
The Outbound Traveller



A simplified approach to making vaccine recommendations

Learning objectives

At the conclusion of this activity, participants will be able to:

- Describe current recommendations for travel vaccinations pertaining to commonly encountered travel consultations in general practice
- Counsel patients regarding the utility of travel vaccines and the diseases against which they provide protection
- Assist patients to assess the risk versus benefit profiles of vaccinating against seasonally affected infectious diseases
- Reflect on their current travel medicine approaches and identify opportunities for practice improvement



Outline of today's session

- Part 1: A vacation to Bali
- Part 2: A trip home to India to visit family
- Consider
 - Explaining the infectious disease to patients
 - The role of vaccination and vaccination schedule
 - Rational risk assessments to inform vaccine use
- How to meet **Reviewing Performance** requirements:
 - Participate in the online discussion via the chat function
 - Post questions in the Q&A
 - Record your answers to the discussion prompts
 - At the end of each section, outline up to 3 changes you intend to make to your practice, or summarise new knowledge you intend to use

The Singh Family: Vacation in Bali

•The Singh family comes to see you regarding a trip to Bali in 6 weeks' time. They will spend 3 weeks away including time in a beachside resort and time in the Balinese mountains. The Balinese rainy season finished 2 months ago. They seek advice on travel vaccinations.

- Nikitha, aged 34, insulin requiring diabetes
 - Priya, aged 33, well, Implanon in situ. Dengue fever 8 yrs ago (Not breast feeding)
 - Bindiya aged 6, well
 - Prasanth aged 1, well
- The Singh family have lived in Australia for 4 years and are originally from India.

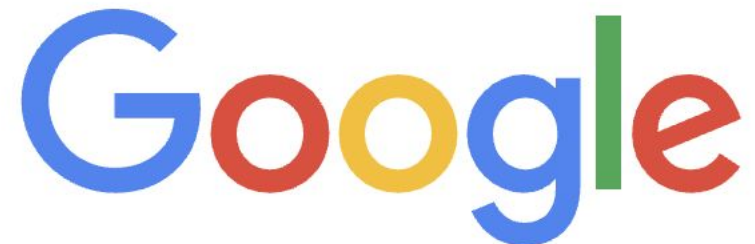
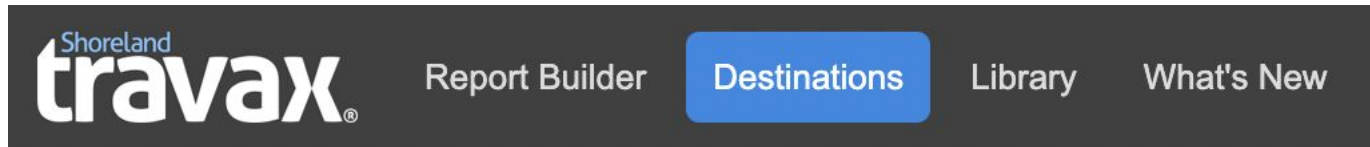


The Singh Family: Vacation in Bali

- Both parents have been vaccinated against COVID-19 a year ago (Priya 3 doses and Nikitha, 4 doses).
- The children are also up to date with their COVID-19 vaccination.
- Prior to this, the vaccine history is uncertain, and the family cannot remember what they have been vaccinated against and when.
- They are travelling in 6 week's time.



What resources do you use in travel medicine consults?

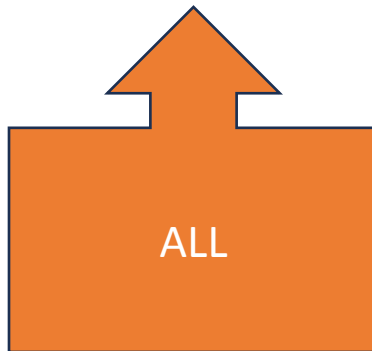


What
vaccine-preventable
diseases will
you discuss for
the family's trip
to Bali?

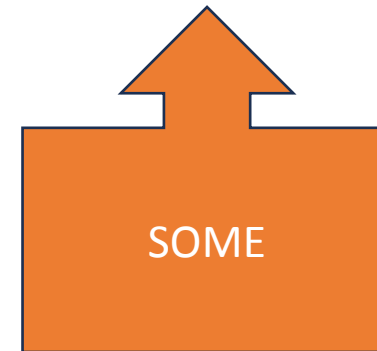


Vaccine preventable illnesses in Bali

- Hepatitis A
- Typhoid
- Influenza



- Hepatitis B
- Measles, Mumps, Rubella
- Rabies
- Japanese encephalitis
- Dengue
- COVID



Who gets what?

