What the Primary Care Providers Need to Know About Travel Medicine?

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Learning Objectives

Understand worldwide risks of disease in travelers

Describe general principles of a travel clinic

Review routine immunizations needed for travel

Identify other travel precautions for traveler and provider



Pediatric Travel

- 1.8 billion people will cross an international border by 2030
- o 66% of those travelers will develop a travel-related illness
- 900 million people traveled internationally in 2022
- An estimated 4% of these people are children
- Approximately 8% of these travelers need to seek medical attention while traveling
- TFR=Traveler's visiting Friends and Relatives
 - More likely to get ill with staying with



General Principles of Travel Clinic

- Most insurances do not offer or have limited coverage for travel vaccines
- The most common thing not covered is the professional fee for counseling
- Travel clinic is a fee for service. Payment is required at the end of the visit



General Principles of Travel Clinic

- Ideally the travel visit should be the second reservation after the flight arrangements
- Review itinerary
- O Destinations: purpose, time, duration and accommodations
- Potential exposure to insects and animals
- Immunization Records
- Vaccines
- Recommended VS Required

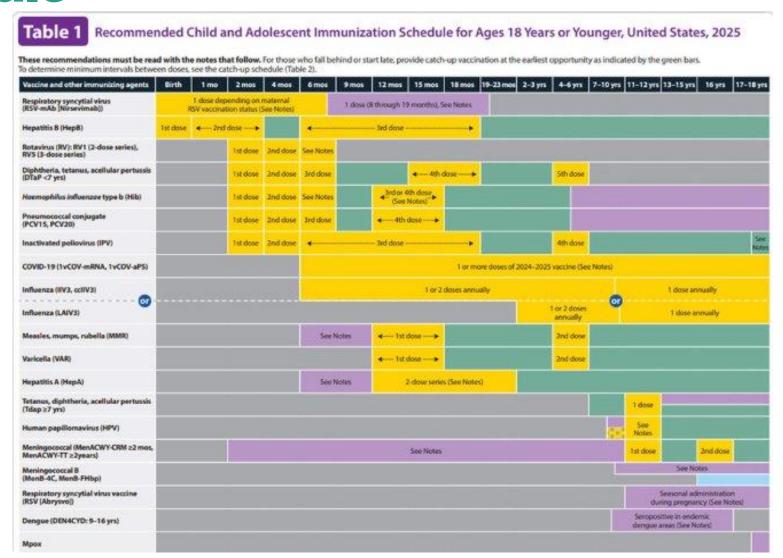


General Principles of Travel Clinic

- Routine Immunizations
- Malaria Prophylaxis
- Protective Measures
- Traveler's Diarrhea
- Preventive measures
- Pediatric Travel Kit
- Other important documents and items

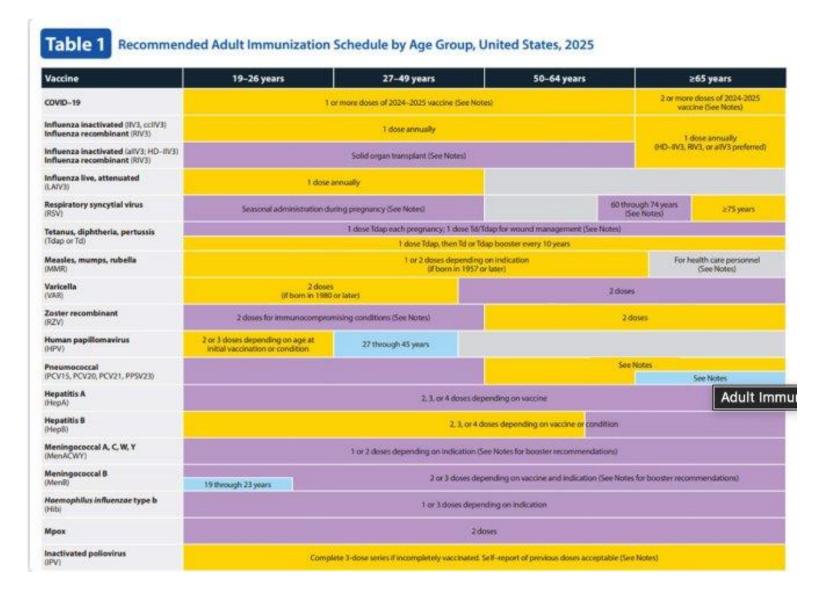


Child and Adolescent Immunization Schedule





Adult Immunization Schedule





Which vaccine preventable disease will the traveler most encounter?

