

Common Sense Pathology

A REGULAR CASE-BASED SERIES ON PRACTICAL PATHOLOGY FOR GPs

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Immunisation - children and travel

A JOINT INITIATIVE OF





Immunisation – children and travel



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Introduction

Travelling with children is often very rewarding. Parents and carers are likely to see places and meet people they might not if travelling without children. But preventable infectious diseases can ruin the experience and put lives, especially young lives, at risk.

Preventing illness in the travelling child needs forward planning. The risks of the destinations should be reviewed using up-to-date resources available at www.smartraveller.gov.au, www.who.int and www.cdc.gov

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“Preventable infectious diseases can ruin the experience [of travel] and put lives, especially young lives, at risk.”



All travellers, but especially those with children, should seek advice from their GP or travel-health service some months before departure. Up to eight weeks may be needed to complete the minimum course to develop adequate immunity after the final dose of vaccine. The children of immigrants to Australia who are returning to visit their parents' country of origin can be at particular risk.

The following scenarios illustrate some of the current issues regarding pre-travel immunisation for children which GPs may encounter.

Scenario 1

A six-year-old child's father, who has recently been divorced from the child's mother, seeks your advice because the mother is planning to take the child on a holiday to Fiji. In the past, the mother has expressed concerns about vaccination safety and effectiveness, and the father is uncertain what, if any, vaccines the child has had. The father wants to know what the risks for the child are. What advice would you give about vaccination?

1. You should recommend that the child be immunised in accordance with the Australian National Immunisation Program.

2. The child's vaccination history should be retrievable from the Australian Childhood Immunisation Register at <http://www1.hic.gov.au/general/acircirghome>

3. In any case, make assessments of vaccine immunity only on the basis of documented records.

4. No documentation means not immunised and vaccination should be recommended. For the diseases that the National Immunisation Program recommends protection against, the risk of adverse events from inadvertent revaccination in a child already up to date for their immunisations is far outweighed by the risk of disease. You should inform the father specifically that for tetanus and diphtheria vaccines, there is an increase in local adverse events in individuals already immune through previous adequate vaccination.

5. Catch-up schedules are available in the *Australian Immunisation Handbook* (9th Edition, 2008) and automated through the Immunisation Calculator (<http://www.health.sa.gov.au/immunisationcalculator/>)



The WHO is progressing towards the elimination of measles in the Western Pacific, including Fiji, by 2012.

6. Of special note is that there have been two suspected cases of measles reported from Fiji from January to March 2008, although the WHO Regional Office is progressing towards elimination of measles in the Western Pacific by 2012.

7. In addition to vaccines on the National Immunisation Program schedule, the *Australian Immunisation Handbook* recommends:

- a. Hepatitis A vaccine for everyone one year and older travelling to moderately to highly endemic countries (including all developing countries).
- b. Typhoid vaccine for travellers two years and older going to endemic regions, including the Indian subcontinent, most south-east Asian countries, many South Pacific nations and Papua New Guinea. Oral live attenuated vaccine for typhoid is registered for use only in individuals above six years of age. It is presented in a pack of three capsules. The dose (a whole capsule on days 1, 3, and 5) is the same for both adults and children. A fourth dose improves immunity but entails purchasing a second packet of three tablets.

Parenteral Vi polysaccharide vaccine is recommended for children older than two years. No typhoid vaccine is licensed for younger children. The combined parenteral hepatitis A/typhoid vaccine (Vivaxim – Sanofi Pasteur Pty Ltd) is recommended only for those 16 years or older. Three-yearly revaccination provides continued protection against typhoid.

Aside from vaccination, it is important that children eat and drink only safe food and water. Boiled or bottled water is safer. Ice is often unsafe. Raw and undercooked shellfish, salads and cold meats are high risk. Children should be very cautious with animal contacts and their carers should know the first aid for bites and scratches. The Pacific Islands are reportedly free of rabies but tetanus and other wound infections, such as staphylococcal, streptococcal and Pasteurella, are also significant risks.

If travelling in endemic regions for arthropod-borne diseases (eg, dengue and filariasis in Fiji) children and adults need protection against insect bites.



Scenario 2

Colleagues who immigrated to Australia 10 years ago plan to visit their families in rural Pakistan with their young children, who were all born in Australia. The family is particularly concerned about cholera, tuberculosis and rabies, all of which they know are common in Pakistan. What immunisations would you recommend for the children?

1. Again, check that all the family is immunised completely for age in accordance with the Australian National Immunisation Program, especially for poliomyelitis and measles.

Wild-type polio remains endemic on the Pakistan-Afghanistan border and, elsewhere in the past 10 years, vaccine-associated polio has caused outbreaks in populations with low levels of immunity. Measles is now an exotic disease in Australia but is regularly re-introduced by young travellers, especially from regions where there is, as yet, no concerted effort to eliminate it. Hepatitis B infection is a risk if a child requires even minor surgical interventions in a developing world health facility.

2. Make assessments only on the basis of documented records, consulting the Australian Childhood Immunisation Register if necessary. No documentation means not immunised.

In exceptional circumstances, consider initial or subsequent vaccination at a younger age than routinely recommended. The National Immunisation Program is designed to deal economically with the epidemiology of vaccine-preventable diseases in Australia but many of its vaccines can be given earlier than recommended. This could provide early protection but may not provide long-lasting immunity. Extra doses of vaccine may often be necessary and the correct between-dose delay must be adhered to.

For example, for protection against group C meningococcus the National Immunisation Program recommends a single dose of conjugated vaccine at 12 months. However, infants less than 12 months can be protected using more doses. Depending on the specific vaccine used (NeisVac-C, Meningitec or Menjugate), 2-3 doses are required, one to two months apart, starting at

six or eight weeks of age. Similarly, diphtheria-tetanus-acellular pertussis vaccine (DTPa) can be given at two, three and four months of age rather than at two, four and six months. In fact the UK's National Health Service schedule recommends DTPa-inactivated poliomyelitis-Haemophilus influenzae type B vaccine at these times.

3. For vaccines other than those included in the National Immunisation Program or not recommended by the National Immunisation Program for all Australians (eg, Japanese encephalitis vaccine), check what is endemic to the proposed area of travel and the likelihood of exposure. The longer the duration of travel, the more time spent outside urban areas and the greater the likelihood of open-air accommodation, the greater the risk. With reference to Pakistan, the *Australian Immunisation Handbook* recommends:

- a. Hepatitis A vaccine for all travellers one year of age or older travelling to moderately to highly endemic countries (including all developing countries).
- b. Typhoid vaccine for travellers two years of age or older travelling to endemic regions, including the Indian subcontinent, most south-east Asian countries, many South Pacific nations and Papua New Guinea.
- c. Japanese encephalitis vaccination for travellers spending a month or more in the rural areas of Asia, particularly if travel is during the wet season or there is considerable outdoor activity or accommodation is not mosquito proof. For stays of more than one year, vaccination against Japanese encephalitis is recommended even for urban areas.
- d. Pre-exposure rabies vaccination for travellers longer than one month in rabies-endemic areas. (US recommendations for rabies immunisation in travellers are somewhat stronger, particularly in relation to children, because they are thought more likely to play with animals and less likely to report bites.)

It is equally important that parents know the first aid for animal bites. All bite wounds and scratches should be immediately and thoroughly washed with soap and water. A virucidal preparation such as povidone iodine solution should be applied after the washing and the management for



tetanus and other wound infections considered. Primary suture of a bite from a potentially rabid animal should be avoided.

An additional zoonotic hazard in Pakistan is avian influenza H5N1. Outbreaks in birds are ongoing and three human cases, one fatal, were reported in 2007. Close contact with poultry should be avoided.

4. Cholera vaccine is not recommended for recreational travel and is not a requirement for travel to any country. It should be noted that the easily administered oral cholera vaccine Dukoral has in a number of studies provided excellent protection against travellers' diarrhoea, caused by heat labile enterotoxin *Escherichia coli*.

It is estimated, however, that only 12% of travellers' diarrhoea cases could be prevented by Dukoral. It can be administered to children from two years of age. Oral live attenuated typhoid vaccine should be separated from the administration of inactivated oral cholera vaccine by an interval of at least eight hours.

5. The *Australian Immunisation Handbook* recommends Bacillus Calmette-Guerin (BCG) to protect against tuberculosis only for children less than five years of age who will be living in an endemic country for greater than three months. For older children, the *Handbook* advises consultation with state and territory tuberculosis services. The published advice from these services varies in approach. Victoria's guidelines state that BCG vaccination should be considered on an individual basis for persons aged over five years to young adulthood who are living or travelling for extended periods (2-3 months or more) in countries of high TB prevalence. NSW Guidelines state travellers over the age of five years who will spend three months or more in high TB prevalence areas may be offered BCG or alternatively Tuberculin Skin Testing (Mantoux testing) evaluation before and following travel. The WHO defines high-risk countries as having an annual incidence of more than 100 per 100,000 population. The latest data from Pakistan from 2006 is that the incidence rate is 181 per 100,000 population.

6. Remember the time of year: any person over six months of age going into a northern hemisphere winter should be vaccinated against

influenza, although the recommended vaccine for that year's northern hemisphere may not be readily available before arrival there.

7. In addition to the general safety advice (see above), protection against malaria needs to be emphasised, especially for immigrants to Australia returning with their children to a malaria-endemic country because over time they will have lost the partial immunity that comes with repeated exposure in an endemic region.

