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Editorial

We have in this edition of the journal a new section devoted to the project work of students, featuring two abstracts and one full paper from graduates of the Glasgow Diploma of Travel Medicine. The BTHA is very keen to encourage student participation in all of our activities and this new section will provide a unique opportunity for them to have their work appear in a publication.

The development of a BTHA research network is progressing well and this issue carries the results of the online survey that over one hundred members completed. The results were presented as a poster at the Hamburg NECTM conference in May. As we have recently updated our database of email addresses the survey will be run again so please take a short while to complete it if you have not already done so. The first project, related to traveller's attitude to and experience of bite avoidance measures, is currently completing ethics approval and scheduled to commence in the Autumn.

The research network project was conducted in collaboration with the Irish Society of Travel Medicine and the future planned projects will also be run together with this organisation. A further collaboration with our Irish colleagues is a new section in the Journal featuring material produced by Graham Fry's Ireland-based Tropical Medicine Bureaux.

Another quite unique feature of our journal is the relatively wide coverage that we give to reviews, reports and case studies. These are invaluable for practitioners to gain a better understanding of more complex cases and appreciation of the health experiences of those travelling overseas. With this educational focus of the journal in mind, we will be looking in the future at articles more specifically suited to Continuing Professional Development (CPD) and declaration in various professional CPD portfolio systems.

Larry Goodyer

Report from the Chair

Julie Gallagher

Infectious Disease Transmission during Air Travel

Part I. Airborne and Contact Transmission of Infectious Diseases during Air Travel

J H Diaz

Abstract

The combination of a mobile global population with the speed of air travel has made international air travel a competent vector of infectious disease dissemination. Mathematical modelling has provided new insights into the mechanisms of in-flight disease transmission. The traditionally held tuberculosis, or close-proximity model of in-flight disease transmission that, side-to-side laminar airflow in air-cabins would restrict the spread of airborne pathogens to within 2 seat-rows has been disproven, by the transmission of sudden acute respiratory syndrome and norovirus to passengers at greater distances from index cases. The cooperation of the global aviation industry and the public health community in the health education of the air-traveling public will be necessary to reduce risks of infectious disease transmission during air travel.

Infectious Disease Transmission during Air Travel: Part I. Airborne and Contact Transmission of Infectious Diseases during Air Travel

Today, more than one billion persons travel by air annually; and of these, more than 80 million persons will travel by air from industrialized countries to developing regions, where emerging and re-emerging infectious diseases are endemic.¹⁻³ The combination of a growing and globally mobile population with the convenience, popularity, and speed of air travel has now made international air travel a competent vector of infectious disease transmission and dissemination.³⁻⁸ This review will describe the epidemiology and outcomes of infectious diseases transmitted by respiratory secretions and close contact during air travel and recommend strategies for their control and prevention.

Materials and Methods

In order to describe the epidemiology and outcomes of infectious diseases transmitted by respiratory secretions and close contact during commercial air travel, and to recommend strategies for their control and prevention, National Library of Medicine search engines were queried with several key words and subject headings including commercial aircraft, commercial airlines, air travel, infectious diseases, infectious disease transmission during air travel, airborne disease transmission, contact disease transmission, respiratory droplet and droplet nuclei disease transmission.

Results

The Airborne Transmission of Infectious Diseases during Air Travel

Tuberculosis: Tuberculosis (TB) remains among the most serious of the world health threats for many reasons including: (1) its prevalence in approximately one third of the world's population; (2) its simplicity of transmission by respiratory droplets; (3) the pathogenicity of its causative organism, *Mycobacterium tuberculosis*, which causes more annual deaths than any other infectious disease except malaria; and (4) the ability of *M. tuberculosis* to mutate into multi-drug resistant TB (MDR-TB) and now extensively drug-resistant strains (XDR-TB).⁹⁻¹¹ The in-flight transmission of TB has been the most widely studied model of the airborne transmission of infectious diseases aboard aircraft.¹²⁻¹⁴

Immigration and air travel have greatly affected the epidemiology of TB in developed countries, especially in the US.¹⁰ In 2001, foreign-borne persons accounted for 57.8% of new cases of TB in the US with an annual incidence rate of 20.6 cases per 100,000 persons compared with an annual incidence rate of 2.1 cases per 100,000 persons for US citizens.¹⁰ Furthermore, 27.5% of TB cases among foreign born persons were diagnosed within 2 years of the person's arrival in the US.¹¹ With nearly 0.5 million immigrants and refugees arriving in the US annually from TB-endemic developing nations, foreign born persons with TB will continue to contribute to the potential for TB transmission aboard aircraft and to the burden of TB in the US.¹²

The transmission of TB aboard aircraft has been well documented in 2 instances.^{7,12,15} In the first case, a flight attendant was the index case-patient and 2 TB skin test conversions occurred during the ensuing 5 months in 1992 among 212 fellow flight crew members and 59 passengers.^{7,12} In the second instance, a passenger with active MDR-TB traveled on commercial airline flights from Honolulu to Chicago and from Chicago to Baltimore and returned one month later.¹⁵ Four of 15 fellow passengers without risk factors for TB seated within 2 rows of the index case had positive skin test conversions.¹⁵ In 2007, a US citizen with active XDR-TB traveled from the US to Europe on a commercial airliner, returned to Canada 11 days later, re-entered the US by automobile, and was quarantined for treatment.¹³ In summary, air travelers may be exposed to drug-resistant strains of TB by symptomatic index cases; and the risks of becoming infected are increased by being seated within 2 rows of the index case, and being exposed for long durations.^{13,15} An overall probability of TB infection aboard aircraft

Infectious Disease Transmission... *continued*

of one in a hundred has been estimated when a symptomatic source of *M. tuberculosis* is nearby.¹⁴

Criteria and procedures for notifying passengers and flight crews after exposure to TB on aircraft have been developed by the US Centers for Disease Control and Prevention (CDC) and may be summarized as follows.¹⁵ (1) If a local health authority determines that a passenger with TB was infectious in flight, it will consult the airline to determine if the case-patient with TB was indeed on the flight and what the duration of the flight was. (2) Health authorities may then consider limiting notification of TB exposures to passengers and crews on flights of 8 hours or longer, unless index cases are considered particularly infectious, as in cases of laryngeal TB. (3) Depending on the design of the cabin, notification only of passengers and air crew seated or working in close proximity to (i.e., within the same cabin) the index case may be adequate. (4) When notification of potentially exposed passengers and air crews is indicated, airlines and health authorities should inform passengers and crews in writing of their potential TB exposures and the need for tuberculin skin testing by local health providers.

Severe acute respiratory syndrome: The severe acute respiratory syndrome (SARS), an atypical pneumonia caused by a zoonotic coronavirus (SARS-CoV), was circulated worldwide by a frequent flyer in 2003.¹⁶ In this case, infection in a single passenger on one flight from Hong Kong to Beijing on March 15, 2003, resulted in the transmission of SARS to 22 of 119 passengers.¹⁶ Forty airline flights have now been investigated for carrying SARS-infected passengers, and five of these have been associated with probable on-board SARS transmission.^{16,17} With the exception of the March 15, 2003, super-spreading SARS event, most passengers who contracted SARS following air travel were seated within 5 rows of the index case-patient.^{16,17}

SARS may be transmitted by mucosal contact with large respiratory droplets like TB, and may also be transmitted by direct and indirect personal contact and by the aerosolization of droplet nuclei.^{7,16} The transmission of SARS by aerosolized infected droplet nuclei best explained the mechanism of transmission of SARS well beyond 2 rows on the commercial airline flight between Hong Kong and Beijing in March 2003 and its spread throughout the separate buildings of the Amoy Gardens apartment complex in Hong Kong in 2003.¹⁶

Prevention and control strategies to prevent the in flight transmission of SARS aboard aircraft should include spatial separation of the index case-patient by 7 or more rows if possible and the use of face masks for both the index case (N95 respirator mask) and attending crew with isolation and proper disposal of any tableware, blankets, pillows, or other items in contact with the patient or the patient's secretions.¹⁶ The airline should notify local health authorities immediately and inform in writing all exposed pas-

sengers and air crews of potential SARS exposure in consultation with local health authorities.¹⁶

Influenza: Influenza is transmitted directly by mucosal contact with large respiratory droplets and indirectly by contact with fomites.¹⁷ Prior to the novel influenza A (H1N1) pandemic in 2009, three investigations of the in-flight transmission of influenza were reported.¹⁸⁻²⁰ In 1979, an outbreak of influenza A/Texas occurred aboard a commercial airliner that resulted in 72% of all passengers aboard contracting influenza A within 72 hours.¹⁸ The high transmission rate on this flight was attributed to a prolonged ground maintenance stay with passengers kept aboard the aircraft for 3 hours to repair an inoperable ventilation system.¹⁸ In 1989, an outbreak of influenza A/Taiwan occurred at a US naval air station in military personnel returning to Florida from temporary duty in Puerto Rico aboard 2 DC-9 aircraft.¹⁹ The third outbreak investigation of the transmission of influenza A occurred in 1999 in mine workers on a 75-seat commercial aircraft.²⁰ In this outbreak, 15 passengers seated within 5 rows of the index case-patient developed influenza symptoms within 4 days; and 9 of the 15 secondary cases were seated within 2 rows of the index case-patient.²⁰ No further influenza outbreaks aboard commercial aircraft were reported until the novel influenza A (H1N1) pandemic of 2009.²¹

The emergence of a novel influenza A (H1N1) strain in Mexico in early spring 2009 triggered a pandemic that by the summer of 2009 had spread to over 150 nations worldwide. The rapid spread of the pandemic (H1N1) virus was facilitated by air travel, and the increasing volume of regional cases matched international air passenger movements.²¹

During June 2009, an outbreak of novel influenza A (H1N1) occurred among 31 members of a US tour group to China.²² Han and co-investigators conducted a retrospective cohort investigation of this outbreak in order to document the mode of transmission of influenza and the risk factors for infection.²² The index case-patient was a 40-year-old female US citizen who traveled with a tour group from the US to southwestern China, changed flights twice in China, and made several bus tours with her tour group.²² Secondary cases developed in 9 (30%) tour group members who had spoken with the index case-patient and in 1 airline passenger, not a tour group member, who sat within 2 rows of the index case.²² All airplanes boarded by the index case and the tour group were equipped with HEPA filters, and re-circulated less than 50% of cabin air every 3 minutes.²² All tour buses boarded by the index case and the tour group mixed 70% re-circulated and filtered air with 30% outside air.²² For the 16 tourists who had spoken with the index case-patient at close range (< 2 m) for 2 minutes or longer, the attack rate for influenza was 56%.²² None of the other 14 tour group members who had not spoken directly with the patient developed

influenza symptoms.²² The investigators concluded that this outbreak of influenza A (H1N1) 2009 virus was caused by large respiratory droplet transmission when the index case-patient was talking with fellow tourists and not by aerosolization of respiratory droplet nuclei.²² A lack of secondary cases among fellow air and bus passengers also supported respiratory droplet transmission of influenza in this outbreak.²² The single secondary case in a fellow airline passenger who sat within 2 rows of the index case and was not a tour group member was consistent with either respiratory droplet transmission or fomite contact.²²

Unlike SARS, influenza A is most commonly transmitted by large respiratory droplets and fomites aboard aircraft, and risk factors for infection include talking with infected case-patients at close range for 2 or more minutes or being seated within 2 rows of an infected patient.²² Commercial air travel played a significant role in the 2009 influenza A (H1N1) pandemic by disseminating infected case-patients and secondary cases worldwide.²¹ The secondary attack rates in the close contacts of secondary cases were unknown, but a secondary attack rate of 20% within 2 weeks occurred in family contacts of cases in the 1979 outbreak of influenza A/Texas on a commercial air flight.¹⁸

The best methods to prevent influenza are by seasonal influenza vaccinations, monovalent pandemic strain-specific vaccinations during pandemics, and frequent and proper hand hygiene. When in flight aboard commercial aircraft, case-patients with suspected influenza should be isolated from other passengers and air crews and provided with a face mask, preferably an N95 respirator mask. New evidence, however, has suggested that health providers and probably attending air crews may be adequately protected from respiratory droplet transmission by surgical masks alone.²³ In 2009, Loeb and co-investigators reported the results of their prospective randomized trial to compare surgical masks versus N95 respirators in preventing influenza transmission among nurses in Ontario hospitals.²³ Among 446 nurses caring for patients during influenza season, 225 were randomly assigned to wear surgical masks and 221 were assigned to wear N95 respirators.²³ There was no significant difference ($P = 0.86$) in influenza infections in the surgical mask group ($n = 5$, 23.6%) compared to the N95 respirator group ($n = 48$, 22.9%).²³

Measles: Measles is a highly contagious viral infection with an attack rate of 80% in the unvaccinated.²⁴ Measles is transmitted by respiratory droplets among close contacts of an infected case, often during its prolonged (2 weeks) prodromal phase.²⁴ Measles is often imported into the US and other developed nations.²⁵⁻²⁷ During the period 1996-2000, 30% of imported measles cases were estimated to have occurred in case-patients who flew on commercial air flights while symptomatic with measles.²⁵ During the summer of

2007, 2 cluster outbreaks of measles occurred in the Netherlands and were epidemiologically associated with air travel by index cases.²⁷ Three case studies have documented in-flight measles transmission during air travel. In 1982, 7 secondary measles cases occurred after exposures to an index case, either on board a commercial flight or at the airport departure gate.²⁸ An index case infected 2 fellow airline passengers on a flight from Venezuela to Miami in a second measles cluster in 1982.^{7,28} In 1994, 8 cases of in-flight measles transmission were reported during a 10-hour flight from New York to Tel Aviv.²⁹ More recently, the CDC investigated a multistate outbreak of measles among children adopted from an orphanage in China in 2004 in which 9 out of 10 confirmed cases were probably infectious during air travel.³⁰ Today, most cases of measles are imported into the US by foreign-born persons who often travel by air and pose significant risks of cluster outbreaks in unvaccinated or insufficiently vaccinated close contacts, even in countries with high measles vaccination coverage ($\geq 95\%$), such as the Netherlands and the US.²⁷

Lassa fever and Marburg hemorrhagic fever: The Lassa and Marburg RNA viruses are both potential bioterrorism agents transmitted by respiratory droplets or close (direct or indirect-fomite) contacts that can cause viral hemorrhagic fevers (VHF) with high case fatality rates. Two single human cases of VHF caused by Lassa virus (Arenaviridae) have been air-imported into the US. The first case of imported Lassa fever occurred in Chicago in 1989, and the second case was reported in Trenton, New Jersey in 2004.^{31,32} Like measles, Lassa fever has a prolonged asymptomatic prodromal phase of up to 3 weeks that makes air travelers unaware of their infectious status when exposing fellow air travelers in close proximity to respiratory droplet and contact transmission.³³ However, in a German retrospective cohort investigation of airline passengers exposed to a confirmed index case of Lassa fever, Hass and co-authors found no evidence of increased in-flight transmission, even in the 19 passengers seated within 2 rows of the index case-patient.³⁴ Although there are no vaccines for the VHFs, Lassa fever can be treated effectively with ribavirin if administered within the first 6 days of illness.^{33,34}

The first air-imported case of Marburg hemorrhagic fever (MHF) caused by the Marburg virus (Filoviridae) in the US occurred in January 2008, in a 44-year-old woman who had recently returned from travel in Uganda, and was hospitalized for unexplained febrile illness.³⁵ In July 2008, the patient requested repeat serological testing for VHFs after learning of the death of a fellow Dutch tourist who had visited the same bat-roosting cave in Uganda at the same time as the US case patient, and who tested positive for Marburg virus (MARV) antibodies.³⁵ A subsequent CDC contact investigation did not identi-

Infectious Disease Transmission... *continued*

fy illness consistent with any secondary cases of MHF transmission in the case-patient's husband or in 6 of her 8 US Ugandan tour companions.³⁵ CDC investigators concluded that travelers should be aware of the increased risks of acquiring MARV infections through direct or indirect exposures to bat excretions or secretions in caves or mines inhabited by bats in the MARV-endemic areas of sub-Saharan Africa.³⁵ Due to its prolonged, asymptomatic phase, MHF could be transmitted during air travel through direct contact with infectious body fluids, such as respiratory droplets, or contaminated fomites, infecting close contacts and health care providers.³⁵

Isolation of suspected patients and droplet and contact precautions are recommended to prevent person-to-person spread of VHF.³⁵ The CDC has developed interim guidance recommendations about potential in flight exposures to both Marburg (available at <http://www.cdc.gov/ncidod/dvrd/spb/mnpages/dispages/marburg.htm>) and Ebola (available at <http://www.cdc.gov/ncidod/dvrd/spb/mnpages/dispages/ebola.htm>) virus infections for airline flight crews, cargo and cleaning personnel, and personnel interacting with arriving passengers.

Close Contact Transmission of Infectious Diseases during Air Travel

Smallpox: Smallpox is a highly contagious, acute viral disease caused by a Poxviridae virus, Variola major, with a long incubation period, like measles and Lassa fever (2-3 weeks) that is transmitted by direct close contact or indirect fomite contact.³⁶ *Smallpox has now been eradicated worldwide as an infectious disease, although the possibility that it may be used as an agent in biological warfare is still a possibility.* It is of historical interest to note that in-flight transmission of smallpox has been well documented. In a 1963 smallpox outbreak in Sweden, the index case-patient transmitted smallpox to 24 secondary cases, four of which were fatal, either in-flight, or at the airport.³⁶

The best measure of prevention for smallpox is by pre-event vaccination for persons without contraindications to vaccination, such as atopic dermatitis, eczema, acute or chronic exfoliative skin or immunosuppressive conditions, and pregnancy.^{36,37} There are no contraindications to smallpox vaccination for persons who have been exposed to smallpox.^{36,37}

Meningococcal disease: Meningococcal disease is transmitted by direct contact with respiratory secretions and usually presents after a 2-week incubation period as febrile bacterial meningitis with positive blood and cerebrospinal fluid cultures for *Neisseria meningitidis*.³⁸ Commercial aircraft offer suitable, closed environments for the transmission of meningococcal disease which the CDC specifically defines as the development of meningitis within 14 days of a flight of at least 8 hours duration.³⁸ From 1999 to 2001, the CDC received 21 reports of suspected air travel-

associated meningococcal disease.³⁸ Investigations of these reports demonstrated that the index case-patient was contagious in-flight, but no secondary cases occurred.³⁸ In such cases, passengers seated next to the infected case should be quickly contacted and given chemoprophylaxis within 24 hours as chemoprophylaxis administered more than 14 days after onset of illness in the index case is ineffective.³⁸ Smallpox and meningococcal disease transmission may be prevented by vaccination or by isolation of index cases and vaccination of exposed contacts for smallpox and chemoprophylaxis for airline passengers exposed in close proximity to meningococcal disease (Table 1).³⁶⁻³⁸

The CDC Guidelines for the management of airline passengers exposed to meningococcal disease are available at http://www.cdc.gov/travel/menin_guidelines.htm.

