Post-travel case scenarios
When to refer, when to panic and when to reassure
Objectives

- Develop a framework for triage of travelers presenting with medical complaints.
- Recognize the most common post travel emergency scenarios.
- Recognize common post travel health scenarios requiring reassurance, referral or both.
- Name the symptoms of malaria, dengue fever, typhoid fever and persistent traveller’s diarrhoea.
- Have fun
Practice question

In the five minutes following this scene, the monkey:

A. Bit me
B. Crawled down my shirt
C. Pick pocketed me
D. Threw a fruit at me
E. All of the above
Case #1

- A 44 year old Ghananese woman presents with sudden onset fever (38.9ºC, measured).
- She returned to Winnipeg from Ghana 12 days prior after visiting her mother and brothers in Ghana, where she also visited numerous other sub-Saharan African countries (Nigeria, Angola, Namibia and South Africa).
- In Ghana, she stayed with her family near the town of Tamale.
- For her other destinations, she was part of an organized tour.
- She did not seek pre-travel advice and is unsure of her vaccination status. She reports multiple episodes of malaria during her childhood but never recalls it being “quite this bad”.


What is the best immediate course of action?

A. Start quinine and doxycycline on the phone.
B. Reassure and refer to GP as required.
C. Refer to local travel clinic.
D. Refer to hospital emergency department.
E. None of the above
What are the top three diagnoses?

A. Malaria, Malaria, Malaria
B. Malaria, Dengue, unknown cause or not travel related.
C. Typhoid, Malaria, Dengue
D. Malaria, unknown or not travel related, tick typhus
Fever in Sub-Saharan Africa

- Malaria accounts for ~2/3 of all systemic febrile illnesses in returned travellers from sub-Saharan Africa.
  - By far the worst region for malaria
  - Major risk factors are VFRs, no prophylaxis, exposure to rural areas, during night-time hours.
- Almost 3/10 cases of fever in travellers from SSA are undiagnosed or cosmopolitan infections.
- 1/20 cases of fever in travellers from this area are due to rickettsial infection, almost all *R. africae*
  - Almost exclusive to Southern Africa region (South Africa, Botswana, Namibia, Swaziland, Lesotho and Zimbabwe).
  - Physical exam should point this diagnosis.

Cosmopolitan and other causes of fever

- Dengue and Typhoid are rare in SSA – account for less than 1% of SFI’s.
- Mononucleosis accounts for ~1% of fevers in SSA travellers.
- Cosmopolitan or unknown causes account for ~40% of cases of FRT (overall).
  - ~15% respiratory
  - ~5% Urinary tract
  - ~20% unknown
  - ~5% other

Clin Infect Dis. 2007 44(12):1560-8
What initial lab investigations are essential?

A. Malaria smears
B. Blood cultures
C. Rickettsial and Arboviral serology
D. EBV serology
E. A and B
F. All of the above
Investigations in hospital

- Three malaria smears should be ordered, ~12 hours apart, preferably when the patient is febrile.
  - Alternatives include malaria antigen detection and PCR. Neither are easily available.
- Blood cultures useful to diagnose typhoid and many cosmopolitan infections.
- Rickettsia and arboviral serology may be useful, but can be deferred unless clinical findings suggest these.
- EBV unlikely.
Case #2

A 24 year old female returns from her July honeymoon vacation in Italy where she stayed only in four and five star hotels and traveled by train.

Their honeymoon started in Rome with travel south to Naples and north along the Adriatic Sea to Venice.

They returned to Winnipeg 10 days ago. She now presents with subjective fever, malaise and joint pain. She reports a mild headache and feels tired. She has no neck stiffness, nausea or vomiting.
What is the best course of action?

A. Send to ER for assessment.
B. Send to family doctor as required.
C. Send to Travel and tropical medicine at next available appointment and suggest she go to the hospital if symptoms worsen.
D. Reassure and tell her it will go away.
E. Offer to bring her some chicken soup.
Huh? What about the fever?

