

Dora the Explorer: Paediatric Travel Medicine & Immunisation

By Dr Daryl Cheng



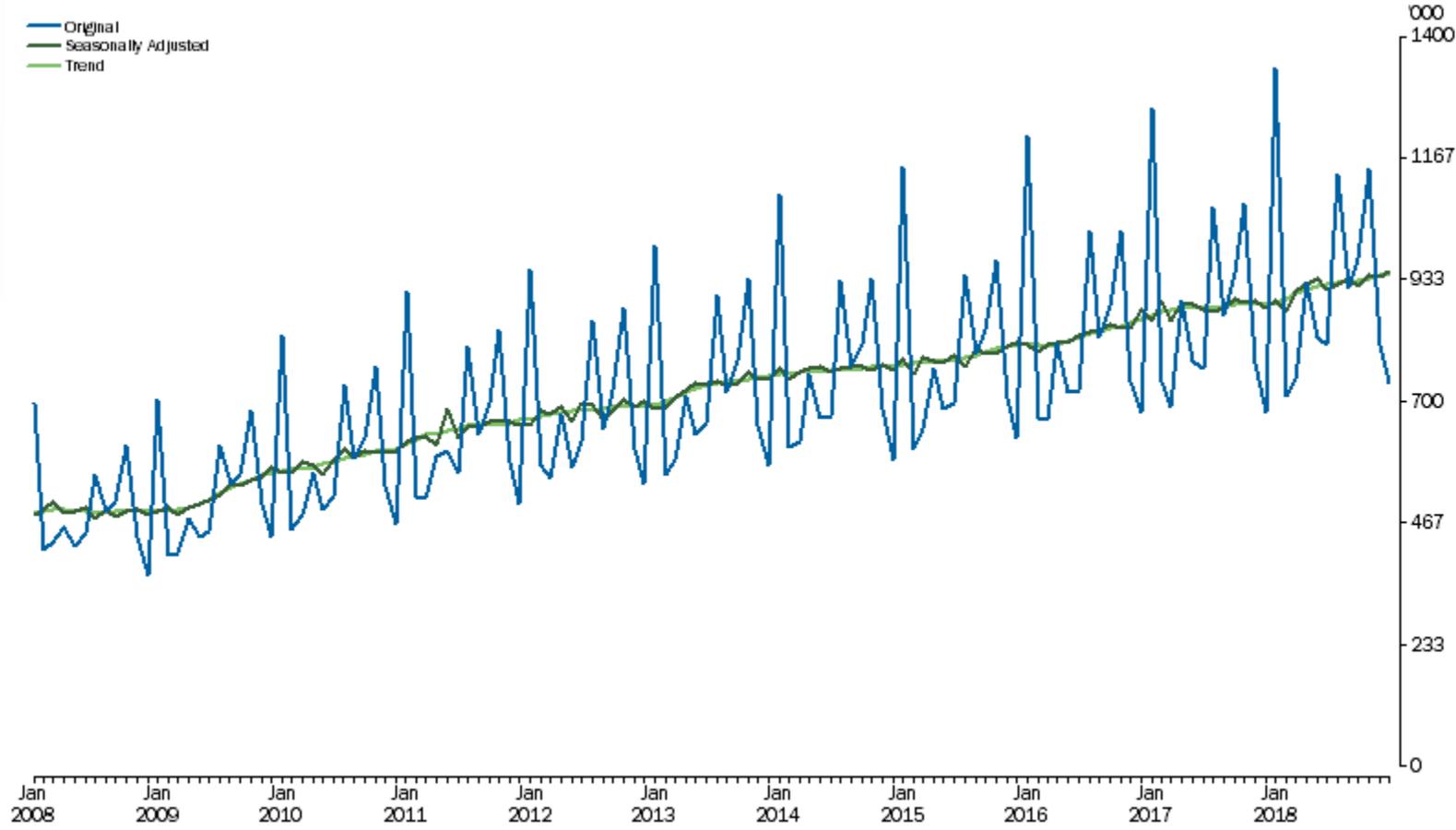


Topics

- Paediatric Travellers
- Common Travel Issues / Updates
- Common Presentations



Travelling all the time!



Most common countries

1. New Zealand
2. Indonesia (232.7% increase in last 10 years)
3. USA
4. UK
5. China (117.2% increase)
6. Thailand
7. Japan (212.7% increase)
8. Singapore
9. India (185.9% increase)
10. Fiji