HEPATITIS A

MENINGOCOCCAL DISEASE

VARICELLA

INFLUENZA



Influenza

Preliminary 2024–2025 U.S. Flu In-Season Disease Burden Estimates

Since October 1, 2024, CDC estimates there have been between:

47 Million - 82 Million

7

Flu Illnesses 21 Million - 37 Million



Flu Medical Visits 610,000 -1.3 Million



Flu Hospitalizations 27,000 -130,000



Flu Deaths

Based on data from October 1, 2024, through May 10, 2025

Because influenza surveillance does not capture all cases of flu, CDC provides these estimated ranges to better reflect the full burden of flu in the United States. These estimates are calculated using a mathematical model based on CDC's weekly influenza surveillance data and are preliminary and are updated weekly throughout the season.







Routine Immunizations

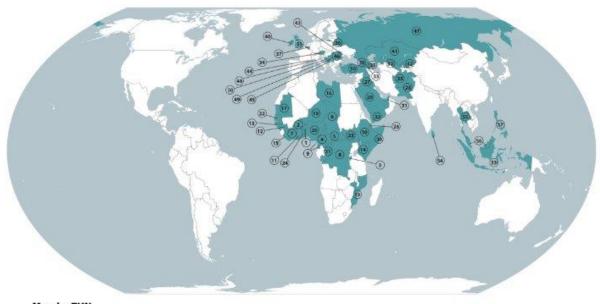
O Polio

- Global eradication targeted for 2005
- Between 2002 to 2005, 21 countries previously polio free documented polio infections
- www.polioeradication.org

O MMR

- More than ½ million children die of measles annually
- Children less than 1 year of age have the highest risk of severe disease
- Children 6 to 12 months of age traveling to endemic countries should receive a dose of MMR

Measles Worldwide



Measles THN

AFRICA

- 1. Benin
- 2. Burkina Faso Burundi
- 4. Cameroon
- 5. Central African Republic
- 6. Chad
- 7. Cote d'Ivoire
- 8. Dem. Rep. of the Congo
- 9. Equatorial Guinea 10. Ethiopia
- 11. Ghana

- 12. Guinea 13. Guinea-Bissau
- 14. Kenya 15. Liberia
- 16. Libya
- 17. Mauritania 18. Mozambique
- 19. Niger
- 20. Nigeria 21. Rep. of the Congo
- 22. Senegal 23. South Sudan
- 24. Togo

EASTERN MEDITERRANEAN

- 25. Afghanistan 26. Djibouti
- 27. Iraq 28. Pakistan
- 29. Saudi Arabia
- 30. Somalia 31. United Arab
- Emirates 32. Yemen
 - 41. Kazakhstan
 - 42. Kyrgyzstan 43. Moldova

EUROPE

- 33. Armenia 34. Austria
- 35. Azerbaijan 36. Belarus
- 37. Belgium
- 49. Serbia 38. Bosnia and Herzegovina
- 50. Türkiye (Turkey) 39. Georgia 40. Ireland

