The pregnant traveller

JONATHAN COHEN MB BS, FRACGP, FACTM, MastFamMed

The physician should discuss with the pregnant patient the risks and benefits of travel and the recommended strategies to prevent ill health.

PHOTOLIBRARY

Discussing pretravel advice with the pregnant traveller poses somewhat of a dilemma for medical practitioners. On the one hand, the risks of ill health are generally low with travel to common tourist destinations, and in most cases preventable with the appropriate strategies. On the other hand, the pregnant traveller and fetus are more prone to some diseases, and treatment may have dire consequences for both. It is, therefore, important for the physician to discuss with a pregnant patient the risks and benefits of both travel and the recommended strategies to prevent ill health while travelling.

Examples of some topics to discuss include general and obstetric health, fitness to travel, vaccinations, mosquito-borne diseases, malaria prevention, animal bites, food and water safety, high altitude, motion sickness, jet lag, thromboembolism, accidents, aircraft issues and access to medical care if needed while away. This article will focus on some of these topics.

General advice

The first point is to ensure the patient is aware that a normal pregnancy has its own risks even without travel. Milder problems include nausea, morning sickness, reflux, tiredness, back pain, urinary frequency, constipation and haemorrhoids. Although these may seem relatively inconsequential, they can still spoil a holiday. More serious problems include thrombophlebitis, hypertension, pre-eclampsia, spontaneous miscarriage, ectopic pregnancy and premature labour. Spontaneous miscarriage is generally accepted to occur in about 15% of normal pregnancies, which means that some pregnant travellers have to manage this while overseas. The patient should have a clear plan of who to contact for urgent medical attention, especially with higher-risk pregnancies. Most travel insurance companies now include telephone contacts of international medical aid companies.

The physician should inquire about general as well as obstetric medical risk factors and advise the patient, that depending on the destination, appropriate medical care may be difficult to access. The traveller should be advised to stay within reasonable proximity to medical health services.

Medications need to be reviewed for their safety profile in pregnancy. Paracetamol, erythromycin, penicillin, cephalosporins and all beta-lactams are considered safe in pregnancy. The use of amoxycillin/clavulanic acid combination is cautioned close to delivery due to the possible association with necrotising enterocolitis (personal communication, Dr Peter Wein). Both doxylamine and dimenhydrinate are ADEC pregnancy category A (no proven harmful effects on the fetus), although the product information for both these drugs conflictingly states use should be avoided during pregnancy. There is currently insufficient information available to advise the patient on complementary and alternative medications in pregnancy.

The physician also needs to make an assessment of the travellers' psychological preparedness to be able to handle situations that can change suddenly. For example, long waits in transit may not be acceptable to some women who are close to term.

The best time to travel is generally during the second trimester as symptoms and risk are least likely at this time. International airlines generally advise against overseas travel and decline insurance cover after 32 weeks' gestation.

Air travel and thrombosis

Deep vein thrombosis may occur both on and off the aircraft with or without pregnancy. Definitive evidence of air travel *per se* being a cause of thromboembolism is still lacking. However, risk factors for the pregnant traveller are the same as for all travellers and include immobilisation, cramped position, insufficient fluid intake, low humidity and hypoxia.[1,2] Most of these can be prevented if appropriate advice is given and followed, such as regular calf exercises, moving around the cabin every two hours, adequate fluid intake and avoidance of diuretics including intake of excessive alcohol or caffeine. This advice also applies to car, bus and train travel.

Those with a past or family history of recurrent thrombosis should be screened for predisposing causes such as the Factor V Leiden gene. Travellers who are at a higher risk are advised to wear below the knee supportive stockings and use low molecular weight heparin, which can be self-injected following appropriate instruction.[1,2] Aspirin has not been shown to be effective in the prevention of venous thromboembolism with travel and is

Dr Cohen is a Medical Director, Travel Clinics Australia and Senior Lecturer, Department of General Practice at Monash University, Melbourne, Vic.

continued

Table 1. Malaria prophylaxis in women during pregnancy

Malaria prophylactic medication	Use in pregnancy[6]	ADEC pregnancy category	Comment
Atovaquone-proguanil	No	B2	Safety not determined Folate supplementation required
Chloroquine	Yes	A	For prophylaxis
Doxycycline	No	D	Contraindicated
Mefloquine	Yes	B3	Avoid in first trimester
Proguanil	Yes	B2	Folate supplementation required

Printed with permission from Travel Clinics Australia. Abbreviation: ADEC = Australian Drug Evaluation Committee.

associated with both an elevated level of D-dimers[3] as well as a significantly increased rate of adverse gastrointestinal effects.[4]

Malaria

It is important to remind all pregnant travellers, or those intending to be pregnant while travelling, that the WHO advises 'pregnant women to avoid travelling to areas where transmission of chloroquine-resistant *Plasmodium falciparum* occurs'.[5] The reason for this is that malaria in a pregnant woman is associated with a significant increase in the risk of maternal, fetal and neonatal death. In addition, life-saving treatment with antimalarial medications may cause significant problems to both mother and fetus. For nonpregnant women of a childbearing age, pregnancy should be avoided until three months after leaving the malarious area.

