

ORIGINAL PAPERS

New and Emerging Concepts in Travel Medicine

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Abstract

The following article summarises the proceedings of the Travel Medicine Study Day run by the Haywood Club Tri-Service Medical Society at the Medical Society of London on 23 November 2006. The event was attended by over 50 serving and retired DMS personnel, including nurses, MSO's and medical officers and included talks on the historical contribution of the military medical services to the evolution of tropical medicine, the changing face of worldwide illness and insights into the behaviour of travellers that may increase their risk of illness.

Introduction

Travel medicine, as distinct from tropical medicine, emerged as a specialty in the 1970's with the arrival of the wide-bodied commercial airliner. The British Overseas Aircraft Cooperation (BOAC) inaugurated the first commercial jet service on May 2, 1952 taking passengers from London to Johannesburg but it was not until the merger of BOAC with BEA (British European Airways) and the resultant formation of British Airways that the world of flying as we know it began to really take off and travel medicine became a recognised and required speciality (1). Travel medicine, as we understand it today, has always been a core element of service primary care, with former military physicians responsible for many discoveries and early advances in Tropical Medicine.

With the advent of low cost flights, an increasing number of people are travelling abroad and subsequently increasing number of travellers are now seeking advice from medical staff before, during and after they travel. This cultural shift is mirrored in the military but, in addition, our forces are now more expeditionary and there is an additional requirement for

a good understanding of travel medicine within the military. Some 190,000 military personnel passed through RAF Brize Norton and RAF Lyneham in 2005 (Figure 1) emphasising both the scale and importance of this topic to the military health professional. Our service personnel deploy to more remote and underdeveloped countries than ever before and their adventurous training is now being carried out in more exotic and remote locations. Travel medicine has never been more topical or relevant to today's military medical specialists.

Military Tropical Medicine

The speciality of tropical medicine was important to the military well before the 1970s, with military physicians contributing to the tropical medicine literature during the years of the Empire when service doctors served across the globe. Notable achievements of former service physicians in the early days of the British Empire include seminal works such as those of Sir Ronald Ross and Sir Patrick Manson at the end of the 19th Century with their discovery that the anopheline mosquito was involved in propagation of malaria (2). The past glory of our military medical establishment was reflected by the grandeur of the magnificent Royal Victoria Military Hospital, based at Netley (Figure 2) on the south coast of England, near Southampton. This majestic hospital was built following Florence Nightingale's experiences of managing casualties



Figure 1: Troops preparing for departure at RAF Lyneham

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Figure 2: The Royal Victoria Hospital, Netley

during the Crimean War and many renowned military physicians trained at the medical school attached to Netley, including Sir David Bruce who discovered Malta fever (Brucellosis) and Trypanosomiasis and Captain Whitmore who discovered Meiloidosis (Whitmore's disease), an infection caused by burkholderia pseudomallei (3). Furthermore, Sir William Leishman developed a deep interest in Kala-Azar (Leishmaniasis) whilst at Netley and together with Donovan published his seminal findings in the early 20th Century (4,5).

Leishmaniasis remains as topical today as it was in the 1800's, with personnel from both the desert regions of Iraq and the tropical climates of Belize returning to the UK with clinical manifestations of this condition today (6). Recent experiences of the RAF aeromedical teams include repatriating increasing numbers of personnel with tropical infections, not normally seen in the UK, but contracted by deployed troops in theatre. Serving personnel with trypanosomiasis, malaria and presumed Lassa fever have all been repatriated to the UK in recent times. With these diseases once again presenting to the military medical service, it is important that we should maintain access to current and up-to-date information of tropical and travel related illness and useful references are summarised in the Appendix.

With conditions that are uncommon to most UK based health professionals it is important that the Defence Medical Services both promulgates relevant preventative travel medicine advice but also audits the effect of this advice in reducing disease incidence. The challenge of making sure advice is followed and audited and that all aspects of military training/operations are covered by sensible and pragmatic health advice is highlighted by these two real life scenarios.

Case 1

Following concern that personnel deploying overseas failed to assimilate travel health information a study involving 200 personnel from a frontline fast jet station was performed. With 133/200 responses (76.5%), it was shown that servicemen's retention of travel knowledge was deficient, but also highlighted poor attendance at pre-deployment health briefings, limited information around core subject material (that was often presented by personnel with limited travel medicine knowledge) and little, if any, literature provided for further reading. Subsequently it was recommended that attendance at health briefings should be mandatory and given by a health professional who was trained and up-to-date in travel medicine; and suggested that ideally health briefs should be standardised across all three services (reducing ambiguity in health information) and be backed up with written information, in the form of single, simple reminder card.