Conclusions

The traditionally held beliefs that, the artificially controlled environment of the aircraft cabin would restrict the spread of airborne pathogens to a few rows and that the perceived risks of contracting infectious diseases during air travel far surpassed actual risks, have now been disproven by the in-flight transmission of SARS and norovirus to passengers at great distance from index sources of infection.^{17,39} The TB model of disease transmission within the close proximity of 2 rows or less still works for large respiratory droplet transmission as in TB and in some influenza cases. However, the close proximity model does not explain the spread of pathogens which can be aerosolised as droplet nuclei (SARS, norovirus) or the spread of pathogens by direct contact and fomites (influenza, norovirus).

Recently, mathematical modelling has helped to identify high-risk infectious disease-spreading travelers, such as frequent flyers and returning expatriates, and will continue to provide new insights into the mechanisms of disease transmission during air travel.⁴

Lastly, human behaviour can neither be predicted nor controlled, rendering mass pre-flight health screening for communicable diseases transmitted by respiratory secretions or close contact inefficient and impractical. Only the cooperation of the global aviation industry and the medical and public health communities in the health education of the air-traveling public will ameliorate, but never eliminate, the risks of infectious disease transmission during air travel.

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Infectious Disease Transmission... *continued*

Table 1
Schedule for Administering Chemoprophylaxis against Meningococcal Disease.

Source:
United States Centers for Disease Control and Prevention, Atlanta, Georgia USA (CDC).³⁸

<i>Drug</i>	<i>Age group (oral administration unless specified otherwise)</i>	<i>Dosage</i>	<i>Duration and route of administration</i>
Rifampin*	Children < 1 month of age	5 mg/kg po q 12 hours	2 days
	Children ≥ 1 month of age	10 mg/kg po q 12 hours	2 days
	Adults	600 mg po q 12 hours	2 days
Ciprofloxacin†	Adults	500 mg po	Single oral dose
Ceftriaxone	Children < 15 years of age	125 mg im	Single intramuscular dose
Ceftriaxone	Adults	250 mg im	Single intramuscular dose

*Rifampin is not recommended during pregnancy because of its teratogenic effects in animals. Rifampin reduces the reliability of oral contraceptives, and alternative means of contraception should be considered during rifampin therapy.

† Ciprofloxacin causes cartilage damage in immature laboratory animals and is not recommended during pregnancy or for persons under age 18 years, unless there are no acceptable alternatives.

Health of the Elderly Traveller, Part 4

Transportation and Associated Illness in Older Travellers

"It is not where or when you arrive, it is taking the journey that counts".

I B McIntosh

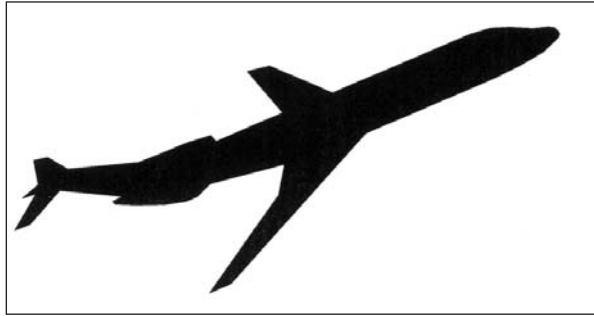
AIR TRAVEL

More than two billion people travel aboard scheduled aircraft annually.¹ One in five international air journeys originates from Britain and traffic flow through British airports involves about 150 million passengers each year.² A substantial number of them are senior citizens. They and health-care providers should be aware of potential health risks associated with air travel. Environmental and physiological changes occurring during routine commercial flights can lead to mild hypoxia and gas expansion, which can exacerbate chronic medical conditions and precipitate acute in-flight medical occurrences. The latter are increasing in frequency. With ageing of national populations, a growing number of individuals are elderly and suffering from pre-existing medical conditions. Venous thromboembolism, cosmic-radiation exposure, jet lag, cabin-air quality and psychological stress are health-care issues associated with air travel to which they are vulnerable.

Air transport is the favoured long-haul mode for protracted travel. Up to 5% of airline passengers suffer from chronic illness, with many of these elderly people given invalid passenger status. As individuals are responsible for reporting incapacity to air carriers, this may be an underestimate. 95% of individuals with health problems who have to travel by air, desire more medical advice from their physicians about its effects.³

Many older passengers instigate mid-air emergencies. About 72 people, many of advanced years, die annually while air-borne, with sudden cardiac crisis the cause of death in one group studied. Only 34% of these individuals had reported health problems prior to travel.⁴ Air carriers are not obliged to report in-flight medical events, but limited data report an incidence of 1 in 10,000–40,000 passengers, suggesting about 50–100 in-flight medical events per day, with United States airlines.⁵

In 1989/90 British Airways carried 17 million people and recorded 1328 medical incidents to airborne passengers, a gross attack rate of 1:13,000. The ratio narrowed to 1:350 of passengers, many of whom were old and infirm, who notified themselves as less than fit beforehand. The same airline reported 31,200 medical incidents aboard their aircraft during 2007, with 3000 being deemed serious.⁶ Most in-flight medical



events are however minor in severity.⁷ The effects of pre-existing disease resulting in chronic pulmonary, cardiac, renal, hepatic and physical dysfunction can however place the old at higher risk from physiological and physical stressors inseparable from modern air travel. The air traveller faces three main

problems in the air craft cabin from:

- pressure of the air
- amount of oxygen
- quality of air

The first two are related. Modern aircraft are pressurised to about two thirds at sea level: equivalent to atmospheric pressure on the summit of a 2,700m. mountain. This has two consequences:

- The concentration of oxygen remains unchanged, so actual partial pressure of oxygen must also be reduced to about two thirds of sea level.
- Reduced pressure causes gases to expand by 30%.

Cabin air at altitude

Tolerance to thin air experienced at altitude may be poor in passengers who are suffering from chronic illness eg. hypercapnia, associated with severe anaemia, and active cerebrovascular and cardiovascular disease. Cardiac, neurological and respiratory complaints are the most serious in-flight medical events, with cardiac and neurological complaints accounting for most diversions. Passengers aged over 70 years have highest rates of in-flight medical events.⁸ Individuals may cope in day to day living at ground level, but exhibit fatigue, cardiac arrhythmia or vague symptoms due to anoxia, when exposed to moderate degrees of high altitude, as occurs in high flying aircraft.

Regulatory authorities require compensated cabin altitude not to exceed 2438m.¹⁹ Healthy passengers tolerate hypoxaemia induced by lower than normal oxygen pressure. The arterial P_{O2} drops to about 8 kPa (two thirds of normal), but the shape of the oxyhaemoglobin dissociation curve ensures that saturation only falls by 5–6%. In passengers with respiratory disease however, changes can be more challenging. Many passengers with pre-existing cardiac,

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pulmonary, and haematological conditions have a reduced baseline PaO₂, so reduced cabin pressure leads to further reduction of oxygen saturation, which lowers further with increasing flight times.^{8,9} In adult volunteers in simulated 20-hour flight conditions, the frequency of reported complaints ie. fatigue, headache, light-headedness and nausea was found to increase with increasing altitude. Symptoms peaked at 2438m, with most symptoms apparent after 3–9 hours of exposure.¹⁰

Cabin pressurisation to 2438m reduces atmospheric pressure of the cabin, resulting in a concomitant decrease of arterial oxygen partial pressure (PaO₂) from 95mm Hg to 60mm Hg.¹¹ The decreased oxygen saturation can exacerbate medical conditions.^{11,12,13,14}

18% of passengers with chronic obstructive pulmonary disease exhibit mild respiratory distress during a flight. Continuous supplemental oxygen should be provided for all passengers whose saturation will fall below 85% (or P_{O2} below 6.2 kPa), when exposed to maximum permitted altitude.¹³ New aircraft, such as the Airbus A380 and Boeing 787, are designed to operate at cabin altitudes of 1829m which should reduce hypoxic effects, but older aircraft are likely to fly around the world for decades to come.

Adverse effects of air travel

Commercial flights usually cruise at altitudes of 7010–12 498 m, above sea level with passenger cabin pressurised to an altitude of 1524–2438m.¹⁴ Cabin pressures equivalent to 2–2,500 m of altitude create a hazard of hypoxia for older travellers and place at risk those with little cardiac, cerebrovascular, or respiratory reserve. Aircraft control systems maintain a pressure differential of about 9 PSI between cabin and the exterior environment. At 13,300m, the cabin is pressurised to about 2333m and the need to fly higher to circumvent bad weather leads to a further drop in pressure. Arterial P_{O2} at sea-level is around 9mmHg, but at 2600m this falls to 60mmHg in healthy young adults.

Healthy passengers normally respond to pressure changes with hyperventilation and tachycardia. Those with pre-existing lung disease may not compensate adequately for the changes in atmospheric pressure in aircraft cabins. If arterial P_{O2} levels fall to 30–40mm Hg, light exercise, such as arm movements and walking, may lead to dyspnoea, fatigue, light-headedness and dizziness.

Quality of cabin air

Aviation techniques have changed over fifty years of commercial flying, but currently passengers and crew breath air directed from aeroplane engines. When commercial flights began, passengers breathed in air directly from the atmosphere via compressors. In 1962 a system was installed to draw air from the heart of the engines. "Bleed" air is drawn out of the compres-



sion section of the engine and cooled. It then enters the cabin, mixes with recirculated air passed through filters to remove bacteria and viruses. These "recirculated air" filters do not remove fumes or vapours from the engine and with a leak of hydraulic fluid, or engine oil, contamination of cabin air can theoretically occur. Most jet aircraft systems recirculate 50% of the air and top it up with fresh air. In many current aircraft the purest air can go to the first-class section and the poorest to the rear.

Nearly all types of aircraft have been reported as affected by contaminated air, but Civil Aviation Authority (CAA) records show that British Aerospace 146, Boeing 757, Airbus A319 and the Embraer 145 aeroplanes to be particularly susceptible. The CAA denies a health issue, or that incidents involving fumes are not being reported. In United States, the Federal Aviation Administration, (FAA) however has recorded a serious worry about under-reporting. The British Government, resists this and believe that only one in 2,000 flights are affected by "fume events" and the numbers of people who report feeling unwell as a consequence are very small. This remains a source of concern for travellers and health professionals. The Department of Transport is undertaking research on contaminated air in aircraft cabins.¹⁵

For many years, about 0.57 cubic metres of fresh air was provided per passenger per minute. Recently this has been halved and more air is recirculated raising further concern about cabin contaminants, particularly carbon dioxide (CO₂) and ozone. CO₂ is produced by passengers with the quantity determined by their number and the amount of ventilation. The percentage of occupied seats therefore has a significant effect, since the ventilation system is relatively limited in efficacy.

With reduction of fresh air entering the cabin, CO₂ levels have risen and may be above levels associated with comfort on some flights although within safety limits. Distribution of cabin air is not uniform, with ventilation rates in older aircraft sometimes two or three times higher in better class accommodation than in the economy section where the majority of people sit. Passenger and crew complaints of dry eyes, stuffy nose, and skin irritation, headaches, light-headedness,

and confusion have been associated with cabin air quality. Chemical compounds, the result of vaporised jet oils that can mix with air, have been blamed. Controlled studies on the effect of vaporised organic compounds, such as tricresyl phosphate are in progress.¹⁶ Episodic light headedness, headache and confusion are not uncommon occurrences in elderly people especially those on medication, which make this a difficult field to research in older travellers, who may also be less tolerant of contaminated air supply.^{17,18} New Boeing 787 Dreamliners coming into service use a different system to ventilate the cabin. They pump fresh air into the cabin from a source away from the engines, which ought to reduce the risk from toxic chemicals entering.

Infection in aircraft

Atmospheric recycling within the aircraft may also theoretically increase the infectivity of certain bacteria and viruses carried by travellers eg. influenza. This effect is made worse if closed aircraft spend long periods on the ground during delays.

Infections from serious diseases have been reported aboard commercial airlines, including influenza,^{19,20,21} severe acute respiratory syndrome (SARS),^{22,23} tuberculosis,^{24,25} food poisoning and enteritis.^{26,27,28} Air travellers travelling from San Francisco to Denver during winter months showed an upper-respiratory tract infection frequency of 3–20%.

Travellers may however acquire their viruses before rather than during the flight.²⁹ Congestion in airport lounges and security areas may present higher exposure to infection than time spent in an aircraft where at least some of the infective factors are filtered out. Risk of onboard transmission of infection is mainly restricted to individuals with close personal contact or, seated within two rows of an infected passenger.¹ The risk of infection for vulnerable elderly people emphasises the wisdom of pretravel influenza and pneumococcal vaccination in susceptible senior travellers.¹⁸

Air humidity and expansion of gases

In most aircraft fresh air is brought in from the outside, cooled and delivered to the cabin without humidification and cabin humidity can be as low as 5%. In the new Boeing 787 this will usually be 15 to 20%. Low figures may cause voice and throat problems and dehydration effects on long flights. Many older people take diuretics and may already be dehydrated compounding the effect. Overindulgence in alcohol on the journey may further add to dehydration. Air in body cavities at ground level increases by 30% at 1830 metres altitude, to cause gastric distension and sinus problems. These changes can adversely affect the older traveller who has undergone recent surgery, gastrointestinal haemorrhage or, ear operations.



Pre-existing illness

The highest attack rates of travellers' illness are recorded in those who set off with pre-existing illness.^{1,30} One in two individuals of 60 years of age has evidence of severe coronary arterial narrowing, although only half will have clinical signs and symptoms. Age related myocardial changes tend to present as dyspnoea rather than chest pain. A sudden breathless attack in the older traveller is likely to have a cardiac cause. Older travellers with hypertension may slip into cardiac failure if stressed. Cardiac patients frequently omit or forget to take medication during travel and stress and strain associated with transit often results in anginal attacks and arterial occlusion. There is also a tendency for patients to avoid diuretic therapy on long journeys, which precipitates cardiac failure on prolonged flights.¹⁸

In-flight deaths are relatively uncommon worldwide, but a considerable number of people of advanced years succumb to travel-induced illness in transit or immediately after air-travel. Unexpected cardiac events (myocardial infarction and ischaemia), on international flights caused 56% of in-flight fatalities.³¹ One passenger in 7 million dies en route, but many are found to be seriously ill in transit airports.³² Data collation from hospitals adjacent to international airports is poor. The myocardial insufficiency in 25 people with cardiovascular problems who had collapsed in London airport had primarily occurred on the ground. Airport stress and exhaustion was considered as important a predisposing factor as in-flight hypoxia. Noise, poor communications, unexpected delay, unfamiliar melee, uncertainties of airport transit through customs, security and check-in can all dispose to confusion in older travellers.^{33,34}

Travellers can also find themselves exposed to extremes of heat or cold at flight destinations or in unscheduled transit situations resulting from adverse weather or delay. They can also arrive at airports situated at high altitude such as La Paz and Lhasa and be exposed to low partial pressures of environmental oxygen and suffer from hypoxia. Many older patients omit to take drugs on day of journey, or forget to carry routine medications with them. Failure to pack regularly required drugs in hand-held luggage could precipitate cardiac and respiratory crisis in mid-air, or airport.

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Psychological stress

Air travel cannot be divorced from physical and psychological stressors associated with the journey to the airport, security and customs clearance, baggage handling and boarding and transfers. For many it is an anxious and even phobic experience with fears of crash, explosion and terrorist event prominent in travellers' minds. Older travellers are less capable of coping than younger people with associated transit of long walkways, physical baggage handling and the angst of delays. They become confused, fatigued and stressed, with the less fit experiencing, angina and breathlessness precipitating a cardiac event.^{34,35}

In-flight immobility

Many of the aged rarely leave the security of their seats while on board the aircraft. This results in accumulation of fluid in lower limbs. Gross peripheral oedema is often suffered by older passengers, during prolonged air travel. Physical constraint and immobility bring the risk of deep venous thrombosis and pulmonary embolism (PE)³⁶. Senescent and arthritic patients with stiff hips or fixed knees are at particular disadvantage when restricted to the narrow confines of aircraft. The need to regularly access the toilet can also put older travellers at particular risk of falls in an unstable aeroplane.

Air travel and venous thromboembolism risk

The relation between long-haul flights (more than 8 hours) and increased risk of venous remains controversial. Studies show an association between venous thromboembolism (VTE) and long-haul air travel, with risk up to four-fold.^{36,37} Risk peaks after more than 8 hours flight time,^{38,39} and starts to increase when flight duration is more than 4 hours.⁴⁰ Cabin class seating has no effect on VTE incidence.⁴¹ The greatest frequency occurs in non-aisle seating where passengers tend to move less.^{42,46}

Prospective controlled cohort studies suggest a relative risk of 2.93 (95% CI 1.5–5.58).^{42,44} One, a study of 9000 business travellers over 4 years, showed an absolute risk for VTE of one every^{46,56} flights (incidence rate ratio 3.2, 95% CI 1.8–5.6).³³ Risk increases with

increasing number of flights during the first 2 weeks after a flight and when other risk factors are present.

Factors increasing risk in association with air travel:

- immobility,
- advanced age,
- obesity,
- dehydration,
- hypobaric hypoxia,
- malignancy,
- recent surgery,
- history of hypercoagulable states)^{42,44}

One of the strongest risk factors is **aging** with, a many times higher incidence in elderly

Additional causes of increased thrombosis in elderly people:

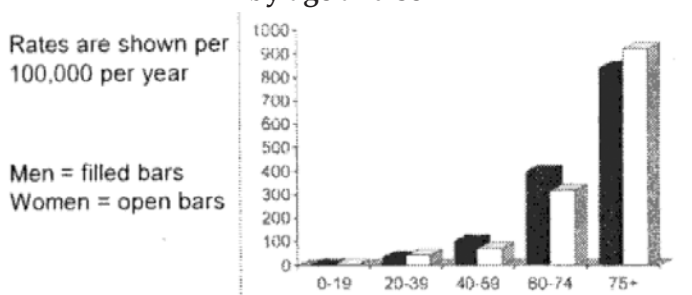
- Decreased mobility
- Reduced muscular tone
- Increased frequency of risk-enhancing disease (eg. Malignancy)
- Aging tissues: Vein walls, valves and subcutaneous tissues

Prevention of VTE

Immobilisation has been linked to 75% of air-travel cases of VTE. Dehydration can increase risk of venous thromboembolism due to haemoconcentration and hyperviscosity, potentially leading to hypercoagulable states.⁴⁷ Use of graduated compression stockings, with an ankle pressure of 17–30 mm Hg, can reduce risk during air travel. In a meta-analysis, only two of 1237 individuals who wore compression stockings had VTE compared with 46 of 1245 individuals who did not wear them.⁴⁸

Anticoagulant thrombo-prophylaxis has been recommended but no formal guidelines exist. Many clinicians have recommended aspirin for individuals at moderate risk of VTE. However, evidence for benefit is scarce and risk of side effect high, therefore it is not recommended alone as prophylaxis for any air traveller.^{49,50} Randomised trials have shown benefit of low-molecular-weight heparin for air travellers at moderate risk of VTE and not taking routine anticoagulant drugs.⁵¹ Routine use should be for those at high risk and be based on customised individual assessment.

