You Too Can Travel: Preparing for a Healthy Journey

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EMPORIATRICS

- Definition: the study of diseases in travelers. From the Greek word Emporos (one who goes shipboard as a passenger) + iatrics (medicine)
- Travel Medicine is an interdisciplinary specialty concerned with the prevention and management of health problems associated with travel.

TRAVEL FACTS

- 983 million travelers in 2011 worldwide!
- Of these, around 25% travel to lesser developed countries (increasing the incidence of tropical and infectious diseases)
- Travel also increasing for those with comorbid conditions
- One-half of the U.S. travelers will acquire an illness related to travel, ranging from mild nausea to potentially fatal diseases (although the latter risk is slight)

The Importance of Travel Health Measures

- 100,000 travelers to developing world for 1 month
  - 50,000 travelers will develop some sort of health problem during the course of their trip
  - 8,000 travelers will see a physician
  - 5,000 travelers will be confined to bed

QUIZ

- What is the most frequent vaccine-preventable disease among travelers going to countries of lower hygiene standards?
  - A. Hepatitis A
  - B. Influenza
  - C. Hepatitis B
  - D. Typhoid
QUIZ

What is the most common clinical illness in travelers to tropical and semi-tropical regions?
A. Diarrhea
B. Hepatitis A
C. Typhoid
D. Dengue fever

QUIZ

What is the most common cause of morbidity and mortality in travelers 50 years and older?
A. Malaria
B. Rabies
C. Cardiovascular disease
D. Accidents

QUIZ

What is the most common cause of morbidity and mortality in travelers under 50 years of age?
A. Malaria
B. Rabies
C. Cardiovascular disease
D. Accidents

CAUSES OF DEATH WHILE TRAVELING

- Cardiovascular (heart attack, stroke) 49%
- Accidents (auto, motorcycle) 22%
- Medical illnesses 13.7%
- Infectious diseases 1.0%

Mainstays Of Pre-travel Medicine

- Information, with the goal of behavior modification: food/beverage, mosquitoes, safety issues and unprotected sex
- Immunizations: required and recommended vaccines
- Chemoprophylaxis: mainly suppressive therapy against malaria
- Self-treatment, especially for travelers’diarrhea
- Special precautions/travelers with special needs: (e.g., chronic diseases, pregnancy, +HIV)

RISK FACTORS FOR TRAVEL-RELATED ILLNESSES

- Age: 20-29, the old and the very young
- Chronic gastrointestinal, immunosuppression, pulmonary or endocrine illnesses
- Life-style while abroad
  - Living with indigenous populations
  - Sleeping in tents or boarding houses
- Prolonged stay in areas with poor sanitation
- Tobacco smoking
- Visit to western Africa
- Work or study in tropics
What to expect at your visit

- Trip itinerary
- Medical history
- Review and set schedule for routine/required/recommended vaccines
- Get information on common medical problems you may encounter:

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The Three Rs of Travel Immunization

- Routine
  - Childhood or adult immunizations
- Required
  - Crossing international borders
- Recommended
  - According to risk of infection

Some immunizations may fall into multiple categories. Not all vaccines are available in every country.

Routine Immunizations – Most Countries

- Tetanus
- Diphtheria
- Pertussis
- *Hemophilus influenzae* type b
- Polio
- Measles, Mumps, Rubella
- Hepatitis B
- Influenza
- Pneumococcal

Geographic Distribution of Yellow Fever

Yellow Fever Vaccine

- Required if going to at risk areas and for administrative purposes (crossing at risk borders)
- Administered at official yellow fever centers—get a validated WHO yellow book
- Effective 10 days after administration
- Duration of immunity: 10 years
- Live vaccine: caution with thymus problems, immunosuppression, pregnancy, breastfeeding
- Caution when first time getting vaccine and 60 years of age and older

African Meningitis Belt
Meningococcal Meningitis Vaccine
- Required for: Saudi Arabia during pilgrimages
- Recommended for: international travel to endemic areas (Sub-Sahara Africa)
- Highly efficacious and well tolerated
- Effective 10 days after vaccination
- Three types, each only effective against types A, C, Y and W-135
- Conjugate vaccines more effective than polysaccharide vaccines, but can't use conjugate vaccines after age 55

Hepatitis A
- Transmission
  - Contaminated food and water; Person to person
- Recommendations
  - International travelers to at risk areas
  - Anyone with ongoing contact with children adopted from countries where hepatitis A is common
- Booster 6 to 12 months later

Hepatitis B Vaccine for Travelers, Recommend If:
- Long-term traveler (>6 months, ?> 3 months)
- Frequent short-term traveler
- High-risk behaviour profile (sex, drugs)
- Occupational exposure: healthcare worker, military, aid worker, missionary
- Close contact with locals (e.g., VFR children)
- Adventure traveler
- Accident prone

Hepatitis B
- Transmission
  - Sexual contact; contaminated needles, syringes; and other instruments (e.g., tattooing, body piercing, acupuncture); blood and blood products
- Schedule
  - First 2 doses 1 month apart, 3rd dose 5 months after 2nd
  - Accelerated: 0, 7, 21 days or 0, 14, 28 days with booster at 1 year; or 0, 1, 2 months with booster at 1 year
Twinrix: Hepatitis A&B

