Travel Medicine

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Goals and Objectives

- Review and discuss common pre-travel related issues
- Review and discuss common issues during travel including risks and prophylaxis
- Discuss the approach to fever in a returning traveler

- No financial conflicts of interest
This picture is from?

1. India
2. Thailand
3. Cambodia
4. Vietnam
Pre-Travel Counseling

- Where are they going?
- How are they getting there?
- Where will they be staying?
- Why are they going?
- How long will they be gone?
  - Specifically duration of risk of exposure
- Will they be participating in any special or unusual activities?
Pre-Travel Counseling

- Past Medical History
  - Medication list
  - Allergies
- Past Travel History
- Travel and routine immunization history
65 yo couple are traveling to South Africa and Tanzania for vacation and plan on spending time at the wild game parks. Their trip does not require yellow fever vaccination.

A. Yes
B. No
Where are they going and how are they getting there?

- Travelers to areas without Yellow Fever will require vaccination if they have a visa marked passport from a YF area or if the lay over was more than 12 hours (country specific).

- In our example, if the couple were to stop in Nairobi, Kenya for a few days they WOULD require yellow fever vaccine. If flying directly from the US to South Africa they would not.
How long will they be gone?

- Risk of malaria increases with duration
- Some diseases (Japanese Encephalitis Virus) have a vaccine recommendation based on duration and risk (> one month or if high risk exposure and < one month stay)
- Rabies
- Will they really take their malaria pills that long?
- Can they afford the prophylactic medications for that duration?
Where are they staying?

- Hotels
- Rural cabins/tents – Africa game parks
- Families – no control over food or water
- Rural location – will they be able to get back to the city in time for post-exposure prophylaxis for rabies or if they get sick?
Individual goes swimming in Lake Victoria or the Nile river. They are likely to get exposure to?

1. Dracunculiasis
2. *Mycobacterium marinum*
3. *Pseudomonas africanum*
4. Schistosomiasis
What will they be doing?

- Tourists – often at less risk
  - Malaria mosquitos bite dusk to dawn
- Mission trip with extensive exposure to local populations
  - Tb exposure, meningococcal disease, hepatitis B immunization if medical care related
- Hiking, camping backpacking or swimming
- Visiting areas with a lot of wild monkeys
Who will be providing their food?

Many tour groups and individuals visiting families or participating on mission trips will have limited control over food and water exposure.
A family is traveling to Peru and planning on visiting Machu Picchu. Other than the typical risk factors for a variety of disease, this family should be aware of developing...

1. Malaria
2. Paracoccidioidomycosis
3. Altitude sickness
4. Blastomycosis
Vaccinations

- Ensure that all routine and recommended vaccines are up to date
  - These tend to be covered benefits under insurance plans
  - Tdap, influenza, pneumococcal when indicated
  - Age related issues – MMR, Polio
Travel Specific Vaccination

- Routinely address
  - Hepatitis A
  - Oral or IM typhoid
- Medical missions
  - Hepatitis B
- Sub-Saharan Africa
  - Meningococcal
- Long term and remote exposures
  - Rabies - $$$$$
  - Japanese Encephalitis Virus - $$$$$
- Yellow fever
A 40 yo woman with Rheumatoid arthritis is on methotrexate, low dose steroids and a DMARD for control of her symptoms. Which of the following vaccines can she be given safely?

1. MMR
2. OPV
3. Yellow Fever
4. Tdap
Liver Virus Vaccines

- MMR
- Yellow Fever
- Oral Polio – no longer available
- Varivax and Zostavax
- Oral Typhoid is liver attenuated bacterial strain
Who said, “An ounce of prevention is worth a pound of cure”?

1. Alexander Fleming
2. Louis Pasteur
3. Benjamin Franklin
4. L.L. Cool J
An ounce of prevention......

- Steaming hot food that is prepared fresh – no street vendors!
- Peelable fruits
- Bottled beverages including fermented drinks
  - Consider avoiding alcohol in hot/humid climates
- NO ICE!
- Was the cap on tight and sealed?

- For long trips or stays, water purification may be less costly than bottle water!
Pore size <0.2 micron
- DEET has a plateau effect of 50% or above
- 15-35% concentrations ideal and < 30% for children
- Vehicle is very important and 100% DEET evaporates
- DEET absorption is increased if applied UNDER sunscreens
- FDA recommends against using combination products!
- Picaridin has less odor and less greasy feel than DEET
- 10-20% concentrations were effective up to 12 hours against lone star ticks
- IR3535
- Initially produced and marked as an emollient and moisturizer (Avon skin so soft)
- Hunters apparently began reporting greater efficacy against midges etc
- IR3535 better against blackflies and sandflies
- ~ 10 hours of protection
Plant-based

- Oil of lemon eucalyptus - similar level and duration of protection as with DEET and picaridin but better against ticks
- Citronella – less effective and too short duration of action and ineffective against ticks
- Permethrin – used as impregnating agent for nets and clothing with long duration of action
Insect Repellents

- Permethrin treated clothing
  - Spray treatment kits
  - Clothing maintains bug repellent activity for up to 6 weeks or 6 washes
  - Take a can with you for bed nets and window screens for some higher risk trips
Medications

