Immunisation for overseas travel

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Introduction

Immunisation advice for overseas travel has become more complex as we visit ever more exotic destinations and embark on activities that place the traveller at greater risk of vaccine-preventable diseases. It is not possible to simply make blanket recommendations about the country or countries of destination and each case must be reviewed on an individual basis, taking into account many different factors. Travel medicine has now become a specialty in its own right; however, it is important that all nursing and medical staff have a working knowledge of the vaccines available in Australia and how they can be best utilised.

General considerations

In general, a person who seeks advice about travel immunisations 4 to 6 weeks prior to departure will be able to schedule the injections so that no more than one injection is given in each arm at each immunisation session. However, if travel must be undertaken at short notice, it is possible to receive most vaccines at separate injection sites during a single session, provided the patient is willing to tolerate the likely increase in side-effects. We have given up to six injections in the arms and legs in one session without undue problems. Up to three live virus vaccines may be given on the same date without affecting immunogenicity.

Table 1 lists the travel and special (non-routine) vaccines currently available in Australia, and their preferred route of administration.

It is, of course, very important that, prior to overseas travel, routine immunisations – including childhood immunisation – are up to date. Adult travellers should have a booster dose of adult diphtheria/tetanus and oral polio vaccine if they have not had these immunisations in the previous 10 years.

Table 1. Status of travel and special vaccines available in Australia.

	Disease	Type of vaccine	Preferred route of adminstration
Travel immunisations:	Cholera	Killed bacterial	Subcutaneous
	Yellow fever	Live viral	Subcutaneous
	Typhoid, parenteral	Killed bacterial	Subcutaneous or intradermal
	Typhoid, Vi	Bacterial polysaccharide	Intramuscular
	Typhoid, oral	Live bacterial	Oral
	Meningococcal	Bacterial polysaccharide	Intramuscular or subcutaneous
	Rabies	Killed viral	Intramuscular
	Plague	Killed bacterial	Intramuscular
	Japanese encephalitis	Killed viral	Subcutaneous
	Immune globulin	Passive antibody transfer	Intramuscular
Special immunisations:	Influenza	Killed viral	Intramuscular
	Pneumococcal	Bacterial polysaccharide	Intramuscular or subcutaneous
	Hepatitis A	Killed viral	Intramuscular
	Hepatitis B	Recombinant viral protein	Intramuscular
	Tuberculosis, BCG	Live mycobacterial	Intradermal

Specific vaccines

Yellow fever

This vaccine, which is required for travel to central Africa and northern parts of South America (see map, Figure 1), can only be given at a licensed vaccination centre, with a single injection valid for 10 years. It should not be given to children less than 1 year of age or any patient with an immunosuppressive condition.

Cholera

Generally, the current cholera vaccine is not recommended for travellers because of its poor efficacy and significant side-effect profile; nor is it a World Health Organisation (WHO) requirement for any country that a valid cholera vaccination certificate be produced for travel. It is expected that two improved oral cholera vaccines will be available in Australia some time next year.

Typhoid

At present three vaccines are available:

- the older, heat-killed injectable;
- the newer, Vi antigen injectable, and
- the Ty21a oral capsule vaccine.

The older vaccine should be given as a two-dose schedule and the intradermal route can be used to decrease side-effects when giving booster doses.

The Vi vaccine, while more expensive, is given as a single dose in adults and children more than 5 years of age and is associated with a better side-effect profile.

The oral vaccine is attractive to those who are needle-shy but needs to be taken as a three-dose schedule, on alternate days, starting 4 weeks prior to travel. It is not indicated for children less than 6 years of age.

All three vaccines show similar immunogenicity and requirements for booster doses.

Typhoid vaccines have a broad range of indications, similar to those of hepatitis A vaccine, and should be offered to travellers going to developing countries irrespective of their class of accommodation.

Meningococcal

This vaccine is indicated for those travelling to Nepal and sub-Saharan Africa and is a requirement of entry for travellers to Saudi Arabia during the Hajj season (see map, Figure 2). Booster doses should be given every 3 years.

Japanese encephalitis

Japanese encephalitis is found in large parts of Asia (see map, Figure 3) and can be fatal. Generally, the vaccine is indicated only if prolonged stays (that is, 2 months or more) in endemic areas, particularly rural areas, are anticipated. The vaccine has significant side-effect problems and its availability is limited. Therefore, specialist advice should be sought prior to receiving it.

Figure 1. Regions in which yellow fever is endemic.

