Immunization Webinar Series

Travel Vaccinations

Jennifer Burns, APN
CME Accreditation Statement

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Nurses and Nurse Practitioners can submit Certificates of Attendance to their accrediting board to claim credit for participation in the live webinars.
# CME Disclosure Grid

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<th>Was there a relevant Financial Disclosure</th>
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<td>Jennifer Burns</td>
<td>Faculty/Presenter; Planning Committee Member; Content Reviewer</td>
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<td>Alexandra Arca</td>
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</table>
HELLO!

Jen Burns, APN
• Director, Pediatric Family Travel/Vaccination
• Section of Pediatric Infectious Diseases
• University of Chicago Comer Children’s Hospital
• Chicago, Illinois
Objectives

Understand worldwide risks of disease in the pediatric traveler.

Describe general principles of travel clinic.

Review routine immunizations needed for travel.

Identify other travel precautions for traveler and provider.
**Pediatric Travel**

- By May 2023, international travel had already seen a 24% increase compared to May 2022.
- Tourism in 2023 reached 90% of pre pandemic levels.
- 2024 expected to see a 14% increase in international travel from 2023, around 4 billion passengers.
- An estimated 4% of these people are children.
- Approximately 8% of these travelers need to seek medical attention while traveling.
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.
  o Potential exposure to insects and animals.
  o Immunization Records.
  o 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.
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<th>Vaccine and other Immunizing agents</th>
<th>Birth</th>
<th>1 mo</th>
<th>2 mo</th>
<th>4 mo</th>
<th>6 mo</th>
<th>9 mo</th>
<th>12 mo</th>
<th>15 mo</th>
<th>16 mo</th>
<th>19–23 mo</th>
<th>2–3 yrs</th>
<th>4–6 yrs</th>
<th>7–10 yrs</th>
<th>11–12 yrs</th>
<th>13–15 yrs</th>
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<th>17–18 yrs</th>
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<td>Respiratory syncytial virus (RSV-maB)</td>
<td>1 dose depending on maternal RSV vaccination status, See Notes</td>
<td>1 dose</td>
<td>1 dose (8 through 19 months), See Notes</td>
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<td>Rotavirus (RV)</td>
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<td>Diphtheria, tetanus, acellular pertussis (DTaP&lt;7 yrs)</td>
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<td>2nd dose</td>
<td>See Notes</td>
<td>3rd dose</td>
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<td>Pneumococcal conjugate (PCV13, PCV20)</td>
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<td>3rd dose</td>
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<td>Annual vaccination 1 dose only</td>
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<td>Influenza (ILV4)</td>
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<td>Influenza (ILAV4)</td>
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<td>Hepatitis A (HepA)</td>
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<td>Meningooccal (MenA+CYW-CRM+2 mos, MenACYW TT&lt;2years)</td>
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<td>Respiratory syncytial virus vaccine (RSV [Aryxvix])</td>
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<td>Dengue (DEN4CYD; 9–16 yrs)</td>
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<td>Mumps</td>
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| Range of recommended ages for all children | Range of recommended ages for catch-up vaccination | Range of recommended ages for certain high-risk groups | Recommended vaccination can begin in this age group | Recommended vaccination based on shared clinical decision-making | No recommendation/ not applicable |
Which vaccine preventable disease will the traveler most encounter?

- Hepatitis A
- Meningococcal Disease
- Varicella
- Influenza
Influenza

CDC estimates* that, from October 1, 2023 through April 6, 2024, there have been:

- 33 – 60 million flu illnesses
- 15 – 28 million flu medical visits
- 360,000 – 750,000 flu hospitalizations
- 23,000 – 66,000 flu deaths

https://www.cdc.gov/flu/about/burden/preliminary-in-season-estimates.htm
Routine Immunizations

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

• MMR
  o More than ½ million children die of measles annually.
  o Children less than 1 year of age have the highest risk of severe disease.
  o Children 6 to 12 months of age traveling to endemic countries should receive a dose of MMR.
  o Children under 12mo of age can get an early first dose for travel and children over 12mo can get their first dose immediately if not already vaccinated.
Measles and Travel

- Measles remains a common disease in many parts of the world, including Europe, the Middle East, Asia, and Africa.
- Children under 12mo traveling internationally can get an early dose 6mo-11mo.
  - Another dose 12-15mo.
  - Final dose 4-6 years.
- Children over 12mo should get first dose immediately.
  - 2nd dose 28 days after the first.
- Teens and adults with no evidence of immunity should get the first dose immediately.
  - 2nd dose 28 days after the first.
- * Acceptable evidence of immunity against measles includes at least one of the following:
  - Written documentation of adequate vaccination.
  - Laboratory evidence of immunity.
  - Laboratory confirmation of measles OR
  - Birth in the United States before 1957.
Mpox

