

– Part 6 –

Immunization of Travellers

A detailed discussion of immunization and other preventive measures recommended for travellers to other countries is beyond the scope of this *Guide*. Current information on immunization requirements and recommendations should be obtained from travel health clinics or public health agencies.

Readers are referred to the Travel Medicine Program section on Health Canada's web site (<http://www.travelhealth.gc.ca>). This Program provides extensive information, including statements on travel medicine and tropical medicine from CATMAT (Committee to Advise on Tropical Medicine and Travel). CATMAT statements are updated every 4 years or when new information becomes available.

Readers are also referred to *Health Information for International Travel* (U.S. Centers for Disease Control and Prevention, www.cdc.gov/travel), and *International Travel and Health: Vaccination Requirements and Health Advice* (World Health Organization, www.who.int/ith).

There is no single schedule for the administration of immunizing agents to travellers. Each schedule must be personalized according to the individual traveller's immunization history, the countries to be visited, the type and duration of travel, and the amount of time available before departure.

With some notable exceptions, most immunizing agents can be given simultaneously at different sites. Concerns about individual vaccines and their potential compatibility with other vaccines or antimicrobials (including antimalarials) are dealt with in the specific vaccine chapters of the *Guide*.

A health care provider or travel medicine clinic should be consulted 2 to 3 months in advance of travel in order to allow sufficient time for optimal immunization schedules to be completed. A listing of travel clinics across Canada can be found in the Travel Medicine Program section of Health Canada's web site (<http://www.travelhealth.gc.ca>).

It must be emphasized that the most frequent health problems faced by international travellers are not preventable by immunizing agents. As well, immunization is not a substitute for careful selection and handling of food and water.

Travel is a good opportunity for the health care provider to review the immunization status of infants, children, adolescents and adults. Unimmunized or incompletely immunized travellers should be offered vaccination as recommended in the specific vaccine chapters in this *Guide*.

Immunizations related to travel can be divided into three general categories: those that are considered **routine** (part of the primary series of immunizations), those **required** by international law, and those **recommended** for maintenance of health while travelling. The immunization recommendations for travel will vary according

to the traveller's age, existing medical conditions, the nature of travel (whether the traveller is staying in urban hotels or visiting remote rural areas), the legal requirements for entry into countries being visited and the duration of travel.

Routine Immunizations

The following section specifically discusses the indication for “extra” or booster doses of routine immunizations or a change in the routine immunization schedule as it applies to travellers.

Tetanus and diphtheria

Adult travellers should be revaccinated against tetanus and diphtheria every 10 years for optimal protection. For individuals planning to travel to developing countries where safe tetanus vaccine administration may not be available if required, it may be prudent to offer an early tetanus booster prior to travel if more than 5 years have elapsed since the previous dose.

Poliomyelitis

The risk of polio for travellers has substantially decreased as we move towards global polio eradication. A single booster dose of IPV in adulthood is recommended for international travellers who plan to visit regions of the world where poliovirus continues to circulate in either epidemic or endemic fashion. The need for subsequent boosters of poliovirus vaccine has not been established.

Measles, mumps, rubella – adults

Measles, mumps and rubella are endemic in many countries. Protection against measles is especially important for people planning foreign travel, including adolescents and adults who have not had measles disease and have not been adequately immunized. Two doses of measles-containing vaccine (preferably MMR) are recommended for all unimmunized adult travellers who were born after 1970 and who are en route to a measles endemic area, unless there is serologic proof of immunity or physician documentation of prior measles. Similarly, protection against rubella is especially important for women of childbearing age who are not immune to the disease.

Measles – infants and children

Measles vaccine should be given at an earlier age than usual for children travelling to countries where measles is endemic. Measles-containing vaccine (preferably MMR) may be given as early as 6 months of age, but then the routine series of two doses must still be re-started after the child is 12 months old.

Hepatitis B – adults

Travel is a good opportunity to offer hepatitis B immunization to adults who have not been previously vaccinated. It should be recommended particularly to travellers

residing in areas with high levels of endemic hepatitis B or working in health care facilities, and those likely to have contact with blood or to have sexual contact with residents of such areas.

Hepatitis B – infants and children

The age at which infants, children and adolescents are offered hepatitis B vaccine varies from jurisdiction to jurisdiction in Canada. Since hepatitis B carrier rates are much higher in developing countries, every effort should be made to arrange full hepatitis B immunization for children of any age who will live in an area where hepatitis B is endemic.

