

UNIT NO. 5

TRAVEL DISEASES OF PUBLIC HEALTH IMPORTANCE

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ABSTRACT

Travel medicine is a fast growing field. The recommendations are constantly changing. Websites provide a useful frame of reference for travel advice for patients who consult us. Travel clinics run by certified travel medicine specialists at CGH, TTSH or NUH are another source of travel information. Some of the key infections in the world are: Malaria, HIV/AIDS, Tuberculosis, and respiratory tract infections. Pregnant travellers need to consult their obstetricians long before they travel. Key infections in Asia are: Malaria, Japanese B encephalitis, Scrub typhus, and Dengue. Food and water borne infections are the second commonest cause of illness in returned travellers: Hepatitis A, Campylobacter infection, and Typhoid. Zoonotic infections of importance but low risk are: Highly Pathogenic Avian Influenza (HPAI (H5N1)), and Rabies. Soil and water associated infections of importance, e.g. Leptospirosis, and Melioidosis, are best prevented with protective footwear.

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KEY INFECTIONS IN THE WORLD**What are some of the key infections in the world?**

This is a very broad question. There are several ways to determine the answer to this. The usual Singaporean approach is to ask an expert. Again, as Singaporeans, we tend to believe that the person with the most money has all the answers – hence, it would be a good idea to check in with Mr Bill Gates, Harvard dropout and the richest man in the world (depends on how you count, but most of us are using one of his products – how many of us can say that for any of the other pretenders to the crown?).

Go to <http://www.gatesfoundation.org/GlobalHealth/>¹ which is the website of the Bill and Melinda Gates Foundation. This lists the key diseases which they identify as priority diseases. Three specific diseases are listed and also several groups of diseases. Can you list them down here: Individual Diseases: (1) _____ (2) _____ (3). _____.

Of the three, one is likely to affect all travellers while the other two are more likely to affect travellers in special situations, especially those who are going to do missions or medical work for one and those who are sex tourists for the other.

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Malaria

Some of the best resources for malaria are available from the WHO website: <http://www.who.int/topics/malaria/en/>²

Most of us learned the life cycle of the malaria parasite in secondary school, but the key to diagnosing malaria clinically is to have a high index of suspicion. While there are new diagnostics available for malaria including antigen based tests, these are more commonly used in the field as point of care tests. Polymerase chain reaction (PCR) testing for malaria, while widely used in research and surveillance settings, has limited clinical application because of the costs involved in the tests. For the practicing clinician in Singapore in 2008, the “gold standard” is probably still the blood smear for malaria parasites.

The number of malaria cases annually diagnosed in Singapore can be found at http://www.moh.gov.sg/mohcorp/uploadedFiles/Publications/Guidelines/Infectious_Diseases_guidelines/PG32-62.pdf.³ The overwhelming majority of these are imported cases.

Malaria prophylaxis is critically important to prevent the importation of malaria into Singapore by travellers. The US CDC website lists the recommendations for prophylaxis. The website is <http://www.cdc.gov/malaria/index.htm>. Can you list the regimes of choice for travellers to (1) Saudi Arabia, (2) Indonesia, and (3) India?

HIV/AIDS

HIV/AIDS is a major cause of morbidity and mortality worldwide. Often travellers are at risk because of disinhibitions associated with travel. A survey done in the hotels and ferry terminals in Batam conducted by the non-governmental organisation, Action for AIDS, showed that 70% of Singaporean men in the Riau islands were there for sex with girlfriends or commercial sex workers. More data on AIDS can be found at several websites including UNAIDS, <http://www.unaids.org/en/>⁴ and patient information sites such as www.thebody.com.⁵

HIV/AIDS is now a treatable disease with several new classes of drugs available and in developed countries, few individuals die from AIDS any more. There is however considerable stigma and discrimination against people with HIV/AIDS. Singapore does not have laws prohibiting discrimination against people living with HIV/AIDS and thus, even though most live long lives with appropriate medical care, it is still important to prevent these infections.