2018 ABS, Top 10 Countries Visited

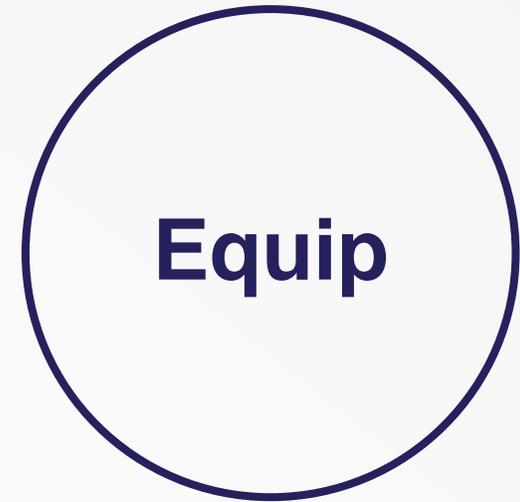
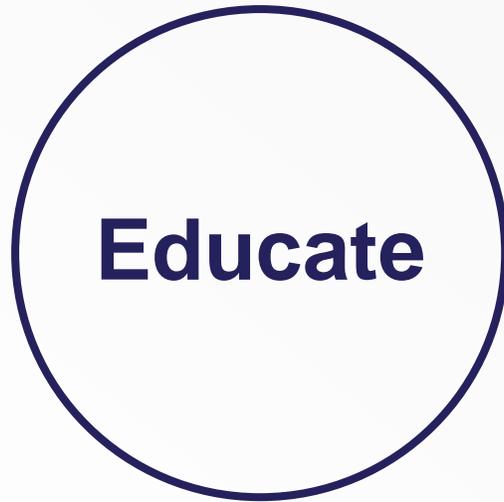


How many potential travel related issues can you spot for Dora?





Paediatric Travel Medicine



The Reliability of Pre-travel History to Decide on Appropriate Counseling and Vaccinations: A Prospective Study ^{FREE}

Isabelle A. Rossi, DTM, MPH ✉, Blaise Genton, MD, PhD, DTMH

Journal of Travel Medicine, Volume 19, Issue 5, 1 September 2012, Pages 284–288,

<https://doi.org/10.1111/j.1708-8305.2012.00618.x>

Published: 04 September 2012



PDF



Split View



Cite



Permissions



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Abstract

Background

Although medical and travel plans gathered from pre-travel interviews are used to decide the provision of specific pre-travel health advice and vaccinations, there has been no evaluation of the relevance of this strategy. In a prospective study, we assessed the agreement between pre-travel plans and post-travel history and the effect on advice regarding the administration of vaccines and recommendations for malaria prevention.

Methods

We included prospectively all consenting adults who had not planned an

“Underreport and underestimate risks they may encounter”



Family Compliance With Counseling for Children Traveling to the Tropics

Stéphanie Caillet-Gossot, MD , Rémi Laporte, MD, Guilhem Noël, MD, Philippe Gautret, MD, PhD, Georges Soula, MD, Jean Delmont, MD, PhD, Benoit Faucher, MD, Philippe Parola, MD, PhD, Lindsay Osei, MD, Philippe Minodier, MD

Journal of Travel Medicine, Volume 20, Issue 3, 1 May 2013, Pages 171–176, <https://doi-org.ezp.lib.unimelb.edu.au/10.1111/jtm.12016>

Published: 08 March 2013



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Abstract

Background

The number of people, both adults and children, traveling abroad, is on the rise. Some seek counseling at travel medicine centers before departure.

95% reporting the use of topical repellents, but markedly less so using nets or insecticide treated clothing.

Only 66% used their recommended malaria prophylaxis medications.

All recommended immunizations were received by only 71%.

While 80% restricted themselves to bottled water, only 31% followed recommended food safety precautions

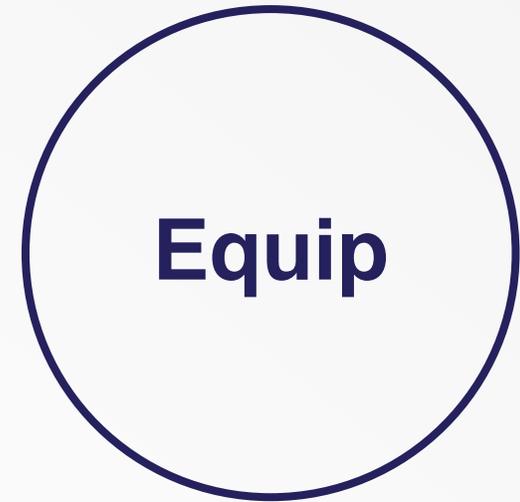
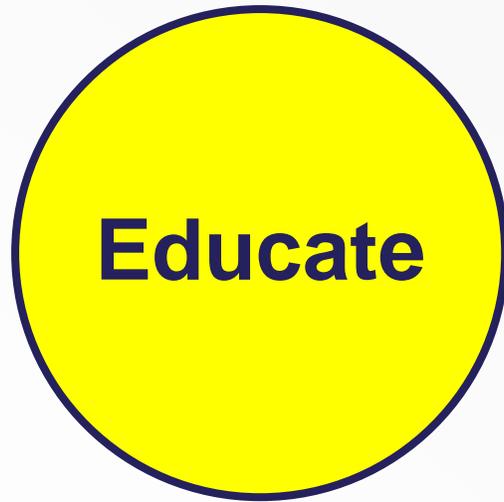


VFR Travelers = Higher Risk

- Higher rates of **infectious** related diseases – measles, typhoid fever, hepatitis A, yellow fever
- Lack of awareness of risk; “am going home so things are safe”
- Cultural or language barriers
- Last-minute travel plans
- Longer trips
- Stay in resource-poor locations
- Fewer precautions, assumption of safety/natural immunity



Paediatric Travel Medicine



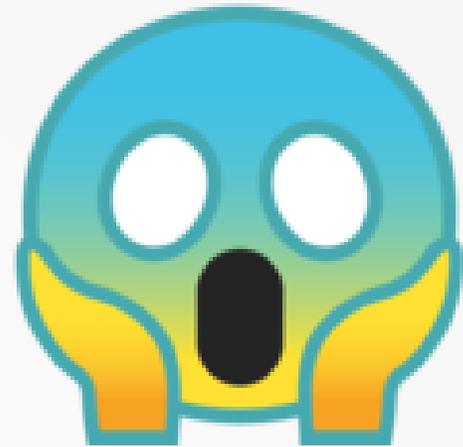
What do travel medicine specialists want to know?

