Pre-Travel Consultation Guidelines

Pre-Travel Consultation Guidelines Navigation menu

1 PURPOSE OF GUIDELINE

2 INTRODCTION

3 PATIENT CHECKLIST

4 PATIENT CONSULTATION

5 ESTABLISHING A TRAVEL CLINIC

6 APPENDIX 1 THE LAST-MINUTE TRAVELLER

7 APPENDIX 2 ADVICE FOR RETURN TO AUSTRALIA OR NEW ZEALAND

8 APPENDIX 3 LIVE VACCINES

9 REFERENCES

10 ALL REFERENCES, LINKS AND BIBLIOGRAPHY

ACRONYMS

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1 PURPOSE OF GUIDELINE

The purpose of this guideline is to outline the pre-travel consultation and provide a suggested plan for undertaking these consultations as well as considerations for means of gathering information that may aid in this process.

It also provides considerations for those who may wish to establish a travel medicine clinic.

2 INTRODUCTION

- The pre-travel consultation is essential for identifying travel-related risks for the individual (both specific and general), educating the traveller about specific travel hazards and providing prevention strategies such as vaccinations, medications, managing travel related deterioration of pre-existing conditions and other recommendations that may be useful for the traveller.
- The traveller should ideally consult the practitioner 4-6 [1,2], weeks prior to travel to ensure sufficient time to optimise any health conditions, provide any vaccinations required and ensure the traveller has received sufficient education and/or is guided towards relevant health information, and allow any side effects from vaccines to subside. There will be occasions where the intending traveller attends

too late to develop a scheme for advised vaccine recommendations. See Appendix 1 *'The Last-Minute Traveller'* for tips on how to manage this situation.

- Optimally, the traveller should inform the practice when booking the consultation, that it is a travel related consultation to allow sufficient time to be allocated. The patient could be asked to bring relevant information and arrive earlier to complete a travel checklist. Information required includes details of the trip itinerary and activities, vaccination history, medical history (if not a regular patient of the practice), list of all medications (prescribed, over the counter, herbal, regular or occasional etc).

- However, as patients rarely volunteer this information when booking appointments, a patient new to the practice may arrive without relevant information or having completed a checklist. The consultation may need to be delayed allowing time for the traveller to complete the checklist and/or the traveller may need to return for additional consultations (depending on patient factors, proposed travel itinerary etc).
- There is an opportunity with online booking apps to include travel consultation in the options when making the appointment. This could include a prompt to inform the patient to arrive 20 minutes earlier than appointment to complete the checklist and/or provide an online checklist to pre-fill prior to the appointment. Relevant information the patient is advised to take to the consultation could also be included in the prompts when making the booking.
- The consultation between the intending traveller and the travel health professional (THP) is an essential way of individualising health and safety information according to perceived risks in the intended travel. Such information is dependent upon intended destination(s), and duration, type, and time of travel.
- The risk to travellers includes various communicable diseases as well as injuries, accidents or other travelled related conditions. Consideration should be given to travel related deterioration of a pre-existing health condition. Therefore, a personalised risk assessment for each person is required.
- If couples, family members (especially children) or friends attend the same booking, determine if discussions surrounding medical history can be held in their presence (note privacy). Longer consultation times will be required for additional persons attending the consultation.
- The practitioner should provide comprehensive education to the traveller and provide them with information sheets and links to further information, according to their individual needs and requirements. It is essential that all information provided (verbal and written) is recorded in the patient file. Given that travellers only remember a small portion of what they are told in a medical consultation, written information is essential.
- The practitioner should only provide travel advice when they have undertaken relevant training in this area. Medico-legal problems may arise if appropriate advice is not provided and/or if the practitioner fails to recommend appropriate vaccinations or malaria chemoprophylaxis to high-risk

travel areas. Where practitioners have knowledge gaps, referral to a specialist including specialist travel practitioners is essential. See Establishing a Travel Clinic for more information regarding this.

- Increasingly it is becoming more common for patients to request virtual consults which is particularly advantageous for those in regional and remote areas where no specialist travel services exist. It would be advantageous to the practitioner and patient if the patient checklist is completed and submitted, and a review of all previous vaccinations is checked prior to the consult (from AIR (both Australia and New Zealand) and/or patient's yellow book). The practitioner should ensure all items discussed during a face-to-face consultation are included in the virtual consult. Where the patient may require vaccines and/or specific medications and they are unable to attend the practice where the virtual consult was held, a letter should be provided to the patient to take to their preferred practitioner with these recommendations.

3 PATIENT CHECKLIST

The patient should be asked to fill in a checklist prior to the consultation (where possible).

See checklist here

a. Trip details

- Destinations: rural/urban; ocean/mountains/desert/tropics, altitude
- Departure date and duration of trip, duration in each destination
- Transport type – aircraft, sea, train, road, cycling, motorcycling, foot
- Accommodation – all that is planned e.g. hotels, family homes (VFR), hostels, long houses, camping
- Activities planned – skiing, bushwalking/hiking, water sports (kayak, swimming, diving), contact sports, climbing, humanitarian work , medical procedures, other
- Previous travel history (and any problems/experiences)
- Expected food preferences
- Travel insurance

b. Medical history

- Allergies (including anaphylaxis) – to medications, egg, previous vaccinations, foods such as peanuts, other

- Previous vaccinations including any adverse events. It should be noted that vaccines given prior to 2021 in Australia may not be listed on Australian Immunisation Register (AIR) as travel vaccines were not previously recorded on AIR. Any previous vaccines confirmed, should be added to AIR (both Australian and New Zealand registers) for future reference.
- Medications – name, dose, frequency (include all prescribed even if irregular, contraception, over the counter, vitamins, herbal, other) including blood products
- List of possible medical conditions (by system – respiratory, cardiac, renal, liver, haematological, endocrine, neurological, GI, autoimmune, previous surgery); past and present and if they are stable or require monitoring. Particular attention should be made to certain conditions such as previous surgery e.g. splenectomy and thymectomy which patients have a tendency to forget about if not specifically asked
- Is the patient pregnant or planning a pregnancy?
- Date of last dental visit, recent hospitalisation.

4 PATIENT CONSULTATION

The practitioner should consider the flow below to ensure all information is covered in the consultation. Each will be discussed in more detail below.

- (a) Review the checklist completed by the patient to see if there is anything that needs to be highlighted to the patient and considered by the prescribing doctor. Are they a high-risk patient? Are there particular risks at proposed destinations that need considering?
- (b) Vaccines – consider the patients past history of vaccines, what vaccines are needed for the new trip, are there issues with giving certain vaccines such as immunosuppression and live vaccines?
- (c) Education. It is essential to provide the traveller with information about any risks they encounter on their travels as well as ways to reduce risk of food and water borne and arthropod borne disease. Malaria should be discussed if relevant and prophylaxis considered. Kit recommendations should also be discussed. Animal bites are common, and risk, prevention and vaccination should be covered. If specific vaccines are needed for the destination make sure they are discussed in detail.
- (d) Discuss any specific risks to the particular destination which may include tuberculosis, infections from various worms, high altitude, thromboemboli, cruise ships.
- (e) Traveller kits – both general and medical.

4.1 Review Checklist and discuss planned trip

4.1.1 High risk Travellers

The practitioner should explain thoroughly if travel is very high risk e.g. if a pregnant woman will spend time in a highly malarious area, the practitioner may recommend she reconsider her travel.

Travellers who have a higher risk of infections or ill health whilst travelling include:

1. Patients with chronic medical conditions e.g. diabetes, renal disease, autoimmune diseases, obesity, malignancies etc. These diseases may worsen when travelling and should be discussed.
2. Patients on specific medications e.g. corticosteroids, immunomodulating drugs, warfarin
3. Pregnant women/those planning pregnancy
4. Children
5. Travellers visiting friends and relatives especially in low and middle income (LMIC) countries
6. Expatriates
7. Backpackers
8. Sex tourists
9. Medical tourism participants
10. Humanitarian work
11. Animal care

4.2 Vaccinations

Practitioners should be aware of the traveller's risk of infection from vaccine preventable diseases including those with lesser risk but high consequence if infected e.g. Japanese encephalitis, rabies. See Table 1 below which shows infections that are high risk as well as those with low risk but high consequence[3,4].