44. Monaco

46. Romania

48. San Marino

47. Russia

45. Montenegro

51. United Kingdom

52. Uzbekistan

SOUTH-EAST ASIA

- 53. Indonesia
- 54. Sri Lanka 55. Thailand

WESTERN PACIFIC

- 56. Malaysia
- 57. Philippines





Routine Immunizations

Varicella

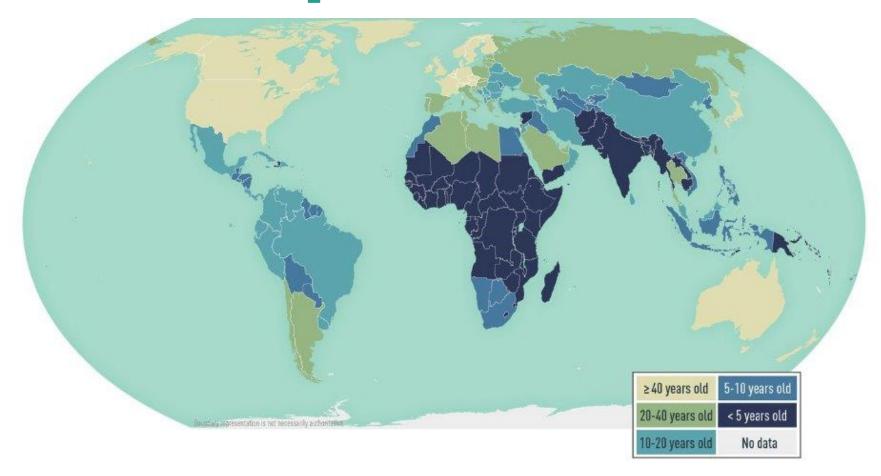
 For children with unknown varicella status, serotesting is recommended before immunization for children 5 years and older

Hepatitis A

- The majority of Hep A is imported to the US from Mexico and Central America
- In children, Hep A causes asymptomatic or mild infection, but virus may be shed for prolonged period
- Immunoglobulin recommended for a child under 1 year of age

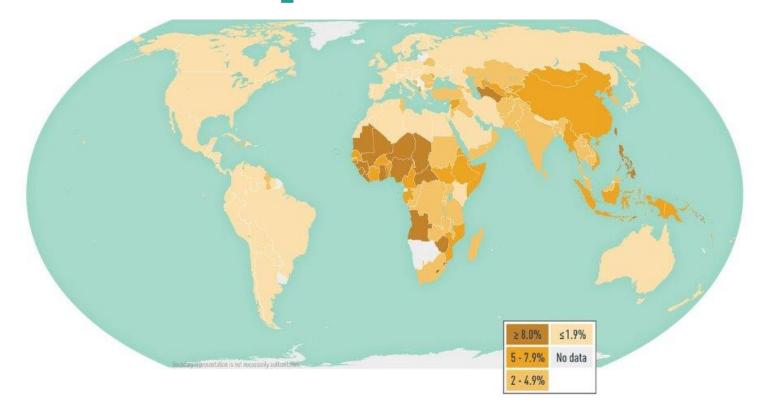


World Hepatitis A Prevalence



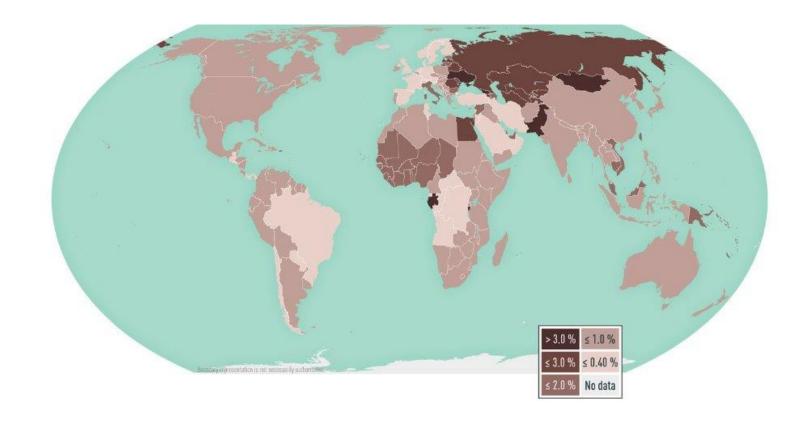


Worldwide Hepatitis B Prevalence





Worldwide Hepatitis C Prevalence





Routine Immunizations

- Meningococcal Vaccines: MenACWY, MenB and MenABCWY
 - Menveo ™ or MenQuadfi ™ or Penbraya ™
 - Part of the routine immunization schedule for 11 to 12 y.o. adolescets.
 - Meningococcal vaccinations required to Hadj in Saudi Arabia