- Recommended for at risk who are age 18 or older
- 0, 1, 6 months
- Accelerated schedule 0, 7, 21 days with a booster at 1 year, or other schedules similar to hepatitis B accelerated schedules
- If traveler leaving soon, best to give separate antigens

Typhoid

- Transmission
  - Contaminated food and water
- Risk
  - Highest risk for those going off the usual tourist routes and those returning to visit family and friends
  - Rates higher in travelers to Indian subcontinent, Peru, Northwest Africa (excluding Tunisia), Mexico
- 2 types: live (oral) and killed (injectable).
- Best to start 2 weeks before leaving

Polio Vaccine

- Oral (live, Sabin, OPV) vaccine no longer used since January 2000
- Use injectable (inactivated, Salk, IPV)
- Booster (.5ml) recommended for adults for international travel (no polio in the Americas)
- Assess if primary series was done. IPV primary series: .5ml SQ or IM at 0, 6-8 weeks later, 6-12 months after the second
Japanese Encephalitis
- Mosquito borne viral encephalitis
- If in endemic rural areas for > 30 days, less than 30 if during outbreak or JEV transmission season and plan substantial time outdoors in at risk areas
  - Mostly Asia and India
  - Risk varies based on the season, destination, duration, and activities undertaken while traveling
- Still need to use good personal protection measures
- 2 dose schedule: .5ml IM day 0 and 28

Rabies: Pre-exposure
- IM
  - 1 ml IM day 0, 7, 21 to 28
- Still need to avoid contact with animals and get post-exposure treatment after cleaning the wound (2 injections day 0,3)
- Education on avoiding potential exposures is key

Rabies: Post-exposure
- If the patient didn't receive pre-exposure treatment:
  - Rabies immune globulin (HRIG) 20 IU/kg with as much at the injury site as is possible
  - 1 ml IM day 0, 3, 7, 14
  - Consider 5th dose at day 28 for patients who are immunosuppressed, or you have a high suspicion that this may be a significant rabies exposure

Malaria Mosquito
Image Courtesy of US Centers for Disease Control and Prevention J. Delany

Malaria Distribution, 2006
Map courtesy of the World Health Organization
Personal Protection Measures

- Wear long-sleeved shirts and long trousers
- Apply insect repellent containing no more than 30-35% DEET, or use 20% or greater Picaridin
- At dusk, spray aerosolized insecticides (such as those containing pyrthrins) in living and sleeping areas
- Sleep in a screened or air-conditioned room
- Use bednetting of good quality with small mesh that is not damaged and preferably impregnated with permethrin
- Pretreat clothing with permethrin

Prophylaxis of Malaria

- Start before trip, take during trip and continue after trip
  - Mefloquine (Lariam)
  - Doxycycline
  - Atovaquone/proguanil (Malarone)
  - Chloroquine phosphate (Aralen)

Insect-borne Diseases

- Malaria
- Dengue fever
- Japanese Encephalitis
- Leishmaniasis
- Scabies

  - Chagas’ disease
  - Yellow Fever
  - Lyme
  - Tick-bourne encephalitis
  - Chikungunya

Geographic Distribution of Dengue

Four dengue serotypes transmitted by Aedes aegypti and A. albopictus mosquitoes

Traveler’s Diarrhea (TD)

- The best protection is careful choice of food and drink. Recommendations to help prevent TD:
  1. Restrict your diet to cooked food and fruits that can be peeled.
  2. Avoid food from street vendors.
  3. Avoid unpasteurized dairy products.

Travelers’ Diarrhea Prevention

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

  Easy to remember, impossible to do!
Traveler's Diarrhea cont.

- 4. Use purified carbonated beverages when possible. You can drink bottled water, soda, beer or wine. Avoid tap water and ice cubes.
- 5. Use heated beverages when possible.
- 6. Avoid brushing teeth when water is suspected to be contaminated.

Water Purification

- Filters: best against bacteria, protozoa. Viruses too small for most filters. Best to get pore size <1 micron
- Chemical disinfection: chlorine, iodine
- Boil water for 1 minute (3 minutes at altitudes above 2000m)

Travelers' Diarrhea Self-treatment: Antibiotics

- Antibiotic +/- loperamide (Imodium)
  - Quinolones: single dose, max 3 days
  - Azithromycin: single dose, max 3 days
    - Use in areas of campylobacter resistance, and for children and pregnant women
- Rifaximin (Xifaxan: new nonabsorbable gi antibiotic): three times a day for 3 days
- See a healthcare provider if symptoms persist after 3 days of treatment

Prescriptions

- Current prescriptions for all medications including OTC
- Enough supplies plus 1 week
- Storage of medications with temperature changes
- Carry a record of what medications you take as well as your allergies
- Carry your medications on board—not in your checked luggage

Travelers' Diarrhea Self-treatment: Non-antibiotic

- Oral rehydration solutions
- Bismuth-subsalicylate compounds
- Antimotility agent (e.g., loperamide)