- Neither of the “bad boys” malaria nor typhoid occur in Italy.
- Many cosmopolitan, local and travel related illnesses can cause fever, and many “fevers” are not real.
- Need for urgent care no different than a “westerner” with same symptoms.
- Cannot guarantee benign cause!
Approximately what percentage of people who “feel like they have a fever” actually do?

A. <10%
B. 10 – 20%
C. 20 – 30%
D. 30 – 40%
E. 40 – 50%

Lancet 350:781.
<table>
<thead>
<tr>
<th>Option</th>
<th>Diagnosis</th>
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<tbody>
<tr>
<td>A.</td>
<td>Malaria</td>
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<td>B.</td>
<td>Dengue</td>
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<td>C.</td>
<td>Influenza</td>
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<td>D.</td>
<td>Travel acquired mononucleosis</td>
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<td>E.</td>
<td>None of the above</td>
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What arboviral diseases circulate in Italy?

A. Toscana
B. Chikungunya
C. West Nile
D. *Rickettsia conorii*
E. Dengue
F. A and B
G. A, B and C
H. All of the above
Case #3

- A 26 year old female calls the THN because of an episode of diarrhoea which occurred while on her fantasy spring break holiday in the Hedonism II Resort in Jamaica.
- She experienced severe diarrhoea, abdominal cramping and vomiting for two days starting three days into her holiday.
- She is upset that she couldn’t party it up with her friends, but is now well and has no symptoms at all. She wants to know what she should do now.
What course of action is most appropriate?

A. Refer her to the travel health clinic at the next available appointment.
B. Tell her to rush to emergency for assessment.
C. Reassure her that traveller’s diarrhoea is common and usually resolves as hers has, and tell her to call back or talk to her doctor if she has any further concerns.
D. Have her make an appointment with her doctor.
E. Sigh, roll back your eyes and hang up after suggesting an STI work up.
What proportion of traveller’s diarrhoea episodes spontaneously resolve with no further need for assessment?

A. >90%
B. ~75%
C. ~50%
D. ~25%
E. <10%
Delhi Belly Epidemiology

- Most episodes of traveller’s diarrhoea are self resolving.
- Between 8% and 50% of travellers develop diarrhoea; depending on the country visited.
- >90% of cases occur within two weeks of arrival.

Outcomes of TD

- About 50% of cases are resolved by 48h.
- 4 to 10% of individuals may develop persistent undiagnosed symptoms.
  - Post infectious IBS?
- Traveller’s diarrhoea can unmask IBD, celiac disease, auto-immune diseases (<1%).

Clinical Infectious Diseases 2005;41:S536–S540
What modalities exist to prevent traveller’s diarrhoea?

A. Only eating food from a renowned 5 star resort.
B. Avoid eating raw/undercooked food, including fruit without peels and raw vegetables.
C. Drinking alcoholic beverages.
D. An effective vaccine.
E. All of the above.
TD prevention

- Wide range of incidence, not related to quality of resort.
  - High class resort can be associated with high rates.
  - ++ food handling, susceptible population, poor hand hygiene.
- Behavioural methods “Boil it, Cook it, Peel it or Forget it” have been shown effective.
- Alcohol at levels that humans can tolerate does not kill bacteria, much less cysts and viruses.
  - Bottled alcohol (e.g. beer & wine) are “clean”.
- The available vaccine (Dukoral™) is marginally effective for only one major cause of TD and conservatively may prevent 1 – 7% of cases of TD overall.

Lancet Infect Dis 2006; 6:361–73
Adv Ther. 2006 4:519-27
Int. J Epidemiol. 1985 14 169-172
Case #4

- A 24 year old male originally from Bangladesh now living in Winnipeg returns from Bangladesh after visiting friends and relatives.
- One week after returning, he feels unwell with rigors, fever (measured at 38.5°C) and significant malaise.
- He reports myalgias, weakness, fatigue and severe headache. He reports significant insomnia.
- While in Bangladesh, he lived with his relatives and ate, drank and lived as they did. He had not sought any pre-travel advice.
What is the most appropriate course of action?

