



## Travel Medicine

**Allison Macerollo, MD**

*Associate Professor - Clinical*

*Vice Chair of Education*

*Department of Family and Community Medicine*

*The Ohio State University Wexner Medical Center*

**MedNet21**  
Center for Continuing Medical Education

THE OHIO STATE UNIVERSITY  
WEXNER MEDICAL CENTER

## Objectives

1. Identify the benefits and risks of travel abroad
2. Be able to provide travel advice to a wide range of travelers
3. Recognize that a returning traveler has additional risks than a person from the community

## Pre -Travel Counseling

Regan is 21 year old female travelling to Argentina for a 4 week Spanish immersion experience.

She is so excited, but her parents are nervous.

What are the next steps?



## Pre-travel assessment

- Only a minority of international travelers seek pretravel counseling – 36%
- Of those seeking assistance
  - 60% see a primary care clinician
  - 10% see a travel subspecialist
  - 30% turn to friends and family
- Individuals returning to their country of origin are less likely to consult a physician before travel
  - Preventable systemic illness is seen more commonly in this group
- At least 6 weeks prior to travel is best!



## Pre- Trip Assessment

- Trip specifics
- Dates of travel
- Itinerary
- Special notes



## Background on Travel

- Since 2012, over 1 billion travelers cross international borders each year.
- Over 900 million tourists travelled internationally in 2022, double those in 2021 though still 37% fewer than in 2019.
- Based on UNWTO's scenarios for 2023, international tourist arrivals could reach 80% to 95% of pre-pandemic levels this year, with Europe and the Middle East expected to reach those levels



## Pre- Trip Assessment

- All patients should be counseled about common things as well



Mary is a 72 year old female travelling to China on her dream trip of a River Cruise in three months and wants to get travel advice

#### Medical History

- Chronic conditions
- Medications
- Recent hospitalizations, injuries/limitations, problems
- Anticipate the expected and the unexpected!



### Mary's dream trip to China – Pre -trip plan

- Persons with most medical conditions can travel without restriction but should prepare in advance.
- Medical conditions should be stable before travel.
- Medications
  - Carry on
  - Keep a list



Josh is a medical student travelling to Honduras for a 10-day medical mission

- What Immunizations does he need?
- What do we do about malaria?



**CDC** Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives. Protecting People™

Travelers' Health

Destinations

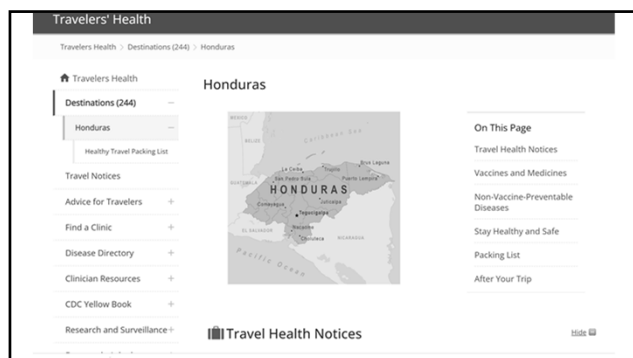
Where are you going?  
Honduras

Go

[View all destinations](#)

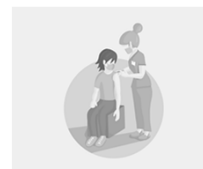
Travel Vaccines  
Find out which travel vaccines you may need to help you stay healthy on your trip.

[Learn more](#)



## Immunizations for Travel

- Hepatitis A
- Hepatitis B
- Varicella/Zoster
- Dtap
- MMR
- Polio
- Pneumococcal
- Influenza
- Covid



## Travel Specific Vaccines

- Cholera – Health care workers who will be caring for those with cholera
- Japanese encephalitis – Travelers to endemic areas of Asia and Western Pacific with planned travel of a months duration
- Meningococcal meningitis – Meningitis belt of Africa
- Poliovirus – Afghanistan and Pakistan and other countries with ongoing transmission
- Rabies – If rabies enzootic and longer stays in rural areas
- *Typhoid fever – Consider for all travelers to low-income countries, rural and longer duration*
- *Yellow fever – Tropical Africa and Tropical South America*

## Travel Specific Vaccines



Source: CDC

### Rabies

Rabid dogs are commonly found in Honduras. If you are bitten or scratched by a dog or other mammal while in Honduras, there may be limited or no rabies treatment available.