Incidence of Venous thrombosis (DVT & PE) by age and sex



Oger E. Incidence of venous thromboembolism: a community based study in western France. *Thromb Haemostasis* 2000; 83:657-660



Jet lag

Air travel may prove to be an endurance test for the fit, but time zone changes and disturbance to circadian rhythm can have serious consequences for the less healthy. Time zone changes especially west to east and the crossing of three or more time zones can disturb mental alertness and cause disorientation, particularly in the old.

Jet lag is a temporary circadian-rhythm disorder associated with long-haul flights due to desynchronisation between the body's internal clock mechanism, residing within the suprachiasmatic nucleus of the hypothalamus, and the new light-dark cycle caused by abrupt time-zone changes.⁵²⁻⁴

Symptoms are:

- daytime fatigue,
- sleep-wake disturbances,
- decreased appetite,
- constipation,
- reduced psychomotor coordination
- reduced cognitiveskills.⁵²⁻⁴

The degree and severity of jet lag is influenced by both flight direction and time zones crossed. Westward travel lengthens the day, causing a phase delay in circadian rhythm. Eastward travel shortens the day and causes a phase advance.

Travellers have greater difficulty falling asleep after eastward travel than after westward travel because of the internal clock's natural tendency to resist shortening the 24-hour day cycle. Re-synchronisation takes one day for every time zone crossed westward or, 1.5 days for every time zone crossed eastward.^{54,55}

Limited toilet access

Elderly people have legitimate concerns about bladder function, associated with bladder and uterine prolapse and urinary frequency in the case of women and hyperprostatism and frequency in men. There can be limited toilet access in foreign airports and very limited access in aeroplanes. Queues to enter the toilet are standard on most long haul flights in economy class, which add to anxiety relating to bladder relief. Many seniors reduce fluid intake and miss out diuretic medication on the day of travel to try to reduce this problem, with resultant cardiac problems or peripheral oedema. The inadequacy of toilet access will not be addressed by airlines and seems likely to worsen if passengers are not allowed to access toilets in the hour before landing, which has happened recently in aircraft landing in the USA. Prostatic obstruction and urinary retention related to travel is not uncommon and is a worry for many older male travellers. Health professionals should be aware of these concerns and potential problems, offer counselling and encourage routine uptake of diuretics during travel.

Advice for potential Elderly air travellers**VTE Avoidance****Low risk**

Flight time less than 8 hours distance less than 5000km and fit, slim passengers

Avoid constrictive clothing,
avoid dehydration,
move about cabin when possible,
do calf-stretching exercises

Moderate risk

Flight time more than 8 hours distance more than 5000km, where obesity, large varicose veins, hormone-replacement therapy, tobacco use, relative immobility are considerations.

Low-risk measures plus properly fitted below-knee compression stockings providing 15–30mm Hg of pressure at the ankle; aisle seating.

High risk

Flight time more than 8 hours distance more than 5000km, with history of previous venous thromboembolism; hypercoagulable state (egfactor V Leiden); major surgery 6 weeks before air travel (including hip or knee arthroplasty); known malignancy.

Low and Moderate-risk measures and: low-molecular-weight heparin injected before departure in people not on warfarin.

Contraindications to commercial air travel

Total contraindications to flying on scheduled services are few and delay in departure date may allow acceptance of those temporary unfit. People must refrain from high flying, however, if they suffer from a disease adversely affected by hypoxia or pressure changes produced by altitude. Those with little cardiac, cerebrovascular and respiratory reserves can meet with problems. In general, dyspnoea at rest is a contraindication to prolonged air travel. Patients with severe anaemia and within two weeks of myocardial infarction occurrence, cerebrovascular accident, or in cardiac failure should not indulge in travel.

Alternative routing trip change or even cancellation may be advisable.

Medical fitness for air travel

Airlines have the right to refuse passengers who are unfit to fly for medical reasons.^{6,56} Passengers should be able to walk a distance of 50m and climb one flight of stairs without angina or severe dyspnoea.⁶

Conditions which are excluded for immediate travel by airlines:**Cardiac conditions**

- Unstable angina
- Myocardial infarction occurring 7–10 days before air travel
- Uncontrolled dysrhythmia

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- Coronary artery bypass graft operation 10–14 days before air travel
- Decompensated heart failure

Respiratory conditions

- Baseline sea-level $\text{PaO}_2 < 67\text{--}70\text{ mm Hg}$ without supplemental oxygen
- Exacerbation of moderate obstructive / restrictive lung-disease
- Contagious pulmonary infections
- Large pleural effusion
- Pneumothorax 3 weeks before air travel

Neurological disorders

- Stroke within 5–10 days of travel
- Uncontrolled seizures or 24-hours after grand-mal seizure

Surgical interventions

- A gastrointestinal, thoracic, ear, nose, and throat, and neurological surgical procedure 10–14 days before air travel
- laparoscopic surgery 5 days before air travel

On board Medical Assistance

In 1 in 50 international flights medical help is requested. In three out of four in-flight emergencies, there is a physician on board when it occurs.¹ Commercial aircraft carry 1–4 medical kits and at least one enhanced emergency medical kit, required by aviation regulation. Most commercial flights also carry an automated external defibrillator. Some commercial air carriers use on-ground tele-medical assistance to medically assess passengers who seem unfit for travel at boarding. This service can provide medical advice during in-flight medical events providing 24-hour ground-to-air medical support and advising the flight deck-crew on best diversion location and emergency personnel availability. Elderly passengers should be made aware that illness on an aircraft is an experience best avoided. Attending doctors may have limited or unpracticed emergency skills and are limited by resources and space in providing an optimum therapeutic response.

Pre-flight assessment

Many airlines consider that if a passenger is fit enough to walk up steps into the aircraft, he or she is fit to fly. Modern airport design means that passengers seldom need to climb steps, but should however be able to walk 50 metres on the flat without breathlessness. In passengers who can just manage this feat there may still be doubt about their fitness to travel. More scientific assessment may require referral to a respiratory unit. If simple spirometry and blood gases are known and the patient has chronic obstructive airways disease (COAD), an idea of oxygenation at altitude can be obtained from a hypoxia challenge test.



photo: I McIntosh

The *hypoxia challenge test* involves the patient breathing 15% oxygen in nitrogen and measuring saturation. This gas mixture simulates oxygen available in the aircraft cabin at maximum cruising altitude. If saturation falls below 85% during test then in-flight oxygen will be required. This test also allows assessment of symptoms that may arise at a lesser degree of hypoxaemia. eg. the patient with coronary artery disease who gets angina during the hypoxic challenge even though the fall in saturation on its own would not be regarded as severe enough to require oxygen. This patient too would require continuous in-flight oxygen to prevent angina during flight.⁵⁷

Oxygen supplementation is recommended for passengers with either a resting oxygen saturation of 92% or lower ($\text{PaO}_2 = 67\text{ mm Hg}$) or if the expected in-flight PaO_2 is less than 50–55 mm Hg.⁹ The American Aerospace Medical Association recommends in-flight oxygen for individuals with a sea-level PaO_2 of 70 mm Hg or lower, or an expected in-flight PaO_2 of 55 mm Hg or lower.¹⁰ Guidelines from the British Thoracic Society (BTS)¹³ suggest hypoxic-challenge testing in individuals with resting oxygen saturations of 92–95% at sea level who have additional risk factors, such as hypercapnia or abnormal spirometry.

Practical recommendations for all older travellers

- Carry routine medications in hand luggage
- Travel with spare medications
- Take medications as normal unless advised otherwise by travel health counsellor
- Carry a list of routine medications for information of emergency personnel
- Maintain good hydration
- Reduce alcohol and caffeine consumption en route
- Walk in the cabin when possible and stroll about departure lounges.
- Periodically exercise calf-muscles when sitting en route
- Use compression stockings if at higher risk of VTE or prone to immobility and put them on when recumbent before leaving home.
- If moderately breathless at rest, seek pre travel health assessment from a doctor
- A passenger needing supplementary oxygen,

requires physician documentation stating fitness to travel at 2438 m altitude

- Passengers who have had surgery or a pneumothorax within 2 weeks are at risk of retained pockets of air expanding and causing problems and should seek pretravel medical advice.
- Passengers with colostomies are advised to use a large bag and to carry a spare!
- Advise the airline by using the Medif form of any potential medical or mobility problems before travel.
- Utilise wheelchairs, moving footways and invalid transport where at all possible in airports.
- Consider business class travel if affordable, for enhanced comfort and space to move in seat and cabin on aeroplanes and in lounges.

Jet lag precautions

Pre-flight sleep preparation

Westbound:

Go to sleep 1 hour later than usual

Rise 1 hour later than usual 3 days before travelling

Eastbound:

Go to sleep 1 hour earlier than usual

Be awake 1 hour earlier than usual 3 days before travelling

Exogenous *melatonin* is recommended. Taken in the evening, melatonin phase advances the circadian clock, with early morning administration, phase delays the circadian rhythm.

Cochrane meta-analysis concluded that taking 0.5-5 mg of melatonin at the desired destination bedtime is effective for reducing or preventing jet lag.

Use of *bright-light exposure* to adjust circadian rhythm is still being researched.

- Recommended especially if crossing five or more time zones, travelling eastwardly, or with a history of jet-lag symptoms. Caution is required in people with epilepsy or on warfarin

Benzodiazepines

- Some reported efficacy in sleep quality (eg, temazepam) and other circadian-rhythm or sleep parameters, although sleeping medication increase the likelihood of immobility and may therefore increase the risk of VTE development

Travel Health Professionals

Consulting nurses and doctors who work in the travel health counselling should:

- Be aware of potential problems associated with longer haul air travel in regard to the aircraft and transit environment.
- Be aware of concerns that travellers have about this mode of travel
- Be prepared to initiate discussion on potential challenges to traveller health
- Offer appropriate counselling on perceived and potential problems
- Offer treatment for travel anxieties, jet-lag and travel related phobias
- Verify the need for medication change, and emphasise the need for routine medications to be maintained on days of travel
- Emphasise the need for medications to be carried on the person during air travel
- Confirm the individuals fitness to fly
- Determine the need for oxygen supplementation in severely dyspnoeic people

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"Lost" Luggage – a stress on



photo: I McIntosh

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SEA AND LAND TRAVEL

In the last decade there has been a huge increase in sea and river cruising. Fly-cruising has become very popular, with passengers flying from Britain to board vessels berthed in ports across the globe. Elderly passengers in particular have embraced sea cruising, attracted by its luxury, protected environment, access to far distant destinations and 24 hour per day, on board medical attention. Cruise ships travel regularly to the Arctic, Antarctica across the Pacific and Atlantic oceans and up the world's great rivers.

They disembark passengers in exotic ports; remote islands unexplored gulfs, congested conurbations and disease-ridden destinations. Their human cargo pours into major cities with excellent medical facilities and into undeveloped areas of the Third World, with poor health resources and scant emergency aid for foreign visitors. The voyager can be exposed to, malaria, exotic disease, infected water and food and trauma.

Many of these passengers are elderly people with ships carrying a large number of senior citizens, many in imperfect health. They travel with pre-existing illness, taking several medications, with scant knowledge of health risk, resources and facilities existing at ports visited en route. They are unaware of limited facilities available to on-board medical staff and the inadequacies of health care and evacuation, they might meet in emergency.

The majority indulge in maritime adventure and return home in good health, but health insurance claims from older travellers continue to rise. Travel health professionals need to be aware of the risks to which elderly travellers are exposed, precautions they should take before and during travel and prophylaxis and vaccination to reduce health risk.

Ever-bigger ships are being launched. Some can accommodate 5,000 passengers and they venture to more adventurous and exotic locations. World-wide, over 12 million people cruise the high seas annually visiting 2000 ports. 1 million Britons cruised in 2005.¹ Mediterranean and Caribbean Seas are most popular destinations with average cruise 7-14 days. World cruises last months and many elderly people stay aboard for 6 weeks or more. Overall health and safety record is good, but ships are inherently unstable and operate in regions where there is hazard to health. They are potential transmission sources and reservoirs for infection. Infection and injury befall passengers, especially the frail and elderly.^{2,3}

Older Passengers

Elderly people are the second largest group to long haul destinations.⁴ The type of itinerary affects



passenger risk, with deep sea, ocean, large river e.g. Amazon/Danube, polar, adventure cruising presenting different health hazard. A cruise ship is a global community, a closed, air-conditioned environment with potential for disease exposure. Rapid movement between ports with varying sanitation standards and disease exposure can introduce communicable disease, with spread of infection in a crowded vessel. Shipboard living

may become a problem for old passengers, if they have exacerbation of chronic illness or an acute event.⁵ One third of passengers are over 60 years age and in some ships three quarters are over 65 years. The majority are middle aged and above and many have preexisting medical disorders.²

Passenger morbidity

Warm water cruising

Incidence of disease and medical intervention depends upon conditions of sea, climate, ship size, passenger age and sex.^{6,7,8} Many passengers are injured ashore. Relevant data is considered commercially sensitive, is limited and often relates to single ships, or cruises. On average, on a one week cruise to the Caribbean, medical staff will be consulted by up to-55 passengers, with 80-90% infirmity visits for non urgent conditions. 10-15% will be urgent, 5-10% for serious illness or injury requiring on board hospitalisation or evacuation. 1% of ship patients require emergency transfer to shore based hospital.^{9,3} One in every 250 passengers experiences a serious illness that requires in patient care.¹⁰

Cold water cruises

There were 9322 tourists in 1996 to the Antarctic Peninsula.¹¹ In years 1998-2000, four ships carried 3637



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passengers on Antarctic cruises of 15 days. The majority of passengers were 64-74 years old. Older passengers did not consult the doctor more frequently, but had more serious illnesses and injuries than younger travellers. Consultation rate was 33.1 consultations per 1000 passenger days in Antarctic, as opposed to 4.6 warm water cruises. 50.5% of passengers consulted the doctor on polar cruises compared to 3.6% on warm water ones.¹²

The spectrum of disease is similar in cruise ships to Arctic and Antarctica, with significant increase in sea sickness in the Antarctic. The proportion of passengers consulting the doctor was similar for polar regions, but much less in warm water cruising.¹³ Consultation rate was 33.1 consultations per 1000 passenger days in Antarctica as opposed to 4.6 for warm water cruise. 50.5% of passengers consulted the doctor on polar cruises compared to 3.6% on warm water ones.¹² Over 60 % consultations in Antarctic were for seasickness. Respiratory illness was second most common presentation in Arctic^{13,4} and Antarctic-5%-and most common in warm waters.^{14,15} There was no significant additional medical risk for passengers cruising polar waters. Cold injury (1%) was uncommon in people cruising in Antarctica. Patients with illness and injury may have to remain on board for some time in heavy seas in polar waters.¹⁶

Passenger morbidity^{14,17}

Condition	%
Respiratory	26-29
Injury related	12-18
Gastro-intestinal	12-16
Cardiovascular	3-7
Skin	3-13

In 5215 passenger presentations to ship doctors over 20 cruises the most common presentations were respiratory (18%), circulatory (13%) injury (12%). One in three had seasickness. Seasickness, respiratory problems and injuries accounted for 72%.²⁰ Contusions, lacerations and burns were common injuries with, lower limbs affected in passengers. Contusions were most frequent representing 1/3 of all injuries. In a further study most frequent illnesses were respiratory, seasickness and gastro-intestinal disease.^{21,22} Medical intervention was requested for virus infection, hypertension, sea-sickness, injuries, and chronic disease in elderly passengers.²³ On 35 cruises, 35 passengers were hospitalised, 4 with myocardial infarction, 2 with peptic ulcer perforations.²⁴

Deaths aboard ship

In a 6-year study of passenger mortality on two ships (complement 88 passengers), 25 died, with an average of one death per 6 months per ship. More men than women died ($P > 0.05$). Nine died after up to 52 hours of intensive on board care. Five had cardiac problems. Findings were similar on four larger ships studied over a year. 7147 passengers attended the ship's clinic in 1,537,298 passenger days with 2.6 versus 3.6 mortalities per thousand passengers per year. 18% presenting had injuries, with precipitating event a slip, fall or trip. Older women were largest group to be hospitalised. 69.3% for medical conditions. Most common diagnosis was respiratory infection²¹ 11% had serious or life threatening event. The spectrum of conditions was similar to hospital emergency departments. With 12% related to injury, 88% to medical problems and 3% emergency intervention.²²

Elderly Passengers

Three cruise lines reported that 1 in 5000 passengers suffers a serious medical crisis requiring evacuation. A ship physician caring for 1000 passengers may expect potentially serious illness or injury and have to disembark people once a week.¹² People older than 64 years accounted for 51% of clinic attendees.²³ Similar results were obtained on a 103-day cruise with 3033 passengers and 693 consultations. Average age was over 60 years. Passengers accounted for 59% doctor consultations, 27% of accidents to passengers occurred ashore 7 passengers were referred to shore specialists and 7 were hospitalised on land. One died aboard.

In case comparison analysis of factors associated with injuries aboard ships resulting in hospitalisations of residents and non-residents in Alaska (1991-2000) showed non resident females, 65+ years old, were aboard cruise ships when injured. They were more likely to suffer fractures and serious injury and experience post injury disability.²⁴

Small boat and rigid inflatable dinghy transfers add risk for elderly cruise passengers with ship to shore transfers from large ships to small boats inherently dangerous in cold, rough seas²⁸ Shore excursions require stamina, and challenge the old. They may last 12-13 hours and take passengers to remote spots and expose them to infection, trauma, fatigue, immobility in coaches and morbidity, especially if people are travelling with pre-existing illness.^{21,26} Ocean cruising may be inappropriate for very elderly, frail, handicapped and mentally unprepared passengers.^{27,28} Many ships now have designated cabins for the handicapped, but the inherently unstable, hazardous environment will pose special risk for these people who would be particularly challenged in a disaster situation.