Table 1. Monthly incidence estimates of travel vaccine-preventable diseases in non-immune travellers*

Disease	Approximate incidence
COVID-19	4 in 100
Influenza	1 in 100
Dengue (symptomatic with seroconversion)	6 in 1000
Rabies risk (animal bite)	4 in 1000
Yellow fever	0.1–1 in 1000
Typhoid (South Asia)	2 in 10,000
Hepatitis A	1–7 in 100,000
Hepatitis B (Asia)	2 in 100,000
Tick-borne encephalitis (rural Baltics)	5 in 100,000
Measles	3 in 100,000
Pertussis	2 in 1,000,000
Typhoid (Africa, Latin America, Middle East, South East Asia)	8 in 1,000,000
Active tuberculosis	2 in 100,000
Typhoid (Caribbean, North East Asia)	<1 in 1,000,000
Japanese encephalitis	<1 in 1,000,000
Rabies (fatal)	<1 in 1,000,000
Meningococcal disease	<1 in 1,000,000
Cholera	<1 in 1,000,000
Diphtheria	<1 in 1,000,000

* Adapted from Steffen R, et al. Travel vaccines-priorities determined by incidence and impact. J Travel Med 2023; 30: taad085.[2]

Reproduced with permission from: Streeton C, Chu S. An update on travel vaccinations. Medicine Today 2024; 25(10): 47-58. Adapted from: Steffen R, et al. Travel vaccines-priorities determined by incidence and impact. J Travel Med 2023; 30: taad085.

Always consider vaccines needed for proposed trip and anticipated activities.

It is beyond the scope of this document to outline what vaccines are required for which destination or traveller – however there are some general guidelines that may be useful as discussed below.

- Discuss **routine** vaccines that are recommended for the individual that is specific to their health, age, lifestyle and occupation. These will include being up to date with all childhood vaccinations, including: tetanus, diphtheria, pertussis, polio, measles, mumps, rubella, meningococcal, HIB, Hepatitis B, HVP, varicella/shingles, influenza and pneumococcal, RPV and SARS-CoV-2, vaccines for those with relevant risk factors or of a certain age. Travellers may be at increased risk of exposure during travel e.g. diphtheria, measles, polio hence travellers should be clear why these vaccinations should be kept up to date.
- Discuss **recommended** vaccines based on age of traveller, itinerary, activities and risk of exposure to disease e.g. typhoid, hepatitis A, Japanese encephalitis, rabies, dengue fever, meningococcal ACWY +/- B, tuberculosis, yellow fever, tick-borne encephalitis, Q fever.
- Discuss **required** vaccines for entry into certain countries or required by International Health Regulations e.g. Yellow Fever, Meningococcal ACWY, polio (as appropriate for proposed trip).

Table 2: Vaccines to consider and discuss with traveller

	Type of Vaccine
Routine – up to date with vaccines specific to age and medical conditions	Tetanus Diphtheria Pertussis Polio Measles Mumps Rubella Meningococcal ACWY & B HiB (Haemophilus influenzae, B) Hepatitis B

	Human Papilloma Virus Varicella/Shingles Influenza Pneumococcal RSV SARS-CoV-2
Recommended based on – age – itinerary – activities – risk of exposure	Typhoid Hepatitis A Japanese Encephalitis Rabies Meningococcal ACWY, B Tuberculosis Yellow fever Dengue fever* Tick borne encephalitis* Q fever
Required – for entry into certain countries or required by International Health Regulations	Yellow Fever Meningococcal ACWY Polio

* Recommended for some travellers. Currently needs to be imported into both countries. Seek expert advice.

For more information on vaccinations for international travel see here and here

For a list of vaccinations by destination see recommendations from: Australia, New Zealand, CDC and UK.

Practitioner needs to:

- Consider whether there is time to provide recommended vaccines prior to departure and/or whether an accelerated schedule is required. Young children may require routine vaccines at the *minimum age* rather than *recommended age* particularly if visiting countries with a high risk of vaccine preventable diseases such as measles.[5] See minimum age for vaccinating children in Australia (table), New Zealand (handbook). See Appendix 2 for a list of vaccines that can be given as an accelerated schedule
- Ensure every traveller is aware of the cost of vaccines. Some travellers may consider the recommended vaccinations are not good value for their personal budget, however it is important to outline the ramifications of not being vaccinated i.e. becoming infected and unwell whilst travelling or on return (including possible long-term outcomes such as ongoing hepatitis, inability to work, risk to contacts and family members, disruption to trip etc). It is also useful to highlight value of vaccines in conjunction with cover for possible future travels.
- Checklist for contraindications/precautions to vaccinations (Australia,[6] table 2.2.NZ[7]) prior to prescription
    - Perform live vaccine check list if needed
    - History of egg allergy is not a contraindication[8] to some of the vaccines previously considered a problem e.g. influenza, MMR, (see Australia,[9] NZ here and here) but for others (Q fever, Yellow fever), specialist advice is required[10]
    - Pregnancy/breastfeeding
    - Have other parenteral live vaccines been administered within 4 weeks? Ensure live vaccines are administered on the same day (otherwise 28 days is required between doses (excluding oral live vaccines (typhoid, polio, cholera and rotavirus) which can be administered at any time interval). One Brazilian study in children under 2 years, suggested yellow fever and MMR should be given at least 30 days apart to improve seroconversion rates hence where sufficient time may allow administration 30 or more days apart, seroconversion rates may be higher.[11] Where time may not permit this, an alternative would be to check serology for measles, mumps and rubella and if negative and both vaccines are required, inform the patient seroconversion may be suboptimal. See Appendix 3 Live vaccines for a list of live vaccines. Note – if you are sending your patient to a specialised travel clinic, please avoid giving live vaccines until *after* they have seen that clinic
    - Has patient received blood or blood products (immunoglobulin) within 12 months? (Australia[12], New Zealand Table A6.1 here[13])
    - Immunocompromised e.g. is patient on immunosuppressive drugs, having chemotherapy or radiotherapy? (Australia[14], New Zealand[15]).

- As is good practice contraindications, or allergies or otherwise needs to be document in patient file

- Explain and preferably provide a handout of possible side effects of all vaccines. Give information to the patient on what they should do if they feel they are having side effects after office hours.
- If verbal consent provided, document that in the patient records; if written consent, include signed consent in patient's notes (patient also needs to be provide explicit verbal consent even if written consent is provided at a previous consultation). Explicit verbal or written consent is required at every consultation.
- All vaccines provided should be recorded in the patient's electronic record and the immunisation register (AIR), if no automatic software link. Where the patient is required to have written proof of vaccination (such as yellow fever vaccine), the international certificate of vaccination and prophylaxis (yellow) book also needs to be completed.
- Specific vaccines
  - Yellow fever vaccination must be given by an accredited centre and documented on the International Certificate of Vaccination or Prophylaxis (ICVP) in the yellow vaccination book.
  - For travellers who are required to receive the polio vaccine or meningococcal (ACWY) for travel, documentation is also required on the relevant page in the International Certificate of Vaccination or Prophylaxis (ICVP). In some vaccine books there is a specific page for meningococcal vaccine annotated in Arabic.

4.3 Education about Risks and Prevention

Vaccines may be the catalyst for travellers to seek health care, but the consultation affords an important opportunity to educate travellers. Protective health behaviours may sometimes be more effective than vaccinations at ensuring optimal health outcomes.

4.3.1 Checklist of Potential Educational Needs of Travellers

Table 3: Checklist for Practitioner

The following topics are included in this guideline below:

- Food and water borne diseases including prevention, food and water precautions and management of traveller's diarrhoea
- Arthropod Borne diseases including bite prevention, repellents, bed nets
- Animal bites – avoiding risk exposure and what to do if bitten by dogs, rodents, monkeys
- Blood borne infections including Hepatitis B, C, HIV
- Respiratory disease prevention including TB prevention – hand hygiene, masks, social distancing
- Worm infections including schistosomiasis, strongyloides, hookworm, ascaris
- Marine environment—water safety, marine envenomation, ciguatera, fresh and seawater infections
- High altitude travellers
- Cruise ship risks
- Thrombosis prevention, hydration
- Activities such as trekking, diving, skiing, climbing
- Accident prevention e.g. motor vehicles, motorcycles, lifejackets during boat travel
- Travelling with medications
- Travel insurance

Additional topics which should also be considered where relevant include:

- Jetlag and adjusting to new time zones
- Motion sickness
- Extremes of hot or cold climates
- Sexually transmitted disease prevention
- Personal security
- Acquisition of antibiotic-resistant bacteria and implications for surgery and treatment of infections on return
- Mind altering drugs/herbs, alcohol, methanol
- Culture shock

- What to do if you get sick
- Special recommendations related to travellers' individual medical history

Adapted from 'Pre and Post-Travel Medical Consultations'[16]

4.3.2 Food and water

(see Food and Water guideline for more detailed information)

