**Travel Immunization and Travel Health Guide**

<table>
<thead>
<tr>
<th>IMMUNIZATIONS</th>
<th>Tourists</th>
<th>Long-term travelers &amp; expatriates</th>
<th>VFRs(^a)</th>
<th>Humanitarian travelers</th>
<th>Rural travelers</th>
<th>Traveler's to high altitude (&gt;8000 ft=2500 m)</th>
<th>Travelers with chronic illnesses(^{1,4})</th>
<th>Pregnant travelers(^6)</th>
<th>Pediatric travelers</th>
<th>Last minute travelers</th>
<th>Immuno-compromised travelers(^{b,4})</th>
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<tbody>
<tr>
<td>Age-appropriate routine vaccines(^1,2)</td>
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<td>Hepatitis A(^3)</td>
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<td>Hepatitis B(^4)</td>
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<td>Typhoid(^5)</td>
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<td>1 injectable dose or 4 oral doses</td>
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<td>Yellow fever(^6)</td>
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<td>Rabies (pre-exposure)(^7)</td>
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<td>Japanese encephalitis(^8)</td>
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<td>Meningococcal(^9)</td>
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<td>1 or more doses depending on indication</td>
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<td>Cholera(^10)</td>
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<td>TB testing(^11)</td>
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<td>Malaria chemoprophylaxis(^12)</td>
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<td>Traveler’s diarrhea self-treatment(^13)</td>
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<td>Acetazolamide(^14)</td>
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<td><strong>Consider if certain geographical or behavioral risk factors are present and potential benefits outweigh risks</strong></td>
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\(^a\) Travelers who are visiting friends and/or relatives (VFRs) (generally defined as those returning to a home country).

\(^b\) Recommendations vary based on degree and type of immune system compromise. Severely immunocompromised patients include HIV+ with CD4 <200/mm\(^3\), asplenia, transplant recipients.
1. **Routine vaccines**: Ensure that all patients are up-to-date on routine adult or age-appropriate pediatric vaccines. May include influenza (yearly), tetanus/diphtheria/pertussis, varicella, HPV, zoster, MMR, pneumococcal, polio, hepatitis A, hepatitis B, meningococcal, & Haemophilus influenza type B. Routine vaccines with travel-specific indications or considerations are discussed below. Use of CDC catch-up immunization schedule may be necessary for pediatric patients who are un/undervaccinated.

2. **Tetanus-containing vaccines**: consider for all patients who do not have documentation of at least one dose within the last 10 years.
   - Indicated for adults every 10 years following final pediatric dose at 11-12 years. Adults should receive a single dose of Tdap then Td every 10 years.

3. **Hepatitis A vaccination**: for all susceptible persons traveling to or working in countries that have high or intermediate rates of hepatitis A before traveling.
   - Children 6–11 months should be protected when traveling outside the United States to an area of risk.
     - This vaccine should be in addition to the routine recommended 2-dose schedule.
   - Persons ages ≥ 1 year can receive the age-appropriate dose of hepatitis A vaccine.
   - The initial dose of vaccine along with IM immune globulin at a separate injection site is recommended for the following travelers who are planning to depart to an area of risk in < 2 weeks: Adults ages > 40 years, immunocompromised people, people with chronic liver disease, people with other chronic medical conditions.
   - Persons who are unable to receive the hepatitis A vaccine, including those who are allergic to the vaccine & children < 6 months, should receive a single dose of immune globulin, which provides up to 2 months of protection.

4. **Hepatitis B vaccination**: for all unvaccinated people traveling to areas with intermediate to high prevalence of chronic hepatitis B.
   - Vaccination to prevent hepatitis B may be considered for all international travelers, regardless of destination, depending on the traveler’s behavioral risk or chronic disease diagnosis.
   - Hepatitis B vaccination should begin ≥ 6 months before travel so full vaccine series can be completed before departure.
     - An accelerated dosing schedule may be considered for patients at significant risk if there is not sufficient time to complete the series prior to departure.
     - For lower risk patients, 1 or 2 doses may be administered prior to departure, but optimal protection is reliable only after complete series.
   - Adult patients receiving hemodialysis or with other immunocompromising conditions: consult package insert for differences in dosing.

5. **Typhoid vaccine**: for all patients traveling to increased risk areas of exposure to Salmonella Typhi. Formulation choice based on age, patient preference, & departure time.
   - Typhim-Vi: Inactivated polysaccharide vaccine approved for patients ages ≥ 2 years. Single IM dose should be administered ≥ 2 weeks prior to possible exposure for optimal protection, but may be considered for last-minute travelers. May be re-dosed every 2 years if at continued risk.
   - Vivotif: Live-attenuated oral vaccine approved for patients ages ≥ 6 years. All 4 oral capsules, taken 1 capsule every other day, should be taken for optimal protection & completed 1 week prior to possible exposure. May be re-dosed every 5 years if at continued risk.

6. **Yellow fever vaccine**: consider in those traveling to or through yellow fever endemic area or when vaccination is necessary for legal reasons.
   - Yellow fever vaccine should be avoided in children < 6 months, those allergic to gelatin, latex, or egg proteins, or in severely immunocompromised. HIV infection with CD4 count 200 to 499/mm3 is a precaution for yellow fever vaccine. (May offer waiver instead of vaccination when benefit does not outweigh risk.)
   - Consider risk-benefit, especially in patients ≥ 60 years old receiving first dose of yellow fever vaccine.
   - Women who are pregnant should only be vaccinated if travel to a yellow fever endemic area is unavoidable & benefits of vaccination outweigh risks.
   - WHO/CDC now consider a single dose to be protective for life. Country-specific regulations may still require dosing every 10 years.