Risks to Health in Cruise travel*Infection**Trauma**UVL exposure**Motion sickness**Air transit problems***Cruise infections**

Infection can occur:

en route to embarkation and on board.

Bacteria and viruses introduced by crew, passengers and ship systems result in:

- Influenza and para influenzal illness
- diarrhoea,
- Legionnaire's disease,
- Rubella, all of which can spread rapidly

On shore excursions expose passengers to:

- Local and exotic infection
- Malaria
- Dengue fever
- Food and water borne infection
- Insect borne disease
- Infection from bites

Risk of exposure to infectious disease is difficult to quantify because of the broad spectrum of cruise ships and itineraries and limited data on infectious diseases occurring on ships.²⁹ Cruise lines are loath to publicise data. Surveillance systems have identified cases of food poisoning, Norwalk virus, Legionella Influenza A and B infections, chicken pox and measles.¹²

Legionella pneumonophila can cause severe pneumonia and even death in the frail and elderly. Legionella species enter ship potable systems. The organism needs poor chlorination or temperature control to multiply.³⁰ In a case control study, among 215 passengers to the North Cape, 45 were affected and one died. The source was prolonged exposure to in the spa pool.³¹ Outbreaks have been associated with ship spas, fountains and showers, which generate aerosols necessary for spread of disease.¹² Inhalation of aerosols contaminated with Legionella bacteria often occurs in the whirlpool spa.³² A prevalence study on 9 cruise ships and ferries revealed 42% of water supplies were contaminated by Legionella species. Legionella is a ubiquitous organism that can survive in ship board freshwater systems.³³ In specimens from showers and washbasins *L. pneumonophila* was isolated in 95.5% samples.

Influenza A and B. Influenzal outbreaks have occurred on cruise ships worldwide. Although cruise ships were not actual source they became a reservoir of infection. There is recorded increased morbidity on cruise ships. There have been prolonged outbreaks of both influenza A and B with fatalities in Caribbean, Pacific, Alaska and Mediterranean.^{34,35,36}

Gastro-intestinal illness (AGE) is common, comprising 5-10% of sick bay visits. Some is due to ingestion of water and food partaken off the ship. Half the

cases are due to Norwalk virus the rest enterotoxigenic *E. Coli* (ETEC), salmonella, shigella, staphylococcus aureus and campylobacter.^{37,38} Norovirus infection is difficult to eradicate in cruise ships where rapid transmission can occur between passengers. It is not usually serious, although elderly people can become dehydrated and require fluid replacement. Symptoms arise 24-48 hours after exposure and illness lasts 1-4 days. It is transmitted through contact with infected persons, poor hygiene, or the handling of contaminated objects. Raw or undercooked shellfish and chilled foods, including salads and sandwiches, can become a source of infection.

In 2002- there was a sharp increase in norovirus associated illness on ships and land.³⁹ In 14 laboratory confirmed outbreaks on ships, 12(86%) were attributed to caliciviruses with continuation on successive cruises, multiple methods of transmission and high attack rates (58%) CDC Atlanta recorded 21 outbreaks of acute gastroenteritis (AGE) on 17 ships, 9 associated with noroviruses, 3 to bacterial agents and 9 of unknown aetiology.

In 2003-600 passengers were infected on two ships. 2% passengers and 7% crew had AGE illness. Another vessel with 2250 passengers was also affected with same virus. 200 passengers were infected and confined to cabins for 4 days. 3 other ships and the worlds largest liner –were affected on Caribbean cruises.

Ship-board out-breaks of Norwalk infection have been caused by ice, shrimps, fresh fruit. Intensive ship cleaning does not always eradicate the infection.¹² In cruises of 3 – 15 days there are 1.4 outbreaks of diarrhoeal disease per 1000 cruises or 2.3 outbreaks per 10 million passenger days, or 6 outbreak related illnesses per 100,000 passenger days. Between 1986-93, 5278 passengers were affected. Most common source was undercooked scallops, eggs and food taken on shore excursions. –thorough cooking of sea foods and use of pasteurised eggs would have reduced the infection by half.⁴⁰ Enterotoxigenic *E. Coli* infection has been sourced to ingested and consumption of fresh cut fruit and water bunkering in transit ports.⁴¹

In 2005 a report revealed poor hygiene practices and health hazards on random checks on 14 British cruise ships docking in British ports. There has been a call for Britain to follow the USA to publish cruise ship hygiene reports by ports inspectors.⁴²

Accidents and Injuries

An agency offering ship physician assistance reported on 1700 cases on 500 different ships. 65% were due to illness and 33% injury, which included musculoskeletal (21%) skin trauma (15%), 13% were eventually repatriated.

- Most frequent cause of ship accidents are stairways, gangways, decks, slippery surfaces
- Unfamiliar environment causes many accidents, especially in the elderly, with poor balance

Health of the Elderly Traveller, Part 4 *continued*

- disturbed gait and locomotion difficulties.
- Sprains and contusions are most frequently reported injuries.
- Common reported accidents are falls/cuts/grazes.
- 66% of all accidents are preventable

Very low air temperatures below +20 degrees C met in polar cruising, increase unsafe behaviour. Cold causes clumsiness and decreases muscle strength.¹²

Inhalation injuries constitute the main risk with on board fire. Fast airstreams develop in corridors and air ducts. Lack of oxygen below decks occurs early in the fire and smoke and fumes contain chemical elements of incomplete burning. Survival and injury depend upon the location of the ship, proximity of other rescue ships and sea state. People have a better chance of survival on a burnt out ship than in a lifeboat.

Ultraviolet light over exposure

Many passengers over expose themselves to strong sunlight on cruises with adverse solar effects compounded by reflection from the sea. Others, especially the old, fall asleep in the sun and are badly burnt. Solar radiation over Antarctica is four times greater than where earth is protected by atmospheric ozone.¹¹

Sea sickness

100% of passengers were affected in rough conditions in the Southern Ocean¹⁴ and motion sickness can affect many people, even on ships with stabilisers³, severe vomiting results in dehydration and interference with routine medication. Only 1/3 of sea-sick passengers ask for medical help.^{19,43} Anti sea-sickness medication has a 30% positive placebo.⁴⁴

On-board medical facilities

Cruise lines strive to maintain a healthy, safe on-board environment. Most large ships have excellent medical facilities, but cannot equate with on shore

hospitals. There are no international standards of care for cruise ships. In 1990 the American College of Emergency Physicians (ACEP) Cruise ship and Maritime Medicine section was founded to: act as a resource for cruise industry physicians and departments and develop guidelines, (GLs). Many ships have medical staffing and facilities in accordance with ACEP, GLs but they do not provide emergency surgery, blood transfusion, extensive laboratory or radiological services. The ship's physician position is determined by "custom", not maritime law and many are employed as independent contractors. Except for ships registered in Norway and England there are no mandatory international maritime requirements for cruise lines to carry a licensed physician, or have hospital facilities aboard. but ships carrying over 50 passengers generally have both. Quality of facilities, medical practice and physician varies depending upon itinerary, ships complement and construction.

North Americans staff about 10% of cruise ship medical rooms, Staff manage severe blood loss with fluid replacement using IV colloids and crystalloids as they do not carry blood products.¹⁴ Most shipboard physicians are not certified in trauma treatment or medical evacuation. There is no internationally agreed standard relating to certification. Most ship doctors are general practitioners on short-term contracts. This can lead to poor continuity and variable standards. The ACEP health care GLs may not be followed by smaller ships, or those run by independent companies where there may be limited medical facilities on board, sometimes located in the doctor's cabin. The ratio of medical staff to passengers varies greatly from ship to ship with one of 88 passengers having a doctor and a nurse and the large *Carnival* line ships of 3000 passengers having also only one doctor eg. "QE2" with 2921 passengers has a doctor, surgeon and 6 nurses while the "Sensation" with 3541 passengers has one doctor and 2 nurses.

Shipboard medical centres are not hospitals and should be considered first aid stations for temporary stabilisation until shore side facilities are reached, a fact rarely appreciated by passengers The cruise line is liable for physician's negligence in treatment of crew but not in treatment of passengers, providing it endeavoured to hire a competent doctor.

Pharmacy Drugs

Medications stocked on board vary markedly from ship to ship and record systems for availability and expiry can be poor with an ever-changing professional resource.. ACEP, GLs encourage standardised equipment, supplies and medications, but cruise lines do not have to comply. Ships often have no oxygen-saturation monitor to determine blood oxygen levels although standard in most land-based emergency departments. GLs for handling emergencies vary from ship to ship with many having elaborate well-



Over-exposed to UVL

rehearsed emergency response systems and others ad hoc arrangements. Disaster drills though realistic can be counterproductive, with the launching of lifeboats on compulsory passenger drills causing more passenger harm than occurs in real disasters.

Disabled passengers

A cruise ship is not a safe environment for some travellers but there are few embarkation restrictions. Unqualified or poorly trained medical staff and/ inadequate medical equipment are serious risk factors for ill or injured passengers.¹⁴ Newer ships are more accessible for people with disabilities. At present only 4 cruise ships give direct ramp access to lifeboats. Specially trained crew members have to be trained to assist wheelchair passengers – 2 per 8 hour shift according to latest safety and evacuation regulations.

Fly cruising

Many passengers now undertake long and medium haul air travel en route to the ship and are posed to health risks associated with long air journeys. The precautions for long haul flights to avoid deep vein thrombosis apply. *See Chapter 4.*

Pre-travel health assessment

Pre-travel Risk assessment. It is essential that pre travel risk assessment is undertaken and pre-travel advice given to the elderly and chronically ill. Risks may be reduced by ensuring passengers understand potential hazards, especially during rough seas.

If a person is very unfit, with serious medical problems and easily confused a cruising holiday may not be in their best interest.⁴⁵

People in poor health or with a history of recurrent serious and chronic illness should pick voyages with short distances between ports with good facilities.

Effective emergency plans; aggressive treatment of serious medical conditions and proactive evacuation policy will keep the number of deaths at sea low.⁶⁶

Targeted safety promotion regarding potential injury is required for elderly people, especially females.²³

Travellers on board cruise ships should be pre-

pared for the possibility of illness and injury and realise that even minor injury may require evacuation to shore facilities. They should appreciate the limitation of medical facilities and providers on board ship and that continuing care will depend on the nearest port with variable shore facilities.³⁴

Check List for passengers

Passengers should:

- buy adequate and comprehensive travel health insurance.
- enquire about the size of ship, distance between ports, quality of medical staff and facilities.
- choose a cruise with close proximity of ports and good evacuation possibilities, if likely to require emergency care.
- be aware that, ship medical rooms should be considered first aid stations for temporary stabilisation until shore side facilities are reached.
- remember, quality of continuing medical care is dependent upon that available at first port of call.
- carry anti-emetic medication, a list of medications and medical history, adequate routine medications, antidiarrhoeal and antimetic preparations, sun block.
- have pre travel influenza and pneumococcal vaccine prophylaxis .
- Immunity compromised passengers e.g. splenectomised, IV infected, or taking steroids or immuno suppressive therapy should be aware of infection risk.
- Acquire a note from family doctor recording medical history and medications.
- Carry adequate supplies of medications on the person en route and on excursions.
- If subject to motion sickness passengers should seek mid-ship, mid-deck inner cabins and adopt supine position parallel to ship axis of major motion, to minimises effects of motion on vestibular apparatus, in rough seas.
- Be aware of risk of enteritis infection from salads, shell food on board
- Take advantage of alcohol-based aerosol antibacterial hand washes provided for embarking passengers and those arriving for meals.
- Be chary of on shore infected water and food
- Remember that on fly cruises the precautions for safe air travel also apply

Recommended Medications

Favoured drugs for motion sickness are cinnarizine, scopolamine and promethazine^{43,44}

Influenzal immunisation

Pneumococcal immunisation

Antimalarials where appropriate



Pre-travel health assessment

Health of the Elderly Traveller, Part 4 *continued*

Land Travel

Many ships berth in a different port every day and disgorge passengers for a day of exploration on land. They voyage to many destinations in undeveloped parts of the world where transport and roads can be rudimentary and road traffic accidents common. Many day trippers take the opportunity to tour the local town and hinterland by coach, on local buses or hire cars. They take to this transport without thought regarding the health risk to which they may be exposed.

On vacation and relaxed, they forget simple precautions for road safety they practice at home. They enter vehicles which are unroadworthy and walk highways without regard for personal safety. They hire beach vehicles, safari cars, motor bikes and scooters and ride them without helmets or seat belts. They often transit over poorly constructed and maintained roads with low safety margins, in mountainous and jungle terrain. They jaywalk and traverse poorly maintained pavements and many do so having imbibed freely on local alcoholic spirit.

Older passengers compound potential safety risk with systemic failings interfering with balance, gait and agility and disability interfering with mobility. Forgetting their years they unwisely enter rickshaws and tuk tuks to be driven by young drivers inured to accident risk, unaware that road traffic accident is likely possibility in foreign travel.

Statistics show that the chances of being involved in a car accident in mainland Europe doubles, it almost triples in Greece and Portugal and is double and treble for undeveloped countries of Asia and the Caribbean.⁴⁸ Accidents cause 20% of all deaths among overseas travellers – the second most common cause after heart disease (68%).

Many holiday accident claims occur before holiday makers even make their destinations as the UK national estimate for accidents while travelling and touring was 480,664 in 2008. Older drivers are more likely to have accidents involving themselves than other drivers in Britain and are more likely to have accidents on unfamiliar, poor congested roads abroad. Accidents in vehicles or on the road are one of the riskiest aspects of travel abroad. Most people worry far more about disease, which causes just 9% of deaths, or terrorism, which presents a negligible risk.

Falls are a common cause of injury abroad and are often associated with alcohol. They are particularly likely in older adults, due to poor vision, imbalance and postural hypotension. Walking barefoot or in sandals increases the risk of falls and foot injuries.

Advice for road users while abroad

Travellers should:

- Insist on wearing a seat belt when in a car or coach.
- Check to see coach, bus, taxi or hire car is

roadworthy and safe.

- Beware of driving in countries with poor traffic regulations such as Egypt and India.
- Avoid motorbikes as they are particularly dangerous - even in European countries such as Greece. If using one, wear a helmet.
- Be careful at night on poorly lit, or poorly maintained roads.
- Be obsessively careful when crossing roads, as zebra crossings are often ignored.
- Avoid alcohol if deciding to drive, but be aware that locals may not do so and be aware that alcohol may disturb balance and gait making a fall more likely.
- Wear a helmet and safety jacket if using a bicycle.
- Think road safety at all times

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BOOK REVIEW

Essential Geriatrics

Henry Woodford

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An ever-increasing proportion of world travellers are elderly people who now venture to the far corners of the world. They travel to exotic destinations and expose themselves to extremes of cold heat, infection and trauma. They pursue activities, which create hazards to health and they travel suffering from chronic illness, ageing systems and failing natural immunity and on medications which can interfere with travel related prophylaxis.

They present to travel health practitioners seeking advice on health precautions and prophylaxis and the possible effects of pre-existing cardiac and respiratory disorders during flight and in land and sea travel. Good counselling requires an awareness of age related physiological changes in the individual and the impact that travel can have on chronic illness, the failing heart and lungs and on routine and recommended medications s.

This book, aptly titled “Essential Geriatrics,” could prove to be a valuable aid to the professional. The lay-out is well organised and is easy to read with the first chapter appropriately dealing with the effect of the ageing process on individual well-being. Falls, dizziness, drop attacks and cardiac and dyspnoeic problems often afflict the elderly traveller and these are well considered. Loss of mobility bedevils older travellers and movement disorders receive good attention. Practical guidance for managing the conditions covered is included in each section. A hundred questions are scattered through the text in “ best of five” format with answers at the end of the book – a useful revision of knowledge for the reader and a learning aid.

This book is aimed at multidisciplinary team readership and not specifically at the travel health professional. It would however prove a handy reference for the latter, particularly for nurses, for those dealing with older travellers with health problems and intent on going to adventurous and exotic destinations.

IBM

Bed-Bugs and Bites

A Melrose

Bed-bugs are Hemiptera ("half-winged" bugs), flat, oval insects, with very short functionless forewings. The adults are 5mm long: reddish-brown in colour and become purple after feeding. The principal host is man, though other warm-blooded animals can be parasitised. They are found in human habitations throughout the world.

As bed-bugs cannot fly, they must either crawl or be passively transported in clothing, luggage, furniture, books and other harbourages. They demonstrate great ability to withstand many months without feeding.

This increases their chances of surviving transportation and the insects' world wide distribution confirms their breeding success. In cool climates, bed bugs reach their peak numbers in early autumn, when all stages in the life cycle will be present. With colder weather, activities decrease: egg-laying ceases and the development of the juvenile forms slows down.

Bed bugs are not regarded as disease carriers, but their blood feeding can cause severe irritation in some people, resulting in loss of sleep. Any household can be invaded by bed-bugs, but infestations will only become established in premises with low standards of hygiene. Bed-bugs are therefore generally associated with poor, crowded and unhygienic conditions.

However there are recurrent reports of their appearance in quality American hotels and they are often inhabitants of low class hotels in less salubrious parts of the world. Holiday resort areas have been noted for bed bug infestation with hotels, hostels and holiday camps significant sources.

Bed-bug excrement gives a characteristic speckled appearance to insect harbours, whilst their "stink glands" confer a distinctive and unpleasant almond-like smell on infested rooms. Nocturnal creatures, both juveniles and adults, live similar lives, hiding away in cracks and crevices most of the time and coming out at night, usually just before dawn, to feed on blood from sleeping hosts.

Hiding places are close to where hosts sleep: in the bed frame or the mattress, in furniture, behind the skirting, behind the wallpaper, or where there is dark harbourage during daylight hours. The increased use of central heating, in homes and hotels, allows continued feeding and proliferation during winter. With frequent feeding at normal room temperatures (18-20C) adults live for 9 – 18 months. Under these conditions nymphs feed at about 10-day intervals. If necessary both can survive long periods without food. Under cool conditions (13C) starved adults can survive for a year.

Case History 1

A 21 year old female student came to surgery complaining of painful very itchy weals on both legs round the ankle and calf. She had recently returned

from an expedition in Ecuador. She had been sleeping rough for some weeks in a malarial area but, had been unaware of any bites at this time. Her last two nights in the country were spent in an up-market rural hotel but, she said that the rooms had been dull and gloomy and had a musty smell. She had slept under a mosquito net, but had been annoyed to find in the morning that she had been bitten about the feet and assumed that the netting had not been tucked in at the bed foot.