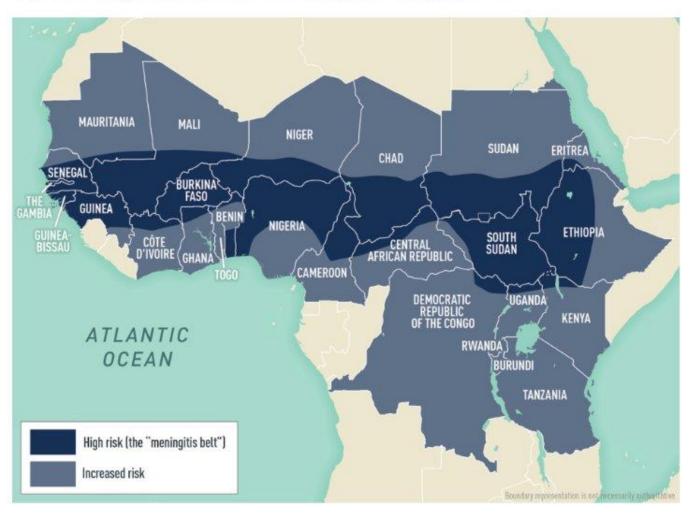
Meningitis Vaccination Risk-based

TARGETED GROUP BY AGE/OR RISK FACTOR	PRIMARY DOSE(S)1	BOOSTER DOSE(S)1	
	neningococcal disease is hyperendemic or epidemic, people olonged increased risk for exposure (e.g., microbiologists ro		
For age 2 through 6 months	Give 3 doses of Menveo, 8 weeks apart, and a 4th dose at age 12–18 months. If possible, vaccination should begin at age 2 months.	If primary vaccination is completed before the 7th birthday: give one booster dose 3 years after primary series, then every 5 years there	
For age 7 through 23 months who have not initiated a series of MenACWY	Give 2-dose series of Menveo. ³ Separate the 2 doses by at least 12 weeks. ⁴	ter, as long as risk remains. If primary vaccination is completed at age 7	
For age 2 years and older	Give 1 dose of any MenACWY vaccine.	years or older: give a booster dose every 5 years thereafter, as long as risk remains.	
People with persistent complement compo	onent deficiencies ⁵		
For age 2 through 6 months	Give 3 doses of Menveo, 8 weeks apart, and a 4th dose at age 12–18 months. If possible, vaccination should begin at age 2 months.	If primary vaccination is completed before the 7th birthday: give one booster dose 3 years after primary series, then every 5 years there	
For age 7 through 23 months who have not initiated a series of MenACWY	Give 2-dose series of Menveo. Separate the 2 doses by at least 12 weeks. ⁴	ter, as long as risk remains. If primary vaccination is completed at age 7	
For ages 2 years and older	Give 2 doses of MenACWY (any vaccine), 8 weeks apart.6	years or older: give a booster dose every 5 years thereafter, as long as risk remains.	
People with HIV infection or functional or	anatomic asplenia (including sickle cell disease)		
For age 2 through 6 months	Give 3 doses of Menveo, 8 weeks apart, and a 4th dose at age 12–18 months. If possible vaccination should begin at age 2 months.	If primary vaccination is completed before the 7th birthday: give one booster dose 3 years after primary series, then every 5 years	
For age 7 through 23 months who have not initiated a series of MenACWY-CRM	Give 2 doses of Menveo. ³ Separate the 2 doses by at least 12 weeks.	thereafter. If primary vaccination is completed at age 7	
For ages 2 years and older	Give 2 doses of MenACWY (any vaccine), 8 weeks apart.6	years or older: give a booster dose every 5 years thereafter.	



Sub-Sahara Meningococcemia Belt

Map 5-01 The meningitis belt & other areas at risk for meningococcal meningitis epidemics





Vaccines Specific for Travel

Typhoid

Yellow Fever Japanese Encephaliti s

Rabies

BCG (Not in USA)

Cholera (Not in USA)