- **Destination(s)**
- **Duration**
- **Timing**
- **Activities**
- **Previous Travel**



Pre-Travel Consultation

- Ideally **6-8 weeks** before travel
- Immunizations (routine + travel)
- Food / Water precautions; animal avoidance
- Travellers' diarrhoea
- Malaria chemoprophylaxis
- Other vector borne diseases (ticks, insects etc)
- Respiratory illnesses
- Personal/car safety
- Disease-specific counselling
- Travel health kits





Fitness to fly in the paediatric population, how to assess and advice

Joël Israëls^{1,2}  · Ad F. Nagelkerke² · Dick G. Markhorst³ · Marc van Heerde³

Received: 20 December 2017 / Revised: 10 February 2018 / Accepted: 13 February 2018 / Published online: 26 February 2018
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Abstract

The number of children on commercial aircrafts is rising steeply and poses a need for their treating physicians to be aware of the physiologic effects and risks of air travel. The most important risk factors while flying are a decrease in partial oxygen pressure, expansion of trapped air volume, low cabin humidity, immobility, recirculation of air and limited options for medical emergencies. Because on-board medical emergencies mostly concern exacerbations of chronic disease, the medical history, stability of current disease and previous flight experience should be assessed before flight. If necessary, hypoxia altitude simulation testing can be performed to simulate the effects of in-flight hypoxia. Although the literature on paediatric safety of air travel is sparse, recommendations for many different situations can be given.

Conclusion: We present an overview of the most up to date recommendations to ensure the safety of children during flight.

What is Known:

- Around 65% of on-board medical emergencies are complications of underlying disease.
- In children, the three most common emergencies during flight concern respiratory, neurological and infectious disease.

What is New:

- Although studies are scarce, some advices to ensure safe air travel can be given for most underlying medical conditions in children, based on physiology, studies in adults and expert opinions.
- In former preterm infants without chronic lung disease, hypoxia altitude simulation testing to rule out in-flight desaturation is not recommended.

Keywords Fit to fly · Air travel · Hypoxia · Trapped air · Neonate · Hypoxia altitude simulation testing



Food / Water

- Avoid tap water, ice from tap water or raw foods rinsed with tap water
- Avoid unpasteurised dairy products, undercooked meat/fish
- **Boiled, treated or bottled water – important for making formula!**
- **Don't forget the bath water!**



Paediatric Travellers Diarrhoea

- Travellers' diarrhoea (TD) affects 20–50% travellers; 50–80% bacterial
- Infants and toddlers have highest incidence rates, greatest severity, higher likelihood of requiring hospitalisation
- Average 8 days between departure to diarrhoea onset

- Enterotoxigenic *Escherichia coli* (ETEC) – Latin America/Africa (most common cause overall)
- Enteroinvasive *E. coli* (EIEC), enteroaggregative *E.coli* (EAEC) – Latin America, SE Asia
- *Shigella* (Africa/Latin America), *Campylobacter* (Asia) and *Salmonella* species
- Norovirus, parasites



Management

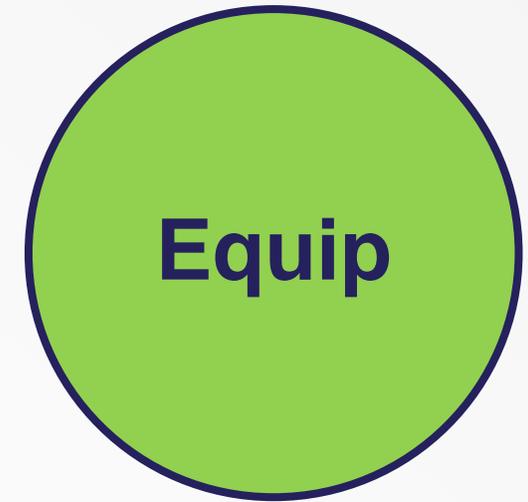
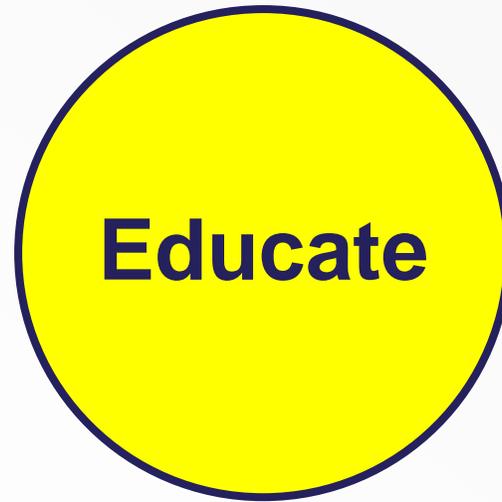
- Oral rehydration 1st line: continue BF/fluids/ORS
- Avoid antimotility and antiemetic drugs (especially in <3years) – can lead to toxic megacolon and CNS depression

