

Pregnant Travelers

Traveler Summary

Key Points

- Avoid travel to developing countries if pregnancy is high risk (e.g., history of preterm labor, preeclampsia, multiple gestation, or preexisting medical conditions), has not been proven to be intrauterine, or if contraindicated vaccines or medications are highly indicated.
- Be aware that travel is safest during the second trimester. Airlines and cruise lines restrict travel after 36 weeks and 24 weeks, respectively.
- Closely follow advice for mobility and hydration in the Travelers' Thrombosis article because pregnant women are at an increased risk of blood clots during air travel due to immobility.
- Purchase travel insurance that covers pregnancy. A specific advance plan to obtain emergency obstetrical care at destination(s) is mandatory.
- Strictly observe insect precautions and other preventive measures because Zika virus (ZIKV) infection, malaria, and several other common infections have more severe outcomes during pregnancy. DEET and picaridin are safe for use during pregnancy. Mefloquine (chloroquine for very few countries) is the only antimalarial advised for pregnancy use; cancel travel if mefloquine cannot be taken.
- Strictly observe food and beverage precautions. Severe travelers' diarrhea (TD) can cause dehydration, leading to preterm labor; hepatitis E virus (HEV) infection can cause severe infection with high mortality. For TD, azithromycin and loperamide are considered safe for use during pregnancy; avoid using bismuth subsalicylate and other antibiotics.
- Avoid high-risk activities such as scuba diving, mountaineering, and water or snow skiing. Avoid high-elevation travel in high-risk pregnancy.

Introduction

Special risks exist for pregnant women who travel internationally. Some infections are more severe in pregnancy (e.g., malaria and HEV). The vaccinations and medicines available to prevent or treat infections (e.g., antimalarials and antidiarrheal medicines) and some infections (e.g., ZIKV infection) may also be harmful to the developing fetus. Additionally, pregnant women are at increased risk of blood clot formation that may severely affect mother and fetus.

Pretravel Planning

Before departure, the pregnant traveler should have a clear plan of action in the event of complications during travel or at her destination, including how to handle emergencies at any time of the day or night, who to contact, and how she will be transported to a preferred physician or hospital. She should have the names of specific preferred hospitals and physicians who speak her language.

The safest time to travel is during the second trimester (weeks 14-28) because pregnancy-related emergencies occur less frequently during this period.

Even with a healthy traveler and normal pregnancy, no guarantee exists that no harm will occur to the fetus during the trip, whether related to travel or not. The pregnant traveler should consider postponing travel during pregnancy if she feels that she might blame an adverse event that might occur on her decision to travel.

Insurance

Many insurance plans do not cover pregnant women who travel internationally or have gestation cutoff dates for travel, beyond which they will not cover delivery out of the area. Additionally, some airlines may have specific requirements or restrictions, especially later in pregnancy (see Air Travel below).

What to Bring

Pregnant travelers should pack a medical kit with items that address pregnancy issues, including prenatal vitamins, anti-nausea medicines, acetaminophen, hemorrhoid cream, medicine for yeast vaginitis, and compression stockings. Antimalarials and self-

treatment medicines for TD should be included when indicated, as well as a blood pressure monitor and urine dipsticks for use in the third trimester (see also *Packing Personal Medications and Supplies*).

Risk Factors

Persons traveling internationally are already at a greater risk of illness and injury than are nontravelers, but illness or injury during pregnancy also pose a risk to the unborn child. Pregnant women are at an increased risk of blood clots during air travel due to immobility and pregnancy complications due to foodborne or insect-borne illnesses.

Contraindications to Travel

Travel should be avoided by pregnant women with complicated medical needs or when crucial vaccinations or antimalarials cannot be taken. Many of the factors that cause a pregnancy to be classified as higher risk (e.g., history of miscarriage, previous toxemia, multiple gestation) make travel potentially inadvisable. Discuss the risks of travel with an obstetrician if such conditions are present.

Need for Medical Assistance

Symptoms requiring immediate medical attention include bleeding or passing of clots or tissue, contractions, abdominal pain or cramps, ruptured membranes, headaches, and visual problems.

Pregnant women who experience leg pain, leg swelling, chest pain, or shortness of breath during or immediately after a flight or within 4 weeks of air travel should seek medical attention immediately for evaluation for blood clots.