Consider rabies vaccination before your trip if your activities mean you will be around dogs or wildlife.

Travelers more likely to encounter rabid animals include

- Campers, adventure travelers, or cave explorers (spelunkers)
- Veterinarians, animal handlers, field biologists, or laboratory workers handling animal specimens
- Visitors to rural areas

Since children are more likely to be bitten or scratched by a dog or other animals, consider rabies vaccination for children traveling to Honduras.

Rabies - CDC Yellow Book

### Typhoid

Recommended for most travelers, especially those staying with friends or relatives or visiting smaller cities or rural areas.

Typhoid - CDC Yellow Book

### Yellow Fever

Required if traveling from a country with risk of YF virus transmission and a 1 year of age.

Yellow Fever - CDC Yellow Book

## Insects and Arthropod – Dengue, Zika, Malaria and many others

20-50% DEET, avoid on children less than 2 months



Source: CDC/Strategic National Stockpile Communications Team

Tuck shirt into pants, pants into socks –  
check companions at end of day  
Permethrin – not to clothing touching skin

Best when permethrin applied and  
reaches floor and tucked into mattress

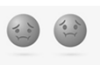


## Malaria - prophylaxis

Medication	Dose	Special notes
Atovaquone-proguanil	Daily dosage – 1-2 days prior and one week after return	Used in Mefloquin resistance, Avoid with kidney disease, \$\$, avoid in pregnancy, take with food
Chloroquine	Weekly dosage – 2 weeks prior and 4 weeks after return	Can be used in Mexico and Central America
Doxycycline	Daily use – 1-2 days prior and 4 weeks after return	Nausea, sun sensitivity, esophageal ulcerations
Hydroxychloroquine	Weekly dosage – 2 weeks prior and 4 weeks after return	Can worsen psoriasis
Mefloquine	Weekly dosage – 2 weeks prior and 4 weeks after return	Avoid in epilepsy, psychiatric disorders, cardiac conduction issues. Safe for pregnancy
Primaquine	Daily use- 1-2 days prior and for 7 days after in vivax	Limited use due to only short-term travel and avoid in G6PD

## Travelers Diarrhea – Prevention and Treatment

- Most common infectious disease while travelling
- Only handwashing and alcohol-based hand sanitizer have reduced incidence!
  - Avoiding street food, tap water, ice and raw foods have not shown a statistical difference
- Carry along antibiotics likely not necessary to take unless higher risk or severe symptoms
  - Azithromycin 1000 mg in divided dose over one day



## Travel Medicine

**Sharon Clark, MD, FACP, FAAP, FHM**

*Assistant Professor of Internal Medicine and Pediatrics*

*Division of Hospital Medicine*

*Director, GME Global Health Scholars Program*

*The Ohio State University Wexner Medical Center*

MedNet21

THE OHIO STATE UNIVERSITY  
WEXNER MEDICAL CENTER

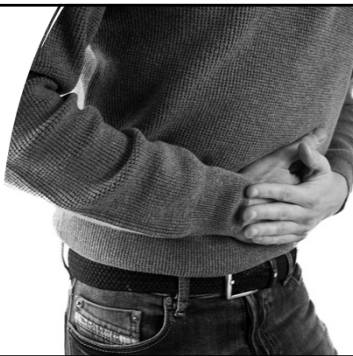
## Post-Travel Evaluation

### Fever in the Returning Traveler

- About 8% of travelers to developing countries seek medical care while they are away or after they return
- Mild illness or potentially lethal infection?

Tom is a 50 year old male with complaints of bloody diarrhea, abdominal pain, nausea, intermittent fevers

- Symptoms for 5 days
- Recently traveled to Thailand with his family on vacation
- What else do we want to know?



### History

- Symptoms, Timing
- Past medical history
  - Immunocompromised?
  - Vaccinations? Medications?
- Travel history
- Exposures



## Traveler's Diarrhea

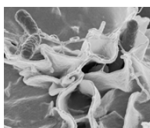
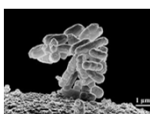
- Most common travel-related illness

Bacteria	Viruses	Protozoa
80-90%	5-15%	10%
E. coli, Campylobacter jejuni, Shigella, Salmonella	Norovirus, rotavirus, astrovirus	Giardia, Entamoeba histolytica, Cryptosporidium
6-72 hours	6-72 hours	1-2 weeks

- When to test?