Case 2

The medical report from Ex MAGANGA MERCURY 06 highlighted 45 personnel exposed to schistosomiasis (Bilharzia) in the waters of Lake Malawi despite having been given an in-depth briefing by the medical health information team (MHIT) on the risks of acquiring schistosomiasis with water contact activities. The key point from this small case study is that despite comprehensive public health initiatives by medical staff to prevent contact with infected water an official (non-medical) R&R activity of Kayaking in the lake was in direct contradiction of this advice. Of these 45 potentially affected individuals it would be expected that 2-7 members of personnel would become infected (7,8), however initial screening with microscopy and serology 8 weeks after returning from Malawi demonstrated no cases of schistosomiasis. It was hypothesised that increased DEET usage (9) or recent government snail eradication programmes (10) may have contributed to this.

The changing face of travel and worldwide health

It is relevant to look at travel health in the context of the changes in worldwide illness patterns. The fact that so called "old" diseases are resurgent in many countries needs to be borne in mind when advising those travelling and assessing patients on their return.

The discrepancy in life expectancy across the world and the re-emergence of diseases such as tuberculosis (TB) following the epidemic of Human Immunodeficiency Virus (HIV) are now major global health concerns. Despite worldwide efforts to eradicate infectious disease there remain several areas of concern with decreasing life expectancy in places such as Eastern Europe, Russia and China. These changes are predominantly due to the increased incidence and prevalence of HIV in these regions but also happen areas with poor or failing public health programmes and weak health infrastructure. Most international aid agencies are still currently focussing on the prevention of the common infectious diseases however recent evidence highlights the burden of non-infectious illnesses, such as cardiovascular disease, obesity and diabetes, particularly with regards the procurement of funds for the prevention and treatment of these diseases (11).

HIV is now regarded as a chronic disease in the UK, which can usually be managed in an outpatient setting, due to the increased production of new combinations of antiretroviral agents. However the prevalence of HIV in areas such as sub-Saharan Africa, with limited supplies of anti-retroviral agents, means that patients travelling to these regions should be fully informed of the risk of transmission in these countries.

Aside from HIV, the two other infectious diseases that attract the greatest attention from international agencies are TB and malaria. These three infectious diseases are collectively responsible for 10% of the deaths in the world annually (11). There is evidence of an increasing incidence of TB within the UK (12), most likely due to patients contracting the disease abroad (often whilst visiting family) and returning to the UK and TB co-infecting those with HIV. Malaria remains a global health concern and still claims over one million lives per year mainly in the younger age groups (13) and should always be considered in ill patients returning from endemic regions.

Finally, there is evidence for the emergence and changing epidemiology of some other infectious diseases. Dengue fever now has a worldwide distribution probably as a consequence of changing vectors and vector survival in more temperate climates. Hepatitis C remains a predominantly hidden disease, although it is thought to have an increasing incidence worldwide but especially in Eastern Europe. Japanese Encephalitis has moved west and now can be found in places such as India and Nepal (14,15).

Additionally, a different type of potential patient is now travelling abroad when compared to the past with increasing age, pre-existing illness and disability no longer being seen as a bar to worldwide travel. A subgroup of travellers also now demand more from their holidays with the advent of health tourism and extreme travel, which mean that medical advisors have a far more complex job in providing travel information beyond the traditional discussion of vaccinations. The medical professional today needs to explore both the patient's medical history and what they plan to do whilst they are away e.g. such as extreme sporting activities that may require tailored medical advice. A lateral glance into the obscure reasons for travel such as dark tourism (visits to mausoleums, mass grave sites etc.) and medical tourism, where people travel to undergo an operation, such as coronary bypass graft or cosmetic surgery, whilst overseas suggest that we must now learn to expect the

unexpected and be prepared to ask the relevant questions during the travel health assessment.

Travellers' Behaviour

The effects of travellers' behaviour should not be overlooked by military health professionals and they should consider tailoring their advice and health briefs based on a behavioural attitude assessment. The majority of travellers die from common conditions in which a cardiovascular cause (69%) or road traffic accidents (RTAs) (21%) predominate (16,17). The commonest cause of death in the younger, predominantly male Armed Forces population is RTAs, with most of these accidents related to alcohol in some way (18). Many accidents and deaths may be prevented by simple changes in people's behaviour such as wearing seat belts, avoidance of high risk areas and protection against environmental hazards. Behaviour within a population will only be changed by increasing knowledge and altering attitudes. Various models have produced theories which approach ways to influence behaviour for example the Health Belief Model, which is a psychological model that attempts to explain and predict health behaviors (19). In practice, behaviour must be targeted prior to travel, during the trip and on returning (20). In a military setting this influence comes from multiple sources; the Chain of Command, peer groups and through thorough travel advice from health professionals.

Specific Health Advice

Malaria

The requirement for anti-malarial chemoprophylaxis will vary from person to person and on where they plan to travel. Sources of advice that may help guide appropriate treatment are available in the Appendix. Anti-malarials vary with regard to the time for which they must be taken prior to departure e.g. malarone needs to be started 24-48 hours prior to arriving in a malarious area, whilst mefloquine requires 2-3 weeks treatment before departure. Similarly, the duration of prophylaxis is variable, with most prophylactic drugs acting purely on the red cell stages of malaria infection necessitating continued prophylaxis for four weeks after the last exposure. Only some anti-malarials are suitable in pregnancy i.e. chloroquine/proguanil taken with additional folate or in the presence of medical conditions such as epilepsy when doxycycline is the anti-malarial of choice. Ultimately prophylaxis needs to be tailored to the individual based on their medical history, the regions they will visit and their duration of stay.

Vaccinations

All travellers should be vaccinated against polio, tetanus, diphtheria, Hepatitis A (and in some cases Hepatitis B) and Yellow Fever (when travelling to Sub-Saharan Africa). Other more specialised vaccines may be required dependent on the planned itinerary and reaffirms the importance of taking a good travel history - some examples are detailed below:

- Japanese B Encephalitis vaccination is recommended if you intend to spend more than 3 to 4 weeks in a region where the disease is prevalent.

Does your patient have:

- Asthma, epilepsy or diabetes
- Allergies or require essential regular medications
- Heart problems
- Recurring back or joint problems
- Psychological or psychiatric problems including eating disorders, depression, anxiety and DSH
- Objections to any form of treatment including blood product transfusion and immunisations
- Any other medical problems

Box 1

- Meningococcal Meningitis vaccine is recommended during early childhood and before the age of 25 but only protects people against Meningococcal Group C and travellers must be aware that they may still develop meningitis particularly from Group B meningococcus.
- Rabies vaccine should be given if in an area with a high incidence of rabies virus or where treatment opportunities are limited.
- Cholera vaccine is available but does not provide 100% protection and is most likely to be suitable for backpackers and those travelling to a region where the risk of cholera is greatest (i.e. refugee situations).
- Tick Borne Encephalitis vaccine given to travellers or residents who are at high risk. The virus is transmitted from the bites of ticks in rural Russia, Eastern Europe and Japan.

Pre-existing medical conditions

Despite the increase in the number of people travelling with pre-existing chronic medical conditions, with careful planning the majority enjoy a safe trip. However there is concern that trips may worsen the medical conditions of this group and a decision must be made into whether the risk of travelling is acceptable. Suggested pre-trip screening questions are included in Box 1 to direct the health professional to obtain a targeted travel history.

The returning traveller

It is essential to always obtain a travel history from anyone presenting with a fever and the most important condition not to overlook in any returning traveler is Falciparum malaria. All medical professionals who see an ill patient following return from an endemic area should remain vigilant, with a low threshold for specialist referral and investigation. Usual presenting complaints in returning travelers are often non-specific and vague and may include fever, dermatological or general systemic disorders. Malaria, Hepatitis, TB and Typhoid fever are all relatively common in returning travelers. Illnesses such as schistosomiasis and Dengue are increasingly seen in travelers from endemic regions.

Conclusion

This article summarizes how globalization facilitates the spread of disease and increases the number of travellers exposed to a different health environment. Travel Medicine includes the global epidemiology of health risks to the traveller, vaccinology, malaria prevention, and pre-travel counseling designed to maintain the health of the approximately 600 million international travelers per year. The field of Travel Medicine encompasses a wide variety of disciplines including epidemiology, infectious disease, public health, tropical medicine, high altitude physiology, travel related obstetrics, psychiatry, occupational medicine, military, migration medicine, and environmental health to name but a few. Travel medicine is a critical component of military medicine and is likely to remain so for many years to come.

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Appendix

Journal of Travel Medicine www.istm.org/publications/jtm

International Society of Travel Medicine (ITSM) www.istm.org

British Travel Health Association www.btha.org

National Travel Health Network and Centre (NATHNaC) www.nathnac.org

Travax (A to Z of Healthy Travel) www.travax.nhs.uk

Foreign and Commonwealth Office – Travel Advice www.fco.gov.uk

Guidelines for malaria prevention in travellers from the UK 2003 [www.hpa.org.uk/cdph/issues/CDPHvol6/No3/6\(3\)p180-99.pdf](http://www.hpa.org.uk/cdph/issues/CDPHvol6/No3/6(3)p180-99.pdf)

Malaria prophylaxis for long term Travellers [www.hpa.org.uk/cdph/issues/CDPHvol6/No3/6\(3\)p200-208.pdf](http://www.hpa.org.uk/cdph/issues/CDPHvol6/No3/6(3)p200-208.pdf)

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