- Provide education on the risk of infections from contaminated food, water and ice. Bacteria (including *E. coli,* Salmonella spp, *Campylobacter jejuni*, Shigella spp), viruses (Hepatitis A, E, norovirus, rotavirus) and parasites (*Giardia lamblia, E, histolytica*) are all common causes of gastrointestinal infection in travellers with patients often experiencing vomiting, diarrhoea, abdominal pain and other symptoms.
- Prevention strategies can be discussed and should include information about good personal hygiene, drinking boiled/treated/filtered/bottled water, eating hot and well-cooked food/avoiding pre-cooked food, raw meat & seafood, avoiding salads unless vegetables cleaned in boiled/treated water. Travellers are recommended to eat at locations which are busy, have a fast turn-over of food, and have locals eating at them. Provide information sheets for travellers to read such as here and here .
- Vaccination for Salmonella Typhi and Hepatitis A is advised if the traveller is visiting areas of endemicity (diseases are often endemic in low and middle-income countries and in areas of poor sanitation). Table 1 above gives information about general incidence of these diseases. It can be noted that there are wide variations in areas of the world in terms of typhoid risk. Travellers with liver disease or immunosuppression are strongly encouraged (regardless of travel destination) to have Hepatitis A vaccine to avoid severe disease.
- Travellers should be up to date with polio vaccine which remains endemic in some countries. See here for a list of countries with polio outbreaks Some countries may require certification of polio vaccination and an international certificate (ICVP) as a condition of entry. See here for information about polio by destination Australia, New Zealand and for vaccine effectiveness and duration of protection here.
- Treatment of travellers' diarrhoea (TD) depends on the severity, impact on activities and duration of symptoms. Appropriate treatment always includes ensuring adequate fluid intake preferably with oral rehydration solution.
    - ***Prophylactic*** antibiotics are **not** routinely recommended due to the high risk of adverse effects including promotion of drug-resistant bacteria.

- An anti-motility agent should **not** be routinely recommended but may be useful where travellers can't delay their travel, and diarrhoea may be problematic or inconvenient e.g. long trips (road or air).
- Anti-motility medications should not be used in children or if the traveller has fever or bloody stools.
- Traveller's diarrhoea is usually self-limiting Antibiotics are not routinely recommended in the ***treatment*** of traveller's diarrhoea as the potential benefit in reducing symptoms of the traveller may only be a number of hours or days[14] and needs to be balanced against the potential side effects of increasing antimicrobial resistance and post antibiotic sequalae.
- Hence, antimicrobials should only **be recommended** as standby treatment for patients with severe diarrhoea **with** a high risk for complications if severely dehydrated e.g. diabetics, immunosuppressed ***or*** those who are travelling very remotely and may not have access to adequate health care.
- Azithromycin is the preferred option in terms of effectiveness, however the patient needs to be warned that there is still a risk of resistance.
- One dose of azithromycin is recommended with additional dose or change of antibiotics only if there is no improvement. Medical Care should always be sought if there are any concerns. See Food and Water guideline for more details.

- Provision of a TD treatment kit is recommended for most travellers. The contents will vary depending on the individual's risk factors (age, medical conditions, style of travel and activities planned), season and destination of travel (which would determine the most prevalent intestinal pathogens) and access to adequate local medical facilities. For more details on the specifics to consider in a medical treatment please see 'food and water guidelines'.

Table 4: Traveller's Diarrhoea Kit

Basic Kit items	• Oral rehydration sachets • Antimotility agent e.g. loperamide (if not contraindicated)
Additional Kit items to consider	• Anti-emetic e.g. metoclopramide (>20 years only) or ondansetron (children and adults)

- Anti-spasmodic e.g. hyoscine butylbromide (buscopan)
- Antibiotic known to be effective in all regions BUT only recommended under specific circumstances e.g. Azithromycin (see Food and Water guideline for details of when to use)
- Anti-parasitic agent (metronidazole or ornidazole (NZ))

4.3.3 Arthoropod Borne Diseases

(see additional links for guidelines for more comprehensive information: Arthropod-Borne Diseases guidelines, Malaria guidelines and Japanese Encephalitis guidelines)

- The most important message to convey to travellers is '**no bite = no disease'**
- Viruses, bacteria and parasites can be transmitted to humans through the bite of arthropods, many of which can cause severe disease including fatalities
- Knowledge of planned activities and specific vector-borne disease risks at all destinations are necessary to provide the best advice on prevention

Arthropods most likely to affect travellers, and the diseases that they transmit, include the following:

Table 5: Arthropods causing potentially serious infections in travellers

Mosquitoes	
day-time biting – Aedes spp	Dengue fever Chikungunya Yellow Fever Zika
night time biting – Anopheles spp	Malaria Filaria

night time biting – Culex spp	Japanese Encephalitis Filaria West Nile fever
Ticks	Lyme disease (*Borrelia burgdorferi*) Tick-borne encephalitis African tick bite fever *(Rickettsia africae)*
Mites	Scrub typhus (*Orientia tsutsugamushi*)
Fleas	Murine typhus (*Rickettsia typhi*) Plague (*Yersinia pestis*) Relapsing Fever (*Borrelia recurrentis*)
Lice	Epidemic Typhus (*Rickettsia prowazekii*)
Flies	Sandflies (Leishmaniasis) Tse tse (African trypanosomiasis) Black (Onchocerciasis) Myiasis – Bot fly (South and Central America) – Tumbu (Africa)_
Triatomine bugs	American trypanosomiasis

Adapted from WHO Vector-borne Diseases (2024).[18] For additional information see here.

Bite Prevention

It is essential to educate travellers to take precautions to avoid bites (of all arthropods) wherever possible

- Regular use of effective repellents (including DEET, picaridin, OLE or IR3535 (ethylbutylacetylaminoproprionate (Fend))
- Possible use of insecticides (mosquito coils, electrical vaporising mats)
- Wearing of long-sleeved tops and long pants to reduce amount of bare skin
- Treatment of clothes, sleeping sheets and equipment with an insecticide e.g. permethrin
- Sleeping under insecticide-impregnated mosquito nets or in rooms with screens or air-conditioning
- Avoidance of outdoor activities between dusk and dawn if possible, when mosquitoes are most active
- Check body for ticks after being outdoors in potentially tick-infected areas; shower soon after coming indoors

4.3.4 Malaria

(see Malaria guidelines for more detailed information)

- Transmitted by Anopheles species mosquitoes, which are typically evening and night-time biters
- Access to detailed malaria information including maps, is vital when conducting a risk assessment. This allows practitioners to check whether the traveller will be visiting a malaria-endemic area and assess the level of risk. The information should clearly outline key factors such as areas of risk, peak transmission seasons, drug resistance patterns, and predominant Plasmodium species. For specific country-level malaria information, consult resources such as the CDC (more risk averse than other recommendations), Travel Health Pro (UK), Fit for Travel (UK) and Public Health England or some commercial sources.
- Education of the traveller is paramount for malaria prevention
    - location of the risk areas in itinerary
    - prevention through avoiding mosquito bites
    - malaria symptoms to be aware of (fever, chills, headache, myalgia) and the importance of seeking medical attention promptly if they become ill during their journey or on return to Australia or New Zealand
    - travellers who have been in a malaria area for 7 days or more who develop a fever, should consider themselves to have malaria until proven otherwise (and hence be tested for malaria)
    - information on diagnostic options including possible self-test kits and standby treatment

- Chemoprophylaxis should be considered for all travellers visiting malaria-endemic areas. Decisions about chemoprophylaxis should be based on a risk assessment of the traveller's plans and personal factors. It is important to fully explain the available options, including costs, side effects and dosing schedules. See malaria guidelines for details.
- Certain individuals, such as children, pregnant women and those with asplenia or hypo-splenism are at higher risk of severe malaria. Pregnant women, in particular, should avoid malaria-endemic areas if possible.
- Migrants from malaria-endemic areas may have acquired partial immunity due to previous malaria infections, but this is lost very quickly. They are often not aware that they are at risk of severe disease if returning to their birthplace.
- Long-term travellers or expatriates, may find taking chemoprophylaxis long term/indefinitely may not be an attractive option. If they are planning to live in a risk area long term, they may opt to take malaria chemoprophylaxis until they are settled, have all prevention measures in place and identify local medical facilities for treatment if needed.
- Backpackers may also prefer to avoid long term chemoprophylaxis. In such cases, carrying a malaria self-test kit and stand-by emergency self-treatment can be a useful option, particularly if they may be in remote areas without immediate access to good medical care.
- See here for
    - Australia and New Zealand travel medicine malaria guideline
    - Malaria information by country – CDC, Travel Health Pro (UK)
    - Recommendations for prevention and prophylaxis
    - CDC Malaria information

4.3.5 Japanese Encephalitis (JE)

(see JE guideline for more detailed information)

- **Dusk and Night-time biting** Culex spp mosquitoes are vectors for Japanese Encephalitis
- JE is a vaccine preventable disease that is a significant public health problem in many parts of Asia and the Western Pacific. The risk of infection in travellers is largely dependent on season and duration of travel, style of accommodation, activities planned, and whether it involves rural/repeat/expatriate or VFR travel

- JE is classified as a low risk, high consequence disease with those becoming symptomatic having a high risk of severe illness and death
- Prevention of infection includes:
    - avoiding dusk to dawn Culex mosquito species bites by using effective insect repellents, contact insecticide, mosquito nets/coils, staying in screened accommodation
    - vaccination is recommended for travellers spending one month or more in endemic areas in Asia and Papua New Guinea during the wet season **or** those travelling less than a month but may have ongoing travel (frequent, shorter trips), are travelling during wet season, experience considerable outdoor activity or sleeping in rooms without screens or nets. See JEG for more information on vaccines
- For additional information on JE see here.
- JE has occurred in Australia but will not be covered in this document.