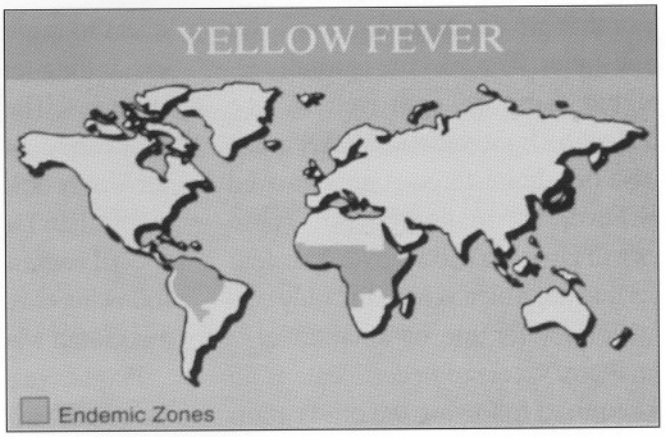


Figure 2. At-risk regions for meningococcal infections.

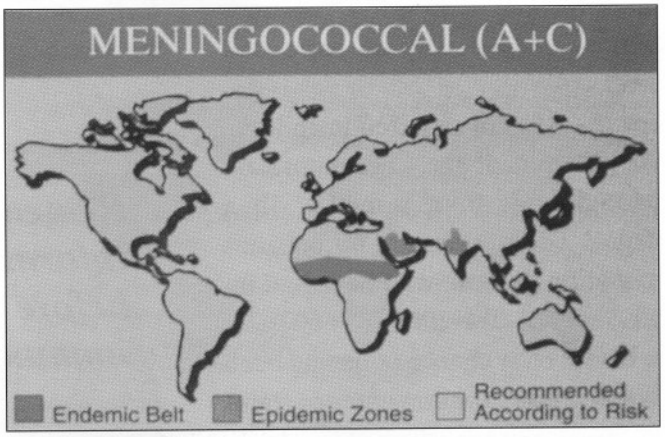
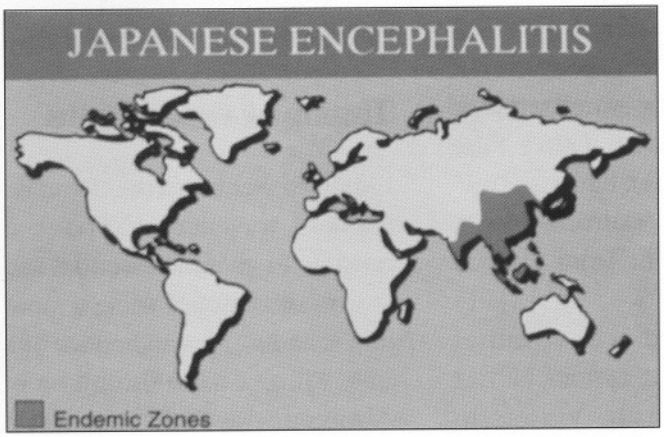


Figure 3. Regions in which Japanese encephalitis is endemic.



Rabies

As a rule, this vaccine also is indicated only for prolonged stays in endemic areas or if significant animal contact is expected. Post-exposure prophylaxis is available with both the rabies vaccine and rabies-specific immunoglobulin.

Plague

Vaccination is not recommended at present, unless travel to a known highly endemic area is planned.

Influenza

This vaccine should be given annually, as per National Health & Medical Research Council (NHMRC) guidelines. Travellers who meet these guidelines should have a dose prior to travel if they have not already done so that year.

Pneumococcal

This vaccine is recommended for those without a spleen, with functional asplenia or who meet the requirements for the influenza vaccine. However, it only needs to be given once every 5 years.

Hepatitis A

Although immunity can be given passively with gamma globulin, those who travel regularly to developing countries will find it more cost-effective to have the hepatitis A vaccine. A single dose of Havrix1440® confers effective immunity for 6 months or more and a booster dose after that will produce immunity for at least 10 years. Pre-vaccine screening for immunity from natural infection with the hepatitis A virus is indicated for one or more of the following:

- age >50 years;
- long-term residence in a developing country;
- past history of hepatitis or jaundice;
- homosexuals;
- IV drug use, past or present.

Hepatitis B

All health-care workers with patient contact should be vaccinated against hepatitis B, apart from those already immune from natural infection or carriers of the virus. Generally, hepatitis B vaccine is not indicated for travellers, unless they plan to be away for prolonged periods or indulge in unprotected sexual activity with someone other than their partner while overseas, which is not a good idea in any case!