Required Immunizations

The following may be a requirement of international law, or proof of immunization may be considered a visa requirement.

Yellow fever

Yellow fever is the only vaccine required as a condition of entry under the World Health Organization's International Health Regulations. A valid International Certificate of Vaccination, issued within the previous 10 years, is mandatory for entry into certain countries in Africa and South America. Other countries have requirements for proof of immunization from travellers who have passed through yellow fever endemic zones (see maps 1 and 2 on pages 234-235).

The period of validity of the International Vaccination Certificate for yellow fever is 10 years, beginning 10 days after primary vaccination and immediately after re-vaccination.

Only Health Canada-designated Yellow Fever Vaccination Centre clinics can provide the International Certificate of Vaccination in Canada. A list of these centres can be obtained from Health Canada's Travel Medicine Program web site (<http://www.travelhealth.gc.ca>).

The decision to immunize against yellow fever will depend on the itinerary of the individual traveller and the specific requirements of the country to be visited (including stopovers). As well as being necessary for entry into certain countries, immunization against yellow fever is recommended for all travellers who are passing through or living in countries in Africa and South America where yellow fever infection is officially reported. It is also recommended for travel outside of urban areas in countries that do not officially report yellow fever but lie in the yellow fever endemic zones (see maps 1 and 2).

Meningococcal disease

As a condition of entry, Saudi Arabia requires proof of meningococcal immunization for pilgrims to Mecca during the Hajj.

For other indications for this vaccine see the meningococcal disease section under Recommended Immunizations.

Cholera

Cholera vaccine has not been required for border crossing under International Health Regulations since 1973. Some travellers to parts of Africa have reported being asked to provide a certificate of immunization against cholera. This “requirement” is not usually the policy of the national government but, rather, of local authorities. Given the related risks of immunization in some countries, certain travel clinics provide a cholera “exemption certificate”, which is used to help travellers avoid being given cholera vaccine while abroad.

Recommended Immunizations

On the basis of a risk assessment of the itinerary, the style of travel and the traveller’s underlying health, the following vaccines should be considered in consultation with a health care provider.

Hepatitis A

Hepatitis A is the most common vaccine-preventable disease in travellers. Protection against hepatitis A is highly recommended for all travellers to developing countries, especially to rural areas or places with inadequate sanitary facilities in countries where the disease is endemic. Protective antibodies are detectable within 2 weeks of administration. Given the long incubation period of hepatitis A (2 to 7 weeks), the vaccine can be administered up to the day of departure and still protect travellers.

The advent of active immunizing agents has made the use of immune globulin virtually obsolete for the purposes of travel prophylaxis. The only exceptions would be people for whom hepatitis A immunization is contraindicated or may not be effective (e.g., immunocompromised travellers and infants < 1 year of age). Immune globulin provides protection for only 3 to 5 months and should be given immediately before departure.

Typhoid

Typhoid vaccine is recommended for travellers who will have prolonged exposure (> 4 weeks) to potentially contaminated food and water, especially those travelling to smaller cities and villages or rural areas off the usual tourist itineraries in countries with a high incidence of disease. Individuals billeted with or visiting families in such areas may be at particularly high risk. Immunization is not routinely recommended for business travel or short-term (< 4 weeks) holidays in resort hotels in such countries. Currently, parenteral and live oral vaccines are available.

Meningococcal disease – adults

Meningococcal polysaccharide vaccine is recommended for travellers planning a prolonged stay in areas with a high incidence of meningococcal disease. Short-term travellers (< 3 weeks) on business or holiday (including safaris) who will have little contact with local populations are at minimal risk and therefore immunization is not routinely recommended. When doubt about the nature of exposure exists, it may be prudent to offer immunization.

However, in special circumstances, immunization should be considered for short-term travellers if (a) there will be close contact with the local population in endemic areas, (b) there will be travel to epidemic areas or (c) the traveller will be providing health care to others.

As noted previously, proof of polysaccharide meningococcal immunization may be required by certain countries e.g., Saudi Arabia, for pilgrims to Mecca during the Hajj. Outbreaks of meningococcal disease have affected these pilgrims in the past, involving serogroup A in 1987, and both serogroups A and W135 in 2000 and 2001.

Meningococcal conjugate C vaccine was licensed in Canada in 2001. This vaccine only protects against serogroup C and therefore is not appropriate for protection of travellers, as it does not protect against outbreaks of serogroup W135 or epidemics of serogroup A disease.