4.3.6 Dengue, Chikungunya and Zika Infections

- See Arthropod borne disease guidelines for more detailed information.
- The vectors for Dengue fever, Chikungunya and Zika are *Aedes aegypti* (predominantly) and *Ae. albopictus* mosquitoes which are **daytime-feeding** and inhabit densely populated areas. Peak biting times are dawn and dusk however they can bite at any time during the day (particularly if it is overcast). Both species have a preference for mammalian blood, however *Aedes aegypti* are more likely to feed on humans.
- The global distribution of both species combined is wide and increasing due to climate change, with populations becoming established in more temperate climates and at higher altitudes. Dengue fever and chikungunya are considered a risk in more than 100[19,20] countries and to date, 89 countries and territories have reported evidence of Zika virus infection.[21]
- Common symptoms for all three viruses are fever, headache, muscle pain, joint pain and rash. Severe disease can occur in dengue (but is more common in secondary infections) whereas Zika and Chikungunya are more likely to produce acute and chronic symptomatology.
- Pregnant women should avoid infection at any stage during their pregnancy as Zika may cause microcephaly and other neurological effects in newborns. Those planning a pregnancy should avoid travelling to Zika risk areas prior to pregnancy. It is recommended to wait for 3 months if travel has been made to a Zika risk area prior to pregnancy. If a woman is pregnant and her partner travels to a risk area, safe sex should be practiced for the remainder of the pregnancy.

- Due to their predilection for urban habitats and mammalian blood, the mosquitoes capable of transmitting dengue fever, chikungunya and Zika virus are a substantial risk for most travellers to at-risk areas – even cruise day-trippers spending a day in port. As a result, insect bite prevention measures must be explained fully.
- Dengue vaccination is currently not recommended for all travellers, though may be advised for those who have had the disease previously and who plan to visit an endemic area for a long period e.g. expatriate. Referral to a specialised clinic may be warranted for a discussion regarding the suitability of Dengue vaccination. See arthropod borne disease guidelines for more information on vaccinations.
- Vaccines are now available for both chikungunya and Zika virus, but neither are yet readily available in Australia or New Zealand.
- For risk maps see here: dengue, chikungunya and Zika .
- For more information see insect guidelines and also dengue, chikungunya and Zika

4.3.7 Yellow Fever

For more information see Arthropod Borne disease guideline.

- Yellow fever is a mosquito-borne viral infection that can be severe and cause death.
- The vector for Yellow Fever in urban areas is predominantly *Aedes aegypti* which are **daytime-feeding** and inhabit densely populated areas. These mosquitoes are also responsible for transmission of dengue fever, chikungunya and Zika virus. In rural areas, additional Aedes species as well as *Haemagogus* and *Sabethes* species are also vectors for Yellow Fever. Most disease occurs in rural areas (jungle and savannah) rather than urban areas where the disease is periodic or sporadic.[22] Travellers working in or partaking in activities in rural areas need to be aware of the risks of disease.
- Travellers 9 months and older travelling to a yellow fever transmission country (tropical and subtropical areas of Africa and Central and South America) may be recommended or required to be vaccinated against the disease. See vaccine recommendations from WHO, for Australia[23] and New Zealand.[24]
- For a list of countries where transmission occurs see WHO and CDC.
- Many countries require a valid International Certificate of Vaccination or Prophylaxis (ICVP) against yellow fever (or letter of exemption) if the traveller arrives from a country of known risk of transmission.
- Travel health practitioners will need to check entry requirements for countries the traveller intends to visit (including transit for 12 or more hours) prior to departure. See CDC, WHO and PAHO for more

details. For Australian information see here and New Zealand here.

- Practitioners require training and certification to provide the vaccine otherwise they must refer to a specialised centre (Australia, New Zealand). Online training is available: Australia, New Zealand.
- All travellers will need to be educated about avoiding mosquito bites (even when vaccinated), wearing appropriate clothing and using personal insect repellents. See Prevention above.
- For more information on Yellow Fever vaccination see Australia, New Zealand and CDC.

4.3.8 Ticks and mites

- Travellers who engage in bushwalking, camping and other outdoor activities are at risk of being bitten by mites and ticks in endemic areas.
- Serious infections include scrub typhus (mite-borne) found in Asia/Pacific; tick borne infections of Lyme disease (Europe, North Asia and North America) and Tick-borne encephalitis (Europe, North Asia). A vaccine for tickborne encephalitis is available. For more information see Arthropod Borne disease guideline
- Travellers are advised to be fluent about the use of insect repellents, permethrin treated clothes and equipment during activities. They need to be encouraged to check for mites and ticks at the end of the activity and shower soon after where possible.

4.3.9 Flies

For more information see Arthropod Borne disease guideline

- Flies can transmit diseases including sleeping sickness (Trypanosomiasis), river blindness (Onchocerciasis) and Leishmaniasis. Travellers visiting game parks in some parts of Africa are at risk of tsetse fly bites (Trypanosomiasis) and are therefore encouraged to wear lightly coloured long sleeved shirts, long pants and hats. Blue and black colours are to be avoided since the flies appear to be attracted to these colours and may bite through clothes of these colours.
- Myiasis can occur in South, Central America and Africa. Ironing clothes after they have been dried in the sun and thus potentially contaminated with fly eggs, will prevent infection by killing eggs of the fly.

4.3.10 Rabies

(see Rabies guideline for more detailed information)

- Most Australian and New Zealand travellers lack an awareness of the potential risk of rabies or other lyssavirus infection. See table 1 above. Infection is caused by exposure to saliva or neural tissue from an infected animal e.g. usually a dog, but can also be a bat, cat, monkey or any other mammal and is almost always fatal once symptoms appear. Humans can be exposed through a bite or scratch that breaks the skin or direct contact of the virus with the person's mucosa (nose, eye, mouth)[25]
- A risk assessment for vaccination is recommended for expatriates or travellers visiting rabies endemic areas where:
  1. there is limited access to immediate medical care
  2. when contact with animals is anticipated
     Children who may not report bites or scratches, long-term travellers, expatriates, those going on repeated trips and those who work with animals in rabies-endemic regions are at higher risk

- Areas where rabid dogs are common include Africa, Asia, Central and South America. Bats anywhere are a potential source of lyssavirus
- Travellers are advised to avoid contact with all animals when travelling even if the animal appears well
- If bitten, scratched or mucosa is in direct contact with a potentially infected animal or bat, it is essential to wash the area well with soap and water. Flush with copious amounts of water for at least 15 minutes.[16] Application of povidone-iodine or alcohol may be useful to also reduce bacterial infection. Do not suture or cover wound. Seek immediate medical care including post exposure prophylaxis (even if pre-exposure vaccine has been provided). See table below.