- Take your medications in the original containers in case customs inspects them.
Malaria prophylaxis

- Chloroquine – very few sensitive areas still exist
- Atovaquone/proguanil – daily until 7 days after returning
- Mefloquine – weekly until 4 weeks after returning
- Doxycycline – daily until 4 weeks after returning
- Primaquine – check G6PD first and daily until 7 days after returning

- Review risk of exposure and patient acceptance
- I tend to try and give everyone on the trip the same medication to assist with compliance
- Long term trips or stays I often offer self treatment courses with clear instructions and dosing
Traveler’s Diarrhea

- Do nothing
  - Push fluids and maintain electrolytes
- Imodium
  - Mild diarrhea
- Severe with or without fever/blood
- Levofloxacin/ciprofloxacin
- Rifaximin
- Azithromycin for high risk exposure to campylobacter with increased rates of cipro resistance
While you are traveling....

- Traveler’s diarrhea is the most frequent travel associated infection
- Avoid animals especially the monkeys!
- Watch for mosquitos, ticks etc.
- Remove ticks immediately
- Maintain good food and water precautions
- Stay away from fresh water
  - Chlorinated or brominated pools and salt water are OK
So now you are back....

- Consider PPD testing in 3-6 weeks for individuals after long trips or heavy exposure to indigenous personnel
- Consider an eosinophil count on blood testing if risk of parasitic infections noted
35 yo comes back from a trip to S Africa. He departed for business 10 days ago and has been back 2 days. He notes fevers, chills, body aches and non-productive cough.
He looks ill, feels very poorly and has a negative examination except fever.

1. Acute HIV
2. Influenza
3. Trypanosomiasis
4. Katayama fever (acute schistosomiasis)
Fever in Returning Travel

- Common "cosmopolitan" infections are still common – respiratory and urinary tract infections, etc.
- Our case likely has influenza or other viral illness
Fever in Returning Traveler

- Review the same issues addressed in pre-travel counseling
  - Where did you go?
  - What did you do?
  - Any unusual or unexpected exposures?
  - Did you get all your vaccines?
  - Did you take all your prophylaxis if indicated?
1. 25 yo couple goes to Puerto Rico for honeymoon. They come back and 2 days later they have high fevers and arthralgias. They likely have?

1. Dengue fever
2. Chikungunya fever
3. Leptospirosis
4. Malaria
Evaluation of Fever in Returned Travelers

- Life threatening nature of patient presentation
- Remember that some life threatening infections may start out mild but can progress – malaria, leptospirosis, etc.
- Differential diagnosis starts based on incubation period discrimination
Short Incubation < 14 days

- The vast majority of traveler associated infections will fall into this category unless there are some unusual or extenuating circumstances
Chikungunya, Dengue, Arboviral encephalitides
Acute HIV
Leptospirosis
Influenza
Rickettsial disease
Enteric fever
Malaria
Intermediate 14 days to 6 weeks

- Amoeba – extraintestinal mostly
- Hepatitis A and E
- Schistosomiasis – Katayama fever
- Malaria
Long Incubation > 6 weeks

- Malaria – vivax mostly
- Leishmaniasis
- Tuberculosis
- Brucellosis – unpasteurized milk products
Associated Symptoms

- Fever + Rash – Dengue, CHKV, rickettsial, HIV, measles
- Fever + abdominal pain – enteric fever, ameobiasis
- Fever + eosinophilia – parasitic – schistosomiasis, liver flukes, drug fever
Some Additional Information

- Did you stick your hand in any fresh water?
- Did you eat any weird or unusual local foods?
  - Drunken crab?
  - Raw locally grown watercress?
  - Monkey bite or scratch?
- Anyone else sick?
- Did you have any extensive exposure to local population outside the tourist routes?
40 yo couple goes to Hawaii for a 2 week vacation. The husband develops severe headache, neck stiffness and fevers 1 week after returning. Lumbar puncture reveals a WBC of 400 cells but 40% eosinophils.

1. Dengue fever
2. Schistosomiasis
3. Angiostrongylus
4. Scombroid
Same couple goes to Hawaii. The wife presents 2 days after returning with fevers, rash – diffuse erythroderma, headache and stiff neck. Her lumbar puncture shows 200 WBC predominantly lymphs. Her CXR shows diffuse infiltrates and she is coughing up pink sputum. Renal function is worse than baseline levels. What did she do in Hawaii?

1. Took surfing lessons and cut her foot on a sea urchin
2. Swam in pool of water under a waterfall
3. Ate sushi
4. Ate raw locally grown pineapple
Travel

- Remember that travel should include within the US as there are geographically specific infectious processes
  - Endemic mycoses – ESPECIALLY coccidioidomycosis
  - Hantavirus
  - Avian schistosomiasis
Typical Costs of Vaccination

- Hepatitis A $89
- Oral Typhoid $58
- Yellow Fever $88
- Japanese encephalitis virus $260 x 2
- Rabies $225 x 3
- Meningococcal $130
Thank you for your attention and participation

Questions?