She assumed a mosquito had attacked her skin and was concerned about the malaria risk. On examination, she had several clusters of whitish swollen lumps on her lower legs. These had been caused by bed bugs. She was relieved at the diagnosis, but upset that she had attracted the insects which she believed related to poor personal hygiene. The swellings disappeared within a few days and the itch was relieved with hydrocortisone cream.

Case History 2

Two boys and girls on an expedition to Kashmir spent a night in separate dormitories in a youth hostel in Srinagar. In the morning the girls were complaining about bites on their calves and feet. The boys displayed bites on thighs and abdomen.

The bites were itchy, with the girls' ones lumpy and whitish in colour whereas the boys' were scattered and red and slightly raised round the bite. The boys had slept on the floor using borrowed blankets, whereas the girls had slept in hostel beds on mattresses. The beds and mattresses had been harbours for bed bugs and the blankets with fleas. The insects had left their female hosts, but several of the lads were unwilling hosts to fleas. Although both sexes continued itching their way on their hike into the mountains, the boys' itches settled quickly while the girls sported blotchy itchy legs for some weeks. Bed-bugs do not normally carry infection, but fleas can carry nasty illnesses.

Control Measures for Bed-Bugs

The control measures used must be thorough and be directed at all insect hiding places. If they are suspected, a close inspection of the bed, the mattress around the seams, the back of the headboard, etc. should reveal their presence. The use of a pyrethroid-based aerosol sprayed lightly around these areas may help, as the insects will be driven out of their hiding places. The finding of eggs, or egg cases and the blackish spots of bug excrement, will also indicate their presence. Infested bedding (e.g. sheets) and clothing should be laundered, or burnt and the fabric of infested rooms extensively cleaned. Eradication with insecticides should include beds, other furniture and harbourages in the fabric of infested rooms. A

professional pest control organisation should be used, as detection and treatment of all bed bug hiding places is a job requiring experience.

Treatment Summary

Bed-bug bites often give rise to a hard, off-white swelling distinguishing it from the flea bite, which leaves a dark red spot surrounded by a reddened area.

The pain and itch from a bug bite can last for several weeks whereas flea bite effects wear off in a day or two. Several bites close together may coalesce and cause quite marked skin swellings which are intensely itchy as well as sore. A common site is round

the ankles, accessed when the bed bug has crawled in below loose sheets at the foot of the bed. They can wander quite far up the leg before settling for a meal. The unwilling host may believe them to be mosquito or flea bites, but turns up for diagnosis and treatment when the irritation has lasted a week or two after return from a foreign holiday when flea and mosquito bites would have settled. The intense itch results in scratching and secondary infection can occur. Simple bites respond to anti-inflammatory ointments with the addition of an antibiotic if badly infected. The swellings gradually disappear over a week or two without leaving marks.

Allan Melrose, family doctor with a special interest in insect-borne disease.



Health Care on a European River Cruise

I Mackay

River cruises along the Danube are popular with aging and often ailing tourists. They board ships clutching EHIC cards, reassured by the thought that, if illness overtakes them, reciprocal health arrangements will provide for emergency health care. The majority of countries neighbouring the Danube in its long course from source to Delta are members of the EC and provide EHIC cover, but there are a few exceptions such as Serbia and Croatia.

The standard of available emergency medical care and facilities varies greatly, however, with cross border travel. In the west, high quality resources equate with and often better the NHS and are immediately available. In eastern European countries, struggling health care systems may not provide the urgent care the ill traveller anticipates. The immediacy of assistance may also be a problem as the river runs through many rural areas far from main population centres, where ambulances may be unavailable. Private health insurance cover may not also be sufficient to provide optimal care for tourists in emergency. They can only provide what is available from local resources and the patient may still have to augment financial arrangements, with what are known as “informal arrangements” – bribes!

The Delta area of the Danube, a terrain in Romania and Bulgaria, is a magnet for tourists but, riverine visitors in need may be exposed to health care in other Balkan countries en route.

Romania

Romania, is a poor Balkan country and a new member of the European Community. It is shedding a culture of corruption, the product of decades of Communism, when Romanians endured long queues to get basic commodities and required bribes to acquire scarce products and services. The culture of bribery affected every administrative system, including health care.

Doctors are accustomed to receiving bribes in Romania. Patients have to pay more to health professionals “to focus their attention”, which often leaves patients desperately seeking reasonable care. A pitifully low average monthly medical wage of about £300 encourages bribe-taking. Previously the Romanian medical profession was denigrated and underpaid under Communist leaders, who made workers in factories the country’s heroes.

A World Bank study conducted for the Romanian Ministry of Health concluded that “informal” payments amounted to £200 million annually. When an illness requires hospitalisation, patients typically pay bribes equivalent to three-quarters of a family’s monthly income. Ethical practising doctors observe that the bribery culture is so established that, when they refuse bribes, some patients become distraught



Photo: I McIntosh

and mistakenly believe it a sign that their illnesses are incurable. Bribery follows unwritten rules, with cost dependent on treatment, ranging from £75 for a straightforward appendix-removal operation to up to more than £4000 for brain surgery. Suggested bribery prices are passed on by word of mouth, on blogs and Web sites. Transparency International, the Berlin-based anticorruption watchdog, ranked Romania as the second most corrupt country in the 27-member European Union last year, behind Bulgaria.

Medical care in Romania is generally not up to Western standards, and basic medical supplies are limited, especially outside major cities. Recently, Romania’s minister of health, did not dispute the notion that his country’s health care system is so underfinanced, that it is facing imminent collapse. Even large university hospitals often lack basic supplies, such as surgical gloves and antibiotics, forcing patients to pay for such amenities. Many buildings are in serious need of repair and sanitisation with limited facilities, medical supplies and medication. Hygiene and equipment standards are low resulting in, rusted surgical instruments, dilapidated examination beds, cracked and damp walls and dirty toilets.

The country has had a mandatory health insurance scheme covering all citizens since 1998. The system is chronically underfunded and notoriously inefficient in allocation of resources. Health system reform introduced free choice of personal physician. The family doctor now has the role of “gate keeper”. Patients cannot access a specialist unless they have a referral from their family doctor. Gps. have been slow to adapt to system change. Compounding the health care problem is the medical brain drain occurring in Romania, which now has one of the lowest ratios of physicians per population in Europe. The State has well-established medical schools graduating many doctors, but the Romanian College of Physicians reports that more than 4000 doctors – mostly juniors and 10% of doctors

in the country. – have emigrated in the last two years, There is also a shortage of nurses for many also emigrate.

Private medical providers meeting Western quality standards are available in Bucharest and other cities, but can be difficult to locate. Travellers seeking medical treatment should choose their provider carefully. Quality health care is scarce. To get treatment at a well-equipped health centre or hospital, in this region one must travel to a county or capital hospital. They are also likely to have staff who can speak English. It is standard practice for patients, including visiting tourists, to tip medical personnel to guarantee that sufficient attention is given to their medical conditions. Potential health risks within the state system include hepatitis A, polio, typhoid, and rabies – Travellers to Romania should ensure they are up to date on all routine immunisations and hepatitis protection before arrival. Dental treatment, tattoos and injections should be avoided where possible when within the country and its neighbours.

Hungary

Following communist rule and EC entry, Hungary transformed its healthcare system from centralised state control to a decentralised model. Contracts between local governments and providers replaced direct ownership, and privatisation within healthcare has grown, with funding now a mix of tax and social insurance. All citizens are covered, regardless of employment status, with the government paying contributions for groups such as the unemployed and pensioners. Health insurance contributions are collected from employees, who pay 3% of their total income, and employers who pay 15% of the employee's gross salary plus a lump sum tax or 'healthcare contribution'. Patients make co-payments on certain services, including pharmaceuticals, dental care and rehabilitation.¹ These out-of-pocket payments cover 18% of health care financing.²

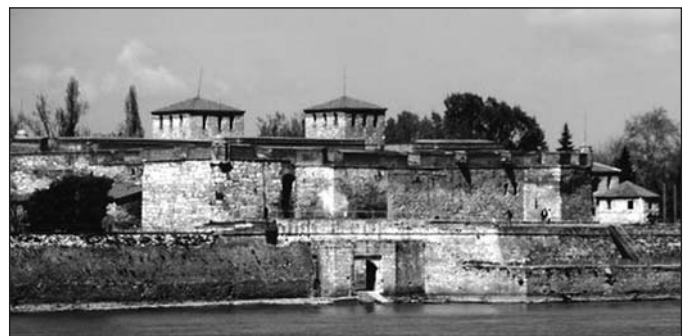
GPs can be paid by local government, as independent private practitioners, or through the local hospital. The majority (77%) of Gp's opt for 'functional privatisation', a payment scheme in which Gp's contracts with the Hungarian Insurance Fund and are paid a capitation fee based on patient list. As a result, the financial incentive is to refer patients on, resulting in a weak gatekeeping system. The current payment system does not encourage Gp's to serve their patients inclusively.¹ Furthermore, in hospitals, the fee-for-service payment scheme discourages treatment as an outpatient and encourages hospitals to treat as an inpatient for financial gain, rather than for the ideal treatment of the patient.² While Gp's are meant to be involved in preventative medicine and education, their role continues to be a prescription and referral service.³ A lack of adequate Gp training and financial incentives for physicians to retain patients are mainly

to blame.¹ Most pharmacies are privatised, but the overall role of the private sector continues to be minimal.

Hungary's healthcare system has been plagued by overprovision, oversupply of resources (including doctors) and duplication of services. In contrast to the oversupply of doctors, there is an undersupply of nurses. This results in doctors performing the duties of nurses – a misuse of resources.³ Apart from the out-of-pocket payments for pharmaceuticals and dental care, 'gratitude payments' - bribes - by patients, the Communist legacy, continue to play an important role in Hungary. Lower than average salaries in the healthcare sector encourage these 'gratitude payments', to guarantee quality or more speedy access to care. Their existence puts poorer patients at a disadvantage and unaware tourists unprepared for bribes will receive inferior care.⁴

Bulgaria

The Bulgarian healthcare system has suffered from under-funding in past years and its facilities are now slowly catching up with Western European nations. Facilities in most Bulgarian hospitals are adequate and medical care is acceptable, although specialised equipment/treatment may not always be available. There are hospitals, clinics and medical services in all major towns and cities, but in hospitals nursing care can be sparse, and knowledge of English limited. The country is a new entry to the EC. Visitors should purchase comprehensive private travel and medical insurance which should include Medivac to the UK.



The Bulgarian government restored the right of the private sector to practice medicine, permitting establishment of private pharmacies, dentists, and opticians. Bulgaria is in the process of restructuring its health care system from one based on command and control to one founded on pluralism. Medical care has never been well funded, but the shift from a centrally planned to a private enterprise system has left the sector in disarray. Doctors continue to receive low wages and operate inadequate and outdated machinery. Bulgarian citizens have access to a free national health service covered by a specified medical package, paid for by the Insurance fund. The insured pay a percentage of their gross income with contributions divided

Health Care on a River Cruise *continued*

equally between the employer and the employee (currently 3% from each). An additional percentage of income has to be paid by the individual if dependent family members are to be covered by the insurance. The self-employed are responsible for paying their own insurance contributions, whilst the contributions of those who do not belong to the work force are paid either by the state (eg for pensioners) or by municipalities for the unemployed. Medical staff in Bulgaria are trained to a very high standard, though hospitals and clinics in general may not have all the equipment and facilities expected in Western Europe. There are a growing number of private hospitals and clinics across the country. Most dentists are private and work to a generally high standard. Bulgaria pharmacists offer affordable treatment and medicines, though these are unregulated.

Doctors and hospitals may expect immediate payment in cash for health services. "Informal" and "gratitude" payments are often expected for simple medical and nursing attention. Some private clinics are now highly regarded and Northern Europeans (increasingly choose Bulgaria for 'Hospital Vacations' – receiving treatment at a very reasonable cost compared to Western Europe, followed by recuperation in one of Bulgaria's famous spas. Exposure to the supposedly healing waters, at Hissar, near Plovdiv and Bankya, (near Sofia), are thought to bring relief to arthritis and rheumatism sufferers. Health care facilities vary across the country and in one recent blog it was noted, "I recently stayed at a hospital in Burgas which was unbelievable, it was totally not up to European standards, with a lack of basic hygiene I couldn't believe! The staff were good but a lack of even the most basic commodities surprised me." The Minister of Health has recently admitted that the medical equipment in all establishments is in poor condition, often more than 20 years old and the health care system is in a critical state.

Serbia

Serbia has weathered years of political and economic turmoil, ethnic strife and civil war, The country is far from recovered and about 20% of Serbians live on less than £60 a month. It has a well developed network of primary, secondary, and tertiary care centres, but the system is inefficient and underfunded; equipment and facilities are out of date; and staff underpaid and demoralised. A European Agency study found that only a third of hospitals had functioning sterilisation equipment and 75% of the medical equipment in health facilities was more than 10 years old. The average doctor was paid a salary of £100 a month and nurses £70, compared with the national average monthly salary of £130. Health workers routinely accepted 'on the side informal' payments from patients and supplemented their income with private practices. Patients had to buy their own

hospital supplies out-of-pocket, even for items such as bandages and catheters. Conditions have improved since then but vary across the country. Medical care is limited. Many physicians in Serbia are well trained, but hospitals and clinics may lack equipment and supplies. In large parts of rural Serbia, an ambulance service may be unavailable. For an acute emergency, the best options are the Military Medical Academy (Vojno Medicinska Akademija) (Centar Za Dijalizu Crnotravska 17, 11000 Belgrade).

Croatia

Large parts of the country were devastated by recent war and medical facilities vary widely across the region, with better resources along the Dalmatian coast. Here Medical Tourism facilities are well established and often incorporate traditional spa and hydrotherapy. There are attempts to repopulate and redevelop areas in the interior that were devastated or where populations were displaced as a result of the war. Areas along the Danube which were particularly affected are slowly recovering. Primary health care is still organised around several medical specialties but is gradually moving towards a family doctor system. The privatisation of primary health care (except for emergency and public health services) is under way. About one third of primary care doctors are specialists in general medicine, and a smaller proportion in family medicine. Doctors act as primary health care team leaders and about seven out of ten patient contacts are with doctors. General practitioner-led primary health care is central to the newly organised health care system. Patients have a free choice of primary care doctor or dentist, but must obtain a referral for any specialist service. The primary care doctor acts as a gatekeeper to secondary care by a specialist, a polyclinic or a hospital. Over-all facilities are good with free emergency available for the tourist in emergency. Some medications are in short supply in state institutions.⁶

Summary

Medical and nursing care resources and facilities vary greatly in countries bordering the River Danube particularly in its course through the Balkans. The river-based tourist may meet care as good as, or better than, within the NHS, or be exposed to conditions closer to those met in an undeveloped country of the third world. River cruise ships pass through many rural areas where health care is limited and falls far short of that available in the big cities. Tourists should remember that they cannot wholly escape the use of local health care resources in emergency. Private health insurance can only provide the best that is available locally and repatriation may be tenuous and lengthy.

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Photo: I McIntosh

The 'Iron Gate' on the Danube

Tibet's new railway: Social, cultural, political implications and new research on work at high altitude

M Townsend

In 2006 a new railway, the Qinghai-Tibetan Railroad, was opened linking Golmud, at an altitude of 2808 metres, to the Tibetan capital, Lhasa at an altitude of 4658 metres. The track is over 1100 km long and much of it is at an altitude of over 4000 metres, rising to 5072 metres at its highest point at the Tanggula Pass. It has over 600 bridges, including the spectacular Lhasa River Bridge, and at one point there is a tunnel over 3 km long. Ingenious engineering solutions have had to be found for the problems involved in constructing a railway track over areas of permafrost, and it represents a major triumph for Chinese engineering. Rail links to Beijing, Shanghai and Hong Kong will make the journey to the Tibet Autonomous Region of China much easier and quicker from many different parts of China. The railway is said to have cost £2.3 billion, and China claims that it will improve trade, tourism and jobs in economically underprivileged Tibet.

There is an argument that the reasons for the building of the railway were as much political as economic. The railway will greatly facilitate administrative, political and possibly military control of an area that has seen widespread demonstrations for greater autonomy and, in some quarters, complete independence from China. Even the Dalai Lama now concedes that whilst greater autonomy is possible, complete independence from China is an unlikely goal. The railway will also open the way for even greater levels of immigration of ethnic Chinese into Tibet, making further inroads into the cultural and religious identity of Tibet which has already suffered much in the last 50 years. The promised new jobs connected with the railway are most likely to go to ethnic Chinese, who have the advantage of better education and training than Tibetans and who speak Chinese, now the official language of business and industry in Tibet.

The Tibetan plateau is one of the world's great wilderness areas. The Chinese maintain that they have respected the environment when building the railway, for example suspending work during the migration season of the Tibetan antelope, but there seems little doubt that long term environmental damage is likely from such a huge construction project.

In addition to the social, cultural, environmental and financial considerations, construction of the railway has also produced information of interest to the world of travel health, and in particular to those with an interest in the problems of high altitude. A paper by Tian Yi Wu *et al*¹ reported a study of the incidence and severity of acute mountain sickness (AMS)

amongst the railway construction workers. 600 workers usually resident in the lowlands and employed for 5 years on the project were compared with 600 lowland workers newly recruited each year to work and also to 200 Tibetan workers usually resident at or around 4500 metres.

They found a lower incidence and severity of AMS on each successive return to high altitude, whereas the incidence and severity remained relatively constant in each new annual batch of recruits to high altitude work. Resting arterial oxygen saturation was higher and resting heart rate lower with increasing exposure to high altitude. AMS did not occur in Tibetan workers, who had even higher oxygen saturation levels and lower heart rates.

What is particularly interesting about these results is that periods of exposure to high altitude lasted 7 months, but periods at lower altitude between episodes of exposure to high altitude lasted for 5 months. Prior to this study there was no clear evidence of the effect of repeated exposure to high altitude or chronic intermittent hypoxia (CIH). Some studies^{2,3,4} showed no major effect, with the incidence and severity of AMS being similar on each repeated exposure to high altitude. Other studies^{5,6,7,8} showed that prior exposure to high altitude reduced the incidence and severity of AMS.

This Chinese study showed that 59-63% of newcomers to high altitude suffered symptoms of AMS, compared with 53% at 4559 metres in the Italian Alps⁹ and 68% at 4300 metres in Nepal.¹⁰ Differences may have been due to different criteria for diagnosis of AMS and different rates of ascent. Workers intermittently exposed to high altitude in this study subsequently suffered a much lower incidence of AMS at 29-51%. This was lower than has been found in previous studies of intermittent exposure at 3550 metres in Chile⁴ and in astronomers at 4204 meters at Mauna Kea¹¹ in which the incidence was 60% and 69% respectively.