Many endemic countries do not offer either post exposure prophylaxis (PEP) or immunoglobulin and therefore pre departure vaccination is highly recommended for those at risk. Various pre-exposure schedules exist including:

Table 6: Categories of contact and recommended post-exposure prophylaxis (PEP) (27)

Categories of contact with suspect rabid animal	Post-exposure prophylaxis measures
Category I – touching or feeding animals, animal licks on intact skin (no exposure)	Washing of exposed skin surfaces, no PEP
Category II – nibbling of uncovered skin, minor scratches or abrasions without bleeding (exposure)	Wound washing and immediate vaccination
Category III – single or multiple transdermal bites or scratches, contamination of mucous membrane or broken skin with saliva from animal licks, exposures due to direct contact with bats (severe exposure)	Wound washing, immediate vaccination and administration of rabies immunoglobulin/monoclonal antibodies

Category II and III exposures require PEP

- For more information on rabies see
  - Australia and New Zealand Rabies Travel guidelines
  - Australia
  - WHO including map of endemicity

Link to rabies guideline

4.3.11 Blood and Body Fluid Borne Infections

- HIV, Hepatitis B and C can be transmitted via contact with contaminated blood, blood products and other bodily fluids including semen (HIV, Hepatitis B and rarely Hepatitis C)
- Education should be provided about high-risk behaviours which include: unprotected sex, sharing drug injection equipment, poor infection control practices (poor processing of medical/dental

equipment including for body piercing and tattooing, use of multi-dose vials for injections is common in some LMIC) and unscreened blood for transfusions

- Hepatitis B vaccination should be offered to all those travelling to endemic areas as well those at higher risk of HIV (visit sex workers, casual sexual encounters, men who have sex with men (MSM) or people with multiple, casual partners).[28] Hepatitis B vaccine can be given as a combination with Hepatitis A. See here for more information on combination vaccines: Australia/New Zealand and Appendix 2 for accelerated schedule
- For more information on hepatitis B see Australia/New Zealand
- International travellers should also be advised that some countries have entry and exit requirements for individuals with AIDS infection. See here for more information.
- Travellers at risk of HIV may also consider pre-exposure prophylaxis (PrEP), an effective preventative HIV infection option.

4.3.12 Airborne infections

N 95 masks

Wearing N95/P2 facemasks may be useful in poorly ventilated or crowded environments e.g. airports (security screening, passport control, airbridges), trains and buses.

COVID-19

- Infection from SARS-CoV-2 virus remains a problem with frequent surges in infections in most countries and is a common infection in travellers (see Table 1). All travellers should be up to date with recommended vaccinations for their age and risk factors. Those at higher risk of severe disease should be aware of what they can do whilst travelling to reduce their risk and what they may need to do for treatment if infected whilst travelling.
- See COVID-19 Guidelines[29] for more detailed information.

Influenza

- Those at higher risk for severe illness from influenza should be up to date with their vaccination prior to travel.
- Vaccination for all travellers should be considered as it is a common disease in travellers (see Table 1). It is particularly recommended if travelling to a destination with an influenza epidemic, if travelling

on a cruise, in a large tourist group (particularly one that includes older persons) or if participating in mass gatherings.

Meningococcal meningitis

- Vaccination is recommended for travellers visiting areas where epidemics of serogroups A, C, W or Y meningococcal disease occur (particularly sub-Saharan Africa)[30] See map here
- Vaccination for both MenB and MenACWY vaccines is also recommended for travellers (particularly adolescent and young adults), who will stay in hostels or dormitory accommodation during travel
- Proof of vaccination is required for entry when visiting the Hajj into Saudi Arabia. See here and here for more details
- For more information see WHO, vaccine recommendations for Australia here and here; New Zealand.

4.4 Destination specific topics to consider

4.4.1 High incidence Tuberculosis countries

- Children under 5 years are at highest risk of severe disease from tuberculosis when visiting or living in a country of high incidence (≥40/100,000). The longer the exposure, the greater the risk of infection. Vaccination with BCG is most effective at preventing severe TB (miliary and tuberculous meningitis) in this age group
- Vaccination should ideally be given at least 3 months before departure to a high-risk destination to allow time for the vaccination site to heal. Other live vaccinations can be given at the same time or after 4 weeks (MMR, yellow fever, varicella). TST / IGRA should be performed prior to vaccination if over 6 months of age to rule out previous infection
- Australia and New Zealand differ a little in their recommendations for vaccination of children under 5 years
- In Australia a risk assessment is recommended for children under 5 years who
    1. have parents from high incident countries: BCG is not routinely recommended due to low TB incidence in Australia, but parents should consider vaccination if there is a risk of exposure (e.g. from themselves if recently in high incident country, relatives visiting them in Australia or if travel to place of parent's origin if planned (see no. 2 below)

2. those who will travel and/or live in high incidence countries. The risk assessment should consider the age of the child, TB incidence at destination(s), proximity of contact with others (VFR increases risk), length of time exposed (the longer the stay and/or multiple trips under 5 years increases the risk of infection)[31]
   Health practitioners should discuss with families as early as possible e.g. during a pregnancy so if the risk of exposure is high, there will be sufficient time to have the child vaccinated before potential exposure from visiting family members or travel. Access to existing BCG clinics may be limited, therefore the earlier a child is referred for consideration of BCG the more chance of obtaining it prior to travel.

3. The need for a tuberculin skin test prior to vaccination should also be determined by an individual risk assessment.[32] See here for more details.
   Seek expert advice from State or Territory TB/Chest clinics or paediatric infectious disease physician.

New Zealand currently recommends the following:[33]

- **Neonatal BCG** is recommended and funded for infants at increased risk of TB, defined as those who:
  - will be living in a house or family/whānau with a person with either current TB or a history of TB
  - have one or both parents or household members or carers who within the last five years lived for a period of six months or longer in countries with a TB rate ≥40 per 100,000
  - during their first five years will be living for three months or longer in a country with a TB rate ≥40 per 100,000

- Funded BCG may be offered to **children aged under 5 years** if they are tuberculin skin test negative or interferon gamma-release assay negative and are at increased risk of TB because they:
- will be living in a house or family/whānau with a person with either current TB or a history of TB
- Have one or both parents or household members or carers who within the last 5 years lived for a period of 6 months or longer in countries with a TB rate ≥40 per 100,000
- During their first 5 years will be living for three months or longer in a country with a TB rate ≥40 per 100,000

Older children and adults

- Vaccinating older children and adults is less beneficial and not routinely recommended.

See WHO, Australian Immunisation Handbook and New Zealand Immunisation Handbook for more information

4.4.2 Schistosomiasis

- Schistosomiasis is a parasitic disease caused by trematode worms. There are two major clinical forms – urogenital and intestinal caused by various species. The majority of schistosomiasis infections occur in sub-Saharan Africa (*Schistosoma mansoni and S. haematobium*), but other areas of transmission include Middle East, Caribbean, Brazil and more recently in Corsica, Europe as well as China and SE Asia (intestinal form due to *japonicum, S. mekongi*).
- Travellers returning to see friends and relatives as well as 'adventure' travellers are most at risk of infection.Infections occur when larval forms of the parasite penetrate the skin during contact with fresh water (swimming, bathing, wading and fishing in rivers, lakes or smaller bodies of water).
- Prevention is through avoiding this contact in known areas of infection. Water for bathing should be boiled and cooled prior to use or left standing for a day (provided no snails are present). Wear boots or waders if crossing an at-risk watercourse. Swimming in chlorinated pools or the ocean is safe.
- For travellers who have been exposed, serology can be obtained 3 months after exposure and if positive can be treated. This does not apply to those who are from schistosomiasis endemic regions or those who have previously lived in an endemic region)

4.4.3 Other skin infections

- Avoid walking barefoot (including when at a beach unless below the high tide mark where the sand is cleaned by the tides) and through flooded waterways to reduce risk of parasitic (hookworm, strongyloides, ascaris) and bacterial infections (melioidosis, leptospirosis). See Food and Water borne infections for additional information.

4.4.4 Travel to areas of High Altitude

- The practitioner needs to provide advice to travellers who are planning to spend time at or above 2500m, so history of travel plans and activities are essential.

- Altitude illness can occur in any traveller ascending to 2500 m or higher unless they are acclimatised. Both children and adults are susceptible with no screening tests to predict the risk.
- As one ascends, the fraction of inspired oxygen (FiO2) decreases (normal FiO2 is 21%) which can lead to hypoxic stress
    - At 2,500m = FiO2 is 15%
    - 3,500m = 14%
    - 4,500m = 12%

- If a person has experienced acute mountain sickness (AMS) (or the more severe outcomes of rapid ascent), they will likely suffer it again under the same conditions.
- Most people will tolerate an ascent to 2,500 metres with minimal effects, however above this altitude AMS symptoms may become apparent
- 4 factors influence the risk of developing AMS:
    - Elevation at destination
    - Rate of ascent
    - Amount of exertion
    - Individual sensitivity to AMS

- There are three syndromes of altitude sickness:
    - Acute Mountain Sickness (AMS). This is the most common and is similar to a ‘bad hangover’ – headache, loss of appetite, nausea, fatigue, dizziness, disturbed sleep and occasionally vomiting. Periodic breathing is common during sleep at high altitudes.
    - High Altitude Pulmonary Oedema (HAPE) develops after 2 or 3 days of altitudes above 2500m. Initially they are breathless on exertion and will also have symptoms of AMS. Cough is often present and may be associated with white or pink frothy sputum. The person becomes weak and then develops breathlessness at rest. Symptoms are similar to chest infection however without treatment (descent, oxygen) the condition can be fatal.
    - High Altitude Cerebral Oedema (HACE) is a severe form of AMS but is fortunately rare. The person becomes increasingly confused, drowsy, unsteady and ataxic. Death can occur within hours, so descent is essential.