While the most effective means of preventing HIV/AIDS is complete celibacy, in those who are not celibate, condoms are highly effective. Some patients will ask for post-exposure prophylaxis (PEP) for sexual encounters overseas. The US CDC

recommendations for PEP for non-occupational exposure in high risk situations are available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5402a1.htm>.⁶

Tuberculosis

Tuberculosis is a disease of poverty. It tends to occur in crowded urban settings in developing countries. Resorts which are the popular destinations for Singaporean tourists are rarely sites of tuberculosis outbreaks. Although there have been a lot of concerns for the transmission of tuberculosis in aeroplanes, the risk is relatively low and most airline associated tuberculosis has resulted in transmission of latent tuberculosis which is very common in Singaporeans. Tuberculosis is an airborne disease and travellers who plan on doing mission work in slums or in poor settings such as hospitals or nursing homes in developing countries should follow local protocols for detection and treatment of latent tuberculosis. This involves either Mantoux skin testing or use of the new interferon-gamma assays.

Syndromes/conditions that may affect travellers

The syndromes/conditions that the Gates Foundation is interested in supporting are:

- (1) _____ (2) _____ (3) _____ (4) _____
(5) _____ (6) _____.

Respiratory tract infections

Respiratory tract infections are commonest in children in developing countries and are a major cause of mortality and morbidity in these countries. Travellers with healthy immune systems should not be overly concerned with respiratory tract infections although vaccination against influenza should be considered for all individuals for whom it is recommended. Recommendations of the US Advisory Committee on Immunization for influenza are available at <http://www.cdc.gov/flu/professionals/acip/index.htm>⁷ and the Singapore Ministry of Health's recommendations for influenza vaccination are available at <http://www.moh.gov.sg/mohcorp/pressreleases.aspx?id=18616>⁸.

Maternal and child health

Maternal and child health services are generally very limited in developing countries. Pregnant travellers need to consult with their obstetricians long before they travel. They need to be aware of which travel vaccines are contraindicated in pregnancy. Advice for pregnant travellers is available from the US CDC's Yellow Book which is freely available online at <http://wwwn.cdc.gov/travel/yellowBookCh9-PregnancyTraveling.aspx>.⁹

Can you list the anti-malaria drugs which are safe for pregnant women?

Safe nutrition and diarrhoeal illnesses are covered under "Food- and water-borne infections".

KEY INFECTIONS IN ASIA

The key infections in Asia are similar to the infections in the rest of the developing world. In my opinion, the most useful website for country specific information for travellers on key infections in the various Asian countries is the US CDC website, <http://wwwn.cdc.gov/travel/destinationList.aspx>¹⁰. Visit the link and list the key infections in the following Asian countries: (1) Afghanistan, and (2) Vietnam.

I. Vector borne infections (e.g. malaria, Jap B encephalitis, scrub typhus, dengue)

Malaria has been discussed earlier. The key elements in malaria prevention as with all other mosquito and other insect vector borne diseases are the use of appropriate insect repellents. Refer to <http://wwwn.cdc.gov/travel/contentMosquitoTick.aspx>¹¹ and list the key ingredient of any insect repellent.

Japanese B encephalitis occurs sporadically in Singapore - much more rarely after the elimination of pig farming. A recent case was described in a report available online at http://www.cdc.gov/ncidod/eid/vol12no03/contents_v12n03.htm¹². General travellers who plan on visiting rural areas of South and Southeast Asia where there are pigs and rice paddy fields for a prolonged period of time should consider vaccination against Japanese B encephalitis. There are concerns for possible neurological adverse events associated with currently available Japanese B encephalitis vaccines.

Scrub typhus is a mite borne disease that is common even in Singapore among those who walk through the long grass or lalang which is the home of the mite vector. As with the other rickettsial diseases, diagnosis is based on a high index of suspicion, serological testing done at an accredited laboratory and occasionally, a therapeutic trial of doxycycline.

Dengue is a disease that is very common in Singapore with several thousand cases a year in Singapore every year. It should not be considered a travel related disease for Singaporeans. The Ministry of Health website has a lot of useful information on dengue.

II. Food and water borne infections (e.g. travellers' diarrhoea, Hep A, Campylobacter infection, Typhoid)

In general, food and water borne diseases are the second commonest cause of illness in returned travellers. The travel medicine rule that still holds is "Cook it, peel it or leave it!" If this rule is strictly adhered to, most travellers can avoid the distressing travellers' diarrhoea which has a number of unfortunate nicknames. The most common cause of travellers' diarrhoea is enterotoxigenic *E. coli*. This is not easy to diagnose in the laboratory but is most commonly self limited.

Noroviruses which have been associated with outbreaks of diarrhoea and vomiting can be diagnosed by PCR of stool or vomitus, which is available at Singapore reference laboratories. Stool cultures in general can only diagnose salmonella, shigella or campylobacter infections. In some labs, you have to specifically request for testing for vibrio cholera if you have a high index of suspicion for the disease – i.e. severe dehydration with possibly even renal failure and voluminous “rice water” stools.

The treatment of travellers diarrhoea is largely supportive. The key is to ensure adequate hydration, and this should preferably be delivered enterally. Oral rehydration solution which contains appropriate proportions of solutes in addition to fluids is strongly recommended. Milder cases of travellers diarrhoea should be treated with judicious combinations of fruit juices and isotonic bottled fluids. It is very important to ensure that there is a clean potable water supply available when providing oral rehydration therapy, otherwise secondary infections might result.

In addition to oral rehydration therapy, charcoal or other bulk forming agents can help in relieving the symptoms of travellers diarrhoea. While antimotility agents can relieve symptoms quickly, they should not be used in patients with fever or bloody stools. A detailed explanation of this is available at <http://wwwn.cdc.gov/travel/yellowBookCh4-Diarrhea.aspx>.¹³

In general, I do not prescribe antibiotics for travellers beyond a one to three day supply of oral ciprofloxacin, which should cover the time that it takes an individual with dysentery to reach medical attention. The risk is that a traveller will seek to self medicate and will concentrate on the antibiotic therapy, which would be ineffective against norovirus or other viruses and even enterotoxigenic *E. coli*, while neglecting rehydration which is the key to preventing the complications of travel related diarrhoeal illnesses.

Vaccines

Vaccines are available for Hepatitis A and for Typhoid. Hepatitis A vaccination is also available as a combined vaccine which incorporates Hepatitis B vaccination. The vaccine is a safe and efficacious vaccine. More details about travel vaccines are available at <http://wwwn.cdc.gov/travel/content/Vaccinations.aspx>.¹⁴

There are two typhoid vaccines which are currently available – an injectable killed vaccine and the oral live attenuated vaccine. It is important to remind travellers who have taken the oral typhoid vaccine that they should not take antibiotics in the 48-hour following ingestion of the vaccine or they risk rendering the vaccine ineffective.

III. Zoonotic infections (e.g. Rabies, HPAI (H5N1))

H5N1 is a very rare infection which has not affected any traveller anywhere in the world to date. There are vaccines

which have been shown to be effective against H5N1 influenza, but none of these are commercially available. Many individuals have taken oseltamivir as prophylaxis after exposure to sick or dead poultry. However, there are growing data on resistance of H5N1 to oseltamivir, and even seasonal influenza this year has been found in many parts of the world to be highly resistant to oseltamivir. A simple rule for the Singaporean traveller is to avoid contact with sick or dead poultry. The WHO website http://www.who.int/csr/disease/avian_influenza/en/index.html¹⁵ gives updates on the number of cases of human infection with H5N1 avian influenza. Look up the website and list the latest countries reporting human cases of H5N1 avian influenza.

Rabies is an almost uniformly fatal disease that is carried by a number of animals in many developing countries. Globally, 55,000 people die from rabies every year, predominantly in Asia. Although rabies carries such a high fatality rate, as with tuberculosis, the risk of infection in travellers is relatively low. Rabies vaccination is generally recommended only for those who plan to travel to settings where they are likely to be exposed to animals. The recommendations on rabies vaccination for travellers can be found at URL: <http://wwwn.cdc.gov/travel/content/Diseases.aspx#rabies>.¹⁶

IV. Soil and water associated infections (e.g. Melioidosis)

Melioidosis is a relatively infrequent disease indigenous to Singapore and thus, not a disease of travellers. With leptospirosis and melioidosis and other diseases associated with soil or surface water, the best prevention is to use protective clothing in particular footwear. Patients also need to be reminded to inform their GPs about their travel histories if they develop fever or unusual complaints after returning from travel overseas.

SUMMARY

Travel medicine is a fast growing field. The recommendations are constantly changing. I hope that the websites cited in this paper will give the reader a useful frame of reference for travel advice for his or her patients. In any case, family physicians can refer to one of the travel clinics run by certified travel medicine specialists at CGH, TTSH or NUH.

REFERENCES

1. Bill Gates Foundation. Priority Diseases and Conditions.
2. WHO. Malaria. URL: <http://www.who.int/topics/malaria/en/>
3. MOH. Malaria. In: Infectious disease guidelines. MOH:Singapore URL: http://www.moh.gov.sg/mohcorp/uploadedFiles/Publications/Guidelines/Infectious_Diseases_guidelines/PG32-62.pdf
4. UNAIDS. Uniting the world against AIDS. URL: <http://www.unaids.org/en/>

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| <p>5. The Body. Complete HIV/AIDS Resource. Patient information resource. URL : http://www.thebody.com/</p> <p>6. CDC. Post-exposure prophylaxis (PEP). URL: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5402a1.htm</p> <p>7. CDC. Seasonal influenza. Immunisation recommendations. URL: http://www.cdc.gov/flu/professionals/acip/index.htm</p> <p>8. MOH. Influenza update. URL: http://www.moh.gov.sg/mohcorp/pressreleases.aspx?id=18616</p> <p>9. CDC. Advice for pregnancy traveller. In: CDC Yellow Book. Chap 9. URL: http://wwwn.cdc.gov/travel/yellowBookCh9-PregnancyTraveling.aspx</p> <p>10. CDC. Travel destinations. http://wwwn.cdc.gov/travel/destinationList.aspx</p> | <p>11. CDC. Measures to prevent bites from mosquitoes, ticks, fleas and other insects and arthropods. URL: http://wwwn.cdc.gov/travel/contentMosquitoTick.aspx</p> <p>12. Jap B Encephalitis in Singapore. A recent case. URL: http://www.cdc.gov/ncidod/eid/vol12no03/contents_v12n03.htm</p> <p>13. CDC. Travellers' Diarrhoea. In: CDC Yellow Book. Chap 4: http://wwwn.cdc.gov/travel/yellowBookCh4-Diarrhea.aspx</p> <p>14. CDC. Vaccinations. URL: http://wwwn.cdc.gov/travel/contentVaccinations.aspx</p> <p>15. WHO. H5N1 avian influenza. URL: http://www.who.int/csr/disease/avian_influenza/en/index.html</p> <p>16. CDC. Diseases related to travel – Rabies. URL: http://wwwn.cdc.gov/travel/contentDiseases.aspx#rabies</p> |
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LEARNING POINTS

- Some of the key infections in the world are: Malaria, HIV/AIDS, Tuberculosis, and respiratory tract infections.
 - Pregnant travellers need to consult with their obstetricians long before they travel.
 - Key infections in Asia are: Malaria, Japanese B encephalitis, Scrub typhus, and Dengue.
 - Food and water borne infections are the second commonest cause of illness in returned travellers: Hepatitis A, Campylobacter infection, and Typhoid.
 - Zoonotic infections of importance but low risk are: Highly Pathogenic Avian Influenza (HPAI (H5N1)) and Rabies.
 - Soil and water associated infections of importance, e.g. Leptospirosis and Melioidosis, are best prevented with protective footwear.
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