- Travelers can **protect themselves** against infection by taking the following steps.
- If you are **eligible to get vaccinated** for mpox, get two doses of vaccine before you travel. Use the **Mpox Vaccine Locator** to find out where you can get vaccinated.
- Avoid close, skin-to-skin contact with people who have a rash that looks like mpox.
  - Do not touch the rash or scabs of a person with mpox.
  - Do not kiss, hug, cuddle or have sex with someone with mpox.
- Avoid contact with objects and materials that a person with mpox has used.
  - Do not share eating utensils or cups with a person with mpox.
  - Do not handle or touch the bedding, towels, clothing, fetish gear, or sex toys of a person with mpox.
- Wash your hands often with soap and water or use an alcohol-based hand sanitizer, especially before eating or touching your face and after you use the bathroom.
World Hepatitis A Prevalence


Prevalence of hepatitis A

Routine Immunizations

• Varicella
  o For children with unknown varicella status, zero testing is recommended before immunization for children 5 years and older.

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

• Hepatitis B
  o Children who are traveling to endemic areas should complete Hep B prior to travel.
  o Can use an accelerated schedule of 0, 1, 2 & 12 months.

• Influenza
  o Recommended for all children 6 months to 18 years of age.
  o Southern Hemisphere flu season April to September and year-round in the tropics.
Routine Immunizations

• Meningococcal
  o Part of the routine immunization schedule for 11 to 12 y.o. adolescents.
  o Hib-Men CY is available, but only covers 2 serotypes.
  o MCV4 (Menactra™) now licensed for children 9 months to 10 years of age.
  o Meningococcal vaccinations required to Hadj in Saudi Arabia.
Sub Sahara Meningococccemia Belt

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

Vaccines Specific for Travel

- Typhoid
- Yellow Fever
- Japanese Encephalitis
- Rabies
- BCG (Not in USA)
- Cholera
**Typhoid**

- Enteric fever caused by salmonella (*S. typhi* & *S. paratyphi*).
- Children are at risk of getting disease and becoming chronic carriers.
- 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


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

https://www.cdc.gov/mmwr/volumes/72/wr/mm7207a2.htm
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

# Yellow Fever Vaccination Proof

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

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<th>AFRICA</th>
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<td>Cameroon</td>
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<td>Central African Republic</td>
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<td>Congo, Republic of the</td>
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<td>Guinea</td>
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<td>Guinea-Bissau</td>
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<td>Sierra Leone</td>
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<th>THE AMERICAS</th>
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<td>French Guiana</td>
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# Yellow Fever Vaccine

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

<table>
<thead>
<tr>
<th>CONTRAINDICATIONS</th>
<th>PRECAUTIONS</th>
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</thead>
<tbody>
<tr>
<td>• Allergy to vaccine component ¹</td>
<td>• Age 6–8 months</td>
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<td>• Age &lt;6 months</td>
<td>• Age ≥60 years</td>
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<tr>
<td>• Symptomatic HIV infection or CD4 T-lymphocytes &lt;200/mm³ (or &lt;15% of total in children aged &lt;6 years) ²</td>
<td>• Asymptomatic HIV infection and CD4 T-lymphocytes 200–499/mm³ (or 15%–24% of total in children aged &lt;6 years) ²</td>
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<tr>
<td>• Thymus disorder associated with abnormal immune-cell function</td>
<td>• Pregnancy</td>
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<td>• Primary immunodeficiencies</td>
<td>• Breastfeeding</td>
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<td>• Malignant neoplasms</td>
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<td>• Transplantation</td>
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<td>• Immunosuppressive and immunomodulatory therapies</td>
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¹ If vaccination is considered, desensitization can be performed under direct supervision of a physician experienced in the management of anaphylaxis.

Japanese Encephalitis Virus Vaccine

• An arboviral infection is transmitted by the Culex mosquito.

• Risk
  o Endemic in rural areas of Asia.
  o Temperate regions April to November.
  o All year round in tropical and subtropical areas.
  o Transmission to travelers is low.
  o Vaccine recommended for traveler’s who will be in rural areas for a month or longer.

• Vaccine
  o Ixiaro®- licensed for persons 2 months and older.
  o Associated with hypersensitivity reaction should be observe for at least 30 minutes and complete vaccine 10 days prior to travel.
JE Endemic Areas

Distribution of Japanese encephalitis risk
Rabies

• Pre-exposure vaccination
  o Not recommended for your average traveler related to manufacturer shortage.

• Risk
  o Endemic in Africa, Asia (India) and Latin America.
  o Risk to traveler is low.
  o Children have been recommended to receive pre-exposure b/c they interact with animals and do not report bites.