- **Prevention**

- The best preventive strategy for altitude illness is gradual ascent to allow acclimatisation. Ideally travellers should take 2 or more days to ascend to an initial 3000 metres, with subsequent increases in sleeping elevation of no more than 500 metres each day
- Avoid going from low elevation to more than 2800 m in one day
- Once at 3000 m, sleep no higher than 500 m each night
- Take a rest day with each 1,000m climb
- Climb high, sleep low
- Avoid alcohol (at least for initial 48 hours)
- Avoid smoking and sedatives
- Recognise symptoms early (symptoms at altitude are altitude sickness until proven otherwise)
- Do not ascend further if experiencing any symptoms of altitude illness. If mild symptoms, wait until acclimatised before ascending further. If more severe symptoms, descent is imperative
- Consider using acetazolamide to speed acclimatisation if abrupt ascent is unavoidable
    - Start the day before ascent and continue to maximum altitude. If staying at the same altitude, acetazolamide can be stopped after 2 or 3 days as traveller will be acclimatised.
    - Adults: 125mg 12 hourly
    - Children: 5mg/kg/day to max 250mg/day in 2 divided doses.
    - Acetazolamide contains a sulfa moiety but carries an extremely low risk of inciting an allergic reaction in persons with sulfonamide allergy. As a result, persons with known allergy to sulfonamide medications can consider a supervised trial of acetazolamide before the trip, particularly if planning travel to a location remote from medical resources.[34]
    - Side effects include paraesthesia of face, hands, feet, frequent urination (adequate fluid intake important at altitude), bitter or metallic taste, nausea, vomiting, diarrhoea.

- Dexamethasone can be used as an alternative prophylactic to acetazolamide for adult travellers where the latter may be contra-indicated. Although not as good as acetazolamide, there is sometimes a benefit in using dexamethasone in AMS prevention especially in those with allergy to acetazolamide. Whilst the drug is not advised for AMS prevention in children, the recommended adult doses are 2 mg every 6 h or 4 mg every 12 h. It is not generally advised for use for more than 10 days, but if it is then it needs to be tapered off over a week and not stopped suddenly[35]

- Treatment of Altitude Illness
    - Descent is the **definitive** treatment for severe AMS, HAPE and HACE.

For additional information on altitude illness including treatment see here and here.

4.4.5 Ocean and River Cruises

- Travelling on cruise ships exposes travellers to risks when disembarking at ports (even for short periods) as well as infections that are more likely to spread easily between people living and socialising in close quarters.
- Travellers should consider the risk of infections at each destination (dengue fever, yellow fever, malaria etc) as well as infections more likely to spread in a closed environment such as respiratory infections (COVID-19, influenza) and gastrointestinal infections (norovirus, Hepatitis A).
- Travellers should be vaccinated for vaccine-preventable diseases and take precautions whilst on a cruise such as regular hand hygiene, being outdoors and social distancing as much as possible.
- Travellers should consider the accessibility of medical care is limited on cruise ships

4.4.6 Other travel related risks

Thromboemboli

- Travellers with risk factors for Deep Vein Thrombosis (DVT) and pulmonary emboli need to be aware they are at increased risk of clots/thromboemboli during long distance travel (air, road or train). Immobility in cramped conditions for long periods interferes with venous flow in the legs which is thought to play a major role.
- Regular calf muscle exercises and frequent ambulation are recommended to reduce the risk. Seating in an aisle seat where legs can be extended more easily may also be helpful. For higher risk travellers, below knee compression stockings during travel are recommended. Very high-risk travellers may be recommended anticoagulants
- Maintaining hydration is important so travellers should be encouraged to drink sufficient water and avoid coffee and alcohol which may cause dehydration.
- For more information and **risk factors** see here.

Other activities

- Travellers often engage in activities they may not be fit for or familiar with leading to increased risk of injury. Activities include motorbike riding/pillion passenger, cycling, diving, boating, bushwalking, skiing etc. It is essential for travellers to be encouraged to have health insurance which covers all activities they plan to engage in. Encourage travellers to read their policy.
- Check safety measures are present in transportation such as seatbelts, child seats, lifejackets on boat etc. Transportation on roads is safer during the day and in substantial vehicles rather than motorbikes or tuk tuks
- Appropriate fitness and training for activities as well as suitable equipment (worn in boots, first aid kits etc), awareness of potential hazards and treatment required i.e., snakes, ticks, insects, sun/extreme temperaturesshould be recommended.
- Encourage travellers to have undertaken first-aid training
- Wear covered shoes when outside

Other important pre travel considerations

- Travellers are advised to visit their **dentist,** optometrist and if travelling long term, be up to date with all health screening prior to departure.
- Identify conditions/medications that may lead to higher risk and discuss mitigations/plans e.g.
    - Will any pre-existing illness possibly require extra medication while away? For example,
        - if on warfarin, does the traveller need to take a handheld INR machine and instructions on how to manage change of dose?
        - If diabetic, do they need to increase their glucose testing whilst away (change of diet, weather, possible change in gut flora etc?)
        - if asthmatic – all necessary puffers and even oral steroids may be prudent
        - if splenectomy – rescue antibiotics
    - A letter provided by GP or travel practitioner regarding all medical and psychological conditions as well as all medications being carried is recommended
    - Travellers with cardiovascular disease are recommended to take the most recent copy of their ECG

- Travellers are advised to have double the required number of medications separated into two packages.At least one package should be in carry-on luggage
- Medications should be kept in the bottles/packages they were dispensed in. If the traveller is on a number of medications or they take up significant space, they may consider a Webster-pak, which can be made up by their pharmacist and labelled appropriately.

- For high-risk patients, depending on destination and length of travel, a consultation or **referral to their specialist** for advice on medications or management may be prudent
- Some countries will not allow certain medications therefore the traveller should check prior to departure.Generally, it is prudent to carry documentation from a doctor stating the name of medication and that it is being carried 'on medical advice' Some countries have strict rules about importing medications even for personal use.

4.5 Traveller First Aid Kit

A travellers **medical/first aid kit** is usually recommended. Items will depend on traveller's risk factors as well as their destination, budget, preference for self-treatment and luggage space. As well as treatment for a travellers regular pre-existing diseases, items may include:

- Sunscreen, and sun protection supplies
- Alcohol hand gel/hand wipes
- Insect repellent and insecticides
- Simple analgesics (paracetamol, ibuprofen)
- Medication to deal with upper respiratory tract infection as these are very common in travellers.
- Treatment for vomiting and diarrhoea (ORS, loperamide, azithromycin (for those with a high risk of complications of traveller's diarrhoea or travelling to remote locations with limited access to medical care), metoclopramide/ondansetron, anti-spasmodic, metronidazole – see food and water guideline for more detailed information)
- Malaria prophylaxis (if recommended)
- Dressings for wounds
- Water purification tablets (preferably Iodine based) and/or filters (if travelling to an area where quality of water is likely to be poor)

- Destination specific medications such as those for altitude sickness, or motion sickness if undertaking surfing/scuba and ocean-based sports,
- Short acting benzodiazepines and/or melatonin for jet lag
- Treatment for potential dental problems
- See COVID-19 guidelines for items to prevent COVID-19 and respiratory infections: standby antiviral treatment for COVID-19 may be warranted in some travellers
- Treatment for women's issues e.g. vaginal thrush, cystitis, UTI
- Medication for children e.g. baby panadol, calamine, headlice treatment
- Condoms

Caution is required regarding antibiotics being included in a traveller's medical kit, given the potential for promoting antibiotic resistance and travellers possibly increased risk of acquiring a multi-drug-resistant bacteria if they take them. This risk must be balanced against the risk of the traveller getting severe disease if they get TG, the difficulties and stress of the traveller becoming sick in areas where medical care may be unavailable or uncertain, and the trip disruption that may be caused by illness –to the traveller but also to the entire traveller party.

Our recommendation is to ensure travellers are well educated on how to prevent infection rather than relying solely on antibiotics which may

1. have adverse effects,
2. be inappropriate for the pathogen causing disease due to different susceptibility profiles in different regions and
3. promote resistance.