Consider but rare:

- Ondansetron if persistent vomiting
- Loperamide 6 years and older*
- Antibiotics (azithromycin) if mod/severe (10–25 mg/kg for up to 3 days) or if you are suspecting *Shigella*, *Campylobacter*, *E Coli*
- If significant ongoing diarrhoea w weight loss, consider *Giardia* infection



Paediatric Travel Medicine



Approach to Immunization for the Traveling Child



Angela L. Myers, MD, MPH^a, John C. Christenson, MD^{b,*}

KEYWORDS

• International • Travel • Vaccines • Children • Yellow fever • Typhoid

KEY POINTS

- Children traveling to limited-resource countries are at risk of acquiring a vaccine-preventable disease, such as hepatitis A, measles, typhoid fever, and yellow fever.
- Children visiting friends and relatives are at the highest risk of acquiring a travel-related infection, such as typhoid fever.
- Assessment of routine childhood and adolescent vaccines, including influenza vaccine, should take place at the pretravel visit.
- The need for yellow fever vaccine should be assessed and provided to children 9 months or older who are traveling to an endemic country, even if not required for entry into the country.
- Japanese encephalitis and rabies vaccines are recommended for children traveling to high-risk areas.

INTRODUCTION

More than 1.1 billion persons traveled internationally in 2014. Approximately 4% were pediatric-age travelers. All regions of the world noted an increase in travel. Many countries with limited resources are endemic to typhoid fever, yellow fever, hepatitis A, and malaria. Measles transmission has been observed in high numbers in many countries,



Are we there yet? Travel vaccinations for Australian children

Volume 43, No 6, June 2014 Pages 378-381

[Article](#)

[Download article](#)

[Download Citations](#)

Marnie Slonim

Mike Starr

Grant Blashki

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/s

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.

Australian Family Physician has become **Australian Journal of General Practice.**



Type

Clinical

2014

December - Patients and technology

November - After the event

October - Immunology

September - Wounds and ulcers

August - Cancer



Minimum Acceptable Age



Australian Government
Department of Health



Australian
Immunisation
Handbook

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[Home](#) > [Resources](#) > [Handbook tables](#) > Table. Minimum acceptable age for the 1st dose of scheduled vaccines in infants in special circumstances

Table. Minimum acceptable age for the 1st dose of scheduled vaccines in infants in special circumstances

[Print](#) [Listen](#)

See [Catch-up guidelines for individual vaccines for children <10 years of age](#) for important details.

Vaccine	Minimum age for 1st dose in special circumstances	Action if a vaccine dose is inadvertently given before the recommended minimum age ²
DTPa	6 weeks	<ul style="list-style-type: none">If a child received their 1st dose of DTPa-containing vaccine between >28 days and <42 days (6 weeks) of age, it does not necessarily need to be repeated. Limited data suggest that receiving the vaccine at this age will still be safe and immunogenic. Follow the National Immunisation Program schedule for future doses, with the next dose of DTPa-containing vaccine given at 4 months of age.If a child received their 1st dose of DTPa-containing vaccine at ≤28 days of age, it is recommended that the dose is repeated. This repeat dose should ideally be given at 2 months of age. Follow the National Immunisation Program schedule for future doses, with the next dose of DTPa-containing vaccine given at 4 months of age.
Hepatitis A (Aboriginal and Torres Strait Islander children in NT, Qld, SA and WA only)	12 months	<ul style="list-style-type: none">If a child receives their 1st dose of hepatitis A vaccine at <12 months of age, and they need ongoing protection against hepatitis A, repeat the 1st dose.
Hepatitis B	6 weeks (this does not include the birth dose, which should be given at <7 days of age)	<ul style="list-style-type: none">As for DTPa