Bindiya aged 6, well but
very needle phobic
Came to AUS age 2

Priya, aged 33, well,
Implanon in situ. Dengue
fever 8 yrs ago
Came to AUS aged 29

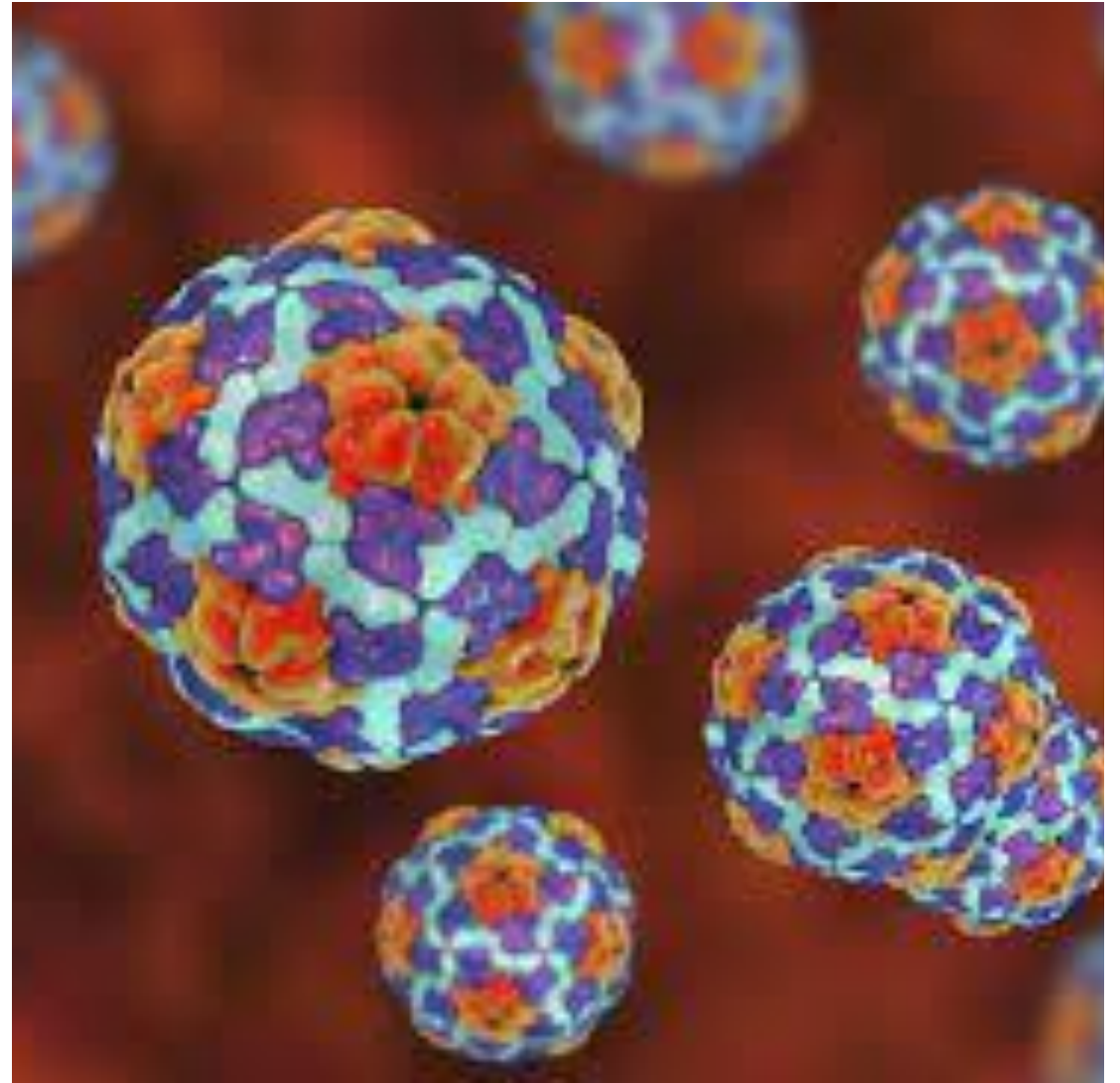


Prasanth aged 1, well
Born in AUS

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Hepatitis A

- Acute viral infection of the liver
- Ranges from mild to severe
- Transmitted by faecal-oral route by contaminated food or water or contact with infected person
- Highly contagious
- Survives well outside its host



Who gets what?: Hepatitis A vaccine

Bindiya aged 6, well but very needle phobic
Came to AUS age 2

Priya, aged 33, well,
Implanon in situ. Dengue fever 8 yrs ago
Came to AUS aged 29



Prasanth aged 1, well
Born in AUS

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Who gets what?: Hepatitis A vaccine

Bindiya aged 6, well but very needle phobic
Came to AUS age 2

Yes, unlikely immune
Can test immunity

Priya, aged 33, well,
Implanon in situ. Dengue fever 8 yrs ago
Came to AUS aged 29

Likely immune
Yes if not



Prasanth aged 1, well
Born in AUS

Yes

Nikitha, aged 34, insulin requiring diabetes
Came to AUS aged 30

Likely immune
Yes if not

Hepatitis A dosing schedule

Product	Age group	No of doses	Dosing interval
Avaxim	2+	2	6-36 months
Havrix Junior	2-16	2	6-36 months
Havrix 1440	16+	2	6-36 months
Vaqta Paediatric	1-17	2	6-18 months
Vaqta Adult	18+	2	6-18 months

Influenza

- Common disease of the respiratory tract
- Ranges from mild to severe
- Can cause hospitalization and death
- Commonest vaccine preventable disease in Australia