Previously it was thought that altitude acclimatisation was lost within 2 to 4 weeks of a return to lower altitude^{7,8,12,13,14} but this study has shown that the incidence and severity of AMS was reduced on each subsequent exposure to high altitude after periods of 5 months at sea level. The authors hypothesise that when exposure to high altitude is intermittent the length the period of exposure is the critical factor in improving acclimatisation on subsequent return to high altitude and that shorter periods of exposure are less likely to be effective.

Mike Townend, retired GP, Cumbria.
(Chair – BTHA Publications Sub. Committee).

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EDUCATION

Travel Medicine at Home: The London School of Hygiene and Tropical Medicine (LSHTM) online travel medicine course

R H Behrens

One of the most challenging aspects of today's busy professional's educational needs, is finding the time to maintain and develop knowledge and competency and meet continuing professional education requirements. Attending courses and conferences meetings has been a popular and valuable way of partly meeting this need, but the content and cost have not always been suited to individual requirements. The London School of Hygiene and Tropical Medicine established in 1899 and Europe's most recognised postgraduate school of public health has identified that alternative methods of training for students living in far flung regions of the world were necessary and established its distance based learning activity in 1998. The first courses were Master level degrees in Infectious diseases and epidemiology, but were hard copy based to meet the limited IT access of many students in resource poor settings.

The next stage forward was to provide on line access to material, taking advantage of the many educational media this provided. One of the first was the Travel Medicine online course. Setting up the course was a steep learning curve. Developing expertise with software, the multimedia material and co-coordinating the many authors required to produce the material was a 2 year exercise which resulted in version 1 of the course.

The material is accessed through a web browser and requires a computer with an internet connection, using a login and password provided by LSHTM. Once in the course the student can navigate through it or jump around, or repeat material if they so wish. The course allows pages and information to be printed off. One of the strengths of the system is the hyperlinks out on the internet to relevant web material, so maps research documents, policy and travel sites are included in the text. The other aspect is that significant quantities of visual material have been incorporated, including figures, pictures, videos, (invaluable for communications training) and flash video demonstrating the immune system and malaria life cycle.

The course, mainly because of the cost, could only cover limited areas of travel medicine. The modules cover an introduction to travel medicine, operating a travel clinic, communications skills, vaccines and immunology and malaria. All modules are introduced with their objectives, for example the malaria module objectives are shown in panel 1

Throughout the material there are self-assessment quizzes, tests of knowledge and summary reviews so students can ensure they are retaining the information provided. An example of such a test is shown in panel 2.

Tabulated material is widely used to clarify information such as the immune response mechanisms to vaccines as shown in Panel 3.

For further information about the course see Panel 4.

Dr Ron H Behrens is a Senior lecturer at the London School of Hygiene and Tropical Medicine.

Panel 1

Malaria module objectives

At the end of this module you should be able to:

- Identify malaria risk regions
- Understand the distribution of malaria species relevant to travellers
- Understand the changing epidemiology of imported malaria disease and the pattern of travel of UK residents
- Understand the influence of destination, local epidemiology and length of travel on the risk of acquiring malaria
- Name 7 high risk travel groups and highlight at least 2 relevant issues to that particular group
- List the various key elements of malaria prevention
- Give examples of personal protection methods
- Describe the advantages of ITNs in comparison to untreated nets and their wider implications
- Compare the 2 main types of insect repellents in terms of their efficacy
- Describe the 4 key elements of vector control
- Name the available chemoprophylactic agents, name the dosing schedule and their most important side effects
- Name the chemoprophylactic agents that are contraindicated for individuals with renal disease, hepatic impairment, children, pregnancy, neuro-psychiatric disorders.
- Name which chemoprophylactic agents can be used longterm
- Define the term Standby treatment, and know "who" for and "when" it would be indicated

Panel 2**Example of self assessment tests**

The following organs/systems are frequently affected in severe falciparum malaria:

- Lungs
- Liver
- Kidneys
- Heart
- Red Blood cells

Or

Over what concentration of DEET, is there no added benefit of protection?:

- 75%
- 33%
- 50%

Panel 3**Example of tabulated material**

<i>Vaccine</i>	<i>Ab</i>	<i>CD4 T</i>	<i>CD8 CTL</i>
Live attenuated (MMR, <i>vaccinia</i>)	+++	+++	(+++)
Whole inactivated (influenza)	+++	++	+/-
Protein subunit (toxoids, <i>aPer</i>)	+++	++	+/-
Polysaccharide (Typhoid Vi, Mem AC)	+	+/-	+/-
Polysaccharide conjugate (Hib, MenC)	+++	++	-
DNA	++	++	++
Live vectors	++	++	++

Panel 4

**The London School of Hygiene and Tropical Medicine (LSHTM) online travel medicine course:
What do you get and where do you get it from.**

The course is currently (2009/2010) priced at £200. For this you get full access for 4 months from your first login. This can be used as frequently as you want and from anywhere in the world. If you have not managed to complete it you can purchase a further 2 months for £50. Once you have completed the 30 hours of material you will be sent a certificate of completion. The course has been approved for external credit for the CPD scheme of the Federation of Royal Colleges of Physicians of the UK. Details and application can be made through the website at http://www.lshtm.ac.uk/prospectus/cpd/travel_me d.html. The LSHTM also runs an annual 1 week course in travel medicine in the month of April and more details can be found under short courses on their website.

Scenarios from the NaTHNaC Telephone Advice Line

A Jordan

The National Travel Health Network and Centre (NaTHNaC) is funded by the Department of Health, England and operates in partnership with the Hospital for Tropical Diseases (London), the Liverpool School of Tropical Medicine, the London School of Hygiene and Tropical Medicine and the Health Protection Agency Centre for Infections.

The telephone advice line service provides detailed advice for health professionals advising travellers with special needs or complex itineraries. The line operates Mondays to Fridays between the hours of 9am - 12pm and 2pm - 4.30pm. Queries are answered by the team of specialist nurses, with medical cover provided. For more information on NaTHNaC refer to the website at www.nathnac.org

Scenarios from the queries to the advice line might prove informative to health professionals and so a selection has been included below. With all travellers it is essential to complete a risk assessment. This involves finding out some details about a) the traveller, including; past/current medical history, medication(s) previous vaccines/malaria chemoprophylaxis and b) the trip, including; date of departure, length of time away, the countries to be visited and the areas within those countries (i.e. urban, rural, coastal, altitude), type of accommodation and any planned activities (i.e. adventure sports, disaster relief/aid work, visiting family and friends). Advice for health professionals on how to conduct a travel health risk assessment is available at: http://www.rcn.org.uk/publications/pdf/travel_health_medicine.pdf

Scenario One.

A 59 year old man consulted the Occupational Health Nurse at his place of work for advice about a business trip to China for two weeks in February 2010. His plans included predominantly staying in Beijing for business meetings but he also hoped to do some tourist trips to Xi'an to see the Terracotta Warriors and the Great Wall of China. He was concerned that he ought to have meningitis vaccine ACW135Y because he had been told that there was an outbreak in China. The OH nurse contacted the advice line for advice.

The advice of NaTHNaC's Senior Surveillance Scientist was sought to help answer this query. A large outbreak of *eosinophilic meningitis* connected with the parasite *angiostrongylus cantonensis*, which lives in snails, was reported in Beijing in 2006.¹ One hundred and sixty individuals were affected² through eating undercooked snails at restaurants in Beijing. A more recent nationwide survey of the incidence

of *angiostrongylus cantonensis* found infected snail species in several states across China.³ The traveller was advised to avoid consuming undercooked snails. The meningitis vaccine ACWY135 does not provide protection against the parasite and is not currently recommended for travellers to China.

Scenario Two

A caller rang to ask for general advice about travellers who do not leave enough time to complete courses of vaccine before departure, e.g. hepatitis B and rabies. Could travellers be advised to carry doses of the vaccine with them so they could get a doctor or nurse at the destination to administer it so they could have it at the correct interval?

This would not be recommended for several reasons; vaccines need to be transported and stored between +2 & +8°C in order to ensure that they remain effective, a process called the cold chain.⁴ Vaccine transported or stored outside of the cold chain cannot be considered viable and should be disposed of. Detailed research has been conducted into the stability of vaccines kept outside of the cold chain.⁵

It is unlikely that a health professional would administer a vaccine that has been provided by a traveller because they would not know where it had come from or in what conditions it had been stored.

Travellers should be advised to seek travel health advice in plenty of time before departure to allow for completion of courses of vaccine. In March 2010 a campaign called '8 weeks to go' was launched to highlight this issue – more details can be found on their website: <http://www.8weekstogo.co.uk/>

Scenario Three

A caller rang to ask for advice for Hajj pilgrims and the need for ACWY meningitis vaccine.

The caller was directed to the NaTHNaC Health Information Sheet for Hajj pilgrims (Hajjis)⁶ which provides detailed information on UK vaccine recommendations and other health risks. Meningitis vaccine ACW135Y is a mandatory vaccine in order to travel to the Hajj in Saudi Arabia.

The following vaccine-preventable diseases are of particular relevance to Hajjis; seasonal influenza, pandemic influenza (H1N1), meningococcal meningitis, polio, hepatitis B and yellow fever (only if entering Saudi Arabia from a country with risk of yellow fever transmission). Other advice refers to food and water hygiene, vector-borne diseases, heat and sun-related hazards, accidents and injuries, and other general health advice.

Useful sources of information include the Kingdom

of Saudi Arabia Ministry of Health⁷ World Health Organization,⁸ Foreign and Commonwealth Office.⁹

The 2009 Hajj season was in November; Hajj 2010 is expected to fall from 14-18 November 2010. Up to date guidelines and recommendations for the 2010 season will be posted nearer the time.

Scenario Four

A 25 year old male is travelling to the coastal resort of Cancun in Mexico in four weeks time for a two week tourist holiday. His past medical history includes splenectomy and cardiac thrombosis connected to a myocardial infarction following a road traffic accident at the age of 21 and Crohn's Disease. His medication includes asacol and warfarin.

This is a high risk immune compromised traveller. Individuals without a spleen or with impaired splenic function are more at risk of bacterial infections,¹⁰ although splenectomy due to trauma may result in a slightly lower risk than those with underlying haematological disease. The advice of his consultant specialist should be sought prior to travel and it may be advisable for him to take along some self treatment antibiotics in case of illness abroad, such as ciprofloxacin or azithromycin.¹⁰ Respiratory infections, complicated skin infections, food and water borne diseases and vector borne diseases such as dengue fever are known to be especially problematic in asplenic travellers¹⁰ and are all prevalent in Mexico. Advice on food and water hygiene¹¹ and insect bite avoidance¹² should be discussed.

There are no contraindications to the administration of the recommended travel vaccines for Mexico, but it is unclear how well he will respond to the vaccines.^{13,14} Hepatitis A, typhoid, diphtheria/tetanus/polio would be recommended for the majority of travellers to Mexico, but he may also want to consider hepatitis B in case he requires hospital treatment during the trip. The pre-travel consultation is a good opportunity to check if he has received routine vaccines recommended for all asplenic individuals i.e. pneumococcal, meningococcal and Hib.¹⁴

Individuals taking warfarin are at greater risk of haematoma following administration of vaccines; pressure, not rubbing, should be applied to the vaccine site. Advice should be sought from his consultant haematologist regarding his Prothrombin Time/International Normalization Ratio (PT/INR), the level should be stabilised before departure and he may need to arrange for it to be taken whilst he is away. A change in diet and any illness may affect the levels. He should carry with him details of his medical history and that he is taking warfarin in case of an accident or need for medical care.

Scenario Five

A 63 year old male is travelling to Kenya in three weeks time for a two week safari holiday, including

Nairobi, and then the National Parks at Samburu, Lake Nakuru and Masai Mara and finishing up in Mombasa. His past medical history includes coronary heart disease; he has a pacemaker in situ and takes warfarin. He has decided not to have yellow fever vaccine due to the potential increased risk of serious adverse events. The caller is unsure where the National Parks are located and would like advice on malaria prophylaxis.

The use of hard-copy or online atlas resources to locate the National Parks was discussed with the caller.

The use of Lariam for malaria prophylaxis would be contraindicated in this individual due to his cardiac medical history and the potential risk of cardiac side effects.¹⁵ All malaria prophylactics potentially have the risk of interacting with warfarin and so a trial of malarone or doxycycline should be completed before departure, advice on how to initiate this is available from the Malaria Reference Laboratory.¹⁶ A baseline INR is recorded, the drug of choice is trialled for one week and then a repeat INR checked. Assuming the INR has remained stable the drug can be taken during the trip. He should be advised that any illness could result in an unstable INR so he would be advised to carry information about his most recent levels and details of his past medical history in case he becomes ill whilst away.

This traveller would be recommended to have a pre-travel assessment by his consultant cardiologist. Cardiac events are one of the most common causes of death during travel, the reason for more than 50% of the deaths during air travel and the second most frequent reason for medical evacuation.¹⁷ Travellers with significant medical history should carry a copy of a recent ECG and those with a pacemaker should also be recommended to carry their pacemaker card.¹⁷

Extensive health insurance should be arranged which includes an air evacuation policy as the itinerary includes some remote destinations so access to medical care may be difficult to arrange. A good supply of medication should be carried, in their original packets with a copy of his prescription.¹⁸

Scenario Six

18 yr old female who is fit and well is travelling to Tanzania (4 days), Malawi (7 days) and Zambia (6 days) in 3 days time. The reason for the trip is unknown. She received her yellow fever vaccine earlier that day. However the caller is concerned that the International Certificate of Vaccination or Prophylaxis (ICVP) won't be valid.

The International Health Regulations (IHR(2005)) [19] state that in order for an ICVP to be valid a 10 day interval is needed from the date of administration of the vaccine. Research has shown that ten days is the earliest point at which optimum protective antibodies have been shown to be present in the majority of

NaTHNaC *continued*

vaccine recipients (90%),²⁰ although antibody levels continue to increase with peak levels found 3-4 weeks after immunisation (99-100% of recipients protected on day 28).²⁰

In order to cross the border between Tanzania and Malawi there is a mandatory requirement for a traveller to be in possession of a valid ICVP.²¹ This traveller may be refused entry to Malawi if she attempts to cross the border, according to the itinerary she has provided, or she may be detained at the border until the required time has elapsed. The traveller needs to be informed of this and should delay departure to allow for the correct interval to elapse. Any attempt to cross the border before this time is done so at her own risk.

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Cheese Found to Improve the Immune Response in Elderly People

F Ibrahim, S Ruvio, L Granlund, S Salminen, M Viitanen, A Ouwehand

Cheese acting as 'The carrier' for probiotic bacteria can help to restore immune system

Scientists in Finland have discovered that cheese can help preserve and enhance the immune system of the elderly by acting as a carrier for probiotic bacteria. The research, published in *FEMS Immunology & Medical Microbiology*, reveals that daily consumption of probiotic cheese helps to tackle age-related changes in the immune system.

"The increase in the proportion of aged individuals in modern society, makes finding innovative ways to thwart the deterioration of the immune system a priority," said lead author Dr Fandi Ibrahim from the University of Turku in Finland. "The intake of probiotic bacteria has been reported to enhance the immune response through other products and now we have discovered that cheese can be a carrier of the same bacteria."

Dr Ibrahim's team believe that the daily intake of probiotic cheese can tackle the age-related deterioration of the immune system known as immunosenescence. This deterioration means the body is unable to kill tumour cells and reduces the immune response to vaccinations and infections. Infectious diseases, chronic inflammation disorders and cancer are hallmarks of immunosenescence.

To tackle immunosenescence the team targeted the gastrointestinal tract, which is the main entry for bacteria cells into the body through food and drink it is also the site where 70% of vital immunoglobulin cells are created.

The team asked volunteers aged between 72 and 103, all of whom lived in the same care home, to eat one slice of either placebo or probiotic Gouda cheese with their breakfast for four weeks. Blood tests were then carried out to discover the effect of probiotic bacteria contained within the cheese on the immune system.

The results revealed a clear enhancement of natural and acquired immunity through the activation of NK blood cells and an increase in phagocytic activity.

"The aim of the study was to see if specific probiotic bacteria in cheese would have immune enhancing effects on healthy older individuals in a nursing home setting," It demonstrated that the regular intake of probiotic cheese can help to boost the immune system and that including it in a regular diet may help to improve an elderly person's immune response to external challenges.

The lead author of this paper is Dr Fandi Ibrahim, who conducts research from the Functional Foods Forum at the University of Turku in Finland.



Reports from the Tropical Medicine Bureau

G Fry

Below are just a selection of the reports issued by the Tropical Medicine Bureau of Ireland with comments from the director Dr Graham Fry.

Readers should note that the information given in these reports is gathered from a number of sources throughout the world and the Tropical Medicine Bureau cannot check each one for accuracy. They are of a very general nature and given purely to assist in the overall healthcare of the overseas traveller. They must not be used in place of a detailed medical consultation under any circumstance

The major source of the material is as follows:

ProMed: www.promedmail.com

AFP: www.afp.com/afpcom/en/

These and other reports are available on the Tropical Medical Bureau web page facility at: www.tmb.ie

SOUTH AFRICA

AGENCE FRANCE-PRESSE

13/05/2010 09:29:00

WHO advises precautions in South Africa virus outbreak

Date: Wed, 12 May 2010 22:14:50 +0200 (METDST)

GENEVA, May 12, 2010 (AFP) – The World Health Organisation on Wednesday advised travellers to South Africa to take precautions against insect bites and contact with raw meat, after an outbreak of Rift Valley fever killed 18 people. "WHO advises no international travel restriction to or from South Africa," the agency said in a statement posted on its website. "However, WHO recommends that visitors to South Africa, especially those intending to visit farms and/or game reserves, avoid coming into contact with animal tissues or blood, avoid drinking unpasteurized or uncooked meat or eating raw meat," it added. "All travellers should take appropriate precautions against bites from mosquitoes and other blood sucking insects. "Rift Valley fever is a viral disease in livestock such as cattle, sheep and camels, but can also infect humans through indirect or direct contact with infected animal blood or organs. "Human infections have also resulted from the bites of infected mosquitoes," the WHO noted. The advice emerged just weeks before football's World Cup, when thousands of football supporters are expected to travel to South Africa. Most human cases of the disease, which is prevalent in east and north Africa, are mild, according to a WHO fact sheet, but it has been deadly in an average of less than one percent of cases with a more severe haemorrhagic form. The statement said the South African government had confirmed 186 cases of the viral fever in humans by May 10, including 18 deaths, in five provinces: Free State, Eastern, Western and Northern

Cape, as well as North West Province. It was not immediately clear when the outbreak began. The WHO said an initially suspected case in a German tourist, who fell ill on April 7 after visiting game reserves and rural areas, had been ruled out by laboratory tests. "Travel medicine professionals and travel medicine services should be aware of the current RVF situation in South Africa in order to provide advice and care accordingly," the UN health agency said.