Key Practice Points

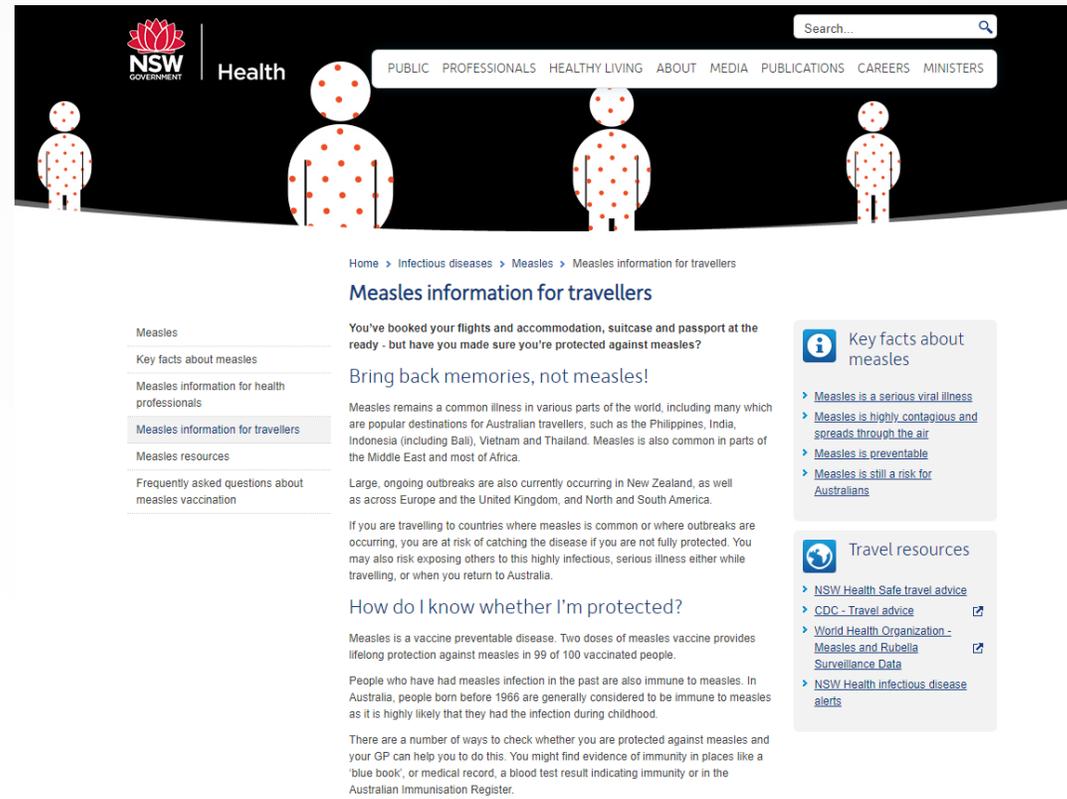
- Tailor recommendations to travel location, duration, incidence of disease
- Timing of live vaccines e.g. BCG and 12 or 18-month immunisations
- Tick off routine vaccine schedule
- Take the chance for opportunistic vaccines - some scheduled vaccines can be given **early** as additional dose (e.g. MMR from 6 months); give flu vaccine!
- Test is to balance **recommendations, timeframe and costs**

CDC: <https://wwwnc.cdc.gov/travel/destinations/list>

NaTHNaC: <https://travelhealthpro.org.uk/>



Measles



The screenshot shows the NSW Health website page for "Measles information for travellers". The header includes the NSW Government logo, the word "Health", a search bar, and a navigation menu with links for PUBLIC, PROFESSIONALS, HEALTHY LIVING, ABOUT, MEDIA, PUBLICATIONS, CAREERS, and MINISTERS. Below the header is a decorative banner with four stylized human figures of varying sizes, each covered in red spots representing measles. The main content area features a breadcrumb trail: Home > Infectious diseases > Measles > Measles information for travellers. The page title is "Measles information for travellers". A sub-header reads: "You've booked your flights and accommodation, suitcase and passport at the ready - but have you made sure you're protected against measles?". The main heading is "Bring back memories, not measles!". The text explains that measles remains a common illness in various parts of the world, including popular destinations for Australian travellers like the Philippines, India, Indonesia (including Bali), Vietnam, and Thailand. It also notes that measles is common in parts of the Middle East and most of Africa. A paragraph mentions large, ongoing outbreaks currently occurring in New Zealand, as well as across Europe and the United Kingdom, and North and South America. Another paragraph states that if you are travelling to countries where measles is common or where outbreaks are occurring, you are at risk of catching the disease if you are not fully protected. You may also risk exposing others to this highly infectious, serious illness either while travelling, or when you return to Australia. The section "How do I know whether I'm protected?" explains that measles is a vaccine preventable disease. Two doses of measles vaccine provides lifelong protection against measles in 99 of 100 vaccinated people. It also notes that people who have had measles infection in the past are also immune to measles. In Australia, people born before 1966 are generally considered to be immune to measles as it is highly likely that they had the infection during childhood. A final paragraph states that there are a number of ways to check whether you are protected against measles and your GP can help you to do this. You might find evidence of immunity in places like a 'blue book', or medical record, a blood test result indicating immunity or in the Australian Immunisation Register. On the left side, there is a sidebar menu with links for Measles, Key facts about measles, Measles information for health professionals, Measles information for travellers (highlighted), Measles resources, and Frequently asked questions about measles vaccination. On the right side, there are two callout boxes: "Key facts about measles" with links to "Measles is a serious viral illness", "Measles is highly contagious and spreads through the air", "Measles is preventable", and "Measles is still a risk for Australians"; and "Travel resources" with links to "NSW Health Safe travel advice", "CDC - Travel advice", "World Health Organization - Measles and Rubella Surveillance Data", and "NSW Health infectious disease alerts".

NSW GOVERNMENT | Health

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Search...

Home > Infectious diseases > Measles > Measles information for travellers

Measles information for travellers

You've booked your flights and accommodation, suitcase and passport at the ready - but have you made sure you're protected against measles?