Environmental Risks

- Sun
- Altitude
- Temperature extremes
- Air pollution
- Marine hazards
Traveling Safely: Be Prepared

- Register with the State Department
- Leave copies of itinerary and passport information with family/friends
- Check your overseas medical insurance coverage
- Familiarize yourself with local conditions and laws
- Make sure appropriately vaccinated

Travelers with Disabilities and Medical Conditions: At the Airport

- Order a wheelchair for each airport when booking your flights
- Advise booking agent/airlines:
  - Special meals
  - Need for supplemental oxygen on board and at layovers
  - Make sure plane, airport, hotel, and transportation is wheelchair accessible
- Advise security agent:
  - Prosthetic devices
  - Pacemakers: show your pacemaker ID card
  - Walkers, crutches, canes and other devices go through the x-ray machine

Travelers with Disabilities and Medical Conditions

- Check for handicapped rooms and, if driving, handicapped parking
- Many tours/cruises designed for travelers with disabilities
- When traveling, get up and walk around, or move your legs/feet frequently to minimize stiffness and risk for deep vein thrombosis (DVT, blood clot)
- Wear comfortable shoes that are already broken in
- Carry your medication list/copy of EKG

Safety and Security: Recommendations

- Dress inconspicuously
- Leave expensive jewelry at home
- Travel in pairs or groups at night
- Carry wallet in the front pocket, purse straps across the shoulder
- Be cognizant of travel advisories
- Know where to go for medical assistance abroad

Travel Health Kit

- First aid kit
- Antipyretic/analgesic
- Thermometer
- Anti-diarrheal, anti-peristaltic agent
- Antimalarial
- Antibiotic
  - Above the waist: a cephalosporin
  - Below the waist: a quinolone
  - A macrolide covers both

Travel Health Kit (continued)

- “Cold” preparation
- Laxative
- Antacid
- Motion sickness medication
- Sedative/hypnotic
- Antihistamine
- Condoms
Jet Lag: Prevention
- Diet: no scientific data, but helpful to minimize alcohol, smoking and caffeine in flight
- Light exposure during daytime
- Short-acting hypnotics, first 3 nights at new location

Melatonin for Jet Lag
- Hormone secreted by pineal gland, regulates sleep cycle
- Induces sleepiness
- Use of commercial preparations is controversial because of lack of standardization and impurities
- Available in US in health food stores
- Dose 3-5 mg tabs

DVT’s and Travel
- Possible increased risk if:
  - Flying for more than 6 hrs at a time
  - Frequent flying
  - Older and/or overweight
  - Have had recent surgery
  - Malignancy
  - On estrogen containing medications
  - Immune suppressed
  - Have a history of dvt’s
  - Have had a recent serious illness
  - Pregnancy

Preventing DVT’s while traveling
- Minimize alcohol intake, No smoking
- Increase non alcoholic fluid intake (1 litre per 6-8 hrs flying time)
- Take regular short walks and perform regular leg exercises
- Don’t sit for prolonged periods with legs crossed or the back of your legs pressed tightly against the front of the seat
- No evidence to support use of aspirin
- Consider using compression stockings (20-30 mm Hg)

Altitude Sickness
- Ascend slowly: 2-3 days at 2500 m before ascending, then 2 d per 1000 m
- Prophylaxis with Acetazolamide 125-250 mg twice daily, beginning 24-48 hours before ascent and continuing for at least 48 hours after ascent or while at high altitude, or start when symptoms start and treat for 2-3 days at altitude. Caution with allergies to sulfa and penicillin
- Acute Mountain Sickness: headache, nausea, fatigue, insomnia

Motion sickness
- Best taken 30-60 minutes before at risk
- OTC antihistamines: cyclizine (Marzine), dimenhydrinate (Dramamine), diphenhydramine (Benedryl), meclizine (Bonine), “Sea Band”, ginger candy
- Prescription: transderm scopolamine patch, scopolamine pills (Scopace)
- Side effects of medications: dizziness, drowsiness

Possible increased risk if:
- Short-acting acting
- Light exposure Light exposure
- Diet: no Diet: no
- Anti-motion sickness medications: Anti-motion sickness medications:
  - Transderm scopolamine Transderm scopolamine
  - OTC antihistamines OTC antihistamines
  - Dose 3-5 mg tabs Dose 3-5 mg tabs

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Motion sickness, cont.

- Eat lightly before and during travel. Limit alcohol intake.
- Sit in most stable section of moving vehicle (over the wings on an airplane; front seat of car; near the front of trains; amidships, on deck if possible; and just forward of the midsection on buses)
- Face forward and look out a window, keeping your eyes fixed on the horizon or a stationary point in the distance.

Resources

- CDC: www.cdc.gov
- Shoreland: www.tripprep.com
- International Association for Medical Assistance to Travlers (IAMAT):
  - www.iamat.org/
- World Health Organization: www.who.ch
- US Department of State: www.travel.state.gov

QUESTIONS

“A vaccine not given is 100% ineffective!”

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