Who gets what?: Influenza vaccine

Bindiya aged 6, well but
very needle phobic
Came to AUS age 2

Priya, aged 33, well,
Implanon in situ. Dengue
fever 8 yrs ago
Came to AUS aged 29



Prasanth aged 1, well
Born in AUS

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Who gets what?: Influenza vaccine

Bindiya aged 6, well but very needle phobic
Came to AUS age 2

Yes

Priya, aged 33, well,
Implanon in situ. Dengue fever 8 yrs ago
Came to AUS aged 29

Yes



Prasanth aged 1, well
Born in AUS

Yes

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Yes

Typhoid

- Caused by *Salmonella typhi* via contaminated food or water
- 90% typhoid in Australia due to travel
- Causes fever and diarrhoea
- 10-15% develop complications (bleeding, perforation, encephalitis)



Who gets what?: Typhoid vaccine

Bindiya aged 6, well but
very needle phobic
Came to AUS age 2

Priya, aged 33, well,
Implanon in situ. Dengue
fever 8 yrs ago
Came to AUS aged 29



Prasanth aged 1, well
Born in AUS

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Who gets what?: Typhoid vaccine

Bindiya aged 6, well but very needle phobic
Came to AUS age 2

Yes

Priya, aged 33, well,
Implanon in situ. Dengue fever 8 yrs ago
Came to AUS aged 29

Yes if not vaccinated
in last 3 yrs



Prasanth aged 1, well
Born in AUS

Not until 2yrs old

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

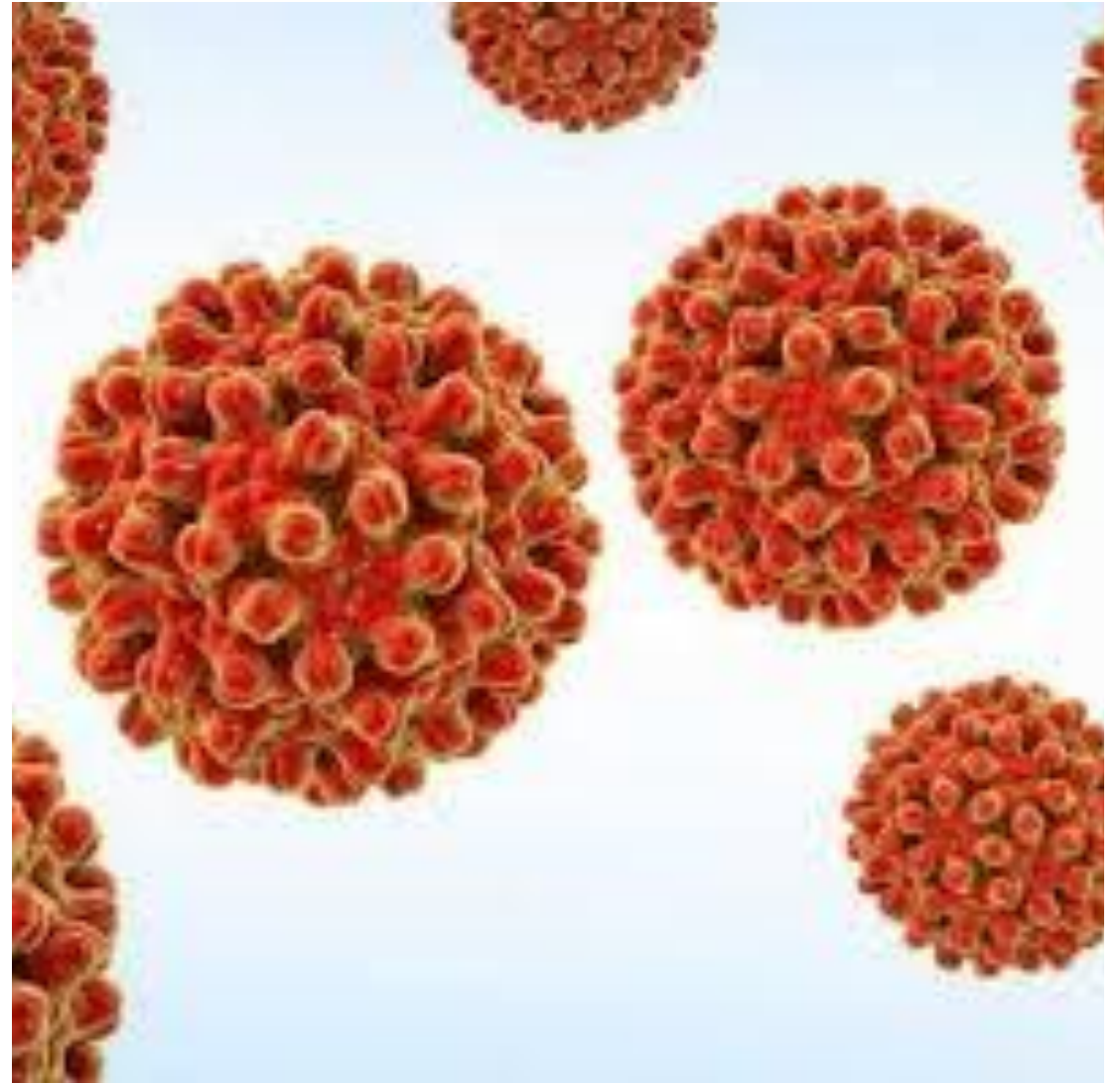
Yes if not vaccinated
in last 3 yrs

Typhoid dosing schedule

Product	Age group	No of doses	Dosing interval
Typhim VI	2+	1	3 yearly
Vivotif Oral Capsules	6+	Day 1, 3, 5 (+/- day 7)	3 years after 3 dose course; 5 years after 4 dose course
Vivaxim (Hep A + Typhoid)	16+	1	2 nd Hep A dose required 6-36 months later 3 yearly for typhoid