Table 7: Basic and Advanced First Aid Kit items

Click her to download table as printable PDF

BASIC FIRST AID KIT ITEMS	
Thermometer	
Dressings	Band aids

	Waterproof dressings Pressure bandages
Analgesics	Paracetamol Ibuprofen
Hygiene items	Alcohol hand gel/wipes Water purification tablets/filters Povidone-Iodine
Insect repellent	Containing DEET, Picardan, OLE or IR3535 (Fend)
Respiratory infection supplies	Nasal decongestant, cough medicine, throat lozenges
Vomiting and Diarrhoea	Oral rehydration sachets Antimotility agent e.g. loperamide (if not contraindicated) Metoclopramide (adults only) or ondansetron Anti-spasmodic e.g. hyoscine butylbromide (buscopan)
Jet lag	Benzodiazepines or melatonin
Safe sex	condoms
ADVANCED KIT ITEMS	
Severe incapacitating diarrhoea with high risk of complications if severe dehydration or remote travel away from medical services	Azithromycin is preferred option but only for specific patients
Malaria prophylaxis and standby self-treatment	If prescribed for at risk travellers See Malaria guidelines
Altitude sickness	Acetazolamide

Dexamethasone

- For more specific details re suggested medications for food and water treatment kit items, please see food and water borne disease guideline
- For more information on suggested malaria medications, see malaria guideline
- For more information on COVID-19 please see COVID-19 guideline
- Travel insurance which includes appropriate evacuation insurance and insurance cover for COVID-19, as well as any sporting etc activities that the traveller may undertake is highly recommended. Once again encourage travellers to read the policy.
- It is recommended the practitioner provide **written information** to each traveller which will ensure information provided has a slightly higher chance of being retained and even suggesting further reading where possible. Documentation of the materials provided (including website links) in patient file is also recommended.

5 ESTABLISHING A TRAVEL CLINIC

5.1 Introduction

As practitioners, time management is always a challenge however it is particularly essential that those providing travel health services allot sufficient time to ensure the patient has an adequate risk assessment and all advice, vaccinations, and medications are provided to the traveller.

Suggestions for different levels of service are presented below:

Level 1: General Practitioner and Nurse Routine Consults
Level 2: General Practitioner Specialisation in Travel Health
Level 3: Travel Medicine Specialist Nurse
Level 4: Travel Medicine Specialist Doctor

- For Level 1 and 2: 'The Consultation in General Practice' – questions to be asked include:
    - How to maximise consultation agenda in the time available?

- What to discuss and how to plan this?
- Roles of the doctor and nurse in consultation need to be defined
- A practice nurse is essential and needs to be adequately trained for the particular role
- Time is the major factor- What is the minimum time required to perform a travel consultation? Our opinion is that a minimum of 20 minutes is required to provide a straightforward consultation to one traveller who has never travelled before on a relatively simple itinerary of one or two countries. Complicated travellers will take much longer. If 20 minutes is not possible then patients may need to be referred to specialist services (in person or virtual).

- For Level 3 and 4: 'The Specilised Consultation in Travel health'

  - Those with an interest in global and travel health will need to be pro-active in the management of travellers in the future and look much further than vaccinations and anti-malarial advice.
  - The prescriptive tools for the future are clear and laid out for those who wish to grow into a new and exciting re-boot of post COVID-19 travel medicine: a rejuvenated, prescriptive and ongoing post-graduate education, current geographical and historical sources and best possible global political resources including an atlas.
  - Engagement with research (where possible) to help advance the provision of evidence-based travel medicine is an important responsibility when providing a specialised travel medicine service.

5.2 Offering travel medicine services – Preparation

The first step in the process of establishing a travel medicine service must be to understand the scope of knowledge required to adequately prepare travellers Consideration should be given to joining one of the travel medicine support groups.

The next step is to determine the level of service which will be provided i.e. a few common vaccines for common destinations, or a one-stop shop for vaccines, medications such as malaria chemoprophylaxis, travellers' medical kits and products including insect repellents, mosquito nets, water purifiers, general travel health accessories. Will vaccines and prescription medications to be ordered and stocked by the clinic or obtained from a pharmacy? In addition, it will be necessary to establish whether the practice has available:

- Clinicians – doctors or nurse practitioners – as well as practice nurses who have an interest in travel medicine, have undertaken training in the field (or who are willing to do so) and agree to maintain currency through ongoing study or attending educational sessions (conferences, webinars, self-directed learning).
- Nurses: It is most useful to have a nurse who has an interest in vaccination and health education as well as managing vaccine stock – see further information below
- Suitably trained administrative staff who can manage appropriate information gathering from patients, and appropriate scheduling of appointments, and complex billing.
- If medication is to be provided, clear evidence-based protocols for use of medications and awareness of laws regarding labelling and supply of medications as applies to the state of residence.
- Appropriate consultation rooms and private vaccination rooms to accommodate travellers

Session consultation times which include times more suitable for those studying or working during 'office hours' i.e., after-hours and weekends

- Capacity of compliant lockable storage for medications, products and kits if clinic is to provide this.
- Vaccine fridge – preferably with after-hours alarms and backup generators (if clinic is to provide vaccines)
- Access to commercial travel health resources i.e. a travel medicine database supplying up-to-date and accurate information on epidemiology or disease risk/outbreaks, maps of disease endemicity, seasonal variations, transmission, malaria maps and vaccination requirements
- Travel health information sheets or booklets in hard copy to provide to travellers on prevention of travel health issues such as insect bite prevention, jetlag, DVT, and information on other common travel-related illnesses. In addition, supplementary material that reinforces recommendations for treatment of problems such as management of travellers' diarrhoea.

5.3 Ongoing education for travel health professionals

- In order to be able to prescribe the yellow fever vaccine it is necessary to follow the federal government regulations, as well as complete training module on providing the vaccine. (*See Yellow fever Accreditation in section below under Administration*)
- Online training is available: Australia, New Zealand.

- Formal training in travel medicine is provided in the Graduate Certificate of Travel Medicine at James Cook University, Queensland and a Postgraduate Certificate in Travel Medicine at the University of Otago in New Zealand.
- Developing a degree of expertise in travel medicine can also be achieved through self-directed study of online resources for health professionals providing care to international travellers, including:
    - CDC Yellow Book: Health Information for International Travel
    - UK National Travel Health Network and Centre (NaTHNaC)
    - the Manual of Travel Medicine 4th Ed (2019)
    - Australian Immunisation Handbook
    - New Zealand Immunisation Handbook and
    - the World Health Organisation (WHO).
    - Australasian College of Tropical Medicine

- The International Society of Travel Medicine (ISTM) conducts a virtual Travel Medicine Review and Update Course, as well as the Certificate in Travel Health™ exam – also virtual. They also run conferences and have other facilities to support travel medicine providers. Those with an interest in travel medicine are encouraged to join the ISTM.
- The Professional Development Certificate (PDC) in Travel Medicine from the Royal College of Physicians and Surgeons of Glasgow, UK, has been designed to enhance the knowledge and skills of doctors, nurses and pharmacists working within Travel Medicine. The course's four core modules take in pre-Travel Risk Assessment & Management, Travel-related Infections, Malaria and Mosquito-borne Diseases, and Immunology and Immunisations.
- As it is of the utmost importance to be up to date in the field, membership of international and regional societies, which were formed to promote and advocate for travel health, is highly recommended. Institutions such as the ISTM and the Asia Pacific Travel Health Society (APTHS) provide networking opportunities, as well as hosting webinars and conferences on relevant subject matter. Benefits of ISTM membership also include a special members-only online community offering access to special travel medicine alerts, links to important resources, members only discussion groups, publications, educational products and biennial conferences.
- Australasian College of Tropical Medicine also has an annual Travel and Tropical medicine conference, and regular webinars.
- Dependent on the practitioner's level of knowledge, ensure to identify travel consultations you are prepared to do and those which you may refer to a specialist service.

NOTE Specialised travel medicine clinics cannot see every traveller. GPs would be expected to equip themselves to manage adult travellers going to simple destinations e.g. Asia (Bali, Thailand, Vietnam, Cambodia) or package tours to South Africa.

Many GP's will tend to REFER the following types of consultations to specialised clinics

- Travellers requiring vaccines for Yellow Fever, Rabies, Japanese Encephalitis, Tick encephalitis, Dengue, Q fever, Tuberculosis
- Those with complicated medical history such as pregnant travellers, small children especially to remote areas, those on immunosuppressive medication, or HIV medication, travellers with long COVID
- Travellers with complicated itineraries: long to multiple countries where there is poor access to medical care, or extensive travel at altitude

5.4 Offering travel medicine services – Administration

- Provide induction to receptionists so they are aware of the need to ask callers if appointment is travel-related and provide a set process to complete booking. (*See next point*)
- Prepare a template or use checklist for travel health bookings which includes destinations, length of trip, transport type (aircraft, ship etc) etc
- Include in template the appointment length allowed for different types of consultations i.e., longer for families with children, complicated itineraries, complex medical history.
- Need to request traveller brings relevant medical documentation (including government accepted documentation such as Medicare number, a list of all medications taken regularly or occasionally) and vaccination history (may include previous vaccination book(s)).
- Pre-consult patient checklist (*see under consultation*) to be completed by traveller prior to consultation. Ideally, to save time, email executable PDF in advance or request traveller arrives at practice early to complete paperwork.
- Accreditation is required to be a yellow fever vaccinator and also a vaccination centre. Applications for approval as a Yellow Fever Vaccination Centre are made to the relevant health authority. Details of the process in gaining accreditation: Australia – National Guidelines for Yellow Fever Vaccination Centres and Providers; for New Zealand see here.

