Illness in the Returning Traveler

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Director, VCU Health System
Travel & Tropical Medicine Clinic
Overview

• Discuss the scope of the problem
• Discuss the conceptual approach to the febrile returning traveler
• Discuss initial work-up and management
• Identify key resources
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The Scope of the Problem

• 15–70% of US travelers develop illness on international trips
  – Most illnesses are mild
  – Gastrointestinal complaints are most common (diarrhea)
• 1–5% of US travelers are sick enough to seek medical care upon returning to the US
• Infections acquired abroad can manifest late (months to years after return)

Franco-Paredes C et al. CDC Yellow Book 2013.
Illness in Returning Travelers

- Analysis by Wilson et al of GeoSentinel Surveillance Network data
  - 24,920 ill returned travelers
  - 6,957 had fever (28%)

Sub-Saharan Africa, 37%
Southeast Asia, 18%
Latin America/Caribbean, 15%
South Central Asia, 13%
North Africa, 3%
Other, 14%

Most Common Conditions

- Malaria, 21%
- Acute Diarrhea, 15%
- Resp Tract Infection, 14%
- Dengue, 6%
- Unspecified febrile illness, 22%
- Acute hepatitis, 1%
- Acute UTI, 2%
- Rickettsiosis, 2%
- Enteric fever, 2%
- Derm illness, 4%
- Other, 11%

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Creating Your Differential: 6 Key Considerations

1. **Geography:** What is present?
2. **Incubation periods:** What is likely?
3. **Activities/ Exposures:** Higher risk?
4. **What is associated with high morbidity or mortality?**
5. **What is treatable?**
6. **What is transmissible?**

Febrile Illness: Incubation < 14 days

<table>
<thead>
<tr>
<th>Disease</th>
<th>Geographic Distribution</th>
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</thead>
<tbody>
<tr>
<td>Malaria (P. falciparum, P. vivax)</td>
<td>Tropics, subtropics</td>
</tr>
<tr>
<td>Dengue</td>
<td>Tropics, subtropics</td>
</tr>
<tr>
<td>Chikungunya</td>
<td>Tropics, subtropics</td>
</tr>
<tr>
<td>Leptospirosis</td>
<td>Widespread; most common in tropics</td>
</tr>
<tr>
<td>Spotted fever rickettsiae</td>
<td>Widespread</td>
</tr>
<tr>
<td>Enteric fever</td>
<td>Widespread; especially India subcontinent</td>
</tr>
<tr>
<td>Influenza</td>
<td>Widespread</td>
</tr>
<tr>
<td>Acute HIV</td>
<td>Widespread</td>
</tr>
<tr>
<td>Legionellosis</td>
<td>Widespread</td>
</tr>
<tr>
<td>Encephalitis (arboviral)</td>
<td>Widespread; specific virus depends on region</td>
</tr>
</tbody>
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CDC Yellow Book 2014; Keystone et al. Travel Medicine 2013.
Febrile Illness: Incubation 14 days–6 weeks

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<td>Hepatitis A</td>
<td>Developing world</td>
</tr>
<tr>
<td>Hepatitis E</td>
<td>Widespread</td>
</tr>
<tr>
<td>Acute schistosomiasis (Katayama syndrome)</td>
<td>Most common with travel to Sub-Saharan Africa</td>
</tr>
<tr>
<td>Amebic liver abscess</td>
<td>Developing world</td>
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CDC Yellow Book 2014; Keystone et al. Travel Medicine 2013.
Febrile Illness: Incubation > 6 weeks

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<tr>
<td>Amebic liver abscess</td>
<td>Developing world</td>
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<tr>
<td>Tuberculosis</td>
<td>Widespread</td>
</tr>
<tr>
<td>Leishmaniasis (visceral)</td>
<td>Africa, Asia, South America</td>
</tr>
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CDC Yellow Book 2014; Keystone et al. Travel Medicine 2013.
Creating Your Differential: 6 Key Considerations

1. Geography: What is present?
2. Incubation periods: What is likely?
   - Most life-threatening diseases occur within the first 3 months after return
   - Exceptions: Malaria, amebic liver abscess, visceral leishmaniasis

## Febrile Illness: Incubation < 14 days

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<th>Differential</th>
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<td>Nonspecific febrile illness</td>
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# Febrile Illness: Incubation 14 days to 6 weeks

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<tr>
<td>Fever with hepatitis</td>
<td>Hepatitis A, E</td>
</tr>
<tr>
<td>Other</td>
<td>Acute schistosomiasis (Katayama syndrome), amebic liver abscess</td>
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CDC Yellow Book 2014.
# Febrile Illness: Incubation > 6 weeks

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<tr>
<td>Nonspecific febrile illness</td>
<td>Malaria, leishmaniasis (visceral) [2–10 months; 10 days–years]</td>
</tr>
<tr>
<td>Fever with hepatitis</td>
<td>Hepatitis E, B</td>
</tr>
<tr>
<td>Fever with respiratory complaints</td>
<td>Tuberculosis (primary: weeks; reactivation: years)</td>
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CDC Yellow Book 2014.
Creating Your Differential: 6 Key Considerations

1. Geography: What is present?
2. Incubation periods: What is likely?
3. Activities / Exposures: Higher risk?
4. What is associated with high morbidity or mortality?
5. What is treatable?
6. What is transmissible?