Hepatitis B

- Hepatitis B causes inflammation of the liver
- Transmitted via broken skin or mucosal contact with infected blood or bodily fluids
- Acute hepatitis B occurs in 30-50% infections
- Chronic hepatitis B occurs in 1-10% adults and >90% infants
- Chronic hepatitis B leads to HCC in 25% cases



Who gets what?: Hepatitis B vaccine

Bindiya aged 6, well but
very needle phobic
Came to AUS age 2

Priya, aged 33, well,
Implanon in situ. Dengue
fever 8 yrs ago
Came to AUS aged 29



Prasanth aged 1, well
Born in AUS

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Who gets what?: Hepatitis B vaccine

Bindiya aged 6, well but very needle phobic
Came to AUS age 2

Check immunity only if doubt exists

Priya, aged 33, well, Implanon in situ. Dengue fever 8 yrs ago
Came to AUS aged 29

Check immunity only if doubt exists



Prasanth aged 1, well
Born in AUS

Up to date

Nikitha, aged 34, insulin requiring diabetes
Came to AUS aged 30

Check immunity only if doubt exists

Who gets what?: MMR vaccine

Bindiya aged 6, well but
very needle phobic
Came to AUS age 2

Priya, aged 33, well,
Implanon in situ. Dengue
fever 8 yrs ago
Came to AUS aged 29



Prasanth aged 1, well
Born in AUS

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Who gets what?: MMR vaccine

Bindiya aged 6, well but very needle phobic
Came to AUS age 2

Check immunity only if doubt exists

Priya, aged 33, well, Implanon in situ. Dengue fever 8 yrs ago
Came to AUS aged 29

