Appendix A: Common Travel Destinations

This advice is intended as a guide only and may not apply to individual patients or itineraries. Travel health advice should be individualised for a particular patient for a particular trip at a particular time.

The following vaccines are indicated for all these destinations:

- Hepatitis A and influenza vaccines are recommended; typhoid and rabies vaccines should be considered for most of these destinations (unless specified that rabies does not exist).
- Travellers should be up-to-date with tetanus, diphtheria, pertussis, polio and measles vaccines.

Special vaccines and malaria advice

Destination	Special vaccination	Malaria risk/recommendation	Other issues
Africa—East and West	Meningococcal (ACWY) Yellow fever	Prophylaxis is generally recommended (Mefloquine, Doxycycline or Atovaquone/Proguanil (A/P)), although there is little risk in some cities such as Nairobi and in highlands above 2500 m	Schistosomiasis in fresh water Rabies Myiasis African sleeping sickness African tick-borne fever HIV Dengue Possible zika risk
Cambodia	Consider JE for long-term travellers	No prophylaxis is needed for Siem Reap, Angkor Wat or Phnom Penh. Doxycycline or A/P for western provinces bordering Thailand	Rabies, Dengue, chikungunya and zika

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Destination	Special vaccination	Malaria risk/recommendation	Other issues
China	Consider Japanese encephalitis (JE) for long-term travellers	No malaria prophylaxis is needed for tourist areas, to places below 1500 m or for river cruises. Limited transmission in Motuo County in Tibet. Doxycycline or A/P is recommended for rural areas below 1500 m in certain counties of Yunnan Province along the border with Myanmar	Schistosomiasis in central Yangtze River basin H5N1 avian influenza Tick-borne encephalitis Dengue and chikungunya
India	Consider meningococcal ACWY if travelling for >2 weeks in northern India JE for long-term travellers	Consider mefloquine, doxycycline or A/P, depending on exact itinerary. Highest-risk areas include rural areas, most districts of the northeastern states; throughout Andaman and Nicobar Islands; most districts of the central states and areas at altitudes <2000 m (6561 ft)	Rabies HIV Scrub typhus in bush areas Dengue, chikungunya and zika outbreaks have occurred Risk of visceral leishmaniasis
Indonesia	JE for long-term travellers	No malarial prophylaxis is necessary for Bali Risk exists in Lombok and surrounding islands, rural areas of Borneo, Sulawesi and Sumatra. Mefloquine, doxycycline or A/P recommended for risk areas	Rabies (including Bali) Dengue, chikungunya and zika
Nepal	JE for long-term travellers	No malarial risk if going *only* to Kathmandu/trekking in the Himalayas but mefloquine, doxycycline or A/P recommended for those heading south to lowlands (below 1200 m) in certain districts along the border with India and in portions of the Seti and Karnali river valleys	High risk for travellers' diarrhoea including *Cyclospora* infection Hepatitis E Dengue Altitude sickness for trekkers
Papua New Guinea	JE for long-term travellers	Mefloquine, doxycycline or A/P is recommended for all areas except travel to central urban areas of Port Moresby or highland areas only (>2000 m altitude). High intensity of both *P. falciparum* and *P. vivax* malaria	Dengue, chikungunya and zika High risk of typhoid Rabies does not occur (but lyssavirus in bats)

Destination	Special vaccination	Malaria risk/recommendation	Other issues
Solomon Islands		Risk all year round throughout the islands. Mefloquine, doxycycline or A/P recommended	Dengue and zika risk No facilities in Solomon Islands for decompression sickness
South America	Yellow fever	No malaria prophylaxis needed if going to usual tourist areas (e.g. Quito, Lima, Cuzco, Machu Picchu, Lake Titicaca, La Paz), but malaria risk is present in Amazon regions. Mefloquine, doxycycline or A/P recommended	Altitude sickness in some areas Other infections include Chagas disease (American trypanosomiasis), schistosomiasis, and cutaneous leishmaniasis Dengue, chikungunya and zika
Thailand	Consider JE for long-term travellers	No prophylaxis required for travellers going to Bangkok, central Thailand, Chiang Mai (city) or the major southern coastal resorts but doxycycline or A/P recommended for those travelling to hilly forested border regions with Myanmar, Laos or Cambodia (mefloquine resistance has been reported) or if spending time in rural parts of peninsular Thailand	Advice on STI/AIDS essential; regard all sexual contacts as high risk for HIV Rabies Dengue, chikungunya and zika
Vanuatu		Malaria present year-round, so mefloquine, doxycycline or A/P recommended. Futuna Island malaria-free. Risk for travellers to Port Vila in resort areas and a few days to Tannah is very low	Dengue Rabies does not occur (but lyssavirus present in bats)
Vietnam	Consider JE for long-term travellers	No malaria prophylaxis needed for usual tourist trips to Hanoi, Ho Chi Minh and the coastal region in between. Mefloquine, doxycycline or A/P for rural areas to the west	Dengue common Chikungunya and possible low zika risk

Appendix B: Malaria Risk by Country and Recommendations for Chemoprophylaxis

Adapted from WHO, International Travel and Health, CDC, Health Information for International Travel and PHE Advisory Committee for Malaria Prevention for UK Travellers (ACMP), Guidelines for malaria prevention in travellers from the United Kingdom.

The authors' recommendations for malaria prophylaxis generally coincide with those of CDC. However, there are some differences in recommendation for prophylaxis between CDC and other authorities, including Public Health England (PHE). CDC tend to recommend prophylaxis for some low-risk areas where PHE recommend only mosquito precautions. In these instances, our approach is to consider duration and timing (wet vs. dry season) of travel and traveller preferences to decide whether to provide prophylaxis.

Countries and areas not included in this table were free of malaria transmission at time of writing (late 2018).

Malaria risk by country and recommendations for chemoprophylaxis

Country	Area and/or season	Malaria type	Authors' recommendation
Afghanistan	April to December in all areas below 2000 m, the central urban areas of Kabul, Kandahar, Jalalabad, Herat and Mazar-e Sharif have sufficiently low risk that mosquito precautions alone are sufficient	PV + PF. CR	Consider 2 (if indicated), otherwise mosquito avoidance
Angola	Risk exists throughout the year in the whole country	Predominantly PF CR	2

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Country	Area and/or season	Malaria type	Authors' recommendation
Bangladesh	Risk throughout the year in the whole country, excluding Dhaka city. However, we would generally recommend chemoprophylaxis only for certain travellers: to the districts of Rangpur, Mymensingh, Sylhet and Chittagong divisions. We would recommend mosquito precautions to other travellers	Predominantly PF. CR	2 for high-risk areas bordering India and Myanmar. Otherwise mosquito precautions generally sufficient
Belize	Negligible risk in most districts, but risk is highest in southern region. No risk in Belize city or islands most tourists visit	Almost exclusively PV. No resistant PF reported	None, mosquito avoidance only
Benin	Risk throughout the year in the whole country	Predominantly PF. CR	2
Bhutan	Rare cases in rural areas <1700 m (5577 ft.) in districts along the southern border shared with India. Rare seasonal cases May–September in Ha, Lhuentse, Mongar, Punakha, Trashigang, Trongsa, Tsirang, Yangtze and Wangdue. None in districts of Bumthang, Gaza, Paro and Thimphu	PF PV. CR	None, mosquito avoidance only
Bolivia	Risk throughout the year below 2500 m, including the Amazon Basin (highest-risk areas include Pando Department; certain municipalities of La Paz, Beni, Santa Cruz, Cochabamba, Chuquisaca, Potosí and Tarija departments). No risk in city of La Paz	Predominantly PV, some PF. CR	Consider 2 (if indicated), otherwise mosquito avoidance
Botswana	Risk mainly November to June in Central and North West districts (including the Okavango Delta area/ Chobe National Park). None in cities of Francistown and Gaborone	Predominantly PF. CR	2

Country	Area and/or season	Malaria type	Authors' recommendation
Brazil	Risk in most forested areas below 900 m in the nine states of the 'Legal Amazonia' region: Acre, Amapá, Amazonas, Maranhão (western part), Mato Grosso (northern part), Para (except Belem City), Rondônia, Roraima and Tocantins Transmission intensity varies and is higher in rural forested areas. Transmission occurs on the periphery of large cities such as Porto Velho, Boa Vista, Macapá, Manaus, Santarem and Marabá Risk is negligible or non-existent in states outside 'Legal Amazonia'. No transmission at in the cities of Brasilia, Rio de Janeiro, São Paolo and none at Iguazu falls	PV 85%, PF 15%. CR	Consider 2 (if indicated), otherwise mosquito avoidance
Burkina Faso	High risk throughout the year in the whole country	Predominantly PF. CR	2
Burma—see Myanmar			
Burundi	Risk throughout the year in the whole country	Predominantly PF. CR	2
Cambodia	Risk throughout the year in the whole country (including Siem Reap city). None in Phnom Penh and in the Angkor Wat temple complex	Predominantly PF. CR MDR—resistance to mefloquine in western provinces near Thai border	2 3 in western provinces bordering Thailand. Note that the area surrounding Lake Tonlé Sap and the central urban area of Siem Reap and typical river cruises along the Mekong rivers generally require mosquito avoidance only
Cameroon	Risk throughout the year in the whole country	Predominantly PF. CR	2
Cape Verde	Limited risk September to November in Sao Tiago Island only	Predominantly PF. CR	Consider 2 for Praia on in Sao Tiago Island; elsewhere none (mosquito avoidance only)

Country	Area and/or season	Malaria type	Authors' recommendation
Central African Republic	High risk throughout the year in the whole country	Predominantly PF. CR	2
Chad	High risk throughout the year in the whole country	Predominantly PF. CR	2
China	Low risk in counties along the China–Myanmar border in Yunnan Province. Limited transmission in Motuo County in Tibet. Travellers to cities, popular tourist areas, including major river cruises, and densely populated plains areas are not at risk. No risk in Hong Kong or Macau semi-autonomous regions	Predominantly PV. PF in Yunnan Province. MDR along China–Myanmar border (resistance to mefloquine)	Chemoprophylaxis rarely needed for travellers. Consider 3 only along China–Myanmar border in western part of Yunnan Province
Colombia	Low risk throughout the year in areas below 1700 m (greatest risk between March and June). No risk in Bogota and vicinity, Cartagena and Medellin	PF 50%, PV 50%. CR	Consider 2 (if indicated), otherwise mosquito avoidance
Comoros	Risk throughout the year in the whole country	Predominantly PF. CR	2
Congo (Republic of the)	High risk throughout the year in the whole country	Predominantly PF. CR	2
Congo, Democratic Republic of the (formerly Zaire)	High risk throughout the year in the whole country	Predominantly PF. CR	2
Costa Rica	Very low risk throughout the year in the cantons of Matina (Limón Province), Sarapiquí (Heredia Province) and Pital District in San Carlos (Alajuela Province)	Almost exclusively PV	None, mosquito avoidance only
Côte d'Ivoire	High risk throughout the year in the whole country	Predominantly PF. CR	2
Cyprus	Risk reported (mainly May to November) from Esentepe (also known as Agios Amvrosios) in the Kyrenia District in northern Cyprus	Predominantly PV	Generally none

Country	Area and/or season	Malaria type	Authors' recommendation
Djibouti	Risk throughout the year in the whole country	Predominantly PF. CR	2
Dominican Republic	Low risk throughout the year, especially in rural areas of western provinces (bordering Haiti) and provinces (including resort areas) of Santo Domingo and La Altagracia. No risk in cities of Santiago and Santo Domingo (Distrito Nacional)	Exclusively PF No resistance to any antimalarial drug	Consider 1 (if indicated), otherwise mosquito avoidance
East Timor	Risk throughout the year in the whole country	PF 50%, PV 50%. CR	2
Ecuador	Risk throughout the year below 1500 m in the provinces of Carchi, Esmeraldas, Morona Santiago, Orellana and Pastaza. No risk in cities of Guayaquil or Quito, the central highland tourist areas, or in the Galápagos Islands	PF 34%, PV 66% CRPF (especially Esmeraldas Province)	Consider 2 (if indicated), otherwise mosquito avoidance
El Salvador	Rare cases along Guatemalan border	Almost exclusively PV	None, mosquito avoidance only
Equatorial Guinea	High risk throughout the year in the whole country	Predominantly PF. CR	2
Eritrea	Risk throughout the year in the whole country below 2200 m. No risk in Asmara	Predominantly PF. CR	2
Ethiopia	Risk throughout the year in the whole country below 2500 m. No risk in Addis Ababa	PF, PV. CR	2 (if indicated)
French Guiana	All areas, including Matoury, Macouria and Kourou, except none in coastal areas west of Kourou, Cayenne City or Devil's island	PF >70%, PV 20–30%. CR	2 (if indicated)
Gabon	High risk throughout the year in the whole country	Predominantly PF. CR	2
Gambia	High risk throughout the year in the whole country	Predominantly PF. CR	2
Ghana	High risk throughout the year in the whole country	Predominantly PF. CR	2

Country	Area and/or season	Malaria type	Authors' recommendation
Guatemala	Risk throughout the year in rural areas below 1500 m. Minimal risk in the central urban area of Cobán No risk in Antigua, Lake Atitlan, Chiquimula or Guatemala City	Predominantly PV	Consider 1 in Escuintla Province; mosquito precautions only in other areas
Guinea	High risk throughout the year in the whole country	Predominantly PF. CR	2
Guinea-Bissau	Risk throughout the year in the whole country	Predominantly PF. CR	2
Guyana	All areas <900 m year-round (highest transmission November to June). Rare cases in coastal areas (including offshore islands), the cities of Amsterdam and Georgetown	PF 50%, PV 50%. CR	2 (if indicated). Mosquito avoidance only in coastal areas and the cities of Georgetown and Amsterdam
Haiti	Risk throughout the year in the whole country (highest November through January and from May through July), including Port Labadee	Almost exclusively PF. CS	1
Honduras	Risk throughout the year throughout the country and in Roatán and other Bay Islands. None in San Pedro Sula and Tegucigalpa	Predominantly PV. CS	Consider 1, otherwise mosquito avoidance
India	Risk throughout the year in the whole country below 2000 m (including the cities of Delhi and Mumbai). Highest risk is in the north-eastern states of Assam, as well as in Orissa, Andaman and Nicobar Islands. Also is a risk in certain districts of Andhra Pradesh and Madhya Pradesh. Maximal risk is following the monsoon season (usually June to September) No transmission in areas >2000 m in states of Himachal Pradesh, Jammu and Kashmir and Sikkim (i.e. no risk in mountainous areas of northern states)	PV 50%, PF >40%. CR	Consider 2, especially for travel to the north-eastern states and during the wet season. Note: many experts recommend mosquito avoidance only if visiting large cities in other parts of the country, especially during the dry season

Country	Area and/or season	Malaria type	Authors' recommendation
Indonesia	Risk throughout the year in the whole country (especially rural areas) except in cities of Java and Ubud and resort areas of Bali and Java, Gili Islands and the Thousand Islands (Pulau Seribu)	PF, PV. CR	2 None for travellers only to Bali
Iran	PF risk in March to November in rural areas of Fars Province, Sistan-Baluchestan Province and southern, tropical parts of Hormozgan and Kerman Provinces	Predominantly PV. CR	Consider 2 (if indicated)
Kenya	Risk throughout the year in the whole country at altitudes <2500 m, including game parks. Lower risk in the city of Nairobi, but risk still present	Predominantly PF. CR	2
Korea, Democratic People's Republic of (North)	Limited risk in some southern areas (mainly May to November)	Exclusively PV (presumed). CS	Consider 1 (Generally none)
Korea, Republic of (South)	Limited risk in months of March–December in rural areas in the northern parts of Incheon Gyeonggi-do and Gangwon-do provinces, including the demilitarized zone (DMZ)	Exclusively PV. CS	Consider 1 (Generally none)
Lao People's Democratic Republic	Risk throughout the year (highest May to October) in the whole country except in Vientiane	PF 65%, PV 34%. CR MDR-resistance to mefloquine along borders between Laos and Myanmar, Thailand, Cambodia and Vietnam	2 or 3 for areas with mefloquine resistance
Liberia	High risk throughout the year in the whole country	Predominantly PF. CR	2
Madagascar	Risk throughout the year in the whole country below 1800 m, except rare cases in the city of Antananarivo	Predominantly PF. CR	2 (except Antananarivo—mosquito avoidance only)
Malawi	Risk throughout the year in the whole country	Predominantly PF. CR	2

Country	Area and/or season	Malaria type	Authors' recommendation
Malaysia	Risk throughout the year only in limited hinterland foci; urban and coastal areas are free of malaria. None in Georgetown, Kuala Lumpur and Penang State (including Penang Island). Also none in cities of Kota Kinabalu and Sandakan on Borneo	All types. CR	Consider 2 (if indicated) (Generally none), otherwise mosquito avoidance
Mali	High risk throughout the year in the whole country	Predominantly PF. CR	2
Mauritania	Risk throughout the year in most of the country south of the Sahara Desert, including the city of Nouakchott. No risk in the regions of Dakhlet Nouadhibou and Tiris Zemmour	Predominantly PF. CR	2 (if indicated), otherwise mosquito avoidance
Mayotte	Risk throughout the year, mainly throughout Bandraboua and Tsingoni communes; rural areas of M'Tsangamouji and mainland Mamoudzou communes	Predominantly PF. CR	Generally none (mosquito avoidance only), although consider 2 for high-risk areas
Mexico	Risk in some rural areas in the south not often visited by tourists. Present in Campeche, Chiapas, Chihuahua, Nayarit and Sinaloa. Rare cases in Durango, Jalisco, Oaxaca, Sonora and Tabasco. Rare cases in the municipality of Othón P. Blanco in the southern part of Quintana Roo bordering Belize. No risk along Mexico–US border or in major resorts along the Pacific and Gulf coasts	Exclusively PV. CS	Consider 1 (generally none)
Mozambique	Risk throughout the year in the whole country	Predominantly PF. CR	2