[TMB: The world cup in South Africa is running into all kinds of difficulties and having a significant outbreak of Rift Valley fever to cope with seems somewhat unfair. The actual risk to any individual careful traveller remains very low but all travelling should be encouraged to take sensible precautions including avoiding uncooked foods (particularly meats) and also to take care against mosquito bites - remembering that this is their 'winter' season so this particular risk should be low. The main risks may be encountered while on Safari so special care should be taken at these times. Information on South Africa is available through the TMB web pages <http://www.tmb.ie>]

REUNION

ProMed Newsgroup

10/05/2010 09:49:00

Tourists to Reunion warned about risks from Chikungunya

Date: Thu 6 May 2010

Source: Le Provence.com [in French, trans. and summ. ProMed Mod.TY]

<<http://www.laprovence.com/article/region/un-cas-de-dengue-et-un-de-chikungunya-detectes-dans-la-region>>

The Bouches-du-Rhone [area], 150 oviposition traps were placed to see if *Aedes albopictus* was present. This refers to *Aedes albopictus*, the mosquito that carries the chikungunya virus, and also that of dengue. Meanwhile, the Institute de Veille Sanitaire (INVS) has called for vigilance by tourists visiting Reunion Island, where 57 cases of chikungunya have been detected since 17 Mar [2010]. An infected patient was diagnosed [here in France] in the region of Arles. He is a patient returning from La Reunion and infected by chikungunya [virus]. "This [is an] imported case," said Jean-Jacques Coiplet, the territorial delegate from the Regional Health Agency (LRA) for Bouches-du-Rhone. In 2009, we then had 7 cases of chikungunya and dengue," he added. "The risk now is that indigenous cases develop."

[TMB: Chikungunya Fever has been around for many

decades but really only has broken into main stream medicine since the disease broke out in Reunion and the surrounding Indian Ocean islands a few years ago and started to affect tourists. This is a mosquito borne illness and causes quite significant muscular aches and generalised flu symptoms in those infected. There is no specific treatment and so the main form of protection relies on avoiding mosquito bites. It is similar in many ways to Dengue Fever which is perhaps better known following very serious outbreaks across South America and many parts of Asia - including most recently the tourist islands of southern Thailand.]

BULGARIA

ProMed Newsgroup

13/05/2010 09:19:00

Problems at Bulgaria-Turkish border over Measles outbreaks

Date: Tue 11 May 2010

Source: inSing.com, Agence France-Presse (AFP) report [edited]

<<http://www.insing.com/news/health/turkey-tightens-borders-against-bulgarian-measles-ministry/id-39681700?ref=RSS> >

Bulgaria's Foreign Ministry warned on Tuesday [11 May 2010] that authorities in Turkey had tightened border controls for fear of a spread of measles from its northern neighbour. "Travellers with measles symptoms, such as fever, rash and coughing, will be provisionally banned access into Turkey and should refrain from travelling," the Bulgarian Ministry said in a statement. The authorities in Turkey had taken the preventive measures in order "to limit the risk of spread" of the disease, it added. A measles epidemic broke out among Bulgaria's Roma population in April 2009 but only gained strength in recent months. So far, it has affected 18 000 people, including 20 who died of the disease, epidemic consultant Mira Kozhuharova told AFP. The rapid spread of the disease among Roma children and adolescents was due to the fact that many of them lacked the obligatory vaccinations, she added. Bulgaria's last measles epidemic in 1992 affected some 22,000 people. [Byline: Noel Celis]

[TMB: Measles, Mumps, Chickenpox, Whooping Cough and many other so called 'childhood' diseases regularly appear within our news reports. One main reason for this is the considerable variability in adherence to national childhood programmes and the fact that the vaccines do not provide 100% cover in all cases. However, despite the fact that these vaccines have been proven to be extremely effective and safe, many parent still refuse to allow their children be covered. These children have themselves a risk of contracting these diseases but they can also be impli-

cated in transmission to others. Certainly undertaking a foreign holiday, to a region of the world where the incidence of illness is considerably higher than in Western Europe, with an unprotected child is both foolhardy and undesirable.]

PERU

AGENCE FRANCE-PRESSE

10/05/2010 10:24:00

Dutch tourist shot during campsite robbery in Peru

Date: Sat, 8 May 2010 03:25:43 +0200 (METDST)LIMA, May 7, 2010 (AFP)

A dutch man was shot in the leg after he stood up to a group of gunmen robbing a couple of dozen tourists camping overnight near the Caral archeological site in northern Peru, local police said Friday. The armed robbers took all the belongings of 58-year-old Tjor Wolveda, as well as those of his 24 compatriots and one Briton sharing the campsite, and fled into the night, police in nearby Supe said. Wolveda, who was also struck by one of the robbers before he was shot, was recovering from his wound at an area hospital, they added.

[TMB: Tourist are prime targets for many vagabonds throughout the world. This is not just a problem of the developing world as can be seen in our own national newspapers almost every day of the week. However travellers should endeavour to avoid conflict situations and to ensure that they do not flaunt their personal wealth - even if they themselves do not think they are rich! One good suggestion is to consider buying a local newspaper when walking around any major city of the world so that you give the appearance of being a local. However if you have large gregarious dark glasses, Florida shorts and a colossal camera by your side that may give the game away!]

RUSSIA

ProMed Newsgroup

01/03/2010 09:35:00

Epidemic Lyme Disease in Kakuga region of Russia

Date: 17 Feb 2010

Source: News agency <Regnum> [in Russian, trans. ProMed Corr.ATS, edited]

<http://www.regnum.ru/news/1255093.html>

The head sanitary doctor of Kaluga oblast reports that the epidemic situation regarding Lyme disease remains unfavorable there. There were 148 registered cases in 2009, which equates to 14.72 cases per 100,000 population. The doctors consider the rise in incidence to be connected to more gardening, tourism development, and urbanization of endemic lands.

Reports from the Tropical Medicine Bureau *continued*

Unauthorized landfills also contribute their part. Landfills are feeding places for many rodents which carry ticks. All this has caused an expansion of the endemic areas. 15.7 per cent of tested ticks were found positive for Lyme disease in 2009. 2307 tick bites were reported in 2009, including 369 children, compared with 1760 tick bites in 2008 (including 489 children). The specialists consider that the level of insecticide land treatment against ticks is inadequate. The average incidence of Lyme disease in Russia was 6.82/100 000 in 2009 (9686 cases). The highest incidence was registered in Ural and Northwest federal okrugs [districts].

[TMB: Even though the 'home' for Lyme Borreliosis is the United States of America (Lyme - Connecticut) this disease has been reported from many regions of the world - including Ireland. It is a spirochetal disease and (similar to the 'great imitator' of old - Syphilis) can present in a multitude of different ways. Perhaps due to this diversity of clinical presentation the disease is often overlooked in the clinical picture of a patient and this can seriously delay their diagnosis and treatment. In our practice we have seen this disease present in patients with cardiac irregularities, arthritic changes, a wide range of neurological features as well as dermatological changes and of course chronic fatigue. It is this link with chronic fatigue which occasionally, and very unfortunately, condemns some patients to a diagnosis of ME and a delayed treatment programme.]

SENEGAL

ProMed Newsgroup

10/02/2010 19:05:00

Report on counterfeit malaria drugs across Africa

Date: Tue 9 Feb 2010

Source: CBC News Canada [edited]

<http://www.cbc.ca/health/story/2010/02/08/malaria-pills-artemisinin.html>

High rates of the most effective type of malaria-fighting drugs sold in 3 African countries are poor quality -- including nearly half the pills sampled in Senegal -- raising fears of increased drug resistance that could wipe out the last weapon left to battle a disease that

kills 1 million people each year, according to a US report released Monday [8 Feb 2010]. Between 16 per cent and 40 percent of artemisinin-based drugs sold in Senegal, Madagascar, and Uganda failed quality testing, including having impurities or not containing enough active ingredient, the survey found.

Artemisinin-based drugs are the only affordable treatment for malaria left in the global medicine cabinet. All of the drugs tested from the public sector in Uganda, however, passed the quality tests. But 40 percent of the artemisinin-based drugs in Senegal failed. "There are countries where donated medicines are not subjected to quality controls, they're just accepted," said Lukulay. "There are countries in Africa where Chinese products have been donated and found to be unacceptable later in the public sector. Sulfadoxine-pyrimethamine is still used, mainly for preventative treatment for pregnant women. Nearly 200 samples then underwent full quality control testing in a US laboratory to examine the amount of active ingredient present and drug purity. For both drugs, 44 percent from Senegal failed the full quality testing, followed by 30 percent from Madagascar and 26 percent from Uganda. [Byline: Margie Mason]

[TMB: Even though the cost of some medicines in Ireland has fallen somewhat in the past weeks there are many who prefer to consider purchasing their medications overseas. In some regions of the world this is a particularly risky business as reports like the one above confirm that frequently the active ingredients are at times even less than those found in homeopathic medications. Trusting your life to these fake medications (even though the packaging may look highly professional) is something our travellers should be strongly warned against and it is important that, where at all possible, individuals purchase sufficient quantities of their medications to cover their needs before leaving home from trusted - though perhaps more expensive - sources.]

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CASE STUDIES

Risking Rabies?

In February 2009, two BTHA (and ISTM) members were asked to advise someone who had been bitten by a dog in Nicaragua. The victim had emailed saying that she had been bitten in two places on her leg. The bites were not deep but had drawn blood. The wounds were thoroughly cleaned by a chemist and two doctors. She had reported the incident (and dog) to the local Health Centre. She was told that the dog would be monitored and if any signs of rabies became apparent they would then treat her. There was some disagreement about which particular dog had done the biting.

Initially, the victim thought that there was no Rabies Immune Globulin (and possibly no vaccine either) in Nicaragua. Local advice was that vaccine might be ordered from Costa Rica but that "it would be safe to wait for 70 – 90 days without treatment". We thought that this advice was unsafe and encouraged the victim to arrange proper post exposure prophylaxis. The victim emailed back to assure us that she would take action – and even return to Britain - if there was any evidence of rabies in dogs in the area, or she developed any symptoms. She reported that some days after the bite, her wounds had healed and disappeared and she was symptom-free. She was reassured by this.

We emailed the victim encouraging her to get post-exposure prophylaxis (PEP) rabies injections as soon as possible, emphasising that once symptoms started then death was inevitable. She was advised that there was an ISTM registered travel clinic in Nicaragua. We reminded the victim to get notes from any doctors she saw to help with any insurance claim to recoup money lost because of the need to change her plans.

Emails continued and we discovered that the woman had decided against changing her travel plans. She went on to Cuba, where we discovered another clinic that we thought would be likely to be able to supply and administer rabies vaccine. It was suggested to FEDEX the vaccine to her as it was believed there were facilities to maintain the cold chain.

The person decided to continue with her trip and later explained that the reason that she had failed to arrange her PEP overseas was that she did not wish to forego trips she'd booked to Cuba, Peru and

Guatemala. She was offered the chance of starting the first injection in the course in Nicaragua before travelling. Then it was suggested that she could take a syringe and the remaining vaccine in a thermos flask to Peru to inject herself there or get someone to do it. She was unwilling to inject herself and also had reservations about travelling in South America, with syringes and needles in her luggage. She was also told by a rabies expert that she'd met who worked for WHO that the virus travels up from the place of the bite to your brain at an average of 1cm per day. This information led her to believe that it would be safe to delay PEP. Indeed she measured herself from bite to brain and figured she had 60-70 days at least before it reached her brain. On that basis she arranged to have the vaccine as soon as she returned to UK on day 43.

Analysis

There are several lessons for clinicians from this incident. Pre-trip pre-exposure prophylaxis would have prevented a lot of angst and logistic difficulty. It is unclear why this was not given before departing Britain. Professional advice needs to be accurate and consistent in order for patients to fully understand the risks. Even then it is easy for misunderstandings to occur.

The woman did not appreciate that the incubation interval is variable and unpredictable. Distance from the brain is only part of the picture. Bite severity and viral load is important and we understand that if virus is inoculated directly into a nerve then the incubation interval is shortened. Furthermore once the virus accesses the nerve then, it is effectively hidden from the immune system and the opportunity for PEP is lost.

In this case, although there was an opportunity for initiating PEP in Nicaragua so that at least some immunity could be developed, this was also declined by the person. Whatever the risks, some people will not alter travel itineraries. We are pleased to report, however, that this patient is alive and well. The odds were in her favour.

Jane Wilson-Howarth, The Travel Clinic, Cambridge.
Paul Richards, South Essex Travel Clinic, Wickford Essex.

Malaria prophylaxis – a side-effect

A female patient consulted me in surgery three weeks before travel. She was flying to Vietnam for a two week trip. She said that she was stressed and "needed a holiday".

She was a slender women, aged 26 years, weighing

53.5kg with a BMI just under 20.

We discussed her prophylactic options and she decided she would like to take mefloquine. She liked the lower cost and the fact that she needed to take it only weekly. There appeared to be no contraindica-

tions, nor any family history of fits.

I told her to start taking the drug 2-3 weeks before travel and return and report any side-effects in particular any mood changes or vivid dreams.

Only when she returned from holiday did she report side effects. A week after commencing mefloquine, she had experienced headaches 2 – 3 times a week especially on waking. Sometimes they were bad enough to make her take time off work. She put this down to stress and the need for a holiday.

While abroad she shared a room with another woman who was a nurse and who witnessed fits

after our patient had fallen asleep. There was no incontinence. These – and the thumping early morning headaches – ceased on stopping mefloquine. The patient was remarkably unconcerned by all this but I told her to avoid mefloquine in future.

I reported this as a Yellow card to the MHRA. In my own mind, early morning headaches did not point me towards a diagnosis of night epilepsy. I think it is worth specifically mentioning new headaches as a reason to stop taking mefloquine.

Jane Wilson-Howarth GP.

BOOK REVIEW

Clinical Hypnosis Textbook

Ursula James

2nd edition 2009 Radcliffe Pub. Abingdon. ISBN 9781846194207

Gp's and travel health professionals are often presented with a patient keen to travel but who cannot, because of a phobia to travel by air, sea, in a closed space or a tunnel. Sometimes the individual has booked the holiday or transportation, under pressure from spouse or family. Then as time for departure comes closer, the impelling force of the phobia convinces them that they cannot make the journey. They seek a medical note endorsing their inability to travel. Travel related phobias can be crippling and may even seriously interfere with the individual's ability to meet the demands of their job.

This type of phobia responds well to cognitive behaviour treatment and clinical hypnotherapy. Competence to treat for these specific types of phobia need not lie with a highly-trained professional. The appropriate skills can be acquired by an interested doctors and nurses through tutorial courses or by reading. This book is a practical guide for the novice, which can augment tuition, or be used as an introduction to the craft. It provides in-depth information on the practice of clinical hypnosis from trance induction and the structuring of treatment to the teaching of self hypnosis by the patient. It is well written in straight forward language and covers all the questions likely to be asked by patient and new practitioner. The extensive chapter on phobias provides all the material necessary to proceed to a successful hypnotherapeutic intervention to ensure the potential traveller can make a successful journey free from crippling anxiety.

This is a useful well referenced book of value to the learner or to those intent on widening their knowledge of this form of treatment and making it available to their patients.

IBM

CASE HISTORY

A typical presentation of *Plasmodium ovale* malaria with severe hepatic and renal damage

C. Montaldo, F. Toscanini, M. Anselmo

Introduction

Non-falciparum malaria refers to malaria infection due to *Plasmodium* species other than *P. falciparum*: *P. vivax*, *P. ovale*, *P. malariae*, and *P. knowlesi*.^{1,2}

The non-falciparum species usually cause febrile illness but are rarely fatal, although deaths and severe presentations have been reported in the setting of *P. vivax* and *P. knowlesi* infections.^{2,3,4}

We report a case of atypical *Plasmodium ovale* malaria with severe hepatic and renal damage and with successful outcome.

Case presentation

A 60 year old Italian female presented high fever (T 39.6°C), shivering and severe renal colic pain in February 2008.

She was on levothyroxine substitutive therapy for a previous thyroidectomy and she had a previous admission for renal colic pain. Her medical history contained nothing else of note.

She had travelled in West Africa (Togo) in August 2007 for one month as a volunteer in a humanitarian mission 2007. Before travel she had been regularly vaccinated for yellow fever, meningococcal infection, typhoid fever, hepatitis A and B (boosted in January 2008). She had taken prophylaxis for malaria with mefloquine (250mg/week starting one week before reaching the endemic area and for 4 weeks after returning)⁵ without any side effect.

She was treated as an outpatient with amoxicilline-clavulanate for 4 days followed by a 4 days course of fluoroquinolone without any improvement. Urine culture was positive for multi-resistant *E. coli* and consequently she commenced treatment with ceftriaxone 1gr i.m. 3/day. Temperature normalised but it rose again after 24 hours.

The patient was then admitted to the nephrology department. Blood examination showed severe hepatic and renal damage (Hb 10.2 gr/dl, Plt 75.000 mg/dl, PT 57%, BUN 178 mg/dl, creatinine 6.85 mg/dl, ALT 50 U/l, AST 38 U/l).

A blood smear was sent to ISS (Istituto Superiore di Sanità) the leading technical and scientific public body of the Italian Health Service and it resulted negative for plasmodia. Antigenemia for malaria was tested by Bimax Now (FDA approved) with a sensitivity of 89% and a specificity of 100%⁶ and was also negative. PCR was not available in our setting. After three days the patient was transferred to the Infectious Diseases department suspecting a sepsis originating in the urinary tract. She was in poor general condition and dehydrated (BP 95/60, CF 96/m). Her temperature

reached 40°C in evening. Examination was otherwise unremarkable.

Echocardiography showed a pericardial effusion (2mm). Abdominal ultrasound showed a mild enlargement of the spleen, a picture of interstitial nephropathy, and a peritoneal sub hepatic effusion. Chest X-Ray was normal and all blood cultures were negative.

Treatment was started with Imipenem, hydration with 0.9% NaCl and 5% dextrose infusion, and support therapy with KCl, Calcium and Vitamin K1. Serial Blood test performed during the admission in infectious diseases are summarized in table 1.

In the following days the fever persisted (T max 40°C), with shivering and deterioration of the general condition. Renal and hepatic function were progressively worsening (table 1). Blood smear and antigenemia for malaria were repeated on day 4 and both were negative. On day 5 a blood smear revealed a schizont and a trophozoite, but initially the species was not identified.