7. **Pre-exposure rabies vaccine**: for those who plan to or may come in contact with potentially rabid animals (e.g., rabies field workers, veterinarians, wildlife biologists, etc.) &/or with prolonged travel or shorter stays in high-risk areas (e.g., epidemic outbreaks) or with extensive outdoor stays.
   - Preexposure vaccination simplifies postexposure regimen but does not eliminate need for vaccination after exposure.
   - Rabies vaccine should not be given if time does not permit completion of series prior to departure.

8. **Japanese Encephalitis (JE) vaccine**: consider for long-term and recurrent travelers who plan to spend ≥ 6 months in endemic areas (Asia & parts of Western Pacific) during JE virus transmission season or expatriates traveling to rural or agricultural areas during high-risk period of JE virus transmission.
   - May consider for short-term travelers (< 1 month) to endemic areas if during JE virus transmission season/outside an urban area & activities will increase risk of JE virus exposure; traveling to area with ongoing JE outbreak or specific destination unknown or during peak transmission season (usually May–Dec, but may differ based on country, activities, or duration of travel).
   - Not recommended for short-term travelers whose visits will be restricted to urban areas or times outside a well-defined JE virus transmission season.
9. Meningococcal: for patients who travel to/live in countries where meningococcal disease is hyperendemic or epidemic, including Sub-Saharan Africa meningitis belt during dry season (Dec-June). Vaccination within 3 years before travel required for entry into Saudi Arabia traveling to Mecca during Hajj & Umrah pilgrimages.
   • Advisories for travelers to other at-risk countries are issued when epidemics are recognized.
   • Administer single dose of MenACWY vaccine, revaccinate with MenACWY vaccine every 5 years if increased risk for infection remains.
   • MenB vaccine not recommended due to meningococcal disease in these countries generally not being caused by serogroup B.
   • Infants/children who received Hib-MenCY-TT are not protected against serogroups A & W: should receive quadrivalent vaccine before travel to high endemic areas.
   • Children who received last dose at < 7 years of age should receive an additional dose of MenACWY 3 years after last dose.
   • Dosing schedule & number of doses dependent on age & product administered: consult package insert.
10. Cholera: only for adult patients from the United States to areas of active cholera transmission. Is an oral live attenuated vaccine.
   • Active cholera transmission is defined as area within a country with endemic or epidemic cholera caused by V. cholerae O1 & has had activity within the last year. Does not include areas of rare imported or sporadic cases.
   • Approved for adults 18–64 years of age. Single dose, must be administered 10 days prior to potential exposure.
   • No data exist on safety and efficacy in pregnant or breastfeeding women & immunocompromised patients.
   • Not recommended for travelers not visiting areas of active cholera transmission. Pregnant women and clinician must consider risks associated with travel to active cholera area.
   • Should not be given to patients who have taken antibiotics (oral or parenteral) in preceding 14 days.
   • If chloroquine is indicated, chloroquine must be started > 10 days after cholera vaccination.
   • Buffer of cholera vaccine may interfere with enteric coated Ty21a (Vivotif), taking first Ty21a dose > 8 hours after cholera vaccine might ↓ potential interference.
   • May shed virus in stool for ≥ 7 days; potentially may transmit to close contacts.
   • Requires special mixing (with supplied buffer) & consumed by patient within 15 minutes after reconstitution. Follow medical waste disposal procedures.
   • Patients must avoid eating or drinking 60 minutes before and after ingestion of cholera vaccine.
11. TB testing: only for patients at increased risk of exposure during travel including healthcare workers, those who will have contact with prison or homeless populations, & expatriates to countries with high TB prevalence.
   • Two-step tuberculin skin testing (TST) should be given prior to travel (2nd test 1–3 weeks after 1st) with repeat testing q 6–12 months during possible exposure period & 86±12 weeks after return.
   • Alternative test: interferon-gamma release assays (IGRA) (is more specific in patients who have received BCG vaccines); may also be used if time before departure is too short for two-step TST.
   • TST may also be considered for VFR patients to document status prior to travel, which can aid in interpretation of future positive tests.
12. Malaria chemoprophylaxis: in combination with mosquito avoidance for all travelers to areas where malaria transmission occurs. Assess exact itinerary to determine risk for exposure & other specific factors in choice of chemoprophylaxis regimen.
   • Chloroquine & primaquine usefulness is limited to Central America; resistance exists in all other areas.
   • Avoid mefloquine in parts of South East Asia (e.g., Thailand) due to resistance.
   • Avoid mefloquine in patients with personal or family history of psychiatric diagnosis including depression & anxiety.
   • Avoid primaquine in patients who do not have documented normal G6PD levels due to risk of death due to hemolysis in deficient patients.
13. Stand-by emergency self-treatment of traveler’s diarrhea (TD): for all travelers to developing countries.
   • First-line antibiotics include ciprofloxacin, levofloxacin, & azithromycin.
     o Avoid fluoroquinolones with travel to SE Asia (resistant strains of Camphylobacter prevalent [e.g., Thailand])
     o Antibiotic agents (e.g., bismuth subsalicylate & loperimide) may be recommended as adjunct symptomatic therapy.
   • Prophylactic antibiotics not recommended except in high-risk travelers (e.g., immunocompromised). Alternate SBET antibiotics considered + prophylaxis in then.
14. Acetazolamide altitude illness prophylaxis: for all travelers at moderate to high risk for altitude illness including those planning rapid ascents of > 1,600 ft (sleeping altitude) above 9,800ft with/without extra acclimatization days every 3,300 ft or those with history of altitude illness.
   • Usual dosing: 125 mg (or 250 mg if >100 kg) twice daily beginning 1 day prior to ascent, during ascent, & for 2 days at destination altitude.

Reference: