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Are we there yet? Travel vaccinations for Australian children

Background

Australians travel overseas frequently and general practitioners (GPs) are often asked to provide detailed advice on travel vaccinations for children. Planning a safe and effective vaccination schedule is dependent on the context: where and when the family is travelling, the individual child's medical needs and past vaccination history, and if they are visiting family and friends.

Objective

In this paper we provide an overview of the issues to consider when vaccinating Australian children for overseas travel. We also list the suite of common travel vaccinations and discuss some clinical scenarios that are likely to present in Australian general practice.

Discussion

Australians love to travel overseas and, increasingly, GPs are asked by patients to provide detailed advice on travel vaccinations for their children. Decisions regarding vaccinations for travelling children can be complex and the advice often differs from that provided for adults. Children differ from adults in their vulnerability to illnesses and side effects of medications. These differences, as well as their status regarding routine childhood vaccinations, all need to be taken into account. As with adults, it is important to consider the location and duration of travel and time until departure. The age of the child is also important and there may be a case for accelerating the routine childhood vaccinations in some children. The aim of this paper is to provide a clear and simple outline of the vaccination recommendations for children travelling overseas from Australia.

Keywords

Travel; immunisation; preventive medicine; child health

7. Does the child have any concurrent medical problems (eg. chronic respiratory disease, such as severe asthma)?
8. Has the child received any travel vaccines in the past? If so, what/when?
9. Has the child had a reaction to any previous vaccines?
10. Is the child allergic to egg?

Routine vaccination

A travel consultation is an ideal opportunity to ensure that travellers are up to date with the routine immunisation schedule. It is not our intention in this short article to list all the specific requirements for routine vaccination, which are listed in detail elsewhere.^{1,2} Some general principles are: a) minor febrile illnesses are not a reason to postpone routine vaccinations;³ b) it is generally safe to administer more than one vaccine at a time;⁴ and c) live viral vaccines, such as measles/mumps/rubella (MMR), varicella and yellow fever vaccines, should be given at the same time or at least 30 days apart.⁵

Influenza is the most common vaccine-preventable disease acquired by travellers.⁶ Particular risks include travel in large tourist groups, on cruise ships or travel to areas of increased seasonal risk (eg. the northern hemisphere winter). Influenza vaccination is strongly recommended for children with heart disease, chronic respiratory conditions, renal disorders, immunocompromising conditions and haematological disorders,⁷ but could be considered for all children.⁸

In some instances there may be a case for accelerating the routine vaccination schedule (*Case 1*). This should be considered if a young child is travelling over a prolonged period and may therefore miss their scheduled vaccinations, or if a child is travelling to an area where diseases such as polio, hepatitis B or measles are more prevalent. Vaccines that can be accelerated include diphtheria/tetanus/

Key questions to ask when assessing a child for overseas travel are listed below.

1. Where is the child travelling?
2. Is the child travelling to main cities or rural areas?
3. When is the child going?
4. How long is the child travelling for?
5. What routine scheduled vaccines has the child previously had?
6. Has the child experienced past infections? (eg. hepatitis A)

pertussis (DTP), haemophilus influenza type B (Hib), hepatitis B, inactivated polio vaccine (IPV) and pneumococcal and rotavirus vaccines.⁹ If MMR and varicella vaccines are given before the recommended age, repeat doses will be required. It should be noted that there are recommendations about the minimum interval to next dose for each vaccine² and these should be checked for individual vaccines.

Vaccines for children visiting high risk areas

The commonly administered travel vaccines for children travelling to high-risk areas are summarised in *Table 1*. Most of the vaccines have a lower age limit at which they may be commenced. There are also a number of options in terms of oral or injectable vaccines and different brands available that have differing product information, so it is important to check the information before administering. It is worth noting that sometimes the product information is not up to date so it is prudent to also check the *Australian Immunisation Handbook*,² particularly the 'Variations from Product Information' sections in Part 4.

Case 1. Prianka visits family in India

An Australian family, originally from India, comes to see you at your practice with their 3-week-old baby girl Prianka, as they are planning to go to India in 11 weeks to attend a family wedding. The family is wondering if you could start the vaccination schedule early as they have heard this is a possibility. The vaccines that are usually given at 2, 4 and 6 months (DTP, Hib, hepatitis B, IPV, pneumococcal vaccine and rotavirus vaccine) can all be accelerated and given at 6, 10 and 14 weeks. In this case BCG is also indicated.

Case 2. A family of 5 travel to Bali

The Anderson family comes to see you before flying off for a 2-week holiday in Bali. They have three children, Jessica, Samson and Freddy, aged 8, 4 and 2 years, respectively. The children have never been outside Australia and are all up to date with their scheduled immunisations, although Samson has

not had his 4-year-old vaccines. Today he should receive DTPa-IPV and MMR (he did not have the MMRV vaccine at 18 months as this vaccine was not yet available) and all 5 family members should have hepatitis A and typhoid vaccines. These can be given as the combined vaccine (Vivaxim), which, although licensed for use in people aged ≥ 16 years, is frequently prescribed off-label for children as young as 2 years of age. Rabies vaccine should be discussed, as rabies has continued to be reported in Bali.

Vaccines for patients visiting friends and relatives

Given the culturally diverse population in Australia, an overseas visit to friends and relatives is a common scenario and in fact visiting friends and relatives (VFR) travellers are often at a higher risk of contracting certain diseases.¹⁴ The risk increases because VFR travellers usually eat local food, may not take the same precautions as other tourists do, have closer contact with local people and often stay longer. For Australian VFR travellers, travel destinations often include tropical parts of the world where the risk of some diseases is higher.¹⁵ Malaria is known to be 8–10 times more likely in VFR travellers.¹⁵ VFR travellers are more likely to contract food-borne illness, including hepatitis A and typhoid, which are both preventable through vaccination.¹⁵ VFR travellers are also at a higher risk of exposure and, therefore, morbidity due to Dengue fever, parasitic infection, tuberculosis and sexually transmitted diseases.¹⁵ These travellers have the highest risk of infection but are significantly less likely than other travellers to get vaccinations or seek travel advice before they leave.¹⁶ This is because the destination is familiar to them and they often rely on buying medications more cheaply in the country they are visiting.

Case 3. Byrne family visiting friends in Sri Lanka

The members of the Byrne family are all major cricket fans and regularly visit Sri Lanka where they have been involved in cricket matches and social events for the past 15 years. Since the tsunami hit when

they were visiting in 2004, they have been visiting every few years to assist with rebuilding a Sri Lankan community health centre in Galle. They come to the GP enquiring about which vaccines should be given to their 6-year-old son, who is going with the family for the first time. Apart from checking that the child is up to date with routine vaccinations, the child should be given hepatitis A and typhoid vaccines. Rabies vaccination should be offered and mosquito-borne diseases, including Dengue and Japanese encephalitis, should be discussed. It would be reasonable to offer influenza vaccine as well.

Conclusion

With travel rates increasing and general practitioners (GPs) being relied on to provide up-to-date and sound advice to families who travel overseas with their children, it is timely to review this topic. The GP is often called on to put in place a complex vaccination plan for the family, which can be challenging in the midst of busy general practice consulting. Planning a safe and effective vaccination schedule is all about the context: when the family is travelling, how old the children are, whether they have had their previous routine vaccinations and whether they are travelling to visit overseas family and friends. In some circumstances, specialist advice may be needed (eg. when the child has a chronic medical illness or is immunocompromised). Some vaccines, such as BCG and yellow fever, are only available from specialist clinics. There are some excellent resources available online (see Resources). Travel vaccinations provide a perfect opportunity for the GP to practice preventive health and ensure that patients travel safely and remain well covered for common diseases during their overseas trip.

