting.

Nursing Practice Implications for Pregnant Women's Travel

Rarely is travel contraindicated during a healthy pregnancy, but more complicated pregnancies may require more planning and may even warrant a delay of travel plans. Preparation for pregnant travelers should include education on the avoidance of travel-related risks, management of minor pregnancy discomforts, and recognition of more severe complications, such as bleeding, abdominal pain, contractions, severe vomiting, shortness of breath, and unusual swelling of legs (CDC, 2020). Pretravel consultation for pregnant travelers should include a visit with a maternity provider to ensure proper routine prenatal care and identify potential travel risks (CDC, 2020).

Pregnant women are at risk for several infections that could be related to morbidity, mortality, and pregnancy complications, which can include congenital anomalies, spontaneous abortion, preterm labor, and even low birth weight (Swamy & Heine, 2015). Pregnant women or those considering pregnancy should receive destination-specific travel-related vaccines such as hepatitis A, tetanus, typhoid, yellow fever, diphtheria, pertussis, and influenza vaccines (Hagmann et al., 2017). Administration of vaccines during pregnancy not only will provide coverage for the mother but is likely to provide fetal and infant coverage through passive immunity. Influenza and tetanus–diphtheria–pertussis (Tdap) vaccines are safe and are recommended for all pregnant women, as

are most inactivated vaccines, although specific data on use during pregnancy has not been obtained (CDC, 2020; McHugh et al., 2019; Swamy & Heine, 2015).

However, several vaccines, such as any live-attenuated versions, are often contradicted or are of questionable safety in pregnancy.

Three travel-related vaccine-preventable diseases are often encountered with international travel—yellow fever, Japanese encephalitis, and typhoid fever. Yellow fever is a mosquito-borne disease with common symptoms that include fever, headache, myalgias, vomiting, and epigastric pain; it is associated with organ failure, hemorrhage,

Critical elements of a travel risk assessment consist of examining health status, destinations, duration, purpose of travel, mode of transportation, standards of accommodation, food, hygiene, and behaviors associated with health risk

and even death. Although yellow fever vaccine is a live-attenuated vaccine, exceptions are made often by clinicians for this vaccine based on the risk assessment and a recommendation that pregnant women should obtain the vaccine if they are going to an area that has a documented risk (Swamy & Heine, 2015).

Japanese encephalitis is also mosquito borne and presents with mild to moderate symptoms including fever, headache, vomiting, generalized weakness, paralysis, and seizures. The mortality rate is 20% to 30%, and 30% to 50% of survivors could be in danger of being left with serious neurocognitive and psychiatric problems (Swamy & Heine, 2015). The CDC (2020) suggests that travelers remaining more than 1 month in a high-risk area should have the vaccine, but there are no adequate studies of the effects of the vaccine on pregnancy.

Typhoid fever, caused by the bacterium *Salmonella typhi*, is considered life threatening. Approximately 75% of known cases are contracted during international travel, and it is common in developing nations, where approximately 21

million people per year are affected (WHO, 2012). Typhoid fever presents with symptoms including fever, fatigue, headache, and anorexia. There are two types of vaccines that may prevent typhoid: one is a live attenuated oral form, and the other is a nonattenuated injection. Nevertheless, there are not enough adequate studies of either used in pregnancy (Swamy & Heine, 2015). However, a discussion with a health care provider of risks versus benefits is recommended before going to a typhoid-endemic area. The CDC (2020) maintains a Vaccine Information Statement for every available vaccine in the United States that informs providers and patients about all the known benefits and risks associated with that vaccine. Providers should be familiar with the information in the Vaccine Information Statement so they can educate and provide screening before administration of any vaccine.

Conclusion

With appropriate preparation, women can mitigate risks to their health while traveling internationally. Nurses play a significant role in educating and preparing women for travel. A traveler should have adequate risk assessment and individualized interventions to help mitigate the potential for injury and illness (CDC, 2020; WHO, 2012). Most pregnant women travel safely even internationally, but special travel considerations are essential when preparing them for travel. The pretravel consultation, which is often performed by a nurse, can lead to greater adherence to current evidence-based recommendations and offers travelers an elevated level of preparedness (Rolling, Muhlenpfordt, Addo, Cramer, & Vinnemeier, 2017). **NWH**



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