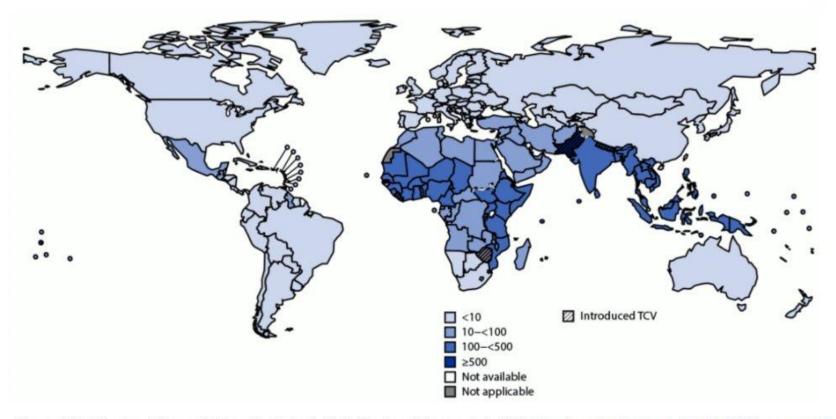
Typhoid

- Enteric fever caused by salmonella (S. typhi & S. paratyphi)
- O Children are at risk of getting disease and becoming chronic carriers
- O Areas of risk:
 - Eastern and Southern Asia, Middle East, Africa and Latin America
 - As of 2019, there is an estimated of 9 million cases of typhoid fever annually, resulting in ~110,000 deaths per year
- Types of Vaccine (70% to 80%)
 - Vivotiff or Ty21a (live attenuated)
 - Oral
 - Typhim (Capsular polysaccharide)



Typhoid Risk Worldwide

FIGURE. Estimated national typhoid fever incidence* and typhoid conjugate vaccine introduction[†] status — worldwide, 2019 and 2022



Source: Global Burden of Disease Collaborative Network, Global Burden of Disease study, 2019. https://www.healthdata.org/gbd/gbd-2019-resources



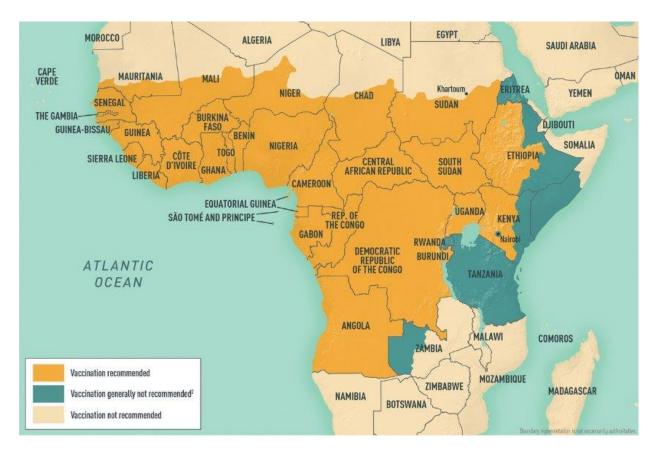
Cases per 100,000 cases; TCV = Typhoid Conjugate Vaccine

Yellow Fever

- Caused by an arbovirus of the Flavus virus group
- Human disease occurs through bites from infected mosquitoes, Aedes aegypti.
- Some countries require this for entry



Yellow Fever Endemic Zones







CDC Yellow book, 2023, https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/yellow-fever

Yellow Fever Vaccination Proof

Table 5-25 Countries that require proof of yellow fever (YF) vaccination from all arriving travelers¹

AFRICA

Angola Côte d'Ivoire Niger

Benin Democratic Republic of the Congo Sierra Leone

Burkina Faso Gabon South Sudan Burundi Ghana Togo

Cameroon Guinea Uganda

Central African Republic Guinea-Bissau

Congo, Republic of the Mali

THE AMERICAS

French Guiana



Yellow Fever Vaccine

Table 4-26. Contraindications and precautions to yellow fever vaccine administration

CONTRAINDICATIONS PRECAUTIONS · Allergy to vaccine component · Age 6-8 months Age ≥60 years · Age <6 months . Symptomatic HIV infection or CD4 T- Asymptomatic HIV infection and CD4 Tlymphocytes <200/mm3 (or <15% of total lymphocytes 200-499/mm3 (or 15%-24% of in children aged <6 years)2 total in children aged <6 years)2 · Thymus disorder associated with abnormal Pregnancy immune-cell function · Breastfeeding · Primary immunodeficiencies · Malignant neoplasms Transplantation · Immunosuppressive and immunomodulatory therapies

www.cdc.ggw/mmwr/preview/mmwrhtml/00018871,htm and 2) Panel on Antiretroviral Therapy and Medical Management of HIV-Infected Children. Guidelines for the use of antiretroviral agents in pediatric HIV infection. 2010. Available from: http://aidsinfo.nih.gov/ContentFiles/PediatricGuidelines.pdf (PDF). p. 20-2.



If vaccination is considered, desensitization can be performed under direct supervision of a physician experienced in the management of anaphylaxis.