A. Start ciprofloxacin on the phone.
B. Reassure and refer to GP as required
C. Refer to local travel clinic
D. Refer to hospital emergency department
E. None of the above
True fever is an emergency!

- Malaria smears, blood cultures and evaluation is essential!
- Blood counts, platelet counts, renal and liver function can help make a diagnosis and guide therapy.
Excluding “unknown cause”, what are the top three diagnoses?

A. Malaria, Malaria, Malaria
B. Dengue, Malaria, Scrub typhus
C. Typhoid, Dengue, Malaria
D. Typhoid, Mononucleosis, Malaria
E. Influenza, Chikungunya, Dengue
What’s in Bangladesh?

- Typhoid, Dengue and Malaria are almost neck and neck in this area.
  - Each accounts for ~14% of SFIs in returned travellers.
- All three present with an undifferentiated fever.
- Being a VFR puts this man at greater risk of all three.
- All three are preventable with education, vaccination and/or prophylaxis.

First rule out the deadly

- Blood cultures and malaria smears are essential to rule out the truly deadly.

- In the absence of haemorrhage or clotting dysfunction, dengue serology is optional
  - May help predict future risk of DHF
  - Consider if negative cultures and malaria smears.

- Bangladesh is in the tsutsugamushi belt.
  - Disease is uncommon, clinical presentation should point to diagnosis.
Assuming he is well enough for outpatient treatment, what antibiotic should be prescribed if a blood culture is reported as “Salmonella enterica subsp. enterica ser. Typhi”?

A. Ciprofloxacin 500mg BID  
B. Azithromycin 500mg OD  
C. Trimethoprim-sulfamethoxazole 160:800mg BID  
D. Levofloxacin 500mg OD  
E. Chloramphenicol 500mg QID
Treatment of Typhoid Fever

- Quinolones, azithromycin, TMP/SMX, cefixime and chloramphenicol are all indicated for Typhoid...

- But...resistance to fluoroquinolones, and TMP/SMX is very high (70-100%) in South Asia.

- Chloramphenicol is more toxic, less effective and hard to get.

Clinical Infectious Diseases 2000;31:1134–1138
Which are complications of Typhoid fever?

A. Persistent carrier state.
B. Pneumonia
C. Bowel perforation
D. Psychosis
E. A, B and C
F. All of the above

Case #5

- A 35 year old woman calls the THN to tell her that 4 days ago, during the last part of her Kenya holiday she was touring the Nairobi Arboretum and was attacked and bitten on the back of the leg by “a seriously nut-bag monkey”.

- She had received rabies pre-exposure prophylaxis. She consulted the back of her vaccine record and did the following:
  1. Washed the wound with soap and water, encouraged bleeding and washed the wound with povidone and alcohol.
  2. Went to the Nairobi hospital (a high-end private western-type hospital) that day where she received amoxicillin-clavulanate and two doses of Imovax (HDCV) vaccine (day 0 and day 3).
  3. The attending physician examined the wound on the morning of day 3 (on her way to the airport) and decided there was no infection, and that sutures could be placed to achieve closure with low risk of infection. The antibiotic was prescribed for 10 days (she is still taking it).
The bite...
What is the most appropriate course of action?

A. Congratulate her on the appropriate management of a potential exposure to rabies and tell her she needs no follow-up.

B. Tell her to come in to the clinic today “just to be safe”.

C. Arrange for her to get two shots of appropriate rabies vaccine at the local ER.

D. Arrange for her to get rabies immune globulin and five appropriate rabies vaccines (day 0, 3, 7, 14 and 28), just to be safe.

E. Hang up.
What pathogens can be theoretically acquired from directly from monkeys?

A. Rabies
B. CHV-1 (Cercopithecine Herpes Virus)
C. SV40
D. Poliovirus
E. Tapeworms
F. Simian Immunodeficiency Virus
G. Monkey Pox
H. Most of these
I. All of these
Why refer?

- The risk of potentially deadly infections (such as SIV and Herpes B (CHV-1)) and the decision for treatment depends on the type of monkey and duration since exposure.

Emerg Infect Dis. 2002 May;8(5):451-7
A 21 year old female returned from India two months ago.

She experienced a severe bout of traveller’s diarrhoea while in Bangalore.

She was treated by a local physician with fluids, chloramphenicol and tinidazole, but the diarrhoea only got marginally better.

Diarrhoea has persisted for the past two months.

She reports her stools are loose but not watery and extremely foul smelling.
What is the best course of action?

A. Send to hospital emergency department
B. Send to family doctor for referral to infectious diseases
C. Send to travel health clinic for the next available appointment.
D. Reassure and tell them they have IBS
E. Start metronidazole
Diarrhoea only feels like an emergency!

- Most cases of chronic diarrhoea can be managed as outpatients.
- Fever, dehydration, confusion, loss of consciousness are danger signs.
- Weight loss is a major concern, but not emergent.
What are the top three diagnoses?

A. Amebiasis, tropical sprue, cryptosporidiosis
B. Norwalk, Salmonella, Shigella
C. Giardiasis, amoebiasis, Norwalk virus
D. ETEC, Norwalk, Campylobacter
E. Unknown, Giardia, Amoebiasis
What investigations are appropriate?

A. Stool for ova and parasites
B. Stool for *Clostridium difficile* toxin
C. Stool electron microscopy for virus
D. A and B
E. A, B and C
Take home points

- Enteric viruses don’t cause chronic diarrhoea.
- Bacteria, besides \textit{C. difficile}, rarely cause chronic diarrhoea.
- “Undiagnosed” (functional diarrhoea and post infectious IBS) is the most common causes of chronic diarrhoea in returned travellers.
- Giardiasis is the most commonly \underline{identified} cause of chronic diarrhoea in returned travellers from India.

Dupont, CID 2008
She is diagnosed with giardiasis and fails two subsequent regimens of metronidazole. What is the next course of action?

A. Try a third course of metronidazole at 750mg po TID
B. Send her back to the travel and tropical medicine clinic.
C. Refer for a cholecystectomy
D. Treat her family empirically
E. A bowel washout with bleach
Second-line drugs are available for resistant or persistent giardiasis!

- Tinidazole, Secnidazole, Ornidazole
- Albendazole
- Nitazoxanide
- Quinacrine
- Furazolidone
- Paromomycin
Case #7

- A 24 year old female adventure traveller returned from a five week adventure rafting trip in Costa Rica where she was camping with no access to civilization.

- She drank treated river water and all food was thoroughly cooked.

- Developed traveller’s diarrhoea now asymptomatic.

- She presents with a non-healing ulcerated lesion on her right arm that is pruritic but non-tender with no redness and intermittently expressing a clear discharge.

- She has seen her doctor who prescribed an antibiotic and steroid cream which worsened the condition.
The lesion
What is the most appropriate course of action?

A. Start a course of TMP/SMX for presumed MRSA infection.
B. Refer back to her family doctor
C. Send her to the Travel Health Specialist
D. Send to the hospital emergency department
E. Reassure her and tell her it will go away
Take a breather

- Most skin disorders are not medical emergencies.
  - Presence of fever, significant oedema, rapid change or excessive pain are danger signs!
- Chronicity suggests a delay of a few days isn’t dangerous.
- Cause should always be sought.
  - Presentation, travel destination and appearance often point to a diagnosis.
What investigation is most likely to get the diagnosis?

A. Biopsy and culture
B. Biopsy and H&E stain
C. Biopsy and PCR
D. Impression smear
E. Serology
F. Swab and culture
Given the result of the tests and history, what is the most likely pathogen?

A. *L. chagasi*
B. *L. costaricensis*
C. *L. panamensis*
D. *L. mexicana*
E. *L. braziliensis*

The End!