Check immunity only if doubt exists



Prasanth aged 1, well
Born in AUS

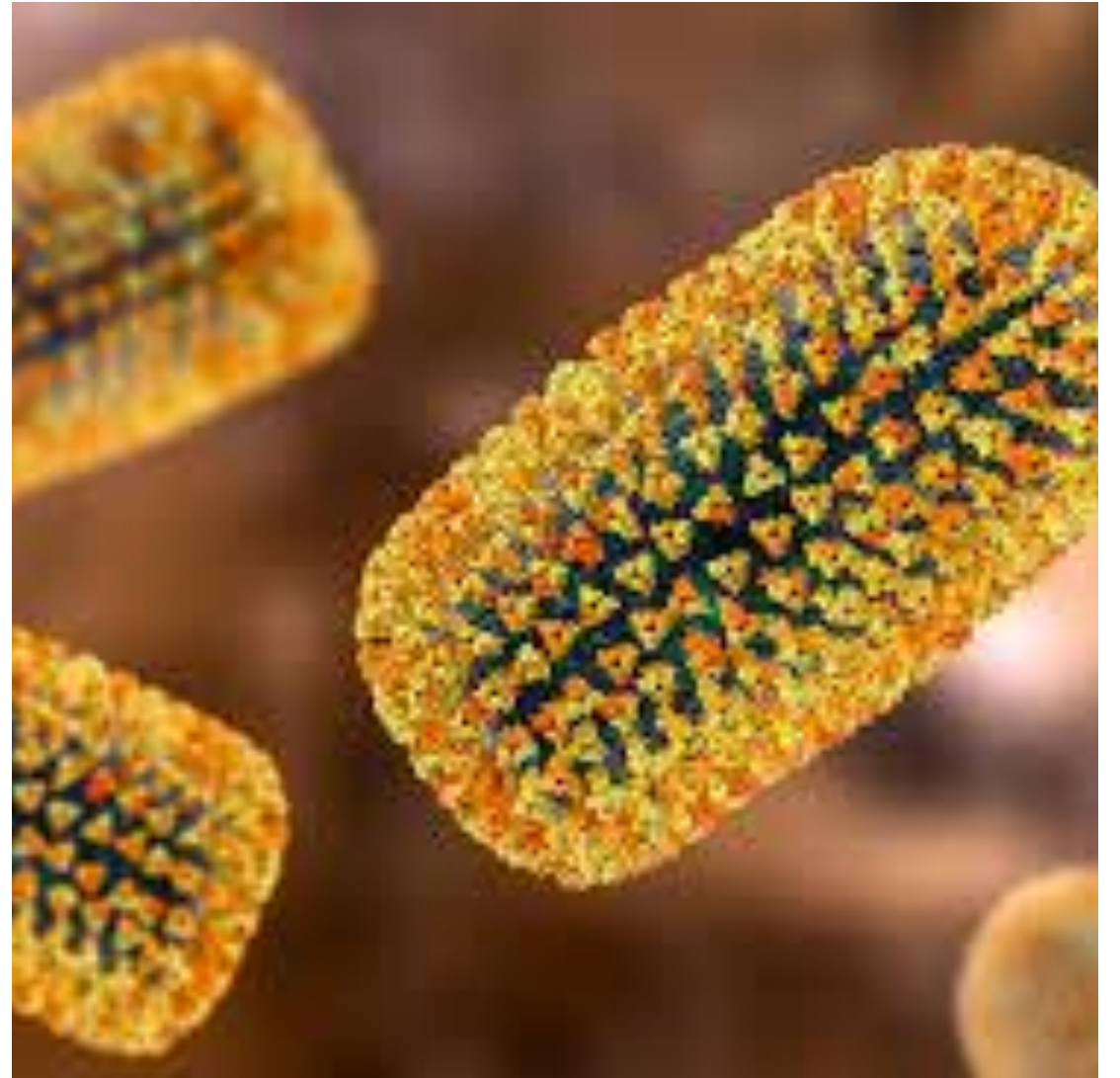
Up to date

Nikitha, aged 34, insulin requiring diabetes
Came to AUS aged 30

Check immunity only if doubt exists

Rabies

- Caused by exposure to saliva or neural tissue from an animal infected with rabies [virus](#) or other lyssaviruses
- Human exposure via animal scratch/bite that breaks skin, or direct contact of the [virus](#) with the mucosal surface, such as nose, eye or mouth.
- Almost always fatal
- All bats
- Rabies-enzootic country animals



Who gets what?: Rabies vaccine

Bindiya aged 6, well but
very needle phobic
Came to AUS age 2

Priya, aged 33, well,
Implanon in situ. Dengue
fever 8 yrs ago
Came to AUS aged 29



Prasanth aged 1, well
Born in AUS

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Rational rabies advice



What are the chances of exposure to a rabid bite/scratch?



Children are unpredictable around animals- is vaccination or animal avoidance better?



Pre-exposure vaccination gives additional 24 hours to seek post-exposure care and precludes need for rabies immunoglobulin, reduces number post-exposure rabies vaccines



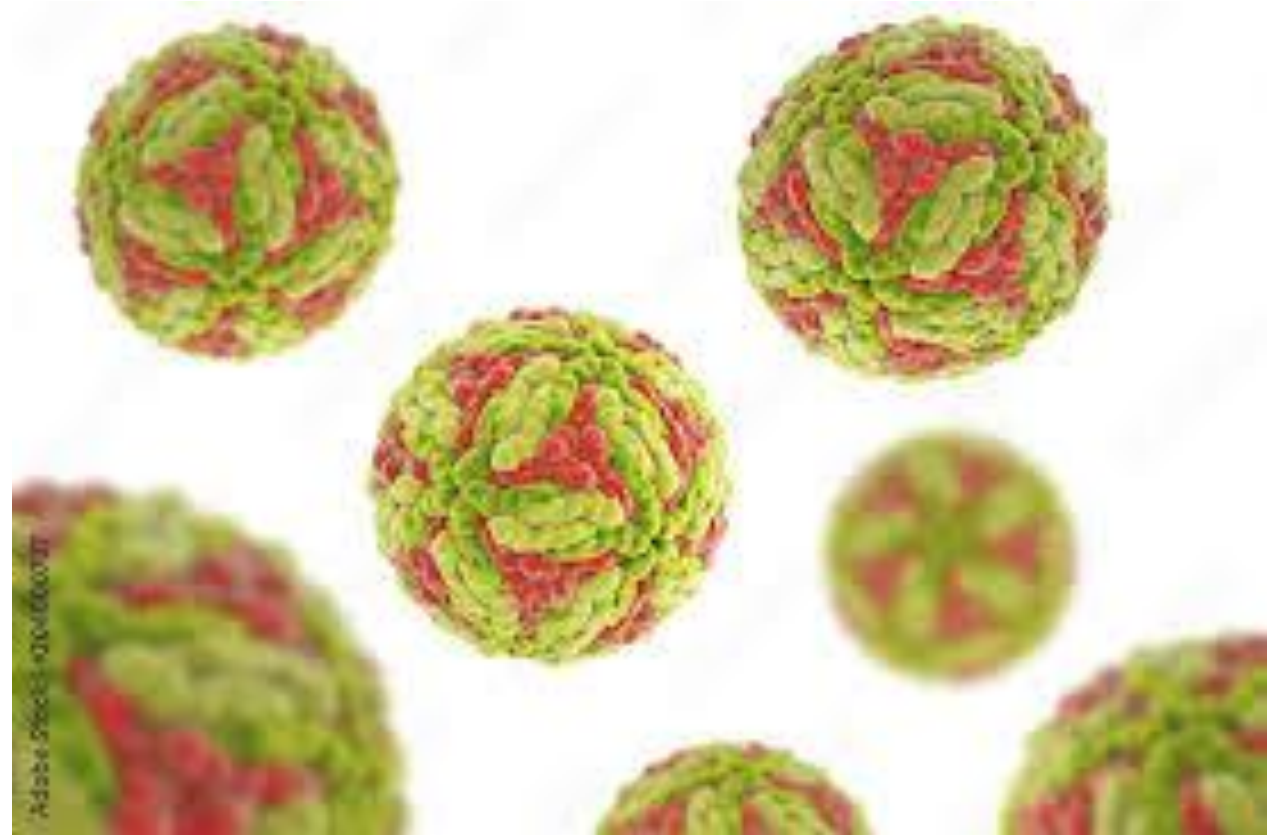
Pre-exposure prophylaxis does not preclude the need for post-exposure management- preferably received in Australia