Country	Area and/or season	Malaria type	Authors' recommendation
Myanmar (formerly Burma)	Risk exists below 1000 m, including Bagan. No risk in cities of Yangon (Rangoon) or the central urban areas of Mandalay and Nay Pyi Taw	PF 60%, PV 35%, PM, PO. CR; mefloquine resistance in eastern part of provinces of Bago, Kachin, Kayah, Kayin, Shan and Tanintharyi below 1000 m. PV with reduced sensitivity to chloroquine reported	3 in eastern Burma (near Thai border in Bago, Kachin, Kayah, Kayin, Shan and Tanintharyi); elsewhere none (mosquito avoidance only)
Namibia	Risk November to June in northern regions—Kunene, Ohangwena, Omusati, Oshana, Oshikoto, Otjozondjupa and Zambezi—and throughout the whole year in the Caprivi Strip, Kavango and Kunene Rivers. None in city of Windhoek	Predominantly PF. CR	2 (if indicated)
Nepal	Risk throughout the year below 2000 m (highest risk July through October), mainly in the Terai district (near border with India and in the Rapti zone). No risk in Kathmandu or on typical Himalayan treks	Predominantly PV. CR	Consider 2 (if indicated), otherwise mosquito avoidance
Nicaragua	Risk throughout the year, mostly in the northern and western North Caribbean Coast (Región Autónoma del Atlántico Norte [RAAN] and Región Autónoma del Atlántico Sur [RAAS]). No malaria in the city of Managua	Predominantly PV. CS	Consider 1 (if indicated)
Niger	High risk throughout the year in the whole country	Predominantly PF. CR	2
Nigeria	High risk throughout the year in the whole country	Predominantly PF. CR	2

Country	Area and/or season	Malaria type	Authors' recommendation
Oman	Very limited risk may exist in Dakhiliyah, North Batinah and North and South Sharqiyah	PF, PV. CR	None, mosquito avoidance only
Pakistan	Risk throughout the year in the whole country below 2500 m including all cities (but minimal risk 2000–2500 m)	PV 70%, PF 30%. CR	Consider 2, otherwise mosquito avoidance. Chemoprophylaxis is not needed for the central urban area of Lahore
Panama	Low risk throughout the year in rural areas in the provinces of Darien, Kuna Yala (also spelled Guna Yala), Ngäbe-Buglé and eastern Panama province. Elsewhere—including Panama City and former Canal Zone—no or negligible risk	Almost exclusively PV. CR (east of the Panama canal)	Consider 2 if travel includes eastern endemic areas; 1 in Ngäbe-Buglé. Otherwise mosquito avoidance
Papua New Guinea	Risk throughout the year in the whole country below 2000 m, except for central urban area of Port Moresby	PF (65–80%), PV (10–30%). CR	2 (note: generally recommend mosquito precautions only for Port Moresby)
Peru	Risk <2000 m in the Amazon basin: most areas east of the Andes, areas along the Marañón River valley and the Choquequirao Trek. In the central urban areas of Iquitos, Tarapoto, Pucallpa, Moyobamba, Puerto and Maldonado and most areas of Manu National Park, there is some risk, but generally mosquito precautions are sufficient. None in Lima Province; the cities of Arequipa, Ica, Moquegua, Nazca, Puno and Tacna; the highland tourist areas (Cusco, Machu Picchu and Lake Titicaca); and along the Pacific Coast	PV 85%, PF 15%. CR	Consider 2 (if indicated), otherwise mosquito avoidance

Country	Area and/or season	Malaria type	Authors' recommendation
Philippines	Risk throughout the year in the rural areas below 600 m and on the islands of Luzon, Mindanao, Mindoro and Palawan. No risk in the 22 provinces of Aklan, Albay, Benguet, Biliran, Bohol, Camiguin, Capiz, Catanduanes, Cavite, Cebu, Guimaras, Iloilo, Northern Leyte, Southern Leyte, Marinduque, Masbate, Eastern Samar, Northern Samar, Western Samar, Siquijor, Sorsogon and Surigao del Norte. No risk in metropolitan Manila or other urban areas	PF 70–80%, PV 23–30%. CR	Consider 2 if indicated, otherwise mosquito avoidance
Rwanda	Risk throughout the year in the whole country	Predominantly PF. CR	2
São Tomé and Príncipe	Risk throughout the year in the whole country in altitudes <1000 m (only São Tomé has areas above 1000 m)	Predominantly PF. CR	2
Saudi Arabia	Rare cases in Asir and Jizan emirates by border with Yemen No risk in Jeddah, Mecca, Medina, Riyadh and Ta'if cities	Predominantly PF. CR	None, mosquito avoidance only
Senegal	High risk throughout the year in the whole country	Predominantly PF. CR	2
Sierra Leone	High risk throughout the year in the whole country	Predominantly PF. CR	2
Solomon Islands	High risk throughout the year in the whole country	PF 60%, PV 35–40%. CR	2
Somalia	High risk throughout the year in the whole country	Predominantly PF. CR	2

Country	Area and/or season	Malaria type	Authors' recommendation
South Africa	Risk throughout the year in low altitude areas, but highest risk is between September and May. Risk present along the borders with Zimbabwe and Mozambique (Waterberg, Vhembe and Mopani district municipalities of Limpopo Province; Ehlanzeni district municipality in Mpumalanga Province; and Umkhanyakude in KwaZulu-Natal Province). Risk present in Kruger National Park and neighbouring game parks	Predominantly PF. CR	2 in areas with malaria in Limpopo, Mpumalanga and KwaZulu-Natal provinces; otherwise mosquito avoidance only
South Sudan	High risk throughout the year in the whole country	Predominantly PF. CR	2
Sudan	High risk throughout the year in the south of the country. Seasonal risk (maximal May to September) in northern Sahara Desert areas. Very low risk in Khartoum	Predominantly PF. CR	Generally 2 (except for travellers going only to Khartoum for whom mosquito precautions only are generally sufficient)
Suriname	Risk in municipality of Tapanahony in Sipaliwini Province. Rare cases in Brokopondo Province and Boven Saramacca municipality in Sipaliwini Province. No malaria in Paramaribo	PF 70%, PV 15–20% CR	2 in Tapanahony in Sipaliwini Province. None in other areas
Swaziland	Risk throughout the year in northern and eastern areas bordering Mozambique and South Africa, including all of Lubombo district and the eastern half of Hhohho, Manzini and Shiselweni districts. Highest risk is November to May. Risk is very low in the rest of the country and no risk in the cities of Mbabane and Manzini	Almost exclusively PF. CR	2 (if indicated), otherwise mosquito avoidance only