Bacille Calmette-Guérin (BCG)

A large number of health-care workers would have had BCG vaccine, which is very rarely indicated for the traveller. Its use may occasionally be recommended in Mantoux-negative travellers likely to experience repeated and prolonged exposure to sputum-positive individuals in endemic areas. If it is used, no other vaccines should be given in the BCG arm for at least 1 month.

Specific problems

Vaccine interactions

There are a great many potential vaccine interactions; in practice, however, they rarely occur. A list of interactions is provided in Table 2.

Table 2. Vaccine interactions.

Vaccine	Interaction	Precaution
Immune globulin	Measles-mumps-rubella vaccine (MMR)	Give MMR at least 2 weeks before or 3 months after immunoglobulin.
Oral typhoid vaccine	Antibiotic therapy	Administer oral vaccine at least 1 week after antibiotics completed – do not take antibiotics for 3 days after vaccine.
Oral typhoid vaccine	Mefloquine malaria prophylaxis	Space 24 hours apart.
Oral typhoid vaccine	Oral polio vaccine	Theoretical concerns but no current data.
Rabies vaccine (intradermal)	Chloroquine malaria prophylaxis	Complete vaccine schedule at least 3 weeks before starting chloroquine.
Live virus vaccines	Other live virus vaccines	Give on same day or separate by 1 month.
Live virus vaccines	Mantoux test	Do skin test prior to vaccination, on same day or 4 weeks later.
Yellow fever	Cholera vaccine	Give the two vaccines on the same day or at least 3 weeks apart.

Table 3. Vaccination schedules.

Vaccine	Primary course	Dose interval	Duration	Comments
Typhoid oral	Three tablets	Alternate days	2 years	Avoid antibiotics, not for child <6
Typhoid killed	Two doses	1 month	3 years	Intradermal boosters, not for child <1
Typhoid Vi	One dose	–	3 years	Not for child <2
Hepatitis A (1440)	One dose	6 months	10 years	Not indicated in children <10
Hepatitis B	Three doses	0, 1, 6 months	5 years	Can give rapid course 0, 1, 2 months, boost at 12 months
Meningococcal	One dose	–	3 years	Not for child <2
Yellow fever	One dose	–	10 years	Not for child <2
Cholera	One dose	–	6 months	Not usually required, not for child <1
Japanese B	Three doses	0, 7, 28 days	1 year	Boosters every 18 months
BCG	One dose	–	Indefinite	Prior Mantoux testing

Vaccines and allergies

No vaccine should be offered to a patient with known hypersensitivities to any component of that vaccine. In addition, always check for allergies to egg protein if the patient is to have a yellow fever, influenza or measles-mumps-rubella (MMR) vaccination.

Vaccines and medical conditions

Vaccines are always to be avoided in those with an acute febrile illness. Live vaccines in general should not be given to immunocompromised patients, although there may be some exceptions. Expert advice should always be sought prior to giving any live vaccine to an immunosuppressed patient.

Vaccines in pregnancy and lactation

Most vaccines are contraindicated during pregnancy and lactation, unless the risk of infection is very high. It is wise to avoid immunisations altogether in the first trimester.

Vaccines and HIV/AIDS

While HIV-positive patients should not be given BCG or yellow fever vaccine, if they are asymptomatic and have normal immune function they can receive MMR, oral polio and inactivated vaccines. However, the efficacy of a vaccine may be reduced in HIV-positive individuals.

Vaccines and adverse reactions

Local reactions are not uncommon and can usually be reduced with ice-packs and simple analgesia. Anaphylactic reactions are very rare, but it is essential to have appropriate resuscitation equipment at hand when providing vaccinations in the surgery.

Vaccination records

Always supply the traveller with a vaccination booklet or record card such as the International Health Card – it is a good record of what has been given and the requirement for boosters. If a vaccine is required for entry but is contraindicated (yellow fever, for example), a letter of exemption is necessary.

Vaccination schedules

While there may be some flexibility in schedules, most vaccines need to be given within a fairly defined time-frame. A table of common vaccine schedules is provided (see Table 3), along with comments and recommendations for boosters.

Conclusion

If in any doubt about which vaccinations to offer a traveller, do not hesitate to seek expert advice. Further, be prepared to revaccinate if the prior vaccine history is unreliable, rather that run the risk of infection. Travellers are often reluctant to part with the money to protect themselves against vaccine-preventable disease; however, they should be urged to comply, since prevention is far better than attempting to treat an infectious disease acquired overseas in circumstances that could well be less than ideal.