Prevention

Vaccinations

Not all vaccines are safe to receive during pregnancy and risk to the fetus from any vaccine is theoretical. In general, inactivated vaccines or toxoids may be given during pregnancy, whereas live vaccines should be avoided. If vaccines are indicated, administration during the last 2 trimesters of pregnancy is preferable. If a vaccine for a high-risk infection cannot be given, trip postponement or consideration of an alternate destination may be necessary.

When travel planning is sought before conception, consideration can be given to vaccinations that may be recommended or required for possible travel but which may be contraindicated during pregnancy. Women can receive live vaccines or certain inactivated vaccines before conception if indicated for the planned itinerary. Attempts to conceive should be avoided for at least 1 month following vaccination with live vaccines. No minimum waiting time is needed before conception following vaccination with inactivated vaccines.

Yellow fever vaccine is a live vaccine and should be used during pregnancy only if travel to an area with risk of yellow fever is *unavoidable* and a high risk exists for contracting the disease. If possible, a pregnant woman should avoid travel to an area with risk of yellow fever transmission or postpone travel until 9 months after delivery, when both mother and infant can be vaccinated. If a pregnant woman receives yellow fever vaccine as indicated, a blood test may be considered to determine whether the vaccine was effective. If international travel requirements (rather than actual risk of yellow fever infection) are the only reason for vaccination, a medical waiver letter should be provided instead.

Vector-Borne Illnesses

Many insect-borne diseases can have serious effects on the mother as well as the fetus or newborn infant; malaria and ZIKV infection are major concerns in pregnant women.

Malaria

Pregnant women should not travel to a malarious area unless travel is *absolutely necessary* and *unavoidable* because malaria can cause more severe problems in pregnant women than in persons who are not pregnant. Malaria increases the risk of maternal death and premature birth, low birth weight, miscarriage, and stillbirth.

Pregnant women who do travel should strictly observe all preventive measures (see *Insect Precautions* and *Malaria*).

Antimalarial Drugs

Both mefloquine and chloroquine (only useful in a few destinations) are safe in pregnancy. Other antimalarials such as atovaquone-proguanil (Malarone or generic), tafenoquine, and doxycycline should not be used during pregnancy.

Travelers who plan to become pregnant after taking doxycycline should wait 1 week following the final doxycycline dose (4 weeks needed after travel) or 1 week following the final atovaquone-proguanil combination dose (1 week needed after travel).

Zika Virus Infection

ZIKV infection is of significant concern during pregnancy because of its association with congenital microcephaly (a rare condition in which an infant's head is significantly smaller than normal) and other malformations of the central nervous system. The risk of adverse fetal effects is highest during the first trimester but persists in the second trimester and appears lower in the third trimester. Women and men trying to conceive should consider postponing travel to ZIKV-affected areas; however, for those that do travel, men should wait 3 months and women should wait 2 months after returning from these areas before attempting conception. Pregnant women should discuss any concerns about ZIKV infection with their health care provider, who can provide specific risk information for each individual destination country.

Insect Precautions

Pregnant women may attract more insects than nonpregnant women; insect precautions are especially important in areas with known mosquito transmission of diseases.

Clothing should cover as much skin as practicable, leaving only extremities, head, and neck exposed. DEET and picaridin can be used by pregnant and breastfeeding women but should not be applied directly to the nipple area to prevent ingestion by breastfeeding children.

DEET has been shown in 1 short-term study to be safe in the second and third trimesters of pregnancy when used at concentrations of 20% or lower; however, the use of DEET in the first trimester has not been well studied. Although no evidence exists that the use of DEET or picaridin by pregnant or breastfeeding women poses a health hazard to unborn babies or children who are breastfeeding, no long-term follow-up studies are available.

Because of the danger of malaria or ZIKV infection during pregnancy, pregnant travelers should use DEET (20%–35%) or picaridin (20%). The duration of effectiveness decreases with the product concentration, thus requiring more frequent application; apply products with 20% DEET or picaridin every 4 to 6 hours.

The insecticide permethrin provides additional protection against mosquitoes. Permethrin-treated clothing and bed nets appear to be reasonably safe for pregnant women based on animal studies. See also *Insect Precautions*.

Food and Waterborne Illnesses

Food- and waterborne illnesses are a common cause of trip interruptions and can lead to diarrhea that ranges in intensity. Severe TD in a pregnant woman can lead to premature labor and shock. A pregnant traveler who experiences TD should drink any available appropriate fluid and use an oral rehydration solution if necessary; follow the same guidelines as for nonpregnant travelers (see *Travelers' Diarrhea*). The antibiotic azithromycin is the treatment of choice for TD in pregnancy (500 mg orally for 3 days). Quinolones (e.g., levofloxacin, ciprofloxacin, ofloxacin) are not considered safe in pregnancy.