Rabies dosing schedule

Product	Age group	No of doses	Dosing interval
Merieux Inactivated Rabies	Any age	3	Days 0, 7, 21-28
			Boosters for persons with occupational exposures
Rabipur Inactivated Rabies	Any age	3	Days 0, 7, 21-28
			Boosters for persons with occupational exposures

Japanese Encephalitis

- JE is spread by mosquito bites
- Causes inflammation of central nervous system
- Virus comes from pigs & birds
- Case fatality 30%; 50% survivors have neurological sequelae
- No specific treatment exists



Who gets what?: Japanese Encephalitis vaccine

Bindiya aged 6, well but very needle phobic
Came to AUS age 2

Priya, aged 33, well,
Implanon in situ. Dengue fever 8 yrs ago
Came to AUS aged 29



Prasanth aged 1, well
Born in AUS

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Rational Japanese Encephalitis advice



What are the chances of exposure to a JE infected mosquito?



Is the country affected year-round or in the summer/wet season?



Is the stay short or prolonged?



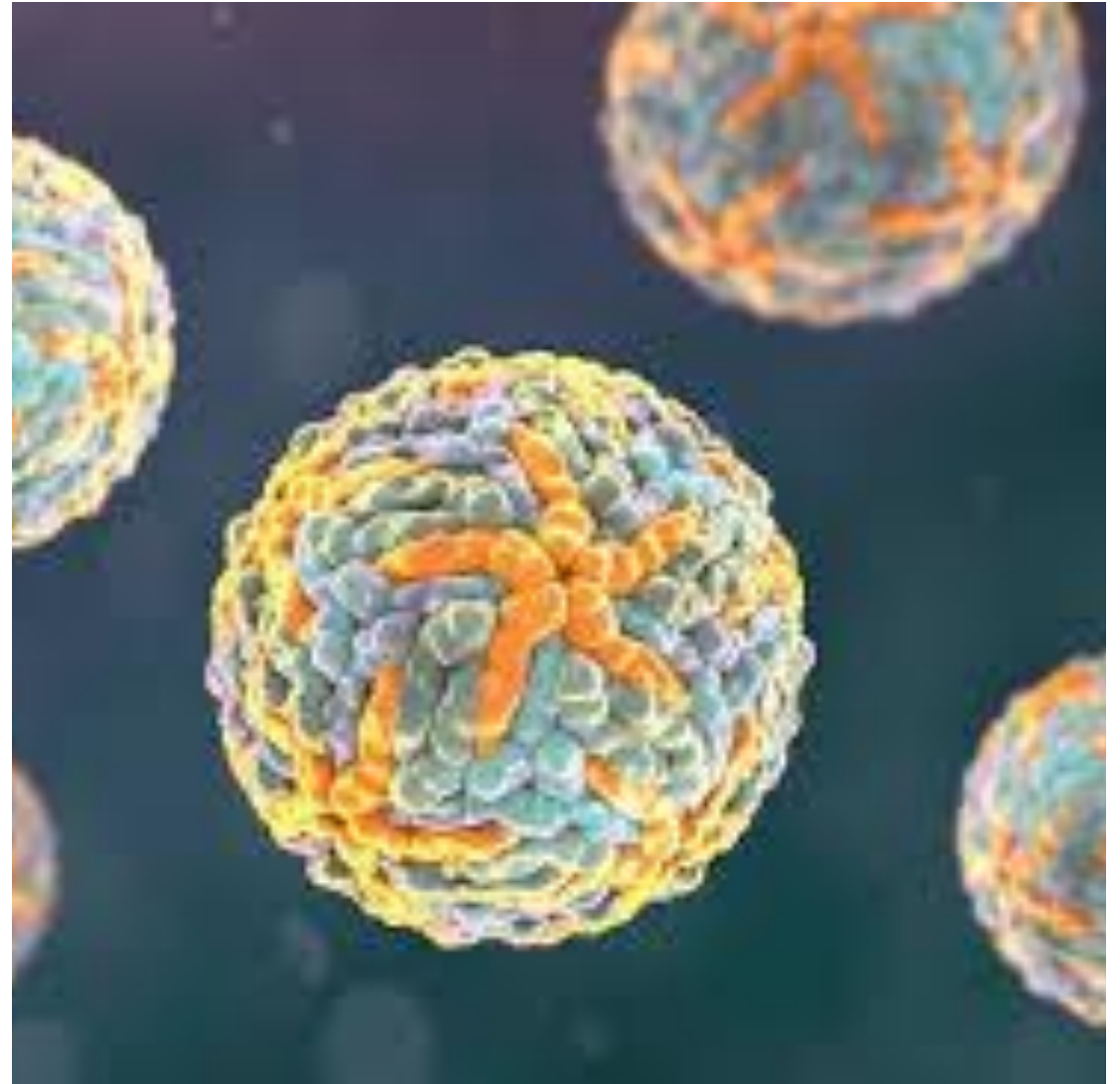
How long will the traveller be in in the at-risk rural area?

