Chapter 102

Travel Immunizations

INTRODUCTION

In this modern day and age with people traveling widely across the globe, one should be aware of the health-related aspects which come with the travel. One should be aware of different diseases which are endemic in the particular country of travel and there might be infections which are imported to the parent country.

The vaccines given to the traveler have to be personalized, keeping in mind the medical conditions and history of prior immunizations, countries visited, amount of time available prior to travel and the duration of travel.1,2

Before going into details of the vaccines one should know the available vaccines. Vaccines are broadly classified into:

1. Live vaccines: Bacillus of Calmette and Guerin (BCG), measles, mumps, rubella, oral polio, yellow fever, typhoid (oral), influenza (intranasal), rotavirus, varicella zoster.

The travel immunizations can be grouped into:

1. Mandatory immunizations
2. Recommended immunizations
3. Immunizations in special groups: Immunodeficient and pregnancy
4. Rabies prophylaxis
5. Malaria prophylaxis.

MANDATORY VACCINES

- Meningococcal vaccine: Meningococcal infections are serious bacterial infections and one of the leading causes of bacterial meningitis. Saudi Arabia requires proof of meningococcal immunization for pilgrims to Mecca during Hajj. Quadrivalent polysaccharide vaccine is preferred.
  - Two kinds of vaccines are available:
    1. Meningococcal conjugate vaccine is the preferred vaccine for children 9 months to 55 years of age
    2. Meningococcal polysaccharide vaccine: Used for adults older than 55 years of age.
- Yellow fever vaccine: Yellow fever is caused by a ribonucleic acid (RNA) virus and transmitted by Aedes aegypti mosquitoes found in tropical and subtropical areas in South America and Africa. It is the only vaccine mandated by World Health Organization’s (WHO’s) health regulations for entry into certain countries in Africa and South America [Check the Centers for Disease Control (CDC) website for a detailed list of countries which need mandatory yellow fever vaccination].
  - The validity of the vaccine is 10 years from the 10th day of primary vaccination and immediately after revaccination.
  - Yellow fever vaccine is a live vaccine and given as a single dose. Anyone who has allergy to any vaccine component like egg, chicken protein or gelatin, should not get vaccinated (If you cannot get the vaccine for any medical reason or if you belong to a category where the vaccination is contraindicated ask your doctor for waiver letter).
- Cholera vaccine: Usually not a mandated vaccine but some parts of Africa will ask for the certificate. This requirement is from the local authorities rather than as a national policy. In such cases, a single dose of oral vaccine is sufficient.
  - Two oral vaccines are available: Dukoral and Shanchol.

RECOMMENDED VACCINES

- Cholera vaccine: See above
- Hepatitis A vaccine: Hepatitis A causes serious liver disease and usually spreads by close contact with the person with infection and also through food and water contamination. It is one of the most common vaccine preventable diseases in travelers. The vaccine is given as two doses with second dose 6–18 months after the first dose. Protective antibodies are seen 2 weeks after the vaccination
- Japanese encephalitis (JE) vaccine: This is a serious infection and a leading cause of viral encephalitis ranging from fever to debilitating encephalitis. It is spread through mosquitoes. Vaccine is a two-dose series spaced 28 days apart with the second dose given 1 week before the travel. Japanese encephalitis vaccine is currently approved only for people 17 years of age and older. A booster dose may be given for the travelers who were vaccinated more than a year ago
- Influenza vaccine: In tropics, influenza occurs throughout the year and the transmission is increased in crowded conditions. People should be immunized with the most currently available vaccine. Single dose needs to take annually
- Typhoid vaccine: Typhoid is caused by Salmonella typhi. People get infected through contaminated food or water. Some people who get typhoid become carriers and can spread the disease to others. It is a vaccine preventable infection to be noted that it is not 100% effective.
  - Two types of typhoid vaccines:
    1. Inactivated (killed): Injectable, given 2 weeks before travel and a booster dose is needed every 2 years
PRECAUTIONS IN SPECIAL POPULATIONS