Bring back memories, not measles!

Measles remains a common illness in various parts of the world, including many which are popular destinations for Australian travellers, such as the Philippines, India, Indonesia (including Bali), Vietnam and Thailand. Measles is also common in parts of the Middle East and most of Africa.

Large, ongoing outbreaks are also currently occurring in New Zealand, as well as across Europe and the United Kingdom, and North and South America.

If you are travelling to countries where measles is common or where outbreaks are occurring, you are at risk of catching the disease if you are not fully protected. You may also risk exposing others to this highly infectious, serious illness either while travelling, or when you return to Australia.

How do I know whether I'm protected?

Measles is a vaccine preventable disease. Two doses of measles vaccine provides lifelong protection against measles in 99 of 100 vaccinated people.

People who have had measles infection in the past are also immune to measles. In Australia, people born before 1966 are generally considered to be immune to measles as it is highly likely that they had the infection during childhood.

There are a number of ways to check whether you are protected against measles and your GP can help you to do this. You might find evidence of immunity in places like a 'blue book', or medical record, a blood test result indicating immunity or in the Australian Immunisation Register.

Key facts about measles

- Measles is a serious viral illness
- Measles is highly contagious and spreads through the air
- Measles is preventable
- Measles is still a risk for Australians

Travel resources

- NSW Health Safe travel advice
- CDC - Travel advice
- World Health Organization - Measles and Rubella Surveillance Data
- NSW Health infectious disease alerts

Measles

Key facts about measles

Measles information for health professionals

Measles information for travellers

Measles resources

Frequently asked questions about measles vaccination



Samoa

Samoa measles epidemic kills 20

Children under five account for all but one of the deaths as suspected cases double to 1,644

Reuters

Sat 23 Nov 2019 19:51 AEDT



114



Children with parents queue to get vaccinated at a clinic in Apia, Samoa. Photograph: AP

Deaths related to measles have risen to 20 in the past week on the Pacific island of Samoa, the government has said, eight days after declaring a state of emergency over the outbreak.

The island state of 200,000, located south of the equator and halfway between Hawaii and New Zealand, declared a measles epidemic late in October after the first deaths.

DR Congo measles: Nearly 5,000 dead in major outbreak

21 November 2019



Experts warn there are not enough available vaccines in the country

Measles has killed nearly 5,000 people in the Democratic Republic of Congo in 2019, authorities said, after the disease spread to all the provinces in the country.

Close to a quarter of a million people have been infected this year alone.

Features



Meningococcal

Table 1: Recommended MenACWY vaccine schedule (by brand) for healthy individuals, travellers and laboratory personnel

Vaccine Brand [¥]	Course commenced at age 6-weeks to ≤ 5-months of age	Course commenced at 6 to ≤ 8- months	Course commenced at 9 to ≤ 11-months of age	Course commenced at ≥ 12 to 23-months of age	Course commenced at ≥ 2-years of age
Nimenrix ^{®†}	2 doses (minimum 8 weeks apart) + 1 booster ^{^#} dose	1 dose + 1 booster ^{^#} dose	1 dose + 1 booster ^{^#} dose	1 dose [#]	1 dose [#]
Menveo [®]	2 doses (minimum 8 weeks apart) + 1 booster ^{^#} dose	1 dose + 1 booster ^{^#} dose	1 dose + 1 booster ^{^#} dose	2 doses [#] (minimum 8 weeks apart)	1 dose [#]
Menactra ^{®†‡}	N/R*	N/R*	1 dose* + 1 booster dose ^{^#}	2 doses [#] (minimum 8 weeks apart)	1 dose [#]



Table 2: Recommended MenB vaccine schedule for healthy individuals, travellers and laboratory*

Vaccine Brand [¥]	Course commenced at age 6 weeks to ≤ 11 months	Course commenced at 12 months to ≤ 9 years of age	Course commenced at ≥ 10 years of age
Bexsero^{®#}	2 doses (minimum 8 weeks apart) + 1 booster [^] dose	2 doses (minimum 8 weeks apart)	2 doses (minimum 8 weeks apart)
Trumenba[®]	N/R	N/R	2 doses (6 months apart)



BCG Recommendation

- Children < 5 years of age travelling to countries with high rates of TB for 2+ weeks*
- E.g. India, China, Pakistan, Thailand, Indonesia, Philippines, Bangladesh, many countries in Africa
- BCG protects children from the more severe forms of tuberculosis
- BCG is a routine immunisation in many countries at birth
- Booster doses of BCG are not required

*Countries with incidence of > 40/100,000, for a full list see:

<http://www.health.nsw.gov.au/Infectious/tuberculosis/Documents/countries-incidence.pdf>



BCG Considerations

- Live vaccine – timing with other vaccines
- Needs skilled delivery (intradermal)
- Mantoux prior only in some instances

- Ideally **2-3 months** before travel
- Consider earlier for families who are likely to travel
- Alternative – mantoux post-travel then BCG



BCG Vaccine

- Fluctuating international manufacturing and supply issues
- Only available in specific centres/clinics
- BOOK EARLY – public / private!