Resources

Vaccination advice for childhood travel vaccination

- www.who.int/ith/en/
- www.health.gov.au/internet/immunise/publishing.nsf/Content/handbook10-3-2
- wwwnc.cdc.gov/travel/page/yellowbook-home-2014
- wwwnc.cdc.gov/travel/destinations/list
- www.nathnac.org/travel/

Table 1. Overview of travel related vaccines for children ^{1,2,10-13}			
Vaccine	Trade names	Lower age limit	Comment
Hepatitis A	<ul style="list-style-type: none"> Avaxim Paediatric Havrix Junior VAQTA Paediatric/ adolescent 	2 years 2 year 1 year	Almost 100% efficacy in preventing clinical illness pre-exposure. 86% effective in preventing clinical hepatitis when administered within 2 weeks post-exposure.
Combined hepatitis A/B	<ul style="list-style-type: none"> Twinrix Junior (360/10) Twinrix (720/20) 	1 year 1 year	Twinrix Junior: for children aged 1–17 years. Twinrix: widely used for adults and is registered for use in accelerated schedule.
Typhoid	<ul style="list-style-type: none"> Typherix Typhim Vi Vivotif Oral 	2 years 2 years 6 years	Injectable polysaccharide vaccine. Injectable polysaccharide vaccine. Oral live attenuated vaccine (can be given from 1 year of age, but capsules must be swallowed whole). Capsules are taken on alternate days; 4 in total is more efficacious and gives longer term protection than 3.
Combined hepatitis A/typhoid	<ul style="list-style-type: none"> Vivaxim 	2 years	Licensed for use from 16 years of age. Often given off-label from 2 years of age – thought to be safe and effective.
Meningococcal ACW _{135Y} (quadrivalent conjugate 4vMenCV)	<ul style="list-style-type: none"> Menveo Menactra 	2 months 9 months	Mainly required for travel to sub-Saharan Africa, Mecca or areas with current vaccine-strain meningococcal outbreaks. Conjugate vaccines are now preferred to polysaccharide meningococcal vaccines.
Multicomponent meningococcal group B vaccine (recombinant, adsorbed)	<ul style="list-style-type: none"> Bexsero 	≥2 months	May be considered for travellers to areas of risk.
Rabies	<ul style="list-style-type: none"> Mérieux inactivated Rabies vaccine Rabipur inactivated Rabies virus vaccine 	No lower age limit No lower age limit	Vaccination even more important in children than adults as they are more likely to play, pat or feed animals, sustain high-risk bites on the hands, head or neck and may not report a bite. Intradermal vaccination is recommended by some experts.
Cholera	<ul style="list-style-type: none"> Dukoral 		Only recommended if travelling to area with a known outbreak. May be recommended as a vaccine for traveller's diarrhoea. Also recommended for individuals at higher risk of severe complications from diarrhoeal illness (eg. patients who are HIV-positive, have poorly controlled or complicated diabetes, inflammatory bowel disease or immunocompromised).
BCG	<ul style="list-style-type: none"> BCG 		Efficacy is only 50% overall but 80% effective against disseminated tuberculosis (TB), TB meningitis and death from TB, all of which are more common in young children. BCG should be considered for long-stay infants and children up to 5 years of age, and those visiting friends and relatives, even for shorter trips.
Japanese encephalitis	<ul style="list-style-type: none"> JEspect Imojev 	2 months 1 Year	Licensed for use from 18 years but safe and immunogenic from 2 months. Rarely a disease of travellers. Primarily indicated for long stay in rural areas of risk.
Yellow fever	<ul style="list-style-type: none"> Stamaril 	9 months	Proof of vaccine is an entry requirement in certain countries to prevent transmission. Contraindicated below the age of 9 months.
Influenza	<ul style="list-style-type: none"> Fluvax CSL Agrippal Fluarix Influvac Vaxigrip 	5 years 6 months 6 months 6 months 6 months	Fluvax CSL is not registered for use in children under 5 years because of unacceptably high rates of adverse events, specifically fever and febrile convulsions. Four other influenza vaccines are recommended for use in this age group.

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