Loperamide (Imodium) is thought to be safe during pregnancy but should be used sparingly. Bismuth subsalicylate (Pepto-Bismol) should not be used during pregnancy.

Hepatitis A and hepatitis E virus infections both present with jaundice, fever, and fatigue, although most infections are mild. However, pregnant women may have a more severe infection and a poor outcome (to include preterm delivery or stillbirth).

Food and Beverage Precautions

Food and beverage precautions are particularly important for the pregnant traveler and include observing hand hygiene (frequent, thorough handwashing), avoiding street foods, consuming only hot foods that are fully cooked and served hot, and drinking only bottled or treated water or other beverages (see *Food and Beverage Precautions*).

Air Travel

In general, pregnant women can safely fly up to the end of the 36th week of pregnancy. Air travel during the final month of pregnancy is generally prohibited by airlines; women who plan to fly during this time should contact the airlines to determine if

any restrictions exist. Women planning to fly during the last 3 months of pregnancy should obtain a letter from their obstetrician (to present at the check-in counter) indicating their due date. Cosmic radiation during air travel is usually not a threat to pregnant women unless they are aircrew with frequent exposures.

Changes in cabin air pressure can cause a decrease in oxygen pressure that could affect those with a weakened cardiovascular system. Pregnant women who may be affected by decreased oxygen availability may require supplemental oxygen.

Entrapped gas tends to expand at higher elevations, causing bloating and gas. To prevent gas formation, reduce consumption of carbonated drinks and gas-producing foods, especially during long flights.

Long flights are also associated with a certain degree of immobility and venous stasis (blood pooling in the leg veins). Pregnant women are predisposed to blood clots even if they stay home. To help prevent blood clots during flights, pregnant travelers should:

- Choose an aisle seat.
- Exercise the legs by walking, stretching, and doing isometric exercises.
- Stay hydrated by drinking plenty of water or juice.
- Wear compression stockings.

Pregnant travelers should wear seat belts low and across the pelvis during flight.

See *Travelers' Thrombosis*.

Other Modes of Travel

Many cruise lines will not carry women who are 24 or more weeks pregnant at the time of the cruise. Pregnant travelers should take care when walking on deck to avoid falling, due to imbalance associated with pregnancy and the ship's motion. Motion sickness can be prevented or treated with meclizine or dimenhydrinate.

Pregnant women who travel by automobile should not sit for prolonged periods and should make frequent stops to walk and stretch. They should also wear 3-point seat restraints when riding in automobiles, with the seat belt worn low and across the pelvis; this may not be possible in developing countries where seat belts are often unavailable.

Other Precautions

Certain activities (such as downhill skiing, scuba diving, waterskiing, contact sports) should be avoided during pregnancy because the change in balance that occurs during pregnancy can increase the risk of falls or other injuries. Changes in pressure when diving may put the fetus at risk for decompression sickness.

Women with complicated pregnancies should avoid travel to high elevations. Short-term exposure to elevations up to 2,500 m (8,200 ft) in women with uncomplicated pregnancies appears to pose minimal risk, but pregnant women should not stay at sleeping elevations above 3,660 m (12,000 ft), partly due to the remote nature of higher elevations that precludes access to medical care. At least 1 ultrasound to confirm a healthy intrauterine pregnancy is recommended. Acetazolamide to prevent altitude sickness should be avoided during pregnancy.

Rh-negative women planning on pregnancy or delivery overseas should research whether their destination has the capability of handling the situation if the baby is Rh positive.

Breastfeeding and Travel

Women who are breastfeeding can receive all vaccines, with the exception of yellow fever and smallpox vaccines. A breastfeeding mother should maintain a regular schedule while traveling (as much as possible), avoid disruptions to sleep and meals, and drink plenty of fluids (avoiding caffeine and alcohol). Food and beverage precautions should be observed. Mefloquine and chloroquine are considered safe for malaria prevention for women who are breastfeeding and atovaquone-proguanil (Malarone or generic) can be taken if the infant weighs more than 5 kg (11 lb). Malaria drugs taken by the mother will not protect the infant against malaria; infants will require their own medications.

Some maternal vaccinations provide short-term protection to the infant through the mother's breastmilk but others do not. The traveling infant should be vaccinated according to the recommended schedule and risk at destination.