For travellers who are aware of and accept these risks, prophylaxis with antimalarial medications is recognised to be safer than the risk of life-threatening malaria, although each individual situation needs to be assessed on its merits. Chloroquine (Chlorquin) and proguanil (Paludrine) are generally considered to be relatively safe in pregnancy, however, they are not as effective as other chemoprophylaxis. Doxycycline is contraindicated because of the risk to the fetus. Mefloquine (Lariam) appears to be safe in the second and the third trimesters, and some experts increasingly advocate its use in the first trimester where indicated. Pregnancy has no known bearing on the adverse neuropsychiatric side effects of this medication and the standard precautions and contraindications of this medication should be borne in mind. There is as yet insufficient information about combined atovaquone-proguanil (Malarone; Table 1).[6]

Standard insect avoidance measures should be encouraged and include staying in well-screened areas from dusk till dawn, sleeping under mosquito nets, wearing long, loose, light-coloured clothing and avoiding perfumes and deodorants. It is probably wise for pregnant women to avoid overexposure to insect repellents and insecticides. Although there is a paucity of studies into the use of repellents in pregnancy, the standard application of three times daily of a 30% DEET-containing repellent, such as Repel, is generally considered safe in pregnancy.

Food and waterborne disease

Gastrointestinal illness occurs in 50 to 80% of travellers per month of travel to developing areas[5] and so it is important to ensure that travellers are aware of preventive measures. A simple rule is 'boil, cook, bottle or peel' which means advising the traveller to eat only boiled or cooked foods, pasteurised dairy foods, water and fluids from bottles or cans, and vegetables and fruit washed with treated water and/or peeled.[7] This will minimise the risk of diarrhoeal illness from common causes, including *Toxoplasma* and *Listeria* species, which have extra risks in pregnancy. Hepatitis E, although not that common in developing countries, induces a mortality rate of 15% in women who are pregnant.

Vaccinations

Vaccines should be given to pregnant women only when there is a real risk of disease. Live vaccines should be avoided unless the advantages of vaccination significantly outweigh the risks. Pregnant women have a lowered immune response and hence may theoretically derive less benefit from vaccination. Although there may be risks from any vaccine, there is little documented evidence for teratogenic effects from vaccines, this being more likely from fever alone.[5,8] For example, a pregnant woman intending to spend time in her family village in Ghana is likely to be at significant risk of yellow fever, and therefore, following a discussion of the relative risks, she may elect to be vaccinated. Only yellow fever clinics authorised by WHO are able to provide these vaccinations, along with an international certificate of vaccination or prophylaxis.

The administration of killed or inactivated vaccines, polysaccharides and

continued

Table 2. Vaccinations in pregnancy[8]

Vaccine	Type	WHO and CDC use in pregnancy[5,6] (avoid in first trimester)	NHMRC use in pregnancy[8] (avoid in first trimester	Comment
BCG vaccine	Live attenuated mycobacteria	Not recommended	Contraindicated	Avoid pregnancy for 28 days after vaccination
Cholera (oral) vaccine	Recombinant B subunit /whole cell	Safety not determined	Not recommended	–
Hepatitis A vaccine	Inactivated virus	Yes, if indicated	Yes, if indicated	–
Hepatitis B vaccine	Recombinant	Yes, if indicated	Yes, if indicated	–
Influenza vaccine	Inactivated virus	Yes, if indicated In some circumstances	Recommended	–
Japanese encephalitis vaccine	Inactivated virus	Safety not determined	Yes, if indicated Avoid unless at high risk	–
Measles vaccine	Live attenuated virus	Not recommended	Contraindicated	Avoid pregnancy for 28 days after vaccination
Meningococcal vaccine	Polysaccharide or conjugated	Yes, if indicated	Yes, if indicated for women at high risk	–
Mumps vaccine	Live attenuated virus	Not recommended	Contraindicated	Avoid pregnancy for 28 days after vaccination
Poliomyelitis vaccine (IPV)	Inactivated virus	Yes, if indicated Normally avoided	Yes, if indicated	–
Pneumococcal vaccine	Polysaccharide	Yes, if indicated	Yes, if indicated	–
Rubella vaccine	Live attenuated virus	Not recommended	Contraindicated	Avoid pregnancy for 28 days after vaccination
Tetanus/diphtheria vaccine	Whole cell, toxoid	Yes, if indicated	Yes, if indicated	–
Tetanus/diphtheria/ pertussis vaccine	Acellular, toxoid	Safety not determined	Yes, if indicated	–
Rabies vaccine	Inactivated virus	Yes, if indicated	Yes, if indicated	For post exposure
Typhoid Ty21a (oral) vaccine	Live attenuated bacteria	Safety not determined	Contraindicated	–
Typhoid Vi vaccine	Polysaccharide	Safety not determined	Yes, if indicated	–
Varicella vaccine	Live attenuated virus	Not recommended	Contraindicated	Avoid pregnancy for 28 days after vaccination
Yellow fever vaccine	Live attenuated virus	Yes, if indicated Avoid unless at high risk	Contraindicated, unless at high risk	Avoid pregnancy for 28 days after vaccination
Immunoglobulins	Immunoglobulin	Yes, if indicated	No known risk to fetus	For post exposure