Country	Area and/or season	Malaria type	Authors' recommendation
Tajikistan	Very low risk of malaria between May and October. No risk of malaria above 2000 m	Predominantly PV. CR	None, mosquito avoidance only
Tanzania, United Republic of	High risk throughout the year in the whole country below 1800 m, including Zanzibar. Highest risk is from November to May	Predominantly PF. CR	2 (if indicated)
Thailand	Risk throughout the year in rural, especially forested and hilly, areas. Primarily in provinces that border Burma (Myanmar), Cambodia and Laos and the provinces of Kalasin, Krabi (Plai Phraya District), Nakhon Si Thammarat, Narathiwat, Pattani, Phang Nga (including Phang Nga City), Rayong, Sakon Nakhon, Songkhla, Surat Thani and Yala, especially in rural areas. No risk in cities, main resort areas and southern coastal areas (including Bangkok, Chiangmai, Chiang Rai, Pattaya, Phuket and Koh Samui). For most tourists the risk is low and prophylaxis not justified	PF 50%, PV 50%. CR, mefloquine resistance	2; however 3 in areas bordering Cambodia, Myanmar (Burma) and Laos. Often none or mosquito avoidance only
Togo	High risk throughout the year in the whole country	Predominantly PF. CR	2
Uganda	High risk throughout the year in the whole country	Predominantly PF. CR	2
Vanuatu	Risk throughout the year in the whole country	PF 60%, PV 35–49%. CR	2
Venezuela	Risk in all areas <1700 m. Risk in the Orinoco River and Angel Falls No risk in Caracas or Margarita Island	PV 83%, PF 17%. CR	Consider 2 (if indicated), otherwise mosquito avoidance only

Country	Area and/or season	Malaria type	Authors' recommendation
Vietnam	Risk in rural areas only. No risk in urban centres (including Hanoi, Ho Chi Minh City, Da Nang, Nha Trang, Qui Nhon and Haiphong). Rare cases in the Mekong and Red River deltas	PF 50–90%, PV 10–50%. CR. Mefloquine resistance in southern part of the country	Consider 3 in southern part of the country in the provinces of Đăk Lăk, Gia Lai, Khanh Hoa, Kon Tum, Lam Dong, Ninh Thuan, Song Be, Tây Ninh. Mosquito avoidance only elsewhere (including Mekong and Red River deltas)
Yemen	Risk throughout the year, but mainly September to February, in the whole country below 2000 m. No risk in Sana'a city	Predominantly PF. CR	2 (if indicated). Mosquito avoidance (not chemoprophylaxis) for Socotra Island
Zambia	High risk throughout the year in the whole country	Predominantly PF. CR	2
Zimbabwe	Risk all year in Zambezi valley, including Victoria Falls. Risk highest November to June in rest of the country below 1200 m. In Harare and Bulawayo, risk is negligible	Predominantly PF. CR	2 (if indicated), otherwise mosquito precautions only

PHE Advisory Committee on Malaria Prevention for UK Travellers (ACMP). *Guidelines for malaria prevention in travellers from the United Kingdom: 2017*. Public Health England. London 2017

Key:

PV Plasmodium vivax

PF Plasmodium falciparum

CS chloroquine sensitive

1. Chloroquine (or hydroxychloroquine), primaquine, doxycycline, mefloquine, atovaquone-proguanil or tafenoquine
2. Doxycycline, mefloquine or atovaquone-proguanil
3. Doxycycline or atovaquone-proguanil

Appendix C: Vaccines: Route, Schedule, Lower Age Limit and Accelerated Regimens

Vaccine	Route	Primary course	Booster	Lower age limit	Accelerated regimen
Cholera (Dukoral)	Oral	Two doses (three doses for 2–6-year-olds) 1–6 weeks apart	Single dose—2 years for adults; 6 months for children 2–6 years. If the interval is longer than these periods, repeat the primary course	2 years	–
Diphtheria–tetanus–pertussis vaccines	IM	2, 4, 6 months	18 months, 4, 11–13, 50 and 65 years of age; for women at 20–32 weeks during each pregnancy	6 weeks	Minimum interval of 4 weeks
Haemophilus influenzae type b	IM	2, 4, 6 months	18 months	6 weeks	Minimum interval of 4 weeks
Hepatitis A (Havrix, Havrix junior)	IM	Single dose	PIs and ATAGI recommend 6–12 months. We think longer is acceptable for all HA vaccines	2 years	–
Hepatitis A (Vaqta)	IM	Single dose	As above	1 year	–
Hepatitis A/ Typhoid (Vivaxim)	IM	Single dose	As above for hepatitis A, 3 years for typhoid	2 years*	–

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Vaccine	Route	Primary course	Booster	Lower age limit	Accelerated regimen
Hepatitis B	IM	0, 1, 6 months	See text	Birth	0, 1, 2, 12 months (Engerix B) or 0, 7, 21 days and 12 months (Engerix B, ≥20 years)
	IM	0, 1–2, 4 months		10 years	
	IM	0, 6 months, adult formulation at 11–15 years of age		11 years	
Hepatitis A and B (Twinrix)	IM	Adults: Twinrix (720/20) 0, 1, 6 months	None	1 year	0, 7, 21 days, 12 months (≥16 years)
	IM	Children: Twinrix Junior (360/10) 0, 1, 6 months, Twinrix (720/20) 0, 6–12 months for children aged 1 to <16 years	None		
Influenza (FluQuadri Junior)	IM	Children 6 months to <3 years: two doses in first year, 4 weeks apart	Yearly	6 months	–
Influenza (Fluarix Tetra, FluQuadri)	IM	Children ≥3 to <9 years: two doses in first year, 4 weeks apart; Children ≥9 years: single dose	Yearly	3 years	–
Influenza (Afluria Quad, Influvac Tetra)	IM	Single dose	Yearly	18 years	–
Influenza (Fluad, Fluzone High-Dose)	IM	Single dose	Yearly	65 years	–
Japanese encephalitis: (JEspect)	IM	Days 0, 28	2 years for most travellers ≥18 years	2 months*	Days 0, 7

