

Travelers' Health

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The WHO International Health Regulations (IHR)

- WHO-IHR bertujuan utk memastikan perlindungan yg maksimal thd penyebaran penyakit dengan intervensi yg minimal thd lalu-lintas dunia internasional.
- International Sanitary Regulation (1951) → International Health Regulation (1969)
- IHR pada awalnya untuk mengontrol enam penyakit infeksi utama yaitu: cholera, plague, yellow fever, smallpox, relapsing fever, dan typhus. Tetapi saat ini yg utama hanya cholera, plague dan yellow fever.
- Peraturan dari IHR ini meliputi penyakit yg sudah ada, yg baru dan muncul kembali, juga penyakit yg bahaya yg disebabkan oleh penyakit tidak menular (existing, new and reemerging diseases, including emergencies caused by noninfectious disease agents)

- Kebanyakan immunisasi dlm peraturan IHR ini tidak dibutuhkan, tetapi direkomendasikan utk melindungi *traveler*.
- Misalnya, International Certificate of Vaccination utk yellow fever diperlukan oleh bbrp negara sbg syarat utk masuk ke negara tsb, namun ada juga negara yg memintanya jika *travelers* datang dari negara dimana penyakit yellow fever tsb masih ada.
- Travelers yang melakukan perjalanan ke negara-negara berkembang lebih berisiko dibanding ke negara maju.

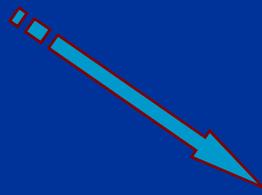
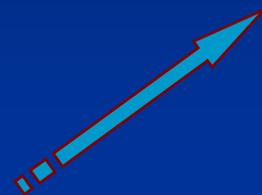
- Semakin banyak orang bepergian dari satu negara ke negara lainnya, maka peran *travel medicine* semakin penting.
- Ok travelers harus meng-update informasi ttg imunisasi yg diperlukannya dan cara pencegahan terhadap masalah kesehatan lainnya di negara yg akan ditujunya.

Travelers' Health

**Responsibilities of
Clinicians**

**Responsibilities of
Travelers**

**Responsibilities of
Travel Industry**



Responsibilities of Clinicians

- Tanggung jawab utama dokter adalah memberikan edukasi pada pasiennya yang akan melakukan perjalanan.
- Dokter harus membekali *travellers* dgn pengetahuan ttg *travel medicine* utk melindungi dirinya dari *potential health risks*, tidak hanya ttg vaksinasi dan pemberian obat, tetapi juga *travels' medical history, assessment of the epidemiology of endemic diseases, health risks at the destination, dan behavioral risks (pre-travel consultation)*. Dokter juga dpt memberikan pelayanan *post-travel medical care* .

Responsibilities of Clinicians

- Dokter harus mempertimbangkan secara menyeluruh perjalanan tersebut; negara, kota, atau daerah tujuan, jenis perjalanan, lama tinggal, musim/cuaca, *potential exposures dan current outbreaks*.

Questions for Persons Preparing to Travel

- When are you traveling, and how long will you be at each location?
- Where are you traveling?
 - In what countries will you be traveling?
 - Where within the country or countries will you be traveling?
 - Are these destinations urban areas or rural areas?
 - What are the conditions of your lodging (such as hotel with air conditioning, screened cabin, or open-air tents)?
- What activities will you be doing while traveling (such as hiking, backpacking, scuba diving, sightseeing, etc.)?
- Have you traveled internationally in the past?
 - Where did you go?
 - When did you travel?
- How old are you?

- What vaccinations have you had previously?
 - When did you have these vaccinations?
 - How many doses did you have of a particular vaccine? (for example, some vaccines, such as the hepatitis A and B vaccines or the measles/mumps/rubella—MMR—vaccine, require multiple doses for long-term protection)
 - Did you have any allergies or reactions to any previous vaccines?
- Do you have any other allergies (for example, medications, foods, or environmental)?
 - In particular, do you have an allergy to eggs, latex, yeast, mercury, or thimerosal?
 - (eggs → Yellow fever and influenza vaccine: thimerosal → Japanese encephalitis vaccines)
- What is your medical history and current health status (for example, past illnesses and surgeries, chronic health problems, or other underlying medical conditions)?
- What medications are you currently taking or have you taken in the past 3 months?
- Are you immune deficient?
- If you are a female,
 - Are you pregnant now?
 - Are you trying to become pregnant, or will you try to become pregnant in the next 3 months?
 - Are you breast-feeding?

Responsibilities of Travelers

- Pada umumnya travelers tidak mencari informasi mengenai vaksinasi apa saja yang dibutuhkannya sebelum melakukan perjalanannya.
- Idealnya, travelers harus mendatangi dokter keluarganya 4-6 minggu sebelum perjalanannya. Bila perlu konsultasi dengan expertnya atau membuka web site CDC Travelers' Health untuk melihat advis yang lebih up-date.

Responsibilities of Travel Industry

(travel agencies, tour operators, air and cruise lines)

- Meskipun bukan tugas utama travel industry memberikan nasehat kesehatan bagi traveler, tetapi penyediaan informasi *travel health risks* dan *vaccinations* yang diperlukan untuk daerah tujuan akan sangat membantu.
- Travel industry harus punya jaringan dengan klinik-klinik/RS yang berguna untuk peningkatan pengetahuan mereka dan untuk memberikan sesi penyuluhan bagi para petugas industry.

Prevention in Travel Medicine



Travel Notices

1. In The News

- The lowest level of notice, will provide information about sporadic cases of disease or an occurrence of a disease of public health significance affecting a traveler or travel destination.
- The risk for an individual traveler does not differ from the usual risk in that area.

Travel Notices

2. Outbreak Notice

- Provides information about a disease outbreak in a limited geographic area or setting.
- The risk to travelers is defined and limited, and the notice will remind travelers about standard or enhanced travel recommendations, such as vaccination.

Travel Notices

3. Travel Health Precaution

- Provides specific information about a disease outbreak of greater scope and over a larger geographic area so travelers can take measures to reduce the risk of infection.
- The precaution also provides guidance to travelers about what to do if they become ill while in the area. CDC does not recommend against travel to a specific area but may recommend limiting exposure to a defined setting, such as poultry farms or health-care settings.

Travel Notices

4. Travel Health Warning

- Recommends against nonessential travel to an area because a disease of public health concern is expanding outside the areas or populations that were initially affected.
- The purpose of a travel warning is to reduce the volume of traffic to affected areas, thus limiting the risk of spreading the disease to unaffected areas.
- SARS outbreak in Asia in 2003



Pre- and Post-travel General Health Recommendations

A. Protection against Mosquitoes, Ticks, Fleas and Other Insects and Arthropods

- vector-borne diseases
- mosquito-borne diseases
- travel to areas where the intensity of disease-transmitting vectors is high, it may be wise to use insect repellents containing DEET (N,N-diethylmetatoluamide), or picaridin.

- Some vector mosquitoes are most active in twilight periods (i.e., dawn and dusk) or in the evening after dark. Avoidance of outdoor activity during these periods can reduce risk of exposure.
- Wearing long-sleeved shirts, long pants, and hats minimizes areas of exposed skin.
- Bed nets are most effective when treated with a repellent such as permethrin.
- Aerosol insecticides

Travelers should be advised to use the following precautions when using repellents:

- Use enough repellent to cover exposed skin or clothing. Do not apply repellent to skin that is under clothing. Heavy application is not necessary to achieve protection.
- Do not apply repellent to cuts, wounds, or irritated skin.
- After returning indoors, wash treated skin with soap and water.
- Do not spray aerosol or pump products in enclosed areas; do not inhale the aerosol.

- Do not apply aerosol or pump products directly to the face. Spray hands and then rub them carefully over the face, avoiding eyes and mouth.
- When using repellent on a child, an adult should apply it to his or her own hands and then rub them on the child. Avoid the child's eyes and mouth and apply sparingly around the ears.
- Do not apply repellent to children's hands. (Children tend to put their hands in their mouths.)
- Do not allow children younger than 10 years old to apply insect repellent to themselves; an adult should do it for them. Keep repellents out of reach of children.

B. Risks from Food and Water (Drinking & Recreational)

- More common infections that travelers can acquire from contaminated food and drink:
 - Escherichia coli infections, shigellosis or bacillary dysentery, giardiasis, cryptosporidiosis, noroviruses, and hepatitis A.
- Less common infectious disease risks for travelers:
 - typhoid fever and other salmonellosis, cholera, rotavirus infections, and a variety of protozoan and helminthic parasites.
- Accidental consumption of recreational water from lakes, rivers, oceans, and inadequately treated swimming pools can spread these same diarrheal diseases as well as ear, eye, skin, respiratory, and neurologic infections

- Travelers should be advised to select food with care. Avoid raw food and eat only food that has been cooked and is still hot.
- Travelers should be advised of the following methods for treating water to make it safe for drinking and other purposes:
 - Boiling: the most reliable method to make water of uncertain purity safe for drinking.
 - Chemical disinfection
 - Water filters

Travel Kit

- To allow the traveler to take care of minor health problems as they occur and to treat exacerbations of pre-existing medical conditions.
- Commercial medical kits are available for a wide range of circumstances, from basic first aid to advanced emergency life support.

The Post-Travel Period

- Some diseases present immediately after the traveler returns, while others may become evident weeks, months, or even years later.
- Therefore, obtaining a travel history is crucial when evaluating any ill patient and it is particularly important to obtain an exact itinerary and details of pre-travel preparation, whether chemoprophylaxis was taken, and what exposures the traveler encountered during the trip.

- It is essential to obtain a detailed history of exposures such as insect bites, swimming in freshwater, animal bites, eating raw meat, seafood, or unpasteurized dairy products, and sexual contacts. Answers to these questions may provide important clues for diagnosis of a particular illness or syndrome in returned travelers

Geographic Distribution of Potential Health Hazards to Travelers



Geographic Distribution of Potential Health Hazards to Travelers

Southeast Asia:

- Brunei
- Burma (Myanmar)
- Cambodia
- Indonesia
- Laos
- Malaysia
- Philippines
- Singapore
- Thailand
- Timor-Leste (East Timor)
- Vietnam

Southeast Asia

- More common infections in travelers to the area include dengue fever, respiratory infections, and diarrheal infections.
- Chronic and latent infections in immigrants (and long-term residents) include tuberculosis, late complications of hepatitis B infection, intestinal helminth infections (including strongyloidiasis), and other helminth infections

Vector-borne infections:

- Dengue fever is hyperendemic in the region, and epidemics are common; cases occur in travelers to the region.
- Malaria is found in focal areas (primarily rural) in all these countries (except Brunei and Singapore), especially in rural areas.
- Japanese encephalitis is widely distributed in the region and is hyperendemic in some areas; risk is seasonal in some countries.
- Scrub typhus is a common cause of fever in the region. Other vector-borne infections include murine typhus, chikungunya virus, and relapsing fever.
- Foci of transmission of lymphatic filariasis are found throughout the area, with the exception of some of the Indonesian islands.

Food- and water-borne infections:

- Risk of hepatitis A is widespread in the region.
- Risk of diarrhea caused by bacteria, viruses, and parasites is high in parts of the area.
- An outbreak of polio (more than 300 virus-confirmed cases) occurred in Indonesia in 2005 after importation of the virus from Nigeria.
- *Campylobacter* infections are especially common in Thailand

- Cholera epidemics have been common in the past; cases were reported from Cambodia, Malaysia, and the Philippines in 2004.
- Outbreaks of hepatitis E have been reported from the region (Indonesia and Burma).
- Cysticercosis is especially common in Indonesia.

Airborne and person-to-person transmission:

- The annual incidence rate of tuberculosis per 100,000 population is estimated to be more than 300 in Cambodia and 100-300 in the rest of the region.
- Measles transmission persists in the region, although vaccination coverage is improving in some countries.
- SARS outbreaks occurred in the region (especially in Singapore and Vietnam) in 2003.
- Influenza infections can occur throughout the year in tropical areas.

Sexually transmitted & blood-borne infections:

- The prevalence of HIV in adults is 1%-<5% in Thailand, Burma (Myanmar), and Cambodia and <1% in the rest of the region. Higher prevalences may be found in specific populations.
- The prevalence of hepatitis B chronic carriage exceeds 8% in many parts of region.
- The prevalence of chronic hepatitis C is 1%-2.4%.
- Chancroid is a common cause of genital ulcer disease.

Zoonotic infections:

- Rabies is common in the region.
- Highly pathogenic avian influenza (H5N1) has been found in poultry populations in most countries of the region. Human cases and deaths have been reported in Thailand, Vietnam, Indonesia, and Cambodia. In 2006, the virus continued to spread in poultry populations in Indonesia.
- Anthrax is hyperendemic in Burma; sporadic cases occur in much of the rest of the region.

Soil- and water-associated infections:

- Schistosomiasis caused by *S. japonicum* is found in the Philippines and Indonesia (Sulawesi [Celebes]); caused by *S. mekongi* in Cambodia and Laos; and caused by *S. malayensis* in peninsular Malaysia.
- Leptospirosis is common in tropical areas and has been reported in travelers to the area.
- Cutaneous larva migrans is common on warm coastal areas.

Prevention of Specific Infectious Diseases

Dengue Fever

- Dengue fever and dengue hemorrhagic fever (DHF) are viral diseases transmitted by *Aedes* mosquitoes, usually *Aedes aegypti*.

Prevention

- No vaccine is available. Travelers should be advised that they can reduce their risk of acquiring dengue by remaining in well-screened or air-conditioned areas when possible, wearing clothing that adequately covers the arms and legs, and applying insect repellent to both skin and clothing

Filariasis, Lymphatic

- The two major species of filariae that cause lymphatic disease in humans are *Wuchereria bancrofti* and *Brugia malayi*.

Prevention

- No vaccine is available, nor has the effectiveness of chemoprophylaxis been well documented. Protective measures include avoidance of mosquito bites through the use of personal protection measures.

Japanese Encephalitis

- Japanese encephalitis virus (JEV) is a mosquito-borne *Flavivirus* that is closely related to West Nile and St. Louis encephalitis viruses

Prevention:

- JE vaccine
- The recommended primary immunization series is three doses of 1.0 mL each, administered subcutaneously on days 0, 7, and 30

- Vaccination should be considered for persons who plan to live in areas where JE is endemic or epidemic, and for travelers whose activities include trips into rural farming areas.
- Short-term travelers, especially those whose visits are restricted to major urban areas, are at lower risk for infection and generally do not require the vaccine.

Geographic distribution of Japanese encephalitis



Japanese encephalitis vaccine

DOSES ¹	1-2 YEARS OF AGE	≥3 YEARS OF AGE	COMMENTS
Primary series 1, 2, and 3	0.5 mL	1.0 mL	Days 0, 7, and 30
Booster	0.5 mL	1.0 mL	1 dose at 24 months or later ²

1. Administered by the subcutaneous route

2. For vaccinees who have completed a three-dose primary series, the full duration of protection is unknown; therefore, definitive recommendations cannot be given.

Malaria

- Malaria in humans is caused by one of four protozoan species of the genus *Plasmodium*: *P. falciparum*, *P. vivax*, *P. ovale*, or *P. malariae*.
- All species are transmitted by the bite of an infected female *Anopheles* mosquito.
- Occasionally, transmission occurs by blood transfusion, organ transplantation, needle-sharing, or congenitally from mother to fetus.

Prevention:

- No vaccine is currently available
- Travelers should be advised to take protective measures to reduce contact with mosquitoes
- Malaria chemoprophylaxis with mefloquine or chloroquine should begin 1-2 weeks before travel to malarious areas; prophylaxis with doxycycline, atovaquone/proguanil, or primaquine can begin 1-2 days before travel.
- Chemoprophylaxis should continue during travel in the malarious areas and after leaving the malarious areas (4 weeks after travel for chloroquine, mefloquine, and doxycycline, and 7 days after travel for atovaquone/proguanil and primaquine).

Travel to Areas without Chloroquine-Resistant *P. falciparum*

- Once-a-week use of chloroquine alone is recommended for prophylaxis. An alternative is hydroxychloroquine sulfate. Travelers unable to take chloroquine or hydroxychloroquine should take atovaquone/proguanil, doxycycline, or mefloquine.
- Chloroquine prophylaxis should begin 1-2 weeks before travel to malarious areas. It should be continued by taking the drug once a week, on the same day of the week, during travel in malarious areas and for 4 weeks after a traveler leaves these areas

Drugs used in the prophylaxis of malaria

Drug	Atovaquone / proguanil (Malarone)
Usage	Prophylaxis in areas with chloroquineresistant or mefloquine-resistant <i>P. falciparum</i>.
Adult dose	Adult tablets contain 250 mg atovaquone and 100 mg proguanil hydrochloride. 1 adult tablet orally, daily
Pediatric dose	Pediatric tablets contain 62.5 mg atovaquone and 25 mg proguanil hydrochloride. 5-8 kg: 1/2 pediatric tablet daily >8-10 kg: 3/4 pediatric tablet daily >10-20 kg: 1 pediatric tablet daily >20-30 kg: 2 pediatric tablets daily >30-40 kg: 3 pediatric tablets daily >40 kg: 1 adult tablet daily 41 kg or more: 1 adult tablet daily
Comment	Begin 1-2 days before travel to malarious areas. Take daily at the same time each day while in the malarious area and for 7 days after leaving such areas.

Drugs used in the prophylaxis of malaria

Drug	Chloroquine phosphate (Aralen and generic)
Usage	Prophylaxis only in areas with chloroquinesensitive <i>P. falciparum</i>.
Adult dose	300 mg base (500 mg salt) orally, once/ week
Pediatric dose	5 mg/kg base (8.3 mg/ kg salt) orally, once/ week, up to maximum adult dose of 300 mg base.
Comment	Begin 1-2 weeks before travel to malarious areas. Take weekly on the same day of the week while in the malarious area and for 4 weeks after leaving such areas.

Drugs used in the prophylaxis of malaria

Drug	Doxycycline (Many brand names and generic)
Usage	Prophylaxis in areas with chloroquine-resistant or mefloquine-resistant <i>P. falciparum</i> .
Adult dose	100 mg orally, daily
Pediatric dose	≥8 years of age: 2 mg/ kg up to adult dose of 100 mg/day.
Comment	Begin 1-2 days before travel to malarious areas. Take daily at the same time each day while in the malarious area and for 4 weeks after leaving such areas. Contraindicated in children <8 years of age and pregnant women.

Drugs used in the prophylaxis of malaria

Drug	Hydroxychloroquine sulfate (Plaquenil)
Usage	An alternative to chloroquine for prophylaxis only in areas with chloroquine-sensitive <i>P. falciparum</i> .
Adult dose	310 mg base (400 mg salt) orally, once/ week
Pediatric dose	5 mg/kg base (6.5 mg/ kg salt) orally, once/ week, up to maximum adult dose of 310 mg base.
Comment	Begin 1-2 weeks before travel to malarious areas. Take weekly on the same day of the week while in the malarious area and for 4 weeks after leaving such areas.

Drugs used in the prophylaxis of malaria

Drug	Mefloquine (Lariam and generic)
Usage	Prophylaxis in areas with chloroquine-resistant <i>P. falciparum</i> .
Adult dose	228 mg base (250 mg salt) orally, once/ week
Pediatric dose	≤9kg: 4.6mg/kg base (5 mg/kg salt) orally, once/wk 10-19 kg: 1/4 tablet once/week 20-30 kg: 1/2 tablet once/week 31-45 kg: 3/4 tablet once/week ≥46 kg: 1 tablet once/ week
Comment	Begin 1-2 weeks before travel to malarious areas. Take weekly on the same day of the week while in the malarious area and for 4 weeks after leaving such areas.

Drugs used in the prophylaxis of malaria

Drug	Primaquine
Usage	Used for presumptive anti-relapse therapy (terminal prophylaxis) to decrease the risk of relapses of <i>P. vivax</i> and <i>P. ovale</i> .
Adult dose	30 mg base (52.6 mg salt) orally, once/ day for 14 days after departure from the malarious area.
Pediatric dose	0.5 mg/kg base (0.8 mg/kg salt) up to adult dose orally, once/day for 14 days after departure from the malarious area.
Comment	Indicated for persons who have had prolonged exposure to <i>P. vivax</i> and <i>P. ovale</i> or both. Contraindication: G6PD deficiency, pregnancy and lactation.

Rabies

- Rabies is an acute, progressive, fatal encephalomyelitis caused by neurotropic viruses in the family *Rhabdoviridae*, genus *Lyssavirus*. The disease is almost always transmitted by an animal bite that inoculates the virus into wounds.
- Rabies vaccination is not a requirement for entry into any country. However, travelers to rabies-endemic countries should be warned about the risk of acquiring rabies and educated in animal bite prevention strategies.

■ Prevention

- Pre-exposure vaccination with human diploid cell rabies vaccine (HDCV), or purified chick embryo cell (PCEC) vaccine.
- Postexposure prophylaxis: rabies immune globulin (RIG).
- Travelers should be advised that any animal bite or scratch should receive prompt local treatment by thorough cleansing of the wound with copious amounts of soap and water (and povidone iodine, if available).

Preexposure immunization for rabies

VACCINE	DOSE (mL)	NO. OF DOSES	SCHEDULE (DAYS)	ROUTE
HDCV	1.0	3	0, 7, 21 or 28	Intramuscular
PCEC	1.0	3	0, 7, 21 or 28	Intramuscular

Postexposure immunization for rabies

IMMUNIZATION STATUS	VACCINE / PRODUCT	DOSE	NO. OF DOSES	SCHEDULE (DAYS)	ROUTE
Not previously immunized	RIG plus	20 IU/kg body weight	1	0	Infiltrated at bite site (if possible); remainder intramuscular. Intramuscular
	HDCV or PCEC	1.0 mL	5	0, 3, 7, 14, 28	
Previously immunized ^{2, 3}	HDCV PCEC	1.0 mL	2	0, 3	Intramuscular

Non-Infectious Risks During Travel

Motion Sickness

Risk for Travelers

- All individuals, given sufficient stimulus, will develop motion sickness.
- Children 2–12 years of age are especially susceptible, while infants and toddlers seem relatively immune.
- Women, especially when pregnant, menstruating, or on hormones, are more likely to have motion sickness.
- Persons with migraine are more prone to either migraine or motion sickness at the same time as the other malady.
- Those who expect to be sick are more apt to experience symptoms.

Management of motion sickness:

■ Nonpharmacologic interventions.

- Being aware of those situations which tend to trigger symptoms.
- **Optimizing positioning**—Driving a vehicle instead of riding in it, as well as sitting in the front seat of a car or bus, sitting over the wing of an aircraft or being in the central cabin on a ship can help reduce symptoms.
- **Eating or drinking**—Eating before the onset of symptoms may hasten gastric emptying, but in some individuals, can aggravate motion sickness. Drinking caffeinated beverages along with taking one of the medications suggested can help manage motion sickness.

- **Reducing sensory input**—The reduction of aggravating stimuli (e.g., lying prone, looking at the horizon, or shutting eyes) can help alleviate symptoms.
- **Adding distractions**—Aromatherapy using mint, lavender, or ginger (oral) helps some; flavored lozenges may help as well. They may function as placebos or, in the case of oral ginger, may hasten gastric emptying.
- **Using acupressure or magnets**—Advocated by some to prevent or treat nausea (not specifically for motion sickness), although scientific data are lacking.

Pharmacologic interventions.

- Antihistamines are the most commonly used and available medications, although nonsedating ones appear to be the least effective.
- Pyridoxine hydrochloride (vitamin B6) plus doxylamine succinate (an antihistamine).
- Sedation is the primary side effect of all the efficacious drugs.
- Sedation is problematic when treating patients who perform essential tasks such as flying a plane or acting as crew on a ship.

Sunburn

- Travelers to the tropics and subtropics are at increased risk of overexposure to the sun. Important consequences include sunburn, premature aging of the skin, wrinkling, and skin cancer, including melanoma.
- Sunlight consists of ultraviolet (UV) rays (UVA, UVB, and UVC)
 - UVA rays are present throughout the day and are the most important cause of premature aging of the skin. In addition, UVA rays are responsible for photosensitivity reactions and also contribute to skin cancer.
 - UVB rays are intense from 10 am to 4 pm and are most responsible for sunburn and skin cancer development.
 - UVC rays are filtered by the ozone layer and do not reach the earth's surface.

Sunscreens:

Sunscreens protect the skin by absorbing or reflecting UV radiation.

- **Physical Sunscreens** contain large particulate substances such as titanium dioxide and zinc oxide, which act to reflect and scatter both visible and UV light.
- **Chemical Sunscreens** absorb rather than reflect UV radiation. A combination of agents is recommended to provide broad-spectrum protection against UVA and UVB rays.