Japanese Encephalitis dosing schedule

Product	Age group	No of doses	Dosing interval
Imojev Live Attenuated Japanese Encephalitis	9 months – 17 years	1	Booster at 1-2 years if ongoing exposure to JE
	18+ years	1	NA
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JEspect Inactivated Japanese Encephalitis	2 months – 3 years (0.25ml only)	2	28 days
	3 years – 17 years	2	28 days
	18+ years	2	28 days Booster 1-2 years if ongoing exposure to JE

Dengue Fever

- Mosquito borne infection
- Tropical & subtropical areas
- Usually year long with peaks in wet seasons
- High fever, myalgias, arthralgias, back pain, nausea, vomiting, retroorbital pain, weakness +/- rash
- “Breakbone fever”



Who gets what?: Dengue Fever vaccine

Bindiya aged 6, well but very needle phobic
Came to AUS age 2

Priya, aged 33, well,
Implanon in situ. Dengue fever 8 yrs ago
Came to AUS aged 29



Prasanth aged 1, well
Born in AUS

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Who gets what?: Dengue Fever vaccine

Bindiya aged 6, well but very needle phobic
Came to AUS age 2

No

Priya, aged 33, well,
Implanon in situ. Dengue fever 8 yrs ago
Came to AUS aged 29

Probably not



Prasanth aged 1, well
Born in AUS

No

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

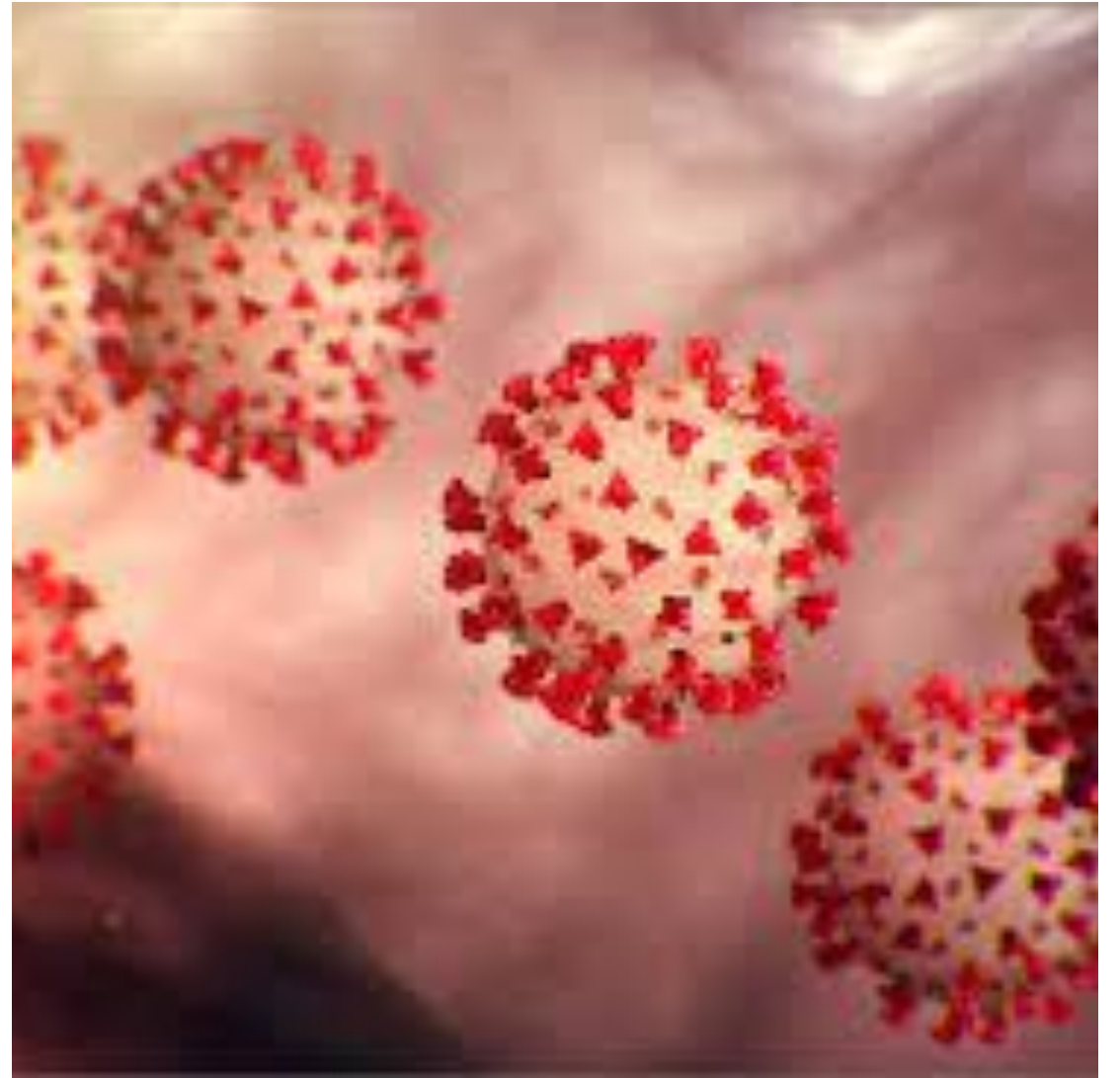
No

Dengvaxia

The ATAGI advice indicates:

- Dengvaxia® is NEVER indicated for primary prevention of initial dengue infection
- Dengvaxia® is potentially harmful and should not be used in people who have never had a dengue infection
- Dengvaxia® should only be used to prevent subsequent, more serious secondary infections in specific groups
- Vaccination in individuals without evidence of previous dengue infection appears to increase the risk of hospitalisation and serious disease
- Dengvaxia® not recommended for short-term stays in dengue-endemic areas, even in people who have had previous dengue infection, as the risks outweigh any potential benefits
- Dengvaxia® should only be considered when all of the following conditions are met:
 - aged 9-45 years; AND
 - have had previous dengue infections; AND
 - are intending to reside in highly dengue-endemic regions for an extended period; AND
 - only if the potential benefits are deemed to outweigh the risks.
- 3 doses at 0, 6 and 12 months, \$700-800 per shot

COVID-19



Who gets what?: COVID-19 vaccine

Bindiya aged 6, well but
very needle phobic
Came to AUS age 2

Priya, aged 33, well,
Implanon in situ. Dengue
fever 8 yrs ago
Came to AUS aged 29



Prasanth aged 1, well
Born in AUS

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Who gets what?: COVID-19 vaccine

Bindiya aged 6, well but very needle phobic
Came to AUS age 2

No

Priya, aged 33, well,
Implanon in situ. Dengue fever 8 yrs ago
Came to AUS aged 29

Consider



Prasanth aged 1, well
Born in AUS

No

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Recommended

The Singh Family: Family Visit to India

- The Singh family return after their trip to Bali to discuss spending 3 months in India with their extended family in the Indian wet season
- The family owns a rice farm in rural Uttar Pradesh
- What vaccines does the family need now?



Vaccine preventable illnesses in India

Already Given

- Hepatitis A + B
- Typhoid
- Influenza + COVID
- MMR

Need to Consider



- Japanese Encephalitis
- Rabies
- Cholera
- Tuberculosis
- Varicella

Vaccine preventable illnesses in India

Already Given

- Hepatitis A + B
- Typhoid
- Influenza + COVID
- MMR

Need to Consider

- Japanese Encephalitis 
- Rabies 
- Cholera
- Tuberculosis
- Varicella

Risk profile has now changed significantly:
prolonged stay with family in high-risk areas at
high-risk times

Cholera

- Caused by contaminated food and water
- Severe diarrhoea and dehydration and metabolic acidosis, NOT gut inflammation
- If severe (rare), death can occur in 6-12 hours if untreated
- Death rates of 2-10% if untreated



Who gets what?: Cholera vaccine

Bindiya aged 6, well but
very needle phobic
Came to AUS age 2

Priya, aged 33, well,
Implanon in situ. Dengue
fever 8 yrs ago
Came to AUS aged 29



Prasanth aged 1, well
Born in AUS

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Who gets what?: Cholera vaccine

Bindiya aged 6, well but very needle phobic
Came to AUS age 2

Yes

Priya, aged 33, well,
Implanon in situ. Dengue fever 8 yrs ago
Came to AUS aged 29

Yes



Prasanth aged 1, well
Born in AUS

No

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Yes

Cholera dosing schedule

Product	Age group	No of doses	Dosing interval
Dukoral	2-6 years Dissolve vaccine in 150ml & only administer 75ml	3	1-6 weeks
	7+ years Dissolve vaccine in 150ml water	3	1-6 weeks

Tuberculosis

- M. tuberculosis can cause both latent (not ill, not infectious) and active disease (ill and infectious)
- Usually inhaled, can be ingested in unpasteurised milk
- Lung disease is 60% active TB, followed by lymphadenitis TB
- Children at risk of miliary and meningeal TB



Who gets what?: BCG vaccine

Bindiya aged 6, well but
very needle phobic
Came to AUS age 2

Priya, aged 33, well,
Implanon in situ. Dengue
fever 8 yrs ago
Came to AUS aged 29



Prasanth aged 1, well
Born in AUS

Nikitha, aged 34, insulin
requiring diabetes
Came to AUS aged 30

Who gets what?: BCG vaccine

Bindiya aged 6, well but very needle phobic
Came to AUS age 2

No, immune

Priya, aged 33, well,
Implanon in situ. Dengue fever 8 yrs ago
Came to AUS aged 29

No, immune



Prasanth aged 1, well
Born in AUS

Yes

Nikitha, aged 34, insulin requiring diabetes
Came to AUS aged 30

No, immune

BCG dosing schedule

Product	Age group	No of doses	Dosing interval
BCG	<12 months 0.05ml	1	NA
	>12 months	1	NA

Question
Time