• Vaccine
  o 3 shots: 0, 7 and 21 or 28 days.
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. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization
Map Production: Health Statistics and Information Systems (HSI) World Health Organization
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More information can be found at: https://www.fitfortravel.nhs.uk/advice/disease-prevention-advice/rabies/rabies-risk-areas#WorldMap
Dengue Fever Vaccine

- Dengvaxia.
- Made by Sanofi will be discontinuing production.
- Not a travel vaccine, but a routine vaccine.
  - Approved for persons 9 y.o. to 16 y.o. older who live in dengue endemic areas.
  - Individuals needed to have antibody test and had past disease to receive this vaccine.
Cholera Vaccine

- VAXCHORA is a vaccine indicated for use against disease caused by *Vibrio cholerae* serogroup O1 in persons 2 through 64 years of age traveling to cholera-affected areas.
  - Administered orally and it is effective 3 to 6 months after.
  - Give at least 10 days prior to travel to Cholera area.

- The Advisory Committee on Immunization Practices (ACIP) recommends VAXCHORA for people 2 through 64 years of age who are traveling to an area with active cholera transmission.

https://www.cdc.gov/cholera/vaccines.html
Chikungunya Vaccine

- Ixchiq
  - 1 dose 0.5 ml - no boosters recommended at this time.
  - Would recommend for the long-term traveler, Peace corps and if relocated to endemic Chikungunya area.
    - Approved for 18 y.o. and older.
    - Live attenuated vaccine.
    - Precaution in pregnancy.
- Side-effects: Prolong side-effect associated with chikungunya disease noted.
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.
• 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.
• At risk:
  o Young children.
  o Pregnant women.
• Vaccine:
  o Not available.
Risk for Malaria in the Americas

Risk for Malaria in Africa and Asia

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 on the CDC recommendations.

Dengue Fever in South America

Dengue risk in the Americas & the Caribbean
Dengue Fever in Africa and Asia
Protective Measures

• 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
  o Most common illness among travelers.
  o 9 to 40% of pediatric travelers.

• Etiology
  o E. Coli.
  o Salmonella.
  o Campylobacter.
  o Shigella.
Traveler’s Diarrhea

• Oral Rehydration
• Antibiotics
  o 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.
• Zinc
  o Found to decrease duration.
  o Dose
• If traveler’s diarrhea does not respond to a course of antimicrobial therapy, medical attention should be sought.
## Prevention of Traveler’s Diarrhea

<table>
<thead>
<tr>
<th>DO</th>
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| • 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. | • 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.

https://wwwnc.cdc.gov/travel/notices
Highly Allergic Travelers

- Allergies are the 6th leading cause of chronic illness in the US.
- Major allergens include dust, insect venom, medications, mold, pets, and pollen.
  - Main risk for anaphylaxis in children and adolescents: food and stinging insect venom.
- International travel exposes travelers to numerous allergen triggers.
- Assist highly allergic travelers in creating a written emergency action plan.
- Even during short office visits, confirm allergies and provide guidance to help travelers respond to severe reactions.

LGBTQ+ Travelers

- Assess each patient’s travel related risk behaviors.
  - Provide nonjudgmental and detailed counseling specific to LGBTQ+ travelers’ risks.
- No single standard message for counseling the LGBTQ+ traveler.
- US Preventative Services Taskforce recommends behavioral counseling for all sexually active adolescents.
  - Avoid tattoos and piercings while abroad.
- LGBTQ+ persons should be aware of sociocultural differences that can affect their situational safety.
- Discuss diseases specific to sexual practices and use of gloves, condoms and dental dams.
- LGBTQ+ adults are 2x as likely to experience substance use disorder and transgender people 4x as likely.
  - Travel medicine providers should screen for depression and anxiety in those planning frequent or long trips.
**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 smaller-dose 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.

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, cotton-tipped 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 cancellation insurance
• Travel health insurance
• Medical evacuation insurance

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
  o Smart Traveler – http://travel.state.gov/
  o To Enroll: https://step.state.gov/step/
Other Helpful Resources

- CDC: https://wwwnc.cdc.gov/travel/
- Travax.com
References

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  o www.travax.com
  o www.istm.org
  o www.aap.org
  o www.who.int/ith/.org
  o www.polioeradication.org
  o www.chinookmed.com
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• Hill, D et al. The Practice of Travel Medicine: Guidelines by the Infectious Disease Society of America. CID 2006: 43 (15 December); 1499
• Center for Disease Control and Prevention. Yellow Book, Health Information for International Travel. 2024
Thanks!

Questions?
Upcoming Events

- Adolescent Health Mini Conference
  - Friday May 17 from 8:00am – 12:00pm

- Lead Poisoning Prevention Webinar
  - Tuesday June 4 from 12:00 PM – 1:00 PM

- Essential Immunizations: Ensuring a Healthy Return to School for Migrant and Refugee Families
  - Tuesday, June 18 from 12:00 PM – 1:00 PM

- ICAAP and IDPH Vaccine Summits for VFC providers outside of Chicago: May – October 2024

Or register at illinoisaap.org/events