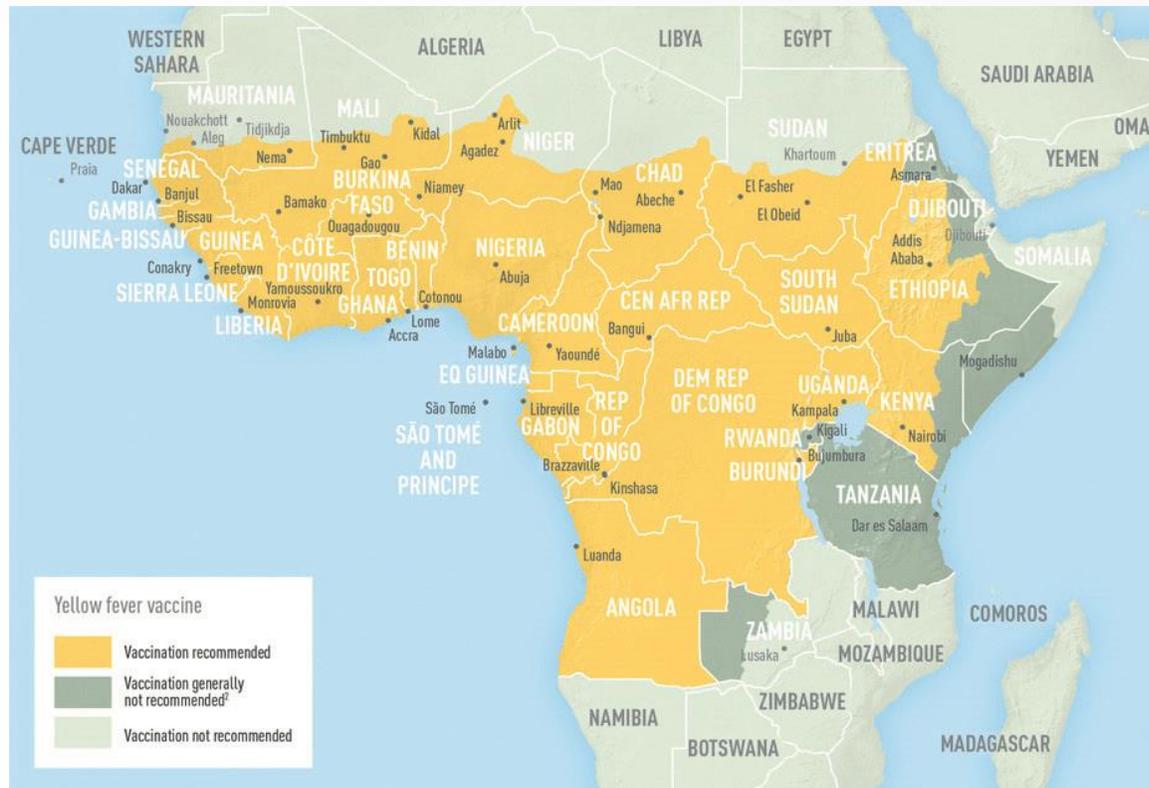


Vector Borne VPDs

- YF
- JE
- Dengue
- Malaria
- West-Nile Virus
- Zika
- Chikungunya



Yellow Fever



>9 months
Single dose for life

West/Central Africa

South/Central
America



Japanese Encephalitis



4+ weeks
Endemic area
Wet season

>2 months (Jespect)

>9 months (Imojev) -
live



Dengue

- Most rapidly spreading VPD (viral) in the world
- Dengvaxia (live attenuated recombinant) licensed in Mexico, Philippines, Brazil, El Salvador, Paraguay
- There are only very rare occasions when Dengvaxia® may be considered for use, on a case-by-case basis.
 - a) aged 9–45 years; AND
 - b) have had previous dengue infection; AND
 - c) are intending to reside in highly dengue-endemic regions for an extended period; AND
 - d) only if the potential benefits are deemed to outweigh the risks
- Side effects if taken without previous dengue – increased risk of hospitalisation and severe illness





Dengvaxia™

Powder and solvent for suspension for injection
Polvo y disolvente para suspensión inyectable

Dengue tetravalent vaccine (live, attenuated)
Vacuna tetravalente contra el dengue (de virus vivos atenuados)

Powder (1 dose) in vial + 0.5 mL of solvent in a pre-filled syringe with 2 separate needles - Pack size of 1
Polvo (1 dosis) en vial + 0,5 mL de disolvente en una jeringa prellenada con 2 agujas por separado - Presentación de 1

Subcutaneous (SC)
after reconstitution
Subcutánea (SC) después
de la reconstitución

SANOFI PASTEUR



Family Immunisation & Travel Service (FITS)

Cabrini Mother & Baby Centre
Level 2, 183 Wattletree Rd
Malvern, VIC 3144

For *new patient referrals / appointments*:

Please call: **(03) 9508 6000**

Fax referral to: **(03) 9508 6198**



Paediatric Immunisation References

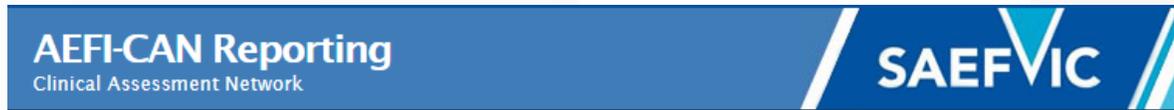
Melbourne Vaccine Education Centre

<https://mvec.mcri.edu.au>



AEFI-CAN / SAEFVIC

www.aefican.org.au



Minimum age of Scheduled Vaccines in Special Circumstances:

<https://immunisationhandbook.health.gov.au/resources/handbook-tables/table-minimum-acceptable-age-for-the-1st-dose-of-scheduled-vaccines-in>

Recommended Lower Age Limit for Travel Vaccines:

http://www.ncirs.edu.au/assets/provider_resources/handbook-tables/Table-3-2-2_Recommended-lower-age-limits-of-travel-vaccines-for-children_2015-update.pdf



WHO Yellow Fever Requirements:

<http://www.who.int/ith/updates/20160727/en/>

BCG:

<http://www.mvec.vic.edu.au/immunisation-references/bcg-vaccine/>

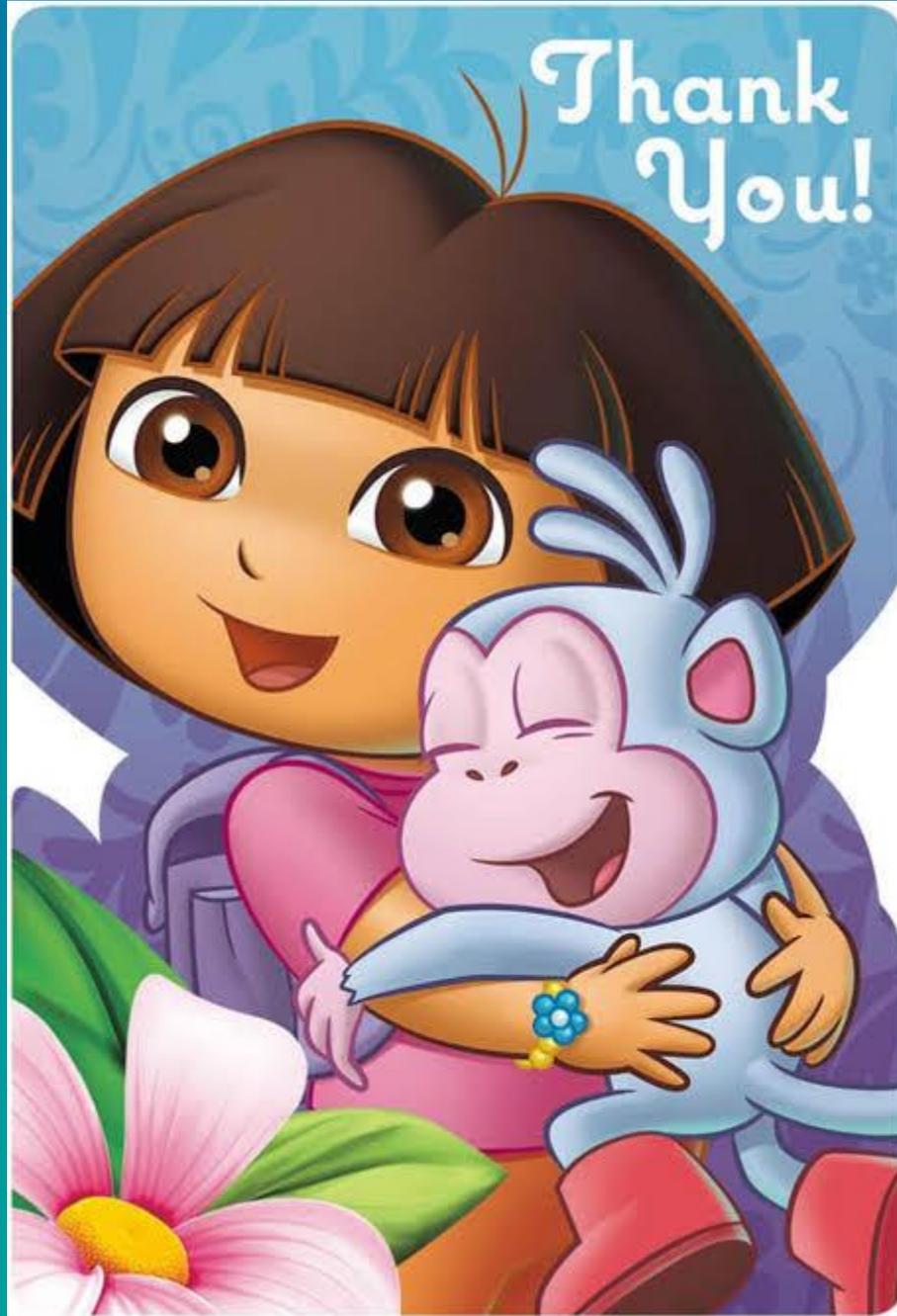
General references:

CDC: <https://wwwnc.cdc.gov/travel/destinations/list>

NaTHNaC: <https://travelhealthpro.org.uk/>



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