Meningococcal disease – infants and children

Because of the relative inability of very young children to respond to polysaccharide vaccine, infants aged 2 to 12 months should be immunized with at least two doses of meningococcal C conjugate vaccine 1 month apart, if they have not previously received it. However, bivalent meningococcal polysaccharide AC vaccine or quadrivalent ACYW135 may be considered for children as young as 3 months who are travelling to regions where broader protection is needed (see Meningococcal Vaccine chapter).

Japanese encephalitis

Japanese encephalitis is the leading cause of viral encephalitis in Asia, but the disease is rare in travellers. Its incidence has been decreasing in China, Korea and Japan but increasing in Bangladesh, India, Nepal, Pakistan, northern Thailand and Vietnam. It occurs in epidemics in late summer and early fall in temperate areas and sporadically throughout the year in tropical areas of Asia. Immunization should generally be considered for those who will spend 1 month or more in endemic or epidemic areas during the transmission season, especially if travel will include rural areas. In special circumstances, immunization should be considered for some people spending < 1 month in endemic areas, e.g. travellers to areas where there is an epidemic, travellers making repeated short trips, or people with extensive outdoor rural exposure.

Cholera

In specific, limited circumstances (e.g., health professionals working in endemic areas or aid workers), the oral live cholera vaccine may be considered. A detailed, individual risk assessment should be made in order to determine which travellers may benefit from immunization.

Rabies

Pre-exposure immunization should be considered for travellers intending to live or work in areas where rabies is enzootic and where rabies control programs for domestic animals are inadequate, or where adequate and safe post-exposure facilities are not available. Children, particularly those who are too young to understand the need to avoid animals or to report bites, should also be considered for pre-exposure immunization.

Since pre-exposure immunization may not provide complete protection, administration of two booster doses is imperative as soon as possible after exposure to a rabid animal. In this situation, rabies immune globulin is not necessary.

Influenza

People at high risk of influenza complications embarking on foreign travel to destinations where influenza is likely to be circulating should be immunized with the most current available vaccine. In the tropics, influenza can occur throughout the year. In the southern hemisphere, peak activity occurs from April through September and in the northern hemisphere from November through March. Influenza transmission is enhanced in the crowded conditions associated with air travel, cruise ships and tour groups.

BCG

Immunization with BCG may be considered for travellers planning extended stays in areas of high tuberculosis prevalence, particularly where a program of serial skin testing and appropriate chemoprophylaxis may not be feasible or where primary isoniazid resistance of *Mycobacterium tuberculosis* is high. Travellers are advised to consult a specialist in travel medicine or infectious diseases when considering a decision for or against BCG immunization.

Travellers Who are Immunodeficient or Infected with HIV

In general, live vaccines should be avoided in individuals who are immunodeficient. These vaccines include yellow fever, oral typhoid, oral cholera, varicella, MMR (measles, mumps, rubella) and BCG.

For more detailed information, see the chapter in this *Guide* for recommendations on the use of vaccines in immunodeficient people.

Travellers Who Are Pregnant

In general, live vaccines should be avoided in pregnancy, whereas inactivated (killed) vaccines are considered safe. In practice, the benefits of inactivated vaccines for pregnant travellers usually outweigh the risks.

For more detailed information, see the individual vaccine chapters in this *Guide* for recommendations and contraindications of vaccines in pregnancy.

Malaria Prophylaxis

There is no licensed vaccine against malaria yet.

Four components of malaria protection should be discussed with travellers: a) the risk of acquiring malaria, b) personal protective measures to prevent mosquito bites, c) chemoprophylactic drugs (where appropriate), and d) the need to seek early diagnosis and treatment for a febrile illness. Information concerning malaria, drug-resistant strains of *Plasmodium*, and recommended drugs for prophylaxis and other preventive measures is regularly updated by CATMAT and published in the *Canada Communicable Disease Report*. Information is also available from local health departments, travel clinics, the Centre for Infectious Disease Prevention and Control, Health Canada, and the Travel Medicine Program section on Health Canada's web site (<http://www.travelhealth.gc.ca>).

All travellers should be informed that malaria should be suspected if fever occurs during or after travel. Medical attention should be sought as soon as possible, and the traveller should request that a blood film be examined for malarial parasites.

Selected References

- Centers for Disease Control and Prevention. *Health information for international travel 1999-2000*. DHHS, Atlanta, GA, 2000.
- WHO. *International travel and health: vaccination requirements and health advice*. Geneva: World Health Organization, 2001.