- Treatment

- Manage dehydration / sepsis
- Fluoroquinolones vs azithromycin

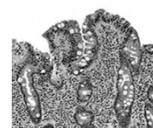


## Traveler's Diarrhea

- Most traveler's diarrhea resolves within 2 weeks

- If persists...

- Evaluate for intestinal parasitic infections
- Underlying gastrointestinal disease
  - Celiac disease
  - Inflammatory bowel disease
- Post-infectious
  - Irritable bowel syndrome
  - Transient lactase deficiency



Author: Samir at English Wikipedia (CC BY-SA 3.0)

Mari is a 32 year old female with fever, chills, body aches, fatigue



- Recently traveled to Sierra Leone to visit her family
- What additional things do we need to ask about?
- What exam findings should we be looking for?
- How should we start our diagnostic evaluation?

## Systemic febrile illness

- Malaria
- Dengue
- Typhoid and paratyphoid fevers
- Rickettsial disease
- Chikungunya virus

- \*GeoSentinel travel/tropical medicine clinic data 2007-2011

## History

- Symptoms
  - Duration of fever, timing
  - Rashes? Gastrointestinal, neurologic, respiratory, musculoskeletal symptoms?
- Patient medical history
- Pretravel immunizations, malaria chemoprophylaxis and compliance
- Treatment at a health center

## Exposures



## Travel History

- All regions the traveler has visited in last year
- Particularly note regions where malaria and dengue are endemic, areas of recent disease outbreaks
- Define dates of travel and timing of symptom onset, duration of fever
- Duration of trip



## Physical Exam

- Carefully examine retina, lymph nodes, heart, lungs, abdomen (liver & spleen), genital area, extremities, neurologic exam, skin



Author: Anandselvam85  
(CC BY-SA 4.0)



## Initial Diagnostic Evaluation

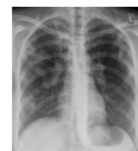
- Broad differential
- Focus on infections that can be rapidly life threatening or highly contagious
- Think about noninfectious causes of fever
- Consider also non-travel related illnesses

## Labs

- CBC with differential
- Chemistry
- LFTs
- Blood and urine cultures
- CXR



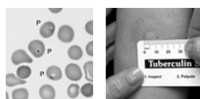
Author: Tannim101 (CC BY 3.0)



Author: Basem Abbas Al Ubaldi (CC BY 4.0)

## Special Testing to Consider

- Malaria testing (thick and thin smears)
- Antibodies/antigens for specific diseases (dengue, chikungunya, rickettsia, histoplasma, etc)
- HIV
- Stool cultures, fecal leukocytes, ova & parasites
- Sputum gram stain & culture, respiratory viral testing
- TB testing (skin test, sputum for AFB and mycobacterial culture)



Source: CDC

Source: CDC

## When to admit / seek expert consultation?

- Any inpatient needs (ie dehydration, sepsis, shock)
- In general, admission not unreasonable for most travelers with undiagnosed febrile illness
- Consider discussing with infectious disease expert before deciding to treat as outpatient



## Final Takeaways

- Give travel advice frequently and often
- Use the CDC website for helpful information
- Common things happen commonly, however be aware of the additional risks / exposures that a returning traveler has
- Ask the right questions and know when further evaluation / treatment is needed

## References

- <https://www.e-unwto.org/doi/abs/10.18111/wtobarometereng.2023.21.1.1>
- <https://www.aafp.org/pubs/afp/issues/2016/1015/p620.html>
- <https://wwwnc.cdc.gov/travel>
- McDonald LC, Gerding DN, Johnson S, Bakken JS, Carroll KC, Coffin SE, Dubberke ER, Garey KW, Gould CV, Kelly C, Loo V, Shaklee Sammons J, Sandora TJ, Wilcox MH. Clinical Practice Guidelines for Clostridium difficile Infection in Adults and Children: 2017 Update by the Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA). Clin Infect Dis. 2018 Mar 19;66(7):e1-e48.
- Koenig, Serena, and James H. Maguire. "Fever in the Returning Traveler." *Principles and Practice of Hospital Medicine*, 2e Eds. Sylvia C. McKean, et al. McGraw Hill, 2017.
- Burman, Deepa, and Timothy Scott Prince. "Travel Medicine." *CURRENT Diagnosis & Treatment: Family Medicine*, 5e Eds. Jeannette E. South-Paul, et al. McGraw Hill, 2020.