Travel Medicine

**Our objectives:**

1. Definition of travel medicine and its concepts .
2. Validity of travel medicine
3. Magnitude of the problem and the importance of travel medicine.
4. Characteristics that makes travelers more susceptible to diseases.
5. Epidemiology of common travel related diseases.
6. Prevention and control.

[](http://www.google.com.sa/imgres?safe=active&sa=X&rlz=1T4RNMZ_enSA562SA562&tbm=isch&tbnid=Q8qIo5dVHxlCJM:&imgrefurl=http://www.travelmedicinecenter.com/&docid=tX8PvWJNqUNwzM&imgurl=http://www.travelmedicinecenter.com/mediac/400_0/media/1088.jpg&w=250&h=228&ei=lQYZU-G4HYTasgaQi4HADQ&zoom=1&ved=0CFQQhBwwAQ&iact=rc&dur=553&page=1&start=0&ndsp=8)

**Definition:**

* Travel medicine is the branch of medicine that deals with the *prevention* and *management* of health problems of international travelers.
* Travel medicine is devoted to health of travel of the travelers who visit foreign countries . It is a specialty concerned not only with prevention of infectious diseases during travel but also with the personal safety of travelers and avoidance of environmental risks.

**Concepts of travel medicine:**

* 4 concepts of travel medicine that you shuld know:

|  |  |  |  |
| --- | --- | --- | --- |
| **Screening** | **Disease managment** | **Pretravel risk assessment** | **Disease preventions and precautions** |
| -Early screening of the symptoms after travelers departed back to their countries Limiting the progression of the diseases especially the contiguous disease . | The proper *treatment* of the infectious and non infectious diseases to the travelers in epidemiological or non epidemiological regions. | This balances *the health of the traveler* (the traveler’s age, underlying health conditions, medications, and immunization history)with the *details of the planned trip* (the season of travel, itinerary, duration, and planned activities) . | 1-immunization/ vaccination  2-chemoproplaxis  3-advise for self treatment  4- travelers instructions  5-medication package . |

**Validity of travel medicine:**

* Reasons are:

1. Clinical trails- based

Travel medicine standards are increasingly based on evidence and are moving away from reliance on the opinion of experts .

1. Knowledge based:

The knowledge base for the travel medicine provider includes: epidemiology, transmission, and prevention of travel-associated infectious diseases; a complete understanding of vaccine indications and procedures; prevention and management of noninfectious travel-associated health risks; and recognition of major syndromes in returned travelers (e.g., fever, diarrhea, and rash)

**The magnitude and the importance of travel medicine :**

1. According to what they found on 2006 , there are 700. 000 .000 travelers cross international borders annually. So, educating the travelers about how they can protect their health will help in preventing lots of diseases.
2. Precautions differ as time changes because there are many changes in global infectious diseases epidemiology .
3. Changing patterns of drug resistance, therefore seeking medical advice is important to have the newly effective treatment that can kill the organism.
4. As mentioned previously, there is huge number of travelers every year , and accordingly an increase in the number of travelers with chronic health conditions, and they need special care to not develop any complications.
5. Traveler protection by providing prophylactic and treatment agents to protect the traveler , prevent the transmission of infectious diseases and minimize the number of cases.

**Some travelers are more susceptible to diseases than others, like:**

1. Pregnant Travelers; especially during sitting for long flights making them at high risk of thromboembolic diseases, like Deep Vein Thrombosis (DVT) for example.
2. Traveling with Children; during a travel, children tend to do activities such as swimming , eating form different places and playing with animals, which make them more prone to infectious diseases . Also, their immune system is not as mature as the adult which adds to their risk.
3. Travelers with Weakened Immune Systems putting them at high risk for infectious diseases more than healthy adults.
4. Elderly and travelers with Chronic Illnesses.
5. Long-Term Travelers &Expatriates ; As they stay longer in the endemic area, they have more chance to get the diseases.
6. Adventurous travelers ; as in staying in the forests or close animal contact.

**International health regulation (IHR):**

The International Health Regulations (“the IHR” or “Regulations”) were adopted by the Health Assembly in 1969. In consideration of the growth in international travel and trade, and the emergence or re-emergence of international disease threats and other public health risks, the Forty-eighth World Health Assembly in 1995 called for a substantial revision of the Regulations adopted in 1969.

After extensive preliminary work on the revision by WHO’s Secretariat in close consultation with WHO Member sand the momentum created by the emergence of severe acute respiratory syndrome (SARS) (the first global public health emergency of the 21st century), the IHR were revised adopted by the Fifty-eighth World Health Assembly on 23 May 20057. They entered into force on 15 June 2007.

The purpose and scope of the IHR (2005) are “to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade.”

 This legally-binding agreement significantly contributes to global public health security by providing a new framework for the coordination of the management of events that may constitute a public health emergency of international concern. IHR includes many rights and obligations for States. These cover activities ranging from surveillance and response, to notification and verification to WHO of certain public health events and risks which will improve the capacity of all countries to detect, assess, notify and respond to public health threats.

**General precautions:**

International travel can pose various risks to health, depending both on the health needs of the traveler and on the type of travel to be undertaken. Travelers may encounter sudden and significant changes in altitude, humidity, temperature and exposure to a variety of infectious diseases, which can result in illness. In addition, serious health risks may arise in areas where accommodation is of poor quality, hygiene and sanitation are inadequate, medical services are not well developed and clean water is unavailable. Accidents continue to be the most common cause of morbidity and mortality in travelers but it is also important to protect travelers against infectious diseases.(

**Key factors in determining the risks to which a traveler may be exposed are :**

* mode of transport
* destination(s)
* duration and season of travel
* purpose of travel
* standards of accommodation, food hygiene and sanitation
* behavior of the traveler
* Underlying health of the traveler

Destinations where accommodation, hygiene and sanitation, medical care and water quality are of a high standard pose relatively few serious risks to the health of travellers, except those with pre-existing illness. The same is true of business travellers and tourists visiting most major cities and tourist centers and staying in good-quality accommodation. In contrast, destinations where accommodation is of poor quality, hygiene and sanitation are inadequate, medical services do not exist and clean water is unavailable may pose serious risks for the health of travelers. This applies, for example, to personnel from emergency relief and development agencies and to tourists who venture into remote areas. In these settings, stringent precautions must be taken to avoid illness. Travel warnings from governmental sources should be taken seriously; they are likely to have implications for travel and for travel insurance.

The epidemiology of infectious diseases in the destination country is of importance to travelers. Travellers and travel medicine practitioners should be aware of the occurrence of these diseases in the destination countries. Unforeseen natural or man-made disasters may occur; outbreaks of known or newly emerging infectious diseases are often unpredictable.

The mode of transport, duration of visit and the behavior and lifestyle of the traveller are important in determining the likelihood of exposure to infectious diseases and will influence decisions on the need for certain vaccinations or anti-malarial medication. The duration of visit may also determine whether the traveler is subjected to marked changes in altitude, temperature and humidity or to prolonged exposure to atmospheric pollution.

Understanding the purpose of the visit and the type of travel planned is critical in relation to the associated travel health risks. However, behavior also plays an important role; for example, going outdoors in the evenings in a malaria-endemic area without taking precautions to avoid mosquito bites may result in the traveler becoming infected with malaria. Exposure to insects, rodents or other animals, infectious agents and contaminated food and water, combined with the absence of appropriate medical facilities, makes travel in many remote regions particularly hazardous.

Whatever their destination or mode of travel, it is important that travellers should be aware of the risk of accidents under the influence of alcohol or drugs and, mainly, in relation to road transport or the practice of sports.

There are some information will help you to be Proactive, Prepared, and Protected when it comes to your health and the health of others while you are traveling:

BE PROACTIVE

Before your travel take steps to anticipate any issues that could arise:

- Learn about your destination.

- See a doctor before you travel.

- Think about your health status (Are you too sick to travel?)(Recent illnesses, injuries, or surgeries) (Do you have any special health needs? (Babies and small children, pregnant women, people with disabilities, people with weakened immune systems).

BE PREPARED

No one wants to think about getting sick or hurt during a trip, but sometimes these things happen. You may not be able to prevent every illness or injury, but you can plan ahead to be able to deal with them:

**Pack smart:**

**What to Pack in Your Travel Health Kit?**

* Medicines:
* Prescription medicines you usually take
* Special prescriptions for the trip:
* Medicines to prevent malaria, if needed
* Over the counter medicines:
* Anti-diarrheal medication
* Antihistamine
* Other important items:
* First-aid supplies. E.g. Digital thermometer and Oral rehydration solution packets

|  |  |
| --- | --- |
| **STIs** | |
| * Sexual transmitted infections depend on the *behavior* rather than the country you visit. * Some examples of these infections are HIV, herpes simplex virus and hepatitis C and B. | **What are they?** |
| These are some routs of transmission: **blood** as hepatitis C, **vaginal fluids and semen** as HIV, also, from the **mother to her child** during pregnancy and **childbirth** as herpes simplex virus. | **Route of transmission** |
| Worldwide infections, about 1 million people acquire a sexually transmitted infection every day. | **Epidemiology** |
| 1. Avoid sexual activity with strangers . 2. Use condom in every sexual contacts. 3. Order sterilized needle in tattooing and avoid sharing razor, needles and shavers. 4. There is vaccination for some of the infections :  * Hepatitis B : it should begin 6 months before travelling, IM, 3-dose vaccine series (Day 0 – 30 – 6months), e.g: Engerix-B * There are no vaccines to prevent HIV or Hepatitis C | **Prevention** |

1. **STIs**

|  |  |
| --- | --- |
| **SCHISTOSOMIASIs** | |
| * It is *parasite* infection by the genus schistosoma. * There are four types: Schistosoma mansoni, S. haematobium,   S. japonicum, and s.haematobium | **What is it?** |
| Is a water-borne infection, this parasite can affect the body by **penetrating the skin**, and larval cercariae can be found in contaminated bodies of freshwater. | **Route of transmission** |
| There is a high prevalence of schistosomiasis in Africa, also, there are types of it Schistosoma mansoni and S. haematobium which more common in Africa, s.haematobium can be found in the Middle East and S. japonicum  more in Indonesia and parts of China. | **Epidemiology** |
| There is **no vaccine** or drugs that prevent the infection, but avoiding swimming, drinking or washing the clothes in lakes and fresh water in disease-endemic countries can help in prevention. | **Prevention** |

1. **Water-borne disease**
2. **Food /drinks related diseases**

|  |  |
| --- | --- |
| **Cholera** | |
| It is bacterial infection and the cause of this infection is bacterium vibrio cholera. It’s affects an estimated 3–5 million people worldwide, and causes 58,000–130,000 deaths a year as of 2010. | **What is it?** |
| It is **fecal oral** rout, mostly transmitted by drinking water contaminated with bacteria. | **Route of transmission** |
| WHO reported that the most recent epidemics was in Africa, about 48% of cases were reprted from Africa in 2012 | **Epidemiology** |
| 1. Drink bottled water. 2. Wash your hand before eating and after using the bathroom or use hand sanitizer if water and soup not available. 3. There is a **vaccine** for cholera:  * Dukoral, dissolving the buffer granules in 150 mL of water, Two doses are required, given a minimum of 1 week and up to 6 weeks apart, single booster dose up to 2 years after completion of the primary course. * The booster dose for who are at risk of exposure to cholera. | **Prevention** |

|  |  |
| --- | --- |
| **Typhoid** | |
| Typhoid fever is a serious disease caused by the bacterium called Salmonella enteric serotype Typhi (S. Typhi) | **What is it?** |
| Transmitted through the **ingestion** of food or drink contaminated by the feces or urine of infected people. | **Route of transmission** |
| It's a worldwide disease, however countries at high risk are regions like South Asia, developing countries in Asia, Africa, the Middle East, the Caribbean, Central and South America. | **Epidemiology** |
| * 1. Wash your hands carefully.   2. Avoid drinking untreated water.   3. Avoid raw fruits and vegetables.   4. Get vaccinated : Two **vaccines** are available**:** * One is injected in a single dose about two weeks before exposure 0.5 mL IM once in the deltoid * The other is given orally in four capsules, with one capsule to be taken every other day3- 0.5 mL IM every 2 years if there is continued exposure toSalmonella typhi**.** | **Prevention** |

|  |  |
| --- | --- |
| **Hepatitis A** | |
| An [acute](http://en.wikipedia.org/wiki/Acute_(medical)) [infectious disease](http://en.wikipedia.org/wiki/Infectious_disease) of the [liver](http://en.wikipedia.org/wiki/Liver) caused by the hepatitis A virus (HAV) | **What is it?** |
| 1-**Fecal-oral route**: Contaminated food or drinks  2-**person-to-person** when poor fecal hygiene is practiced (e.g. between children or during certain sexual practices). | **Route of transmission** |
| Worldwide but most common in regions with poor food and water hygiene, including: Indian sub-continent (especially India, Pakistan, Bangladesh and Nepal), Africa, The Middle East, parts of the Far East (excluding Japan), Central and South America and Mexico | **Epidemiology** |
| 1. keep good personal hygiene. 2. Wash your hands frequently 3. Getvaccinated :the vaccine should be given two weeks before you leave, although it can be given up to the day of your departure if necessary**.**  * Havrix(R): 1 mL IM followed by a 1 mL booster dose 6 to 12 months following primary immunization. * VAQTA(R): 1 mL IM followed by a 1 mL booster dose 6 to 18 months after primary immunization.Primary immunization is recommended at least 2 weeks before expected exposure to hepatitis A virus. | **Prevention** |

|  |  |
| --- | --- |
| **Traveler Diarrhea** | |
| It happens commonly with most of the travelers. caused by many organism such as salmonella, E-coli , Rotavirus and Norvavirus | **What is it?** |
| **Fecal-oral route**: by eating or drinking contaminated food or water. | **Route of transmission** |
| Worldwide however travelers who visit areas with poor standards of hygiene and sanitation are at greater risk . | **Epidemiology** |
| 1. Avoid eating raw, undercooked or uncovered food. 2. Avoid food from street vendors. 3. Drink only bottled drinks and try not to drink anything with ice as it might be made with contaminated water. 4. Wash and peel fruits and vegetables. 5. Makesure dairy products are properly pasteurized | **Prevention** |

1. **Living vector disease**

|  |  |
| --- | --- |
| **Japanese encephalitis** | |
| Caused by Flavivirus, causes brain swelling, & may cause long term nerve damage. | **What is it?** |
| **Mosquito** bite. | **Route of transmission** |
| Occurs in almost all Asian countries and parts of the western Pacific Mainly in rural agricultural areas. | **Epidemiology** |
| 1. [Protection from mosquito bites](http://travel.gc.ca/travelling/health-safety/insect-bite) 2. JE **vaccine** ( Ixiaro ) "inactivated":  * Considered if travelers are spending one month or more in an endemic area, or less than a month but spending large time outdoors. * Adults: 2 doses (0.5 mL) IM, on day 0 & 28, must be completed ≥1 week before travel. | **Prevention** |

|  |  |
| --- | --- |
| **Dengue Fever** | |
| Most common viral disease transmitted by mosquitos, caused by dengue virus. | **What is it?** |
| **Mosquito** bite. | **Route of transmission** |
| Africa, Central and South America, the Caribbean, the Eastern Mediterranean, South and Southeast Asia, Saudi Arabia. | **Epidemiology** |
| * 1. [Protection from mosquito bites](http://travel.gc.ca/travelling/health-safety/insect-bite).   2. Eliminate places where the mosquitoes lay their eggs (in door like flower vases, & around the house like water containers) & change the water frequently.   3. **No Vaccine** available. | **Prevention** |

|  |  |
| --- | --- |
| **Malaria** | |
| Serious fatal disease, caused by Plasmodium parasite. | **What is it?** |
| Mosquito bite. | **Route of transmission** |
| Most malaria cases and deaths occur in sub-Saharan Africa. However, Asia, Latin America, and to a lesser extent the Middle East and parts of Europe are also affected. | **Epidemiology** |
| 1- [Protection from mosquito bites](http://travel.gc.ca/travelling/health-safety/insect-bite).  2- Chemoprophylaxis (Atovaquone-proguanil, Chloroquine phosphate, doxycyclin, Hydroxychloro-quine sulfate, Mefloquine&Primaquine), taken before, during & after return from travel. The Duration depends on the drug type.  - E.g.: Chloroquine phosphate (only for Chloroquine sensitive areas): 300 mg base (500 mg salt) orally, once/week. Taken 1 to 2 weeks before travel, during travel & 4 weeks after coming back.  3- No vaccine available. | **Prevention** |

|  |  |
| --- | --- |
| **Yellow Fever** | |
| Caused byFlavivirus | **What is it?** |
| Mosquito bite. | **Route of transmission** |
| Presented endemically in tropical areas of South America and Africa. | **Epidemiology** |
| 1- [Protection from mosquito bites](http://travel.gc.ca/travelling/health-safety/insect-bite).  2- vaccine: YF-vax" live-virus"  - people age >9 months dose is 0.5 mL SC.  - at least 10 days before travel. This is a legal requirement for those countries requiring a yellow fever certificate (International Certificate of Vaccination).  - single dose protects for 10 years, booster every 10 years. | **Prevention** |

|  |  |
| --- | --- |
| **Leishmaniasis** | |
| its caused by Leishmaniaparasitesand its have 3 main types :  -Cutaneous (most common)  Mucocutaneous-  -Viscera | **What is it?** |
| female phlebotomine sand flies. The Leishmaniaparasites are spread to a human when he or she is bitten by the infected sand fly | **Route of transmission** |
| Common in Afghanistan  Bolivia, Brazil and Peru  Bangladesh, Brazil, Ethiopia, India and Sudan. | **Epidemiology** |
| No vaccine available  Avoid outdoor activities  using nets treated with insecticide while sleeping | **Prevention** |

|  |  |
| --- | --- |
| **Rabies** | |
| Rabies is a zoonotic disease that caused by Lyssavirus ,and usually transmitted by dogs |  |
| contact with the saliva of an infected animal, most often from licks, bites or scratches | **Route of transmission** |
| Rabies mostly in asia and Africa | **Epidemiology** |
| 1-Vaccinating dogs, cats, rabbits, and ferrets against rabies  2-Keeping pets under supervision  3-Not handling wild animals or strays  Contacting an animal control officer upon observing a wild animal or a stray, especially if the animal is acting strangely  If bitten by an animal, washing the wound with soap and water for 10 to 15 minutes and contacting a healthcare provider to determine if post-exposure prophylaxis is required | **Prevention** |

**Air born disease**

|  |  |
| --- | --- |
| **corona** | |
| Corona is caused byMiddle East Respiratory Syndrome Coronavirus (MERS- CoV) | **What is it?** |
| It spreads via air by coughing and sneezing, and close personal contact (i.e. shaking hands). | **Route of transmission** |
| Middle East specifically Arabian Peninsula | **Epidemiology** |
| there is no vaccine for MERS-CoV, but there is still more to learn about this new strain of coronaviru | **prevention** |

|  |  |
| --- | --- |
| **Tuberculosis** | |
| Tuberculosis is a disease caused by a bacterium called Mycobacterium Tuberculosis | **What s it?** |
| Active TB is preceded by latent TB and is air-borne.  Latent TB is not contagious and can stay inactive for years. In fact, it gets activated when you have a weak immune system. | **Route of transmission** |
| Tuberculosis occurs globally, and it is estimated that about one-third of the world’s population has latent TB infection (LTBI). In addition, about 10% of individuals with LTBI will develop active TB. | **Epidemiology** |
| 1-Travelers have to avoid close contac with people who are having active TB in crowded areas.  2-Vaccination:  Travelers do not need the bacillus Calmette–Guérin vaccine but the vaccine may be considered for long term travelers to countries with a high risk of TB  For example, young children (< 5 years of age) who may not have access to regular tuberculin skin test. In addition, trevellers who may not be able to follow the recommended preventative measures against TB medical or personal reasons.  -Doses:  Adult and children aged 12 months and above:  A dose of 0.1 ml of the vaccine is injected strictly by the intradermal route.  Infants under 12 months of age:  A dose of 0.05 ml of the vaccine is injected strictly by the intradermal route. | **Prevention** |

|  |  |
| --- | --- |
| **Meningococcal disease** | |
| Meningococcal Disease is caused byNeisseria Meningitidis |  |
| Mingococal disease is spread from close and prolonged contact with an infected person through saliva or secretions (fluids) from the nose and throat. E.g. sneezing, coughing, and sharing eating or drinking utensils. | **Route of transmission** |
| In sub-Saharan Africa (the meningitis belt extends from Senegal to Ethiopia). Also, in Saudi Arabia due to Hajj. | **Epidemiology** |
| 1-Travelers have to wash their hands frequently  2-they should practice proper cough and sneeze etiquette  3-they have to avoid close contact with people who are having the disease  4-vaccination:  there are two meningococcal vaccines available  - Meningococcal conjugate vaccine (MCV4) whichis for people 55 years of age and younger.  -Meningococcal polysaccharide vaccine (MPSV4) which is for people older than 55.  travelers do not need the meningococcal vaccines, but either meningococcal polysaccharide vaccine or meningococcal conjugate vaccine is recommended for travelers if they travel to any country in which the disease is common such as certain parts of Africa and Saudi Arabia because of annual Hajj and Umrah.  For children and adults 2-55 years of age, MCV4 is administered as a single 0.5 ml dose intramuscularly. On the other hand, MPSV4 is administered 0.5 ml subcutaneously | **Prevention** |

**References** :

* [**http://www.phac-aspc.gc.ca/tmp-pmv/notices-avis/notices-avis-eng.php?id=108**](http://www.phac-aspc.gc.ca/tmp-pmv/notices-avis/notices-avis-eng.php?id=108)
* <http://www.immune.org.nz/sites/default/files/resources/SSI%20BCG%20vaccine%20data%20sheet.pdf>
* [**http://www.cdc.gov/TB/TOPIC/vaccines/default.htm**](http://www.cdc.gov/TB/TOPIC/vaccines/default.htm)
* [**http://travel.gc.ca/travelling/health-safety/diseases/tuberculosis**](http://travel.gc.ca/travelling/health-safety/diseases/tuberculosis)
* [**http://www.cdc.gov/vaccines/vpd-vac/mening/who-vaccinate.htm**](http://www.cdc.gov/vaccines/vpd-vac/mening/who-vaccinate.htm)
* [**http://www.nlm.nih.gov/medlineplus/druginfo/meds/a607020.html#skip**](http://www.nlm.nih.gov/medlineplus/druginfo/meds/a607020.html#skip)
* [**http://www.vaccines.gov/diseases/meningitis/index.html**](http://www.vaccines.gov/diseases/meningitis/index.html)
* <http://www.immunizationinfo.org/vaccines/typhoid->
* <http://www.mayoclinic.org/diseases-conditions/typhoid-fever/basics/prevention/con-20028553>
* <http://www.drugs.com/dosage/typhoid-vaccine-inactivated.html>
* <http://en.wikipedia.org/wiki/Hepatitis_A>
* <http://www.nhs.uk/Conditions/Hepatitis-A/Pages/Vaccination.aspx>
* <http://www.drugs.com/dosage/hepatitis-a-adult-vaccine.html#Usual_Adult_Dose_for_Hepatitis_A_Prophylaxis>
* <http://wonder.cdc.gov/wonder/prevguid/p0000433/p0000433.asp>
* <http://www.cdc.gov/ncidod/dbmd/diseaseinfo/travelersdiarrhea_g.htm>
* [**http://www.doctortravel.ca/index.php?page=hepatitis-b**](http://www.doctortravel.ca/index.php?page=hepatitis-b)
* [**http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/handbook10-4-1**](http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/handbook10-4-1)
* [**http://www.who.int/mediacentre/factsheets/fs107/en/**](http://www.who.int/mediacentre/factsheets/fs107/en/)
* <http://www.who.int/mediacentre/factsheets/fs110/en/>
* <http://www.who.int/gho/epidemic_diseases/cholera/en/>
* <http://wwwnc.cdc.gov/travel/>
* [http://travel.gc.ca](http://travel.gc.ca/)