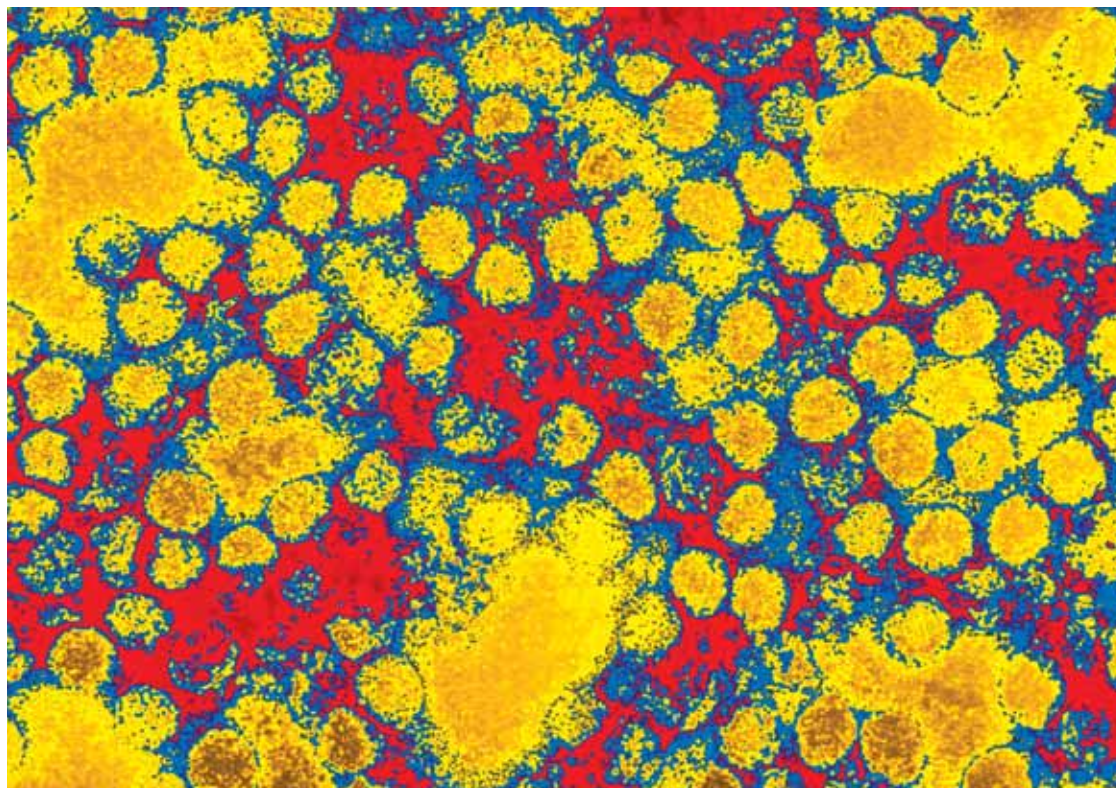
Scenario 3

A nurse practitioner is moving from south-east Australia to far North Queensland with her young family to work in a remote Indigenous community. The children who have lived in south-east Australia all their lives have documented evidence of complete immunisation in accordance with the National Immunisation Program. What advice would you give?

Ordinary advice for travelling children is appropriate: eat and drink only safe food and water, be very cautious with animal contacts, especially bats, and carers of children should know the first aid for animal bites and scratches. There have been two cases of fatal Australian bat lyssavirus infection reported, both in Queensland and both patients had been bitten by bats. Evidence of lyssavirus infection has been demonstrated in all four flying fox species and several of the much smaller insectivorous Australian bats. All Australian bats should be considered potential vectors.

It is particularly important in far north Queensland to protect children against insect bites. One mosquito vector for dengue, *Aedes aegypti*, is endemic north of Brisbane and the even more aggressive *Aedes albopictus* has made incursions into the Torres Strait.

In the late 1990s four cases of Japanese encephalitis infection were reported from the Torres Strait and one on the mainland of Australia from the west coast of Cape York. Japanese encephalitis vaccination is recommended for all residents of the outer islands in the Torres Strait older than one year of age and all non-residents who will be living or working on the outer islands



Yellow fever is endemic in parts of Africa and South America.

of the Torres Strait for a cumulative total of 30 days or more during the wet season (December to May).

Hepatitis A vaccine is recommended for all Aboriginal and Torres Strait Islander children residing in the Northern Territory, Queensland, South Australia and Western Australia, commencing in the second year of life. Those whose occupation may put them at risk of acquiring hepatitis A, including those who live or work in rural and remote Indigenous communities should also be immunised. Depending on the particular social arrangements of the family, hepatitis A vaccine for the children might be considered.

BCG is recommended for Aboriginal and Torres Strait Islander neonates living in regions of high TB incidence. It would be appropriate to discuss the need for protection with BCG for very young non-Indigenous children in these circumstances with the relevant state or territory tuberculosis service.