- Live vaccines should not be used in the following:
  - Patients receiving high-dose corticosteroids (e.g., prednisolone 2 mg/kg/day for more than a week), immunosuppressive treatment including general irradiation and chemotherapy
  - Those suffering from malignancies like lymphoma, leukemia, Hodgkin’s disease or other tumors of the reticuloendothelial system
  - Patients with impaired immunological mechanisms like hypogammaglobulinemia, human immunodeficiency virus infection/aquired immunodeficiency syndrome (HIV/AIDS)
- Live vaccines should be postponed until at least 3 months after stopping corticosteroids and 6 months after stopping chemotherapy
  - Children on lower daily doses of systemic corticosteroids (< 2 mg/kg/day) for less than 2 weeks
  - Those on lower doses or alternate day regimens for longer periods may be given live virus vaccines
  - Live virus vaccines should not be given within 3 months of an injection of immunoglobulin because the immune response may be inhibited.

MALARIA PROPHYLAXIS

There is no effective vaccine against malaria. No antimalarial drug is 100% protective. It must be combined with personal protective methods. Indian subcontinent comes under chloroquine resistant region.

The most commonly used medicines for prophylaxis are:
- **Atovaquone/proguanil**: Start 1–2 days prior; continue during the travel and 7 days after returning from the travel; well-tolerated; caution in renal impairment; cannot be used in pregnancy and in women who are breast-feeding
- **Mefloquine**: To be started 2 weeks prior to travel and to be continued until 4 weeks after returning from the trip; can be used in pregnancy; not recommended in patients suffering with seizures, psychiatric conditions and in patients with conduction cardiac abnormalities
- **Doxycycline**: Started 1–2 days before the travel, during and 4 weeks after return; cannot be used in pregnancy and in children less than 8 years of age; increased risk of vaginal yeast infections and photo sensitivity
- **Primaquine**: Effective against Plasmodium vivax infections only; taken 1–2 days before travel. This medicine cannot be used without testing for glucose-6-phosphate dehydrogenase (G6PD) deficiency; cannot be used by pregnant women and women who are breastfeeding unless G6PD test is also done in the infant.

RABBIES PROPHYLAXIS

If you are traveling to a country where there is increased rabies incidence, if you are spending outdoor time in rural areas and handling animals, then it’s good to discuss about pre-exposure prophylaxis with your doctor.

The pre-exposure rabies vaccination series is given as three doses on 0, 7, 21 or 28 days. The booster dose is given if the antibody titer is low.

Post-exposure prophylaxis for rabies depends on previous vaccination status.
- **No previous vaccination**: Wound cleansing, HRIG-20 IU/kg (human rabies immunoglobulin) and vaccine-IM (intramuscular) in deltoid on days 0, 3, 7, 14 and 28
- **Previous vaccination**: Wound cleansing, vaccine-IM in deltoid on days 0 and 3. In the patients who have received prior vaccination, there is no need to give the HRIG.

A decision on prophylaxis depends on the category of exposure:
- **Category I**: Touching or feeding animals, licks on intact skin—no prophylaxis
- **Category II**: Uncovered skin, minor scratches or abrasions without bleeding—local wound treatment and immediate vaccination
- **Category III**: Single or multiple bites, licks on broken skin, contamination of mucus membrane with the saliva from licks, exposure to bats—immediate vaccination, immunoglobulin administration and wound care.

ROUTINE IMMUNIZATIONS

This is also a good time if you have not taken booster doses of vaccines and get up-to-date with your immunizations.

- For infants who are traveling, the primary vaccination series with diphtheria, tetanus, acellular pertussis-inactivated, poliovirus, Haemophilus influenzae type B (DTaP-IPV-Hib) and pneumococcal conjugate can be started as young as 6 weeks of age
- **Measles**: Children 6–11 months of age who are traveling outside the United States should receive at least one dose of measles, mumps, rubella (MMR). MMR vaccines given before 12 months of age should not be counted as part of the routine series
- **Pertussis**: with the recent outbreaks of this infection, it is recommended to give a booster dose of acellular pertussis vaccine combined with tetanus and diphtheria booster dose.

In summary, travel vaccines are important and one should know the criteria, indications and contraindications to administer them. Also, keep in mind that certain vaccines and immunoglobulins cannot be combined and need to be spaced both in terms of site and time while admini-stering.

REFERENCES