Symptoms of HIV are classified in 1) Adults and Adolescents, Table 1. CDC. 1993 Revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and adults. MMWR Recomm Rep 1992;41(RR-17). Available from:

Japanese Encephalitis Virus Vaccine

- An arboviral infection is transmitted by the Culex mosquito
- o Risk
 - Endemic in rural areas of Asia
 - Temperate regions April to November
 - All year round in tropical and subtropical areas
 - Transmission to travelers is low
 - Vaccine recommended for traveler's who will be in rural areas for a month or longer

Vaccine

- Ixiaro®- licensed for persons 2 months and older
- 2 months to <3 years old 0.25 mL
- Associated with hypersensitivity reaction should be observe for at least 30 minutes and complete vaccine 10 days prior to travel



JE Endemic Areas





Rabies

- Pre-exposure vaccination
 - Not recommended for your average traveler related to manufacturer shortage
- o Risk
 - Endemic in Africa, Asia (India) and Latin America
 - Risk to traveler is low
 - Children have been recommended to receive pre-exposure b/c they interact with animals and do not report bites



Rabies Pre-exposure immunization

Table 5-18 Preexposure immunization for rabies1

Footnotes

VACCINE	DOSE (mL)	NUMBER OF DOSES	SCHEDULE (DAYS) ²	ROUTE
HDCV, Imovax (Sanofi)	1.0	2	0 and 7	IM
PCEC, RabAvert (Bavarian Nordic)	1.0	2	0 and 7	IM

show / hide



Rabies Postexposure Immunization

Table 5-19 Postexposure immunization for rabies1

IMMUNIZATION STATUS	PRODUCT	DOSE	NUMBER OF DOSES	SCHEDULE (DAYS) ²	ROUTE
Not previously vaccinated ³	RIG	20 IU/kg body weight	1	0	Infiltrate bite site (if possible) Give remainder IM
	Vaccine (HDCV or PCEC)	1.0 mL	4 ⁴	0, 3, 7, 14 (and 28 if immunocompro mised) ⁵	IM
Previously vaccinated ^{6,7}	Vaccine (HDCV or PCEC)	1.0 mL	2	0, 3	IM



Rabies Map



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dofted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: WHO Control of Neglected Tropical Diseases (NTD) Map Production: Health Statistics and Information Systems (HSI) World Health Organization



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TB Meningitis - BCG Vaccine

- Not available in the USA
- It is part of routine vaccination schedule in many countries
- BCG prevents CNS TB infection
- You need to instruct parent that they may need this vaccine while living in the country
- Recommend young infants and children who will be traveling/living in TB endemic countries



Malaria

- Leading cause of death among children under 5 years of age
- O Causing more than ½ billion infections a year and 1 million deaths a year
- Infection is caused by Plasmodium species through the bite of an infected female Anopheles mosquito
- O At risk:
 - Young children
 - Pregnant women
- Vaccine
 - Not available



Risk for Malaria in the Americas





Risk for Malaria in Africa and Asia

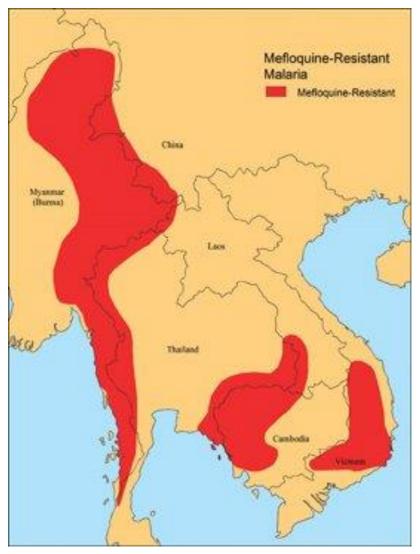






https://wwwnc.cdc.gov/travel/yello wbook/2024/infectionsdiseases/malaria

Mefloquine-Resistant Malaria





https://www.cdc.gov/malaria/travelers/country_table/g.html

Malaria Medications

- May not be covered by insurance
- Not all malaria medications are appropriate for all regions
- Medications have side-effects
- Need to know where patients are traveling and prescribe based the CDC recommendations



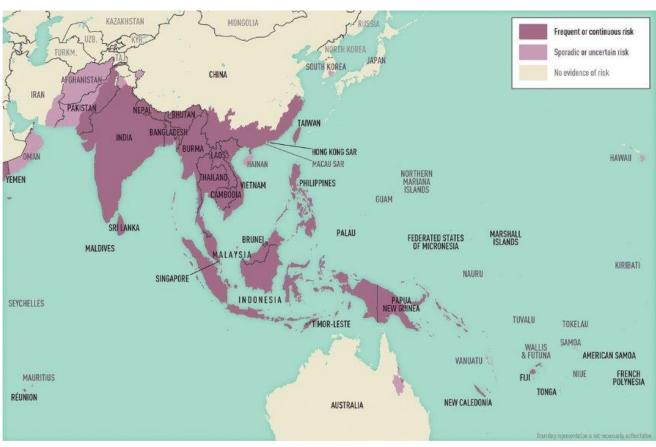
Dengue Fever in South America





Dengue Fever in Africa and Asia







Protective Measures

- **O DEET**
 - Use at least 30% concentration
 - Can be use on infants older than 2 months of age
- PERMETHRIN
 - Insecticide that may be used to treat bed nets and clothing
- Clothing
 - Light colored clothing with long sleeves and pants



Precautions for Use of Diethyltoluamide (DEET)

- Use repellents containing > 30%
 DEET only
- Apply sparingly to exposed skin
- Apply only to intact skin
- Apply to face by wiping, avoid eyes and mouth
- Do not spray directly on face
- Wash off with soap and water when coming indoors

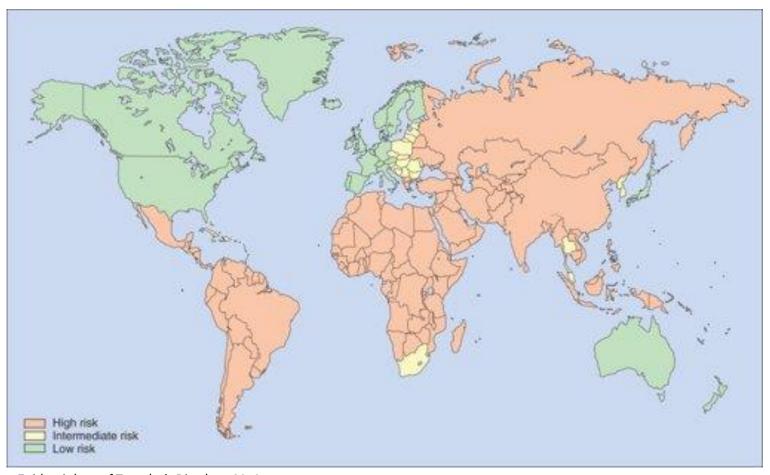
- Do not inhale or ingest repellent
- Do not apply on hands or other areas that are likely to come in contact with the eyes or mouth
- Do not allow children under 10 years to apply DEET themselves
- Apply to your own hands then apply to the child
- Do not use on children less than 2 months of age

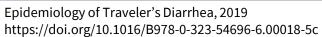
Traveler's Diarrhea

- Risks
 - Most common illness among travelers
 - 9 to 40% of pediatric travelers
- Etiology
 - o E. Coli
 - Salmonella
 - Campylobacter
 - Shigella



Traveler's Diarrhea







Traveler's Diarrhea

- Oral Rehydration
- Antibiotics
 - Azithromycin
 - If prescribing as a liquid, make sure to have the med dispensed as a powder b/c once mixed only good for 2 weeks
- O Zinc
 - Found to decrease duration of diarrhea
 - 20 mg once a day for 10 to 14 days (< 6 months 10 mg daily)
- If traveler's diarrhea does not respond to a course of antimicrobial therapy, medical attention should be sought
- O Pepto Bismol: Recommended for 18 y.o. and older R/T ASA



Prevention of Traveler's Diarrhea

DO

- Eat only thoroughly cooked food served hot
- Peel fruit
- Drink only bottled, carbonated, boiled, chemically treated, or filtered water
- Prepare all beverages and ice cubes with boiled or bottled water
- Wash hands before eating or preparing foods
- Continue breastfeeding throughout travel period

DO NOT

- Eat raw vegetables or unpeeled fruit
- Eat raw seafood or shellfish or undercooked meat
- Eat food from street vendors
- Drink tap water
- Consume milk or dairy products unless labeled as pasteurized or irradiated



If you cannot

BOIL IT

PEEL IT

OR COOK IT

DO NOT EAT IT



Travel Notifications

- Notifications from CDC that informs travelers and clinicians about current health issues in different destinations that could impact a traveler's health
 - Disease outbreaks
 - Special events or gatherings
 - Natural disasters

o https://wwwnc.cdc.gov/travel/notices

Warning Level 3

Alert Level 2

Watch Level 1



Medications

- Personal prescription medications in their original containers Antimalarial medications, if applicable
- Over-the-counter antidiarrheal medication (e.g., bismuth subsalicylate, loperamide)
- Antibiotic for self-treatment of moderate to severe diarrhea
- Antihistamine
- Decongestant, alone or in combination with antihistamine
- Anti-motion sickness medication
- Acetaminophen, aspirin, ibuprofen, or other medication for pain or fever

- Mild laxative
- Cough suppressant/expectorant
- Throat lozenges
- Antacid
- Antifungal and antibacterial ointments or creams
- 1% hydrocortisone cream
- Epinephrine auto-injector (e.g., EpiPen), especially if history of severe allergic reaction. Also available in smallerdose package for children



Traveling with Medications

- Each country has their own laws about which medications travelers can bring
- Check with the destination country's embassy to check which medications are authorized
 - Travelers may need to bring a medical certificate from their provider
- Copies of all prescriptions should be carried, including the generic names for medications, and a note from the prescribing physician on letterhead stationery for controlled substances and injectable medications
- https://wwwnc.cdc.gov/travel/page/travel-abroad-with-medicine



Other Items

- Insect repellent containing DEET (up to 50%)
- Sunscreen (preferably SPF 15 or greater)
- Aloe gel for sunburns
- Digital thermometer
- Oral rehydration solution packets
- Basic first-aid items (adhesive bandages, gauze, ace wrap, antiseptic, tweezers, scissors, cottontipped applicators)
- Antibacterial hand wipes or alcohol-based hand sanitizer containing at least 60% alcohol (1)
- Moleskin for blisters
- Lubricating eye drops
- First aid quick reference card

- Other items that may be useful in certain circumstances
- Mild sedative (e.g., zolpidem) or other sleep aid
- Anti-anxiety medication
- High-altitude preventive medication
- Water purification tablets
- Commercial suture/syringe kits (to be used by local health-care provider. These items will also require a letter from the prescribing physician on letterhead stationery.)
- Latex condoms
- Address and phone numbers of area hospitals or clinics



Traveler's Insurance

- Trip cancelation insurance
- Travel health insurance
- Medical evacuation insurance
- o https://wwwnc.cdc.gov/travel/page/insurance



Smart Traveler Enrollment Program (STEP)

- Smart Traveler Enrollment Program (STEP) free service provided by the U.S.
 Government to U.S. citizens who are traveling to, or living in, a foreign country
- STEP allows you to enter information about your upcoming trip abroad so that the Department of State can better assist you in an emergency
- STEP also allows Americans residing abroad to get routine information from the nearest U.S. embassy or consulate



Smart Traveler Enrollment Program (STEP)

- Security/Safety
 - Smart Traveler http://travel.state.gov/
 - O To Enroll: https://step.state.gov/step/



Other Helpful Resources

- CDC: https://wwwnc.cdc.gov/travel/
- Yellow book: https://wwwnc.cdc.gov/travel/page/yellowbook-home
- Travax.com



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Thank you!

Questions? Comments?



Check Out Our Social Media Toolkits!

ICAAP has several immunization social media toolkits that allow you to download images, copy and paste pre-written captions, and share on your social media pages.

Find the toolkits on our <u>respiratory virus</u>, <u>VFC</u>, and <u>school resources</u> webpages.

We recommend you check out the <u>Vaccine Safety Toolkit</u> now!

Share quick and helpful information about the benefits of the flu vaccine, co-administration, signs and symptoms of RSV, ways to limit the spread of germs, tips for taking care of sick children, Nirsevimab, and more! Simply post the graphic or personalize it by writing your own caption.





Upcoming ICAAP Immunization Events

- IDPH In-Person VFC Trainings *limited seating!*
 - June September
- Immunizations Webinar: Preparing for Back to School Season and Exemptions in IL
 - O Wednesday, June 18 from 12-1pm



https://illinoisaap.org/upcoming-events/