Printed with permission from Travel Clinics Australia. Abbreviations: CDC = Centers for Disease Control and prevention; NHMRC = National Health and Medical Research Council.

toxoids is not contraindicated in pregnant women in general, although the same considerations still apply.[6,8]

Tetanus, diphtheria, hepatitis A and B, and influenza vaccine are currently considered relatively safe in pregnancy, therefore, these vaccines should be offered when indicated. Influenza vaccination is now specifically indicated in pregnancy (Table 2).[8]

Another important concept is that GPs have an opportunity to be proactive with their patients. Any woman considering pregnancy while travelling could be offered yellow fever, polio, varicella, MMR (measles, mumps and rubella), hepatitis A and B, pertussis and typhoid vaccines prior to becoming pregnant.

Conclusion

It is worth noting that the older authoritarian model whereby doctors tell patients what they need has changed. It is now accepted that it is the patients' choice whether to travel or not while pregnant, with the doctors' role to advise them, not to upset or demand. Mutual respect and informed consent form the cornerstone of consultations on travel health and patients can then make the choice to either travel or not fully aware of the relevant risks.

Providing that the above precautions are taken, most pregnant travellers will have safe and satisfying trips, albeit with some morning sickness or back pain, and more serious consequences for a few. Urinary frequency may be more confronting when the location and condition of the toilets are unknown.

It is important for physicians to carefully discuss concerns about the risk of vaccines and medications and balance this against the risks of illness to both the mother and fetus. Both verbal and written information needs to be supplied to the patient, time allowed for consideration of these risks and benefits, and the decisions documented. MT

References

1. Geerts WH, Pineo GF, Heit JA, et al. Prevention of venous thromboembolism. The seventh ACCP conference on antithrombotic and thrombolytic therapy. Chest 2004; 126: 338S-400S.
2. Board of Science and Education of the British Medical Association. The impact of flying on passenger health: a guide for healthcare professionals. BMA; 2004.
3. Jacobson BF, Münster M, Smiths S, et al. The BEST study – a prospective study to compare business class versus economy class air travel as a cause of thrombosis. S Afr Med J 2003; 93: 522-528.
4. Chee YL, Watson HG. Air travel and thrombosis. Br J Haematol 2005; 130: 671-680.
5. World Health Organization. International travel and health: vaccination and health advice. Geneva: WHO; 2005. Available at: www.who.int/ith (accessed May 2008).
6. Sutton M. Advising travelers with specific needs Chap 9 Travelers health: yellow book. Health information for international travel. Centres for Disease Control; 2005-6. Available at: www.cdc.gov/travel/yellowBookCh9-pregnancyTraveling.aspx (accessed May 2008).
7. Cohen J. The travellers pocket medical guide and international certificate of vaccination. 5th ed. Travel Clinics Australia; 2005.
8. National Health and Medical Research Council. The Australian immunisation handbook. 9th ed. Canberra: NHMRC; 2008. Available at: www.health.gov.au/internet/immunise/publishing.nsf/Content/Handbook-home (accessed May 2008).

Further reading

1. ABS (Australian Bureau of Statistics), Overseas arrivals and departures, Australia (3401.0) 2005. Available at: www.abs.gov.au/ausstats/abs@.nsf/mf/3401.0/ (accessed May 2008).
2. Cohen J. Travel Clinics Australia Reference manual 2nd ed. The Travel Clinic; 2006.
3. ACOG (American College of Obstetricians and Gynaecologists). Guidelines: immunisation during pregnancy. Available at: www.acog.org/from_home/publications/misc/bco282-1.cfm#table1 (accessed May 2008).

DECLARATION OF INTEREST: Dr Cohen is Medical Director of Travel Clinics Australia.