Vaccine	Route	Primary course	Booster	Lower age limit	Accelerated regimen
Japanese encephalitis: (Imojev)	SC	Single dose	Unclear (likely to provide adequate protection for 10 years or more). Booster currently recommended for children ≥9 months to <18 years after 1–2 years	9 months	–
Measles/ mumps/rubella (MMR)	SC or IM	12 months	Given as MMRV	6 months	6 months of age, repeated at 12 months
Measles/ mumps/rubella varicella (MMRV)	SC (Priorix-tetra can also be given IM)	18 months	None	12 months	9 months of age, repeated at 12 months, at least 4 weeks after MMR
Meningococcal B factor H binding protein (Trumenba)	IM	2 doses (6 months apart)	Unknown	10 years	–
Meningococcal B multicomponent (Bexsero)	IM	2 doses (8 weeks apart)	Booster dose at ≥ 12 months of age/8 weeks since previous dose (whichever is later) if course commenced before 12 months		
Meningococcal C conjugate (NeisVac-C)	IM	Infants <12 months: two doses at least 8 weeks apart; Children ≥12 months: single dose	None	8 weeks	–

Vaccine	Route	Primary course	Booster	Lower age limit	Accelerated regimen
Meningococcal ACWY conjugate (Menactra)	IM	Number of doses depends on age at which first dose is given. (See Table 2.8 in Chapter 2.9 Meningococcal disease)	3 years. See Table 2.8 in Chapter 2.9 Meningococcal disease	9 months*	–
Meningococcal ACWY conjugate (Menveo)	IM	Number of doses depends on age at which first dose is given. (See Table 2.8 in Chapter 2.9 Meningococcal disease)	3 years. See Table 2.8 in Chapter 2.9 Meningococcal disease	6 weeks*	–
Meningococcal ACWY conjugate (Nimenrix)	IM	Number of doses depends on age at which first dose is given (see Table 2.8 in Chapter 2.9 Meningococcal disease)	3 years. See Table 2.8 in Chapter 2.9 Meningococcal disease	6 weeks*	–
Pneumococcal polysaccharide (23vPPV)	IM	Single dose	5 years (when indicated)	2 years	–
Pneumococcal conjugate (13vPCV)	IM	2, 4, 12 months	None	6 weeks	Minimum interval of 4 weeks between doses
Poliomyelitis (IPV)	SC (IM for combination vaccines)	2, 4, 6 months; fourth dose at 4 years of age for children	10 years—only if travelling to areas or countries with polio cases	6 weeks	Minimum interval of 4 weeks between doses
Rabies	IM (or ID)	Three doses on day 0, 7, 21–28	None routinely	None	2-site ID days 0, 7 or IM days 0, 7 recommended by WHO
Tick-borne encephalitis (TicoVac/ FSME-IMMUN)	IM	Three doses on day 0, 1–3 months, 6–15 months	3 years	1 year	Two doses on days 0, 7–14
Tuberculosis (BCG)	ID	One dose	None	Birth	–
Typhoid oral	oral	Four doses; alternate days	5 years	6 years	–

Vaccine	Route	Primary course	Booster	Lower age limit	Accelerated regimen
Typhoid injectable (Vi polysaccharide)	IM	Single dose	3 years	2 years	–
Varicella (Varilrix, Varivax)	SC	<14 years: single dose, ≥14 years: two doses, at least 4 weeks apart	None	9 months for Varilrix, 12 months for Varivax	–
Varicella (Zostavax)	SC	Single dose	None	50 years	–
Yellow fever	SC	single dose	None	9 months	–

*Lower age limit according to PI is different. We recommend this lower age limit

Appendix D: Vaccine Introduction and Use in Australia

This appendix summarises key dates related to the use of vaccines in Australia. It is necessarily selective, particularly in relation to immunisation indications related to individual medical conditions and risk factors. It is also incomplete regarding the very many minor program, vaccine brand, timing and age range differences which abound between the immunisation programs in different states and territories. Its purpose is primarily to assist travel medicine providers in assessing which immunisations a patient should have received based on age and, to a lesser extent, place of residence and those they should not be expected to have received.

BCG		
BCG	1948	Production by CSL. School-based immunisation programs continued until the mid-1980s (time varies between states—1984 and 1985 in Victoria)
D, T, P and Hib-containing vaccines		
Diphtheria	1921	Combined toxin-antitoxin diphtheria vaccine developed by CSL. Use declined after 'Bundaberg disaster' of 1928 when 12 children died and 6 were injured by vaccine from a multidose container, probably due to staphylococcal toxic shock. This led to introduction of toxoid vaccine and single dose vials
	1929	Diphtheria toxoid vaccine introduced for contacts of cases
	1932–1936	School-based diphtheria immunisation programs
	1940	Infant immunisation programs began at infant welfare centres and municipal councils
Tetanus	1939	Tetanus vaccine introduced, primarily among soldiers, with good effect—only one case of tetanus among 600,000 troops immunised during WW 2. Not widely used in children until DTPw vaccine available in 1953
	2006	Monovalent tetanus toxoid vaccine ceased to be available
Diphtheria-tetanus	2017	DT vaccine supply ceased for 50–59-year-olds (dTPa recommended at age 50 or for pertussis protection if 10 years have elapsed since last dose)
Pertussis	1942	Mass immunisation programs start in most states and territories

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DTPw	1953	Infant immunisation introduced, schedule varying by state and territory
	1975	First uniform national DTPw schedule
DTPa	1996	Vaccine registration
	1997	Funding for 18 month and 4–5 years boosters in September 1997, except in Tasmania (October 1997) and Queensland (December 1997)
	1997–1999	Funding for 2, 4, 6 month primary doses in Northern Territory and South Australia August 1997, everywhere else February 1999 except Queensland April 1999
	2003	DTPa fourth dose at 18 months ceased September 2003
	2011	ATAGI recommends first dose of pertussis-containing vaccine be brought forward from 8 to 6 weeks of age
	2016	DTPa booster reintroduced at 18 months of age
dTpa	2000–2003	Approved 2000, funded January 2004 to replace dT at 15–17 years. Ten-yearly diphtheria and tetanus booster recommendation was withdrawn in 2000
	2008	'Cocooning' dTpa programs for new mothers/parents and sometimes carers introduced in different states at different times, sometimes with restricted eligibility (NT 2008; ACT, NSW, Qld, Vic 2009; SA, Tas 2010; WA 2011), but for varying durations
	2013	A dose of dTpa recommended for adults from 65 years, if 10 or more years since the last dose
	2014–2015	All states fund cocooning program of dTpa for women in third trimester of pregnancy; in some states/territories partners and guardians are included
	2015–2016	Adolescent booster dose of dTpa transitions from Year 10 to Year 7 of secondary school. Adolescents in Y7–10 or aged 12–16 are offered dTpa
	2017	Age for which dTpa vaccine registered for use lowered from ≥10 to 4 years of age
	2018	dTpa funded under NIP for all women during each pregnancy, optimally between 20 and 32 weeks gestation
Various DTPa combinations	1999–2003	Approval of DTPa-HB, DTPa-Hib, DTPa-HB-IPV, DTPa-HB-IPV/Hib, DTPa-IPV, DTPa-IPV-Hib; IPV recommended in 2003 routinely (in a combination) instead of OPV
	2017	DTPa-IPV-Hib vaccine availability ceased. Hib 1992 Vaccine approved for children aged at least 18 months. 1993 Hib vaccines recommended from 2 months of age, funded everywhere for infants born from February 1993. 2013 Hib-MenC vaccine funded for infants aged 12 months. 2017 PRP-OMP-containing vaccine ceased to be available. 2018 Monovalent Hib (PRP-T) for children aged 18 months replaces Hib-MenC at 12 months

Polio vaccines		
Polio	1955	IPV available
	1956	IPV used in huge publicly delivered campaign, initially to infants and young children (from January 56 to children 6 months to 5 years) and then progressively to adolescents and adults (ages 15–45 years) from 1958
	1964	OPV approved after trials in Tasmania
	1966	OPV introduced September 1966
	2000	Western Pacific Region (including Australia) declared polio-free
	2005	IPV (in combination) replaced OPV November 2005
	2008	Monovalent IPV approved from 2 months of age
Measles-, mumps-, rubella-containing vaccines		
Measles	1968	Vaccine approved
	1970	Funded immunisation in all states and territories (except starting 1972 in NSW) of children 12–23 months
	1975	First national immunisation schedule recommends measles immunisation at 12 months
Mumps	1980	Vaccine approved for children aged 12–15 months
	1981	Immunisation recommended for children from 12 months
Rubella	1970	Vaccine approved
	1971	Schoolgirl rubella program (10–14 years) begins, plus post-partum immunisation of susceptible women
Measles-mumps (MM)	1982	MM replaces measles vaccine
	1983	MM funded on national schedule at 12 months
Measles-mumps-rubella (MMR)	1989	MMR replaces MM
	1992	Second dose MMR funded for males and females
	1993	MMR for boys and girls 10–16 years replaces schoolgirl rubella program
	1998	Measles control campaign conducted for children aged 5–12 years Age for second MMR dose reduced to 4–5 years instead of 10–14 years
	1999	National serosurvey demonstrates that those born between 1966 and 1980 are unlikely to have received two doses of measles-containing vaccine and are the most likely population group to be non-immune. MMR immunisation campaign for 18–30-year-olds
	2000	MMR rather than rubella vaccine recommended for non-immune women of childbearing age
	2000	Adults born since 1970 recommended to have received two doses of MMR.
	2003	Adults born since 1966 recommended to have received two doses of MMR
	2005–2006	MMRV vaccines approved
	2013	MMRV funded for second MMR dose at 18 months, replacing monovalent V vaccine
	2018	MMR catch-up funded in Victoria for adults ≥20 years born from 1966 without evidence of MMR immunisation or serological immunity

Hepatitis A and B vaccines		
Hepatitis A	1993	Vaccine available from 1993. Funded for Indigenous children 18 months to 6 years in north Queensland from 1999 and in the second year of life for Indigenous children in Queensland, Northern Territory, South Australia and Western Australia from November 2005
	2018	Vaccine funded in Victoria and Tasmania for men who have sex with men and in Victoria also for people who have injected drugs in the past year
Hepatitis B	1983	HB vaccine (plasma-derived) available March 1983
	1985	Vaccine approved for neonates of HBsAg-positive mothers
	1987	rDNA vaccines replace plasma-derived vaccine; recommended for at-risk adults, and infants and young children in groups with high HB infection rates; implemented at different times in different jurisdictions
	1990	Funded universal neonatal immunisation introduced in Northern Territory August 1990
	1997	Immunisation recommended for 10–16-year-olds. Programs introduced 1998–1999: states with school-based programs—ACT, NT, SA, Tas, Vic achieved good coverage (>80%); areas without such programs—NSW, Qld achieved poor coverage (<20%). School-based adolescent program started in NSW only in 2004 and in Qld in 2007
	2000	Universal infant immunisation commencing at birth introduced everywhere outside Northern Territory in May 2000
	2014	HB vaccine funded in Victoria for many at-risk adults
	2015	HB vaccine funded in Tasmania for many at-risk adults
	2016	HB vaccine funded in SA for many at-risk adults, including all Aboriginal and Torres Strait Islander adults
	2017	HB vaccine funded in Victoria for all non-immune Aboriginal and Torres Strait Islander people
Human papilloma virus (HPV) vaccines		
HPV	2007	Introduced April 2007 for girls 12–13 years in school Year 7; catch-up for females 14–26 years until December 2009
	2013	Funded school-based program for males aged 12–13 years, with catch-up for 14–15-year-olds in 2013–2014
	2018	9vHPV replaces 4vHPV in school-based program 4vHPV funded in Victoria for men who have sex with men aged up to 26 years, until 31 October 2019 4vHPV availability ceases

Influenza vaccines		
Influenza	1944	Inactivated vaccine produced in Australia
	1968	Less reactogenic subunit or other purified vaccines used
	1997	Funded vaccine for all adults ≥65 years in Victoria
	1999	Funded national program for adults ≥65 years and Aboriginal and Torres Strait Islander people ≥50 years
	2008	Immunisation recommended for all Aboriginal and Torres Strait Islander (ATSI) people aged ≥15 years (funded from 2010) WA—first funded program for all children aged 6 months to 5 years
	2009	Funded pandemic A/H1N1 vaccine for ≥10-year-olds from September 2009 to December 2010; funded for children 6 months to 10 years December 2009 to December 2010
	2010	Funded immunisation for all pregnant women
	2013	Immunisation recommended for all children 6 months to 5 years
	2015	Immunisation funded for all ATSI children aged 6 months to 5 years and recommended for all ATSI children aged 5–14 years
	2016	Quadrivalent vaccine replaces trivalent vaccine in NIP
	2018	Immunisation funded for all children 6 months to 5 years in ACT, NSW, Qld, SA Tas, Vic Enhanced trivalent vaccines (high-dose and adjuvanted) funded for all adults aged ≥65 years
Japanese encephalitis (JE) vaccines		
JE	1987	Inactivated mouse-brain vaccine available under Individual Patient Use Scheme; suspended in 1991 following reports of severe hypersensitivity reactions
	1993	Inactivated mouse-brain vaccine approved but availability restricted
	1995–1996	Immunisation of all residents of outer Torres Strait Islands (TSI) aged ≥1 year, with continuing routine immunisation at 12 months of age for children resident in the outer TSI
	2005	Production of mouse-brain vaccine discontinued
	2009	Inactivated cell culture vaccine approved for people aged ≥18 years (approved for children ≥1 year in 2013 and aged 2–11 months in 2015)
	2010	Live attenuated vaccine approved for people aged ≥1 year (and for children from 9 months in 2015) as a single dose
Meningococcal vaccines		
Men ACWY polysaccharide	1991	Men ACWY PS vaccine available
	2017	Vaccine no longer available in Australia
Men C conjugate	2002–2003	Available 2002, national funded program including routine infant immunisation at age 12 months plus catch-up for all children aged 1–19 years implemented 2003 to June 2008. Given as Hib-MenC vaccine between 2013–2018

Men ACWY conjugate	2011	MenACWY CV available
	2017	Vaccine funded for year 10–12 students and (except in SA) for 15–19-year-olds no longer in school in WA, NSW, Vic, Qld, SA, Tas; in NT for all children at 12 months and children aged 1–19 in specified regions; and in Victoria for men who have sex with men. The adolescent programs in Vic, Tas and Qld ended in 2018
	2018	MenACWY CV funded for all children at 12 months of age, replacing Hib-MenC Broader age range covered in some states, e.g. 1–5 years in WA, ATSI people 1–19 years in northern SA, 6 weeks to 20 years in Tas Recommendations expanded to include all children <2 years, ATSI people aged 2 months to 19 years, adolescents aged 15 to 19 years and young adults aged 20–24 years who live in close quarters or who smoke
	2019	MenACWY funded for 15–19 year
Men B	2014	MenB vaccine available, recommended for children <24 months, adolescents 15–19 years, children and adults with medical risks
	2018	MenB recommendations expanded to include ATSI people 2 months to 19 years and young adults 20–24 years who live in close quarters or smoke Funded program in SA for children 6 weeks to 12 months with catch-up for children 12 months to 4 years
Pneumococcal vaccines		
Pneumococcal conjugate	2001–2003	Funded introduction for Indigenous children and all children in central Australia in 2001; funded for high-risk children <5 years from September 2003; funded for all infants from January 2005, plus catch-up in 2005 for children born in 2003–2004. 7vPCV was replaced by 13vPCV from 1 July 2011. A supplementary catch-up dose of 13vPCV was given till 2012 to all children aged 12–35 months who had completed a primary course of 7vPCV. 10vPCV was used in NT between Oct 2009 and Sept 2011
	2011	13vPCV approved for adults ≥50 years
	2012	A booster dose of 13vPCV funded for ATSI children 12–18 months in NT, Qld, SA and WA
	2018	Childhood immunisation schedule changed to 2+1 at 2, 4 and 12 months, replacing 3+0 at 2, 4 and 6 months
Pneumococcal polysaccharide 23-valent	1983	Available since 1983. 14 valent vaccine available in addition to 23 valent between 1982 and 1994. Funded for people ≥65 years in Victoria from 1998; funded for Indigenous Australians ≥50 years from 1998 in Victoria and nationally from 1999; and funded for all Australians ≥65 years from January 2005
	2011	Temporary recommendation to cease revaccination with 23vPS in response to reported increase in local reactions. Resumed except for second dose no longer recommended for non-Indigenous adults aged >65 years without risk condition(s)

Rotavirus vaccines		
	2006	National funded program for all children born from 1 May 2007 (NT began in 2006)
Varicella and herpes zoster vaccines		
Varicella	2000	Vaccine available 2001; funded vaccine introduced at 18 months with catch-up for 13-year-olds from November 2005 (given as MMRV from July 2013). ATAGI recommends a second dose of varicella vaccine in the form of MMRV at 12 months of age when this vaccine becomes available
Herpes zoster	2006	Zoster vaccine registered but limited availability in 2007–2008 and then not again till 2013
	2016	Zoster vaccine introduced at 70 years, with 5-year catch-up program for 71–79-year-olds
Q fever vaccine		
Q fever	1991	Limited abattoir worker use 1991–1993; increasing coverage of large abattoirs in most states 1994–2000; funded federal immunisation program from 2001, with an initial phase targeting abattoir workers and shearers and a second phase targeting sheep, dairy and beef cattle farmers, staff and unpaid family members working on farms. Indications for immunisation have been progressively expanded in 2003, 2008 and 2013 to include those exposed to kangaroos and their products, those exposed to camels, veterinary nurses and students, professional dog and cat breeders, wildlife and zoo workers and agricultural college staff and students working with high-risk animals
Smallpox vaccine		
Smallpox	1804	Vaccine sourced from England
	1917	Vaccine produced in Australia
	1980	Immunisation ceased

Key Reading

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