- Criteria used to indicate compliance with the guidelines may include:

1. The practice has at least one practitioner accredited to administer the vaccine.
2. The practice's cold chain management strategies are in line with National guidelines. Evidence of this could be through practice accreditation or another mechanism approved by the state or territory health authority.
3. The practice has the ability to treat adverse effects, including anaphylaxis.
4. The practice has facilities for patients to contact the clinic after hours in the event of a reaction to vaccine
5. The practice records evidence of valid informed consent.
6. The practice has access to up-to-date travel advisory and travel health information for practitioners as well as written handouts to provide patients with advice on mosquito protection and safe travel practices while away.
7. The practice has the ability to retain an accurate record of yellow fever vaccination history and enter all vaccines onto national immunisation register (AIR).

- Practice nurses must be trained and proficient in
    - Use of all vaccines and medications
    - Patient education best practice
    - Sharps protocols
    - Vaccine hesitancy/needle phobia
    - Vaccine and stock management – cold chain, ordering and patient recalls, notification of side effects. Given that nurses understand the medication uses, and given the regulations around supplying and labelling prescription drugs, nurses are the ones usually responsible for stock management of medication (vaccines, malaria/ gastro and other medication). They may also be involved in management of stocks of insect repellent and any other travel health accessories.
    - Management of Anaphylaxis
    - Protocols for what to do when there are vaccine stock outages should be planned in advance
    - Scope of practice and keeping up to date using courses, conferences and online immunisation handbooks of Australia and New Zealand for information on vaccine indications, schedules and contraindications etc. Immunisation updates offered by local public health units are a good starting point for most vaccine information, however those used in travel health are not a

priority. Local/regional support for nurses working in travel health is available for members of the Travel Health Nurses of Australia and New Zealand (THNANZ), affiliated with the ACTM.

5.5 Offering travel medicine services – prior to each session

- Ensure adequate stock on hand prior to commencing each session: Vaccines, medications (prophylaxis and treatment), first aid or treatment kits, yellow fever vaccination booklets, exemption letters/medication authority templates, products (i.e., insect repellent, travellers' diarrhoea treatment or first aid kits) and hard copies of patient information.
- Check of anaphylaxis protocols, crash trolley and treatments in date and in place.
- Ensure checks of all relevant updates of significant or notable disease outbreaks or relevant news items.
- Gather relevant paperwork: checklists, patient information, yellow vaccination booklets & stamp, medication authority forms
- Check vaccine, medication, accessory stocks
- Read through current travel health news/alerts e.g. EPIWATCH and Health Map
- Open travel health software or free national services e.g.
    - Australian Smartraveller
    - New Zealand Safe travel
    - WHO
    - Travel Health Pro UK
    - CDC

6 APPENDIX 1 THE LAST-MINUTE TRAVELLER

It is not uncommon for travellers to need to travel at short notice.

In general practice it is also not uncommon for a patient seeing her/his usual GP to mention at the end of the consultation *"by the way we are going to X in 2 weeks. Is there anything special I need to do"*

This poses a dilemma for the GP since it takes time to take a travel history and provide the necessary information and care to the patient. It is not ideal to have a short consultation however if the patient cannot return for a full consult, cannot have a telehealth/virtual consult (and/or there is insufficient time to do so), then the practitioner must make a judgment call as to how to manage this situation. A follow up appointment may be made if there is time or a referral to a specialist clinic may be considered. Our recommendation is that the practitioner should encourage the traveller attend for a full travel consultation either in person or virtually rather than providing a quick and insufficient consultation. Ultimately the patient is responsible for the poor planning and the health practitioner should not compromise on quality.

There are a few important considerations which may help in these cases:

- Accelerated schedules can be given. See Appendix 2, Accelerated Vaccine Schedules, below.
- Some vaccines can be provided last minute as the incubation period of the disease is often longer than the time it takes for the vaccine to become effective, i.e. Hepatitis A and typhoid.
- Courses of vaccines such as Hepatitis A, Hepatitis B and rabies, for example, never need to be restarted, just finalise the schedule if already started.

7 APPENDIX 2 ADVICE FOR RETURN TO AUSTRALIA OR NEW ZEALAND

Suggested accelerated vaccination schedule if required for traveller.

Vaccine	Suggested accelerated schedule
Typhoid	Use Typhim Vi rather than the Vivotif
Hepatitis B	Day 0, 7, 21 and 12 months[36]
Hepatitis A & B	Day 0, 7, 21 and 12 months[36, 37]

	Note one dose of Avaxim, Vaqta 50, or Havrix 1440 gives sufficient cover for one trip. Hepatitis A and B given together require 2 doses to provide adequate Hepatitis A levels.
Measles	Can be given from 6 months of age but parents need to understand the patient would still require the routine doses from age of 12 months[37,38]
MenACWY/MenB	Vaccination at 6 weeks of age is possible but additional doses may be required especially for travellers. See local guidelines for individual vaccine recommendations: Australia,[39, 40, 41, 42] New Zealand.[43] Seek expert advice if necessary
Tick Borne Encephalitis	Day 0,14

8 APPENDIX 3 LIVE VACCINES

Live vaccines

Parenteral	Imojev (Japanese Encephalitis)
	M-M-RII or Priorix – (Measles, Mumps, Rubella)
	M-M-R-V or Priorix-tetra – (Measles, Mumps, Rubella, Varicella)
	Varivax and Varilrix (Varicella)
	Zostavax (Shingles – now deleted in Aus)
	Stamaril. (Yellow fever)
	BCG (Tuberculosis)

Oral	Rotarix or RotaTeq (Rotavirus)
	Vivotif (Typhoid)
	Sabin (Poliomyelitis – now deleted in Australia & NZ)
	Vaxchora (Cholera)

The 28-day interval between live vaccines is only applicable for parenteral, not oral vaccines.

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ACRONYMS

Acronym	Definition
ABD	Arthropod Borne Disease
AIH	Australian Immunisation Handbook
AIR	Australian Immunisation Register (Australia)
AIR	Aotearoa Immunisation Register (NZ)
AMS	Acute Mountain Sickness
APTHS	Asia Pacific Travel Health Society
BCG	Bacille Calmette- Guérin
CDC	Centers for Disease Control and Prevention
COVID-19	Corona Virus Disease – 2019 (caused by SARS-CoV-2 virus)
DEET	N, N-diethyl-meta-toluamide
DVT	Deep vein thrombosis
ECG	Electrocardiogram
FiO2	Fraction of inspired oxygen
HACE	High altitude cerebral oedema
HAPE	High altitude pulmonary oedema
HBV	Hepatitis B virus

Acronym	Definition
HIB	Haemophilus influenza B
HIV	Human Immunodeficiency Virus
HPV	Human papilloma virus
ICVP	International Certificate of Vaccination or Prophylaxis
ID	Intradermal
IM	Intramuscular
IGRA	Interferon Gamma Release Assay
IR3535	ethyl butylacetylaminoproprionate
ISTM	International Society of Travel Medicine
JE	Japanese Encephalitis
JEG	Japanese Encephalitis Guidelines
LMIC	Low- and Middle-Income Countries
MMR	Measles, mumps and rubella
MMRV	Measles, mumps, rubella and varicella
MSM	Men who have sex with men
NaTHNaC	National Travel Health Network and Centre
NZ	New Zealand
OLE	Oil of lemon eucalyptus
ORS	Oral rehydration solution
OTC	Over the counter
PAHO	Pan American Health Organization
PDC	Professional Development Certificate
PEP	Post Exposure Prophylaxis

Acronym	Definition
RSV	Respiratory Syncytial Virus
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
TB	Tuberculosis
TD	Traveller's Diarrhoea
THP	Travel Health Professional
TST	Tuberculin skin testing
UK	United Kingdom
VFR	Visiting friends and relatives
WHO	World Health Organization
THNANZ	Travel Health Nurses of Australian and New Zealand
YF	Yellow Fever

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Back to Guideline page

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