Scenario 4

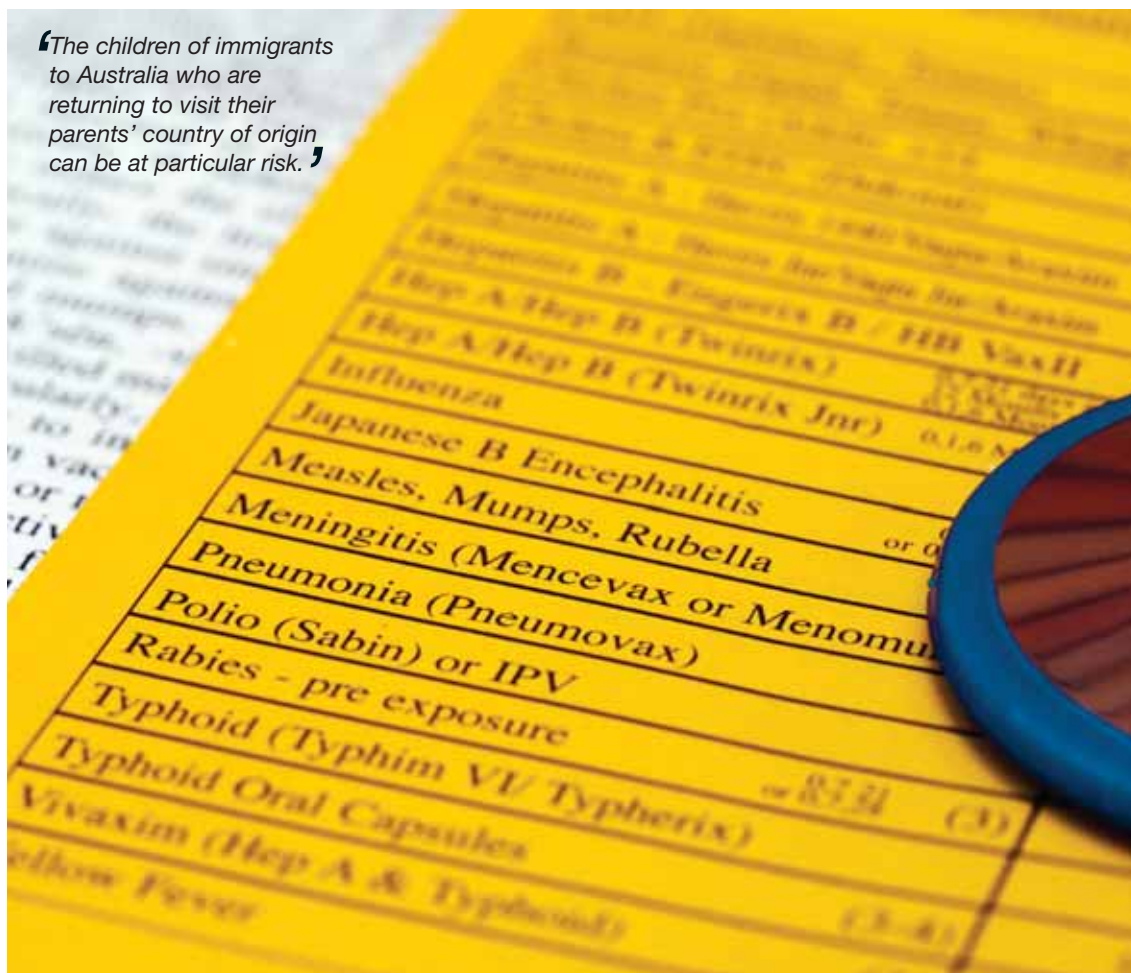
After a year in Australia at boarding school a young teenage child is returning to Nigeria for the long vacation. While in Australia she has been vaccinated in accordance with a catch-up schedule and carries records that indicate she is fully immunised in accordance with the National Immunisation Program. What additional vaccine protection should you consider? Are there other particular risks for her?

Nigeria is one of the African countries that has reported yellow fever since 1950 (see list in the *Australian Immunisation Handbook*, page 324). Yellow fever is also endemic in parts of South America.

It is likely she has already been immunised against yellow fever but it is essential that she have a WHO-approved yellow fever vaccination certificate. If she is not immunised, in addition to



“The children of immigrants to Australia who are returning to visit their parents’ country of origin can be at particular risk.”



the risk of serious illness in Nigeria, she will have the added inconvenience of being placed under quarantine surveillance on her return to Australia if she arrives back less than six days after departing Nigeria.

Under the International Health Regulations, yellow fever vaccination services require national government licensing. This is organised by state and territory health departments.

The other particular risk for this teenager is malaria, since she is likely to have lost her partial immunity while living in Australia.

Nigeria is also one of the countries where endemic wild-type polio still circulates. Since she is up to date with her routine Australian National Immunisation Program immunisations, she should be at little risk. The *Australian Immunisation*

Handbook recommends booster doses of dTPa-IPV at 10-yearly intervals for people at continued risk or for adult travellers to endemic areas.

She should of course be recommended for typhoid and hepatitis A immunisation. Also one fatal human case of avian influenza H5N1 was reported from Nigeria in 2007 but at present there are no current outbreaks in birds.

It might also be relevant to discuss safe sex in an HIV-endemic country.

References

Australian Immunisation Handbook, 9th Edition 2008
<http://www.health.gov.au/internet/immunise/publishing.nsf/Content/Handbook-home>