Key Questions

- Travel itinerary
- Duration of travel
- Type of accommodation
- Pre-travel immunization history
- Adherence to malaria chemoprophylaxis
- Use of bed nets and insect repellants

CDC Yellow Book 2014.
Key Questions

- Risk activities and exposures:
  - Source of drinking water
  - Consumption of raw meat, seafood, unpasteurized dairy products
  - Insect and arthropod bites
  - Activities in fresh water (swimming, rafting, wading, et cetera)
  - Adventure travel
  - Animal bites and scratches
  - Sexual contacts, tattoos, body piercing, shared razors
  - Hospitalizations and other medical care (Injections? Transfusions? Surgery?)

Franco-Paredes C et al. CDC Yellow Book 2013.
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<th>Diseases</th>
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<tr>
<td>Unsafe drinking water</td>
<td>Bacterial, viral and parasitic GI infections</td>
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<tr>
<td>Raw meat, sea food or unpasteurized mild products</td>
<td>Helminth infections; brucellosis, listeriosis</td>
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<tr>
<td>Insect and arthropod bites</td>
<td>Malaria, dengue, chikungunya, viral hemorrhagic fevers, rickettsial diseases</td>
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<tr>
<td>Activities in freshwater</td>
<td>Schistosomiasis, leptospirosis</td>
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<tr>
<td>Adventure travel</td>
<td>Spelunking (histoplasmosis)</td>
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<td>Animal bites and scratches</td>
<td>Rabies, herpes B virus</td>
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<td>Sexual contact, tattoos, piercings</td>
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<td>Hospitalization and local medical care</td>
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Creating Your Differential: 6 Key Considerations

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Case

- HPI: 42 yo male with h/o GERD and ADD who traveled to a coastal resort in the Dominican Republic 6/10–6/17 who developed the acute onset of fever, chills, malaise headache, myalgias, nausea and vomiting around 6/27
- Presents to a local clinic around 6/28, diagnosed with “viral illness” and sent home
- Re-presents to the ER on 7/1
42 yo Male with Recent Travel to the Dominican Republic

- Exam:
  - Febrile to 102
  - Scleral icterus present
  - Abd: normal sounds, diffusely TTP; + splenomegaly
  - No lymphadenopathy
  - No rash
42 yo Male with Recent Travel to the Dominican Republic

• Labs:
  – BUN/Cr: 32/1.13
  – AST: 170, ALT: 348
  – AP: 79; Bili, tot: 3.2; Bili, conj: 1.6
  – WBC: 5.5 with 72%N, 23%L, 1%E
  – Hgb: 10.8 with MCV: 84.5
  – PLT: 33
42 yo male with recent travel to the DR with acute non-differentiated febrile syndrome with anemia/hemolysis, hepatitis and thrombocytopenia

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   - Typhoid
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42 yo male with recent travel to the DR with acute non-differentiated febrile syndrome with anemia/hemolysis, hepatitis and thrombocytopenia

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Undifferentiated Fever

- Malaria
- Dengue
- Chikungunya
- Rickettsial illness
- Enteric fever
- Leptospirosis
- Acute schistosomiasis
- Amebic liver abscess

Malaria

- Risk is highest with travel to Sub-Saharan Africa
- 60% initially report fever (40% may not)
- Fever and headache are common; GI and pulmonary symptoms can confuse the diagnosis

Malaria

- Absence of leukocytosis and thrombocytopenia are common
- Malaria blood smears should be performed urgently
  - Repeat 8–24 hours later if initial testing is negative

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  - Discuss initial work-up and management
  - Identify key resources
Initial Work-Up: Febrile Patient with Recent Travel to the Tropics

- CBC with differential
- Hepatic panel, BMP
- Blood cultures (x2 sets)
- Blood smears for malaria or rapid diagnostic testing for malaria
- Urinalysis and urine culture
- CXR

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Helpful Resources

• Resources to help identify providers versed in travel and tropical medicine:
  – American Society of Tropical Medicine & Hygiene: www.astmh.org
  – International Society of Travel Medicine: www.istm.org

Franco-Paredes C et al. CDC Yellow Book 2013.
Helpful Resources

• CDC:
  - Malaria questions (business hours): 770–488–7788
  - Malaria questions (after hours): 770–488–7100
  - Parasitic infections (business hours): 770–488–7775

Franco-Paredes C et al. CDC Yellow Book 2013.
Decision Support

• Online algorithm to help with the differential diagnosis and work up of the febrile returning traveler
  – www.fevertravel.ch

CDC’s “Yellow Book”

Yellow Book Homepage

Explore Travel Health with the 2014 Yellow Book!

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