Antimalarial treatment was started with oral quinine (8 mg base/kg three times/day) and doxycycline (100 mg twice/day) for 5 days⁵. Intravenous treatment was not started since there wasn't any cerebral involvement, the patient was able to swallow and there wasn't conclusive evidence of *plasmodium falciparum* infection. One day later, plasmodium was identified as *ovale* spp and the same therapy was continued.

Her clinical condition improved, the fever disappeared and the alterations of hepatic and renal function progressively improved without dialysis. The severe anaemia required transfusion of 2 blood units. After 6 days of treatment the patient clinically recovered and the laboratory parameters were almost normal (WBC 5.040, Hb 1,2, Plt 253.000, PT 85 %, BUN 52, creat 1,13).

Treatment with Primaquine (15 mg/day for 14 day) was given to eradicate the intra-hepatic forms after G6PD testing.⁵

Conclusion

P. ovale usually causes mild illness characterized by erratic or continuous fever without organ involvement. Physical findings usually include enlarged spleen by the second week of infection and a palpable liver. Fatalities are rare but deaths have been reported occasionally following splenic rupture.⁷

Cases of atypical severe forms with organ involvement have never been reported in immuno-competent people. In our case the only data suggesting a possible

A typical presentation of *Plasmodium ovale*... *continued*

Tab 1. Serial blood test during the admission

	Range	Day 1	Day 2	Day 4	Day 6	Day 7	Day 9	Day 11	Day 14	Day 15
	400-		4330	3780	2940	2170	2380	4270	7110	5040
WBC	10000/ μ l									
Hb	12-16 gr/dl	10,2	9,7	10,2	8,9	8,5	7,6	11,4	12,5	11,2
PLT	140-440/ μ l	75000	88000	146000	109000	88000	97000	122000	191000	253000
T Quick	78-120%	57	65	66		69			69	
N	10-50 mg/dl	178	158	158	110	98	49	45	36	52
Creatinine	0.5-1.1mg/dl	6,85	6,72	6,5	4,49	3,66	1,98	1,76	1,47	1,13
AST/ALT	1-31 U/l	34/32	24/37							27/23
LDH	220-450 U/l	909								
Bilirubine (tot/dir)	0.1-1/0.01-0.3 mg/dl	0,5/0,1								
RCP	0.0-0.5mg/dl			9,69			4,35	2,42		
Total protein/ Albumine	6.5-8.5 gr/dl 3.5-5.5 gr/dl	5,0/ 2,6								
Fe	49-150 μ g/dl			15						81
Ferritin	12-160ng/mL			1109						
Aptoglobine	0.3-2 gr/l						<5			
Ca	8.8-10-6 mg/dl						6,5			9,48

infection by *P. ovale* was the epidemiologic one of a travel in West Africa but the clinical presentation was extremely uncommon for this infection. In fact, in our report *P. ovale* has been responsible of a very severe presentation with multi-organ damage, even with a very low schizont parasitaemia. The initial negativity of blood smear and malaria antigenaemia and the severe involvement of liver and kidney has been cause of delay in diagnosis, suggesting other diagnoses such as sepsis or pyelonephritis.

Another possible confounding factor could have been the correct use of prophylaxis with mefloquine, which is active against the haematic schizonts and can make the initial crisis milder, although mefloquine cannot block the cycle eso-erythrocytic and the relapses due to the hypnozoites.

This case is a reminder to never exclude the possibility of malaria in a patient with a risk factor. It is also a reminder to never exclude possibility of severe illness even in infections from non-falciparum plasmodia, even with low parasitaemia, taking in account that the sensitivity of antigenic tests is not always high (89% for the test used in our case) and the negativity is not sufficient to exclude the infection. A useful

tool to accelerate the diagnosis could have been PCR which was unfortunately unavailable in our centre.

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STUDENT PROJECTS FROM THE GLASGOW DIPLOMA OF TRAVEL MEDICINE

Attitudes to travel health amongst participants in 'high risk' outdoor sports while abroad

M M Cullen

Abstract

Introduction: The number of people travelling from the UK for leisure purposes has risen dramatically over recent years. Some travellers participate in what is considered 'high-risk' sporting activities while abroad. Such people may be described as 'sensation-seekers' and their attitudes to safety can be thought to be reckless. This study aimed to determine the attitudes to travel health of those who participate in such activities abroad.

Methods & Results: Seventy-six people responded to a survey of travellers who had undertaken outdoor sports or adventure activities abroad in the previous two years. 42% of respondents had travelled outside Europe and North America. The most popular activities were hill-walking, mountaineering, rock climbing, skiing and scuba-diving. Most undertook their activity on a regular basis prior to travel, organised the activity independently while abroad and spent more than three days participating in it while there. Overall 36% sought pre-travel health advice, although 72% of those who travelled outside Europe and North America did so. Most sought advice from their medical practice or from sources such as books and websites. Compliance with advice appeared to be good overall, with the exception of anti-malarial chemoprophylaxis, insect-bite avoidance and altitude sickness prevention. 22% of respondents reported having health problems while abroad, the most common being gastro-intestinal illness and accidents or injuries. 79% of travellers carried a first aid kit and 43% of those reported that they used it, painkillers and sticking plasters most frequently.

Conclusions: Overall, it did not appear that participants in high risk sporting activities were any more likely to take risks with travel health than most travellers. Information about travel health risks and precautions should be available through guide books and websites frequently referred to by participants in their specific sports.

Introduction

The number of people travelling from the UK for leisure purposes has risen dramatically over the past 20 years. Amongst this group of travellers are those who travel to participate in risk activities such as rock climbing, mountaineering and scuba diving. General travel health principles apply to them in the same way as any other traveller, while sport-specific health advice may also be appropriate.

Many reports since the 1960s have associated participants in such sports with high risk-taking or 'sensation-seeking' personality types. This trait was defined by Zuckerman in 1979 as "the need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experiences". A relationship between score on Zuckerman's Sensation-Seeking Scale (1983) and participation in a 'high risk' activity has been demonstrated. However, certain positive personality characteristics, such as conscientiousness and emotional stability, have also been linked with high-risk sports participants (Kajtna, 2004).

This study aimed to determine whether the attitudes to travel health of travellers who participated in high-risk outdoor activities while abroad were significantly different from the average traveller with respect to pre-travel health advice, first aid kit use and health problems encountered.

Method

A questionnaire was distributed to travellers who had participated in an outdoor sports activity while abroad during the previous two years. Rock-climbers and scuba-divers were targeted specifically. The questionnaire aimed to determine the respondents' level of experience and confidence at their activity, whether they organised the activity independently while abroad, their accessing of pre-travel health advice, health problems encountered while abroad and use of a first aid kit. A general question about car seatbelt use aimed to identify general attitude to risk-taking. An incentive to encourage entry to the study was a prize draw for an outdoor shop gift voucher was used.

Results

Seventy-six completed questionnaires were returned. Most respondents (71; 93%) were UK residents with the remainder living in Europe or North America. Thirty-two (42%) had travelled outside Europe and North America to participate in their activity (Table 1). The majority had undertaken their activity(ies) on a regular basis prior to travel and had organised them independently with or without the help of a local guide or advisor (Table 2). Fifty-four respondents (71%) spent more than five days doing the activity, seventeen (22%) spent 3-5 days and five (7%) 1-2 days.

Twenty-seven respondents (36%) sought travel health advice prior to their trip (Table 2). Of those,

Attitudes to travel health amongst participants... *continued*

seventeen (63%) sought advice from their general practice, fifteen (20%) from sources such as the internet or travel books, five (7%) from a travel clinic and three (4%) from a tour company. All who responded to the question indicated that the advice received was useful (26). A significantly higher proportion of those travelling outside Europe and North America sought advice compared to those travelling within these continents [23/32 (72%) v. 4/40 (36%); $P < 0.0001$]. The types of health advice received and compliance rates are given in Table 3.

Of the 27 who sought pre-travel advice, the majority (23; 85%) undertook their activity outside Europe and North America. Of those who did not seek pre-travel health advice (48; 63%), the most common reason quoted was that they did not think it was necessary for this trip (67%) or they knew what would be advised from previous trips (25%). Of the nine out of 32 (28%) who had travelled outside Europe and North America and did not seek pre-travel advice, eight stated that they knew what would be advised from previous trips and one that it was not necessary.

Seventeen out of 76 travellers (22%) reported having health problems during their trip (Figure 1), 15 commenting that the problem was not preventable in their opinion. Four people required medical assistance while abroad and one on return home. Of those who organised their activity independently, 18% (10/55) reported experiencing health problems while 33% (7/21) of those who used a commercial company reported health problems ($P = 0.16$).

Sixty respondents (79%) travelled with a first aid kit (Table 2). Of these, 15 (25%) experienced a health problem although 26 (43%) reported using their first aid kit. Of those without a first aid kit, only two out of 16 (13%) reported a health problem. The most frequently used items from the first aid kit were painkillers (14), sticking plasters (12), medications for diarrhoea or other gastro-intestinal upset (6) and anti-septic creams, wipes and fluids (4). The majority (56/57; 98%) would not change the contents of their kit based on their recent experience.

Almost all respondents (73/76; 96%) said they would wear a seatbelt in the car even if it wasn't a legal requirement. All who said they might not were rock climbers (3).

Discussion

Kajtna et al (2004) define high-risk sports as "any sport where one has to accept a possibility of severe injury or death as an inherent part of the activity", commenting that high-risk sports athletes were more conscientious, with higher energy and emotional stability. Although those involved in high-risk sports may be associated with 'sensation-seeking' personality types, these positive traits may suggest that the enjoyment resulting from controlling the risk effec-

tively is coupled with appropriate and adequate preparation and safety awareness as well as an ability to cope well when things go wrong. Although the type of activities and degree of risk varied amongst respondents to this survey, most (78%) were regular participants in their activity and spent more than three days of their trip doing their sport (92%), suggesting a high level of commitment and fairly intense involvement.

The proportion of travellers to non-temperate countries in this study who sought travel health advice (72%) compares favourably with the survey by Van Herck et al (2004) of tourists from Europe to developing countries where 60.9% sought health advice ($n = 5,465$). Of those who did not seek pre-travel advice, a higher proportion in the present study (89% compared with 40.9% in Van Herck's study) stated that they already knew what would be advised. It may be true of high-risk sports participants that they often already having the required knowledge if their level of 'conscientiousness' is high. However, the complex nature of travel health risk assessment may mean that some risks are not appropriately assessed by the traveller him/herself.

Compliance with the advice appeared to be comparable with published reports. Sixty-five percent reported always following malaria advice and 67% followed advice regarding insect bite avoidance. Piyaphanee et al (2009) reported 57.6% of international backpackers in malarial areas of Thailand taking malaria chemoprophylaxis and 53.9% using insect repellent most of the time.

Only two of seven people who received altitude advice said they routinely followed the advice. Merritt et al (2007) reported that travellers to high altitude in Peru demonstrated a lack of knowledge about acute mountain sickness. They suggested dispersing information about altitude through guide books and websites. Given the frequency of referral to alternative sources of travel information amongst the population surveyed, this study would concur with their recommendations.

Reporting of health problems by individuals may vary considerably, with the degree of severity being interpreted differently by different people. Puretz (1992) describes the type of 'macho' behaviour used by backpackers to overcome problems and crises for which they are unprepared and that this type of coping mechanism was understandable to allow them to get to a place where help could be obtained. Of the majority of travellers who took a first aid kit with them in this study, 27% reported experiencing a health problem but 43% reported that they used their first aid kit. Clearly some people considered minor ailments as 'health problems' while others treated the problem but did not report it as such. Interestingly, of those who did not take a first aid kit, a lower proportion (13%) reported a health problem. This may represent a difference in interpretation of the term.

It does not appear, from this study, that those who organised their activity independently were any more likely to suffer health problems while abroad. This may be due to an appropriate assessment of risk by those who were more experienced at managing risk through their sport.

The review by Cossar et al (1990) of illness experienced by travellers returning to Scotland reported that the overall attack rate was 36% ($n = 13,816$), with gastro-intestinal complaints predominating. This is significantly higher than the overall attack rate of 22% in the present study ($P = 0.013$), although diarrhoea or other gastro-intestinal upset also predominated, being jointly the most common health problem reported together with accidents and injuries (both 37%). Although the difference in attack rate may be explained by differences in study population and also recall bias, the data derives from different time periods, with Cossar's population dating back to 1977. Awareness of travel health issues is likely to have increased amongst all travellers since that time.

Of the eleven individuals who received pre-travel advice about diarrhoea prevention, 36% reported having diarrhoea while abroad. In contrast, of the remaining 65 travellers who either did not seek health advice or their advice did not include diarrhoea prevention, 6% reported diarrhoea symptoms. Swaminathan et al (2009) reported that infectious gastrointestinal disease was significantly associated with younger ages and tourist travel ($n = 25,867$). Females and those who attended a pre-travel medical appointment were also more likely to present with such symptoms. Their results correlate with the results of this study, suggesting that those who seek the pre-travel health advice are less successful at avoiding this risk while abroad. This may be because the travellers who seek advice are less experienced in travel.

In this study, accidents and injuries together were one of the most common health problems encountered (37%). Most respondents stated that the injuries were not preventable, while two commented that improvements in equipment use may have prevented injuries (diving shoes and ice-climbing equipment). The appropriate use of technical equipment in many high-risk sports is an essential component of its safety. This area of travel health advice would normally be outwith the expertise of most travel medicine practitioners. The onus would necessarily be on the traveller him/herself to ensure they had the appropriate level of knowledge and training for the proposed activity.

In this study, seven respondents reported receiving pre-travel health advice on high-altitude illness, while 19 stated that they had participated in mountaineering above 2500 metres. Of those who did not seek pre-travel health advice, more than two-thirds stated that it was not necessary. This may suggest a number of explanations: i) that there is a lack of awareness of the risks of high altitude ii) that the respondents were

already knowledgeable about the potential hazards or iii) the respondents did not consider themselves to be at risk. Despite none of the respondents reporting health problems due to altitude, it is important that potential travellers to high altitude are aware of their role in recognising, treating and preventing high altitude illness.

Only about half of those travelling outside Europe and North America to go scuba-diving sought pre-travel health advice, although a greater majority (86%) travelled with a first aid kit. The proportion of divers experiencing health problems was no different from the rest of the study population, with only one traveller reporting a health problem specifically related to diving (foot injury).

Overall, more than three-quarters of the study group travelled with a first aid kit, with little difference between subgroups. Goodyer et al reported in 2004 that there was little published research on the use of medicines and first aid supplies amongst travellers. They reported that of a cohort of 127 travellers from the UK to South America, Asia, Africa or the Middle East for two weeks or less, the most frequently used items from the first aid kit were analgesics, medications for the treatment of diarrhoea, antiseptics and sticking plasters. The results of the present study correlate closely with their findings. It is suggested that the types of additional dressings carried should depend on the type of activity being undertaken (Goodyer, 2004).

A crude measure of the risk-taking behaviour of the study group was taken by asking whether the traveller would wear a seatbelt in the car if it was not required by law. A clear majority (96%) responded that they would, while of those who would not, rock climbing was the common sport. Although the survey did not examine the reason for this response, explanations could include the possibility that some respondents prefer to manage risk in their own way rather than following general rules or alternatively that some 'sensation seeking' personalities are attracted to risk per se.

This study has the limitation of relying on travellers' remembering their travel preparations, health and response to health problems while on holiday up to two years previously. The answers to some questions may be better recalled than others e.g. minor health problems and specifics of first aid kit use. Statistical analysis is limited by the number in the study population.

Conclusions

The results of this study suggest that travellers who participate in high-risk outdoor activities while abroad cannot be considered 'reckless' with regard to travel health risks. They are no less likely to seek pre-travel health advice than other travellers to non-tem-

Attitudes to travel health amongst participants... continued

perate countries. The source of health advice received is arguably of a higher quality than some other travellers as it is more commonly from a medical practice rather than a tour company. The high level of awareness of risk associated with their sport may make them more perceptive of personal risks in general. However, assessment of travel health risks can be complex and should ideally be made with reference to good quality and up-to-date information. For those who do not seek pre-travel health advice from a recognised healthcare provider, information including sport-specific recommendations should be available through high quality and readily accessible resources.

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Table 1
Distribution of travel destinations

Continent	Number of responses
Europe	54
Asia	15
North America	13
Africa	11
South America	6
Australasia	5
Antarctica	0
Total	103

Figure 1

Distribution of health problems encountered

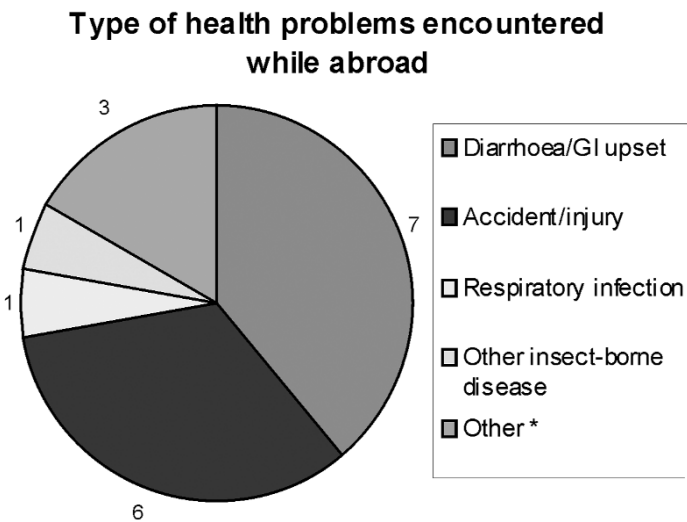


Table 2

Summary of results

<i>Activity undertaken abroad</i>	<i>No. of respondents</i>	<i>No. seeking travel advice (%)</i>	<i>No. taking first aid kit (%)</i>	<i>Travel outside Europe and North America</i>		
				<i>No. of respondents</i>	<i>No. seeking travel advice (%)</i>	<i>No. taking first aid kit (%)</i>
Walking /Hill-walking (below 2500m)	32	15 (47%)	27 (84%)	18	15 (83%)	15 (83%)
Rock climbing	25	6 (24%)	20 (80%)	9	6 (67%)	6 (67%)
Skiing /snowboarding	20	4 (20%)	15 (75%)	2	1 (50%)	2 (100%)
Hill-walking / mountaineering (above 2500m)	19	9 (47%)	17 (89%)	11	9 (82%)	10 (83%)
Scuba-diving	19	9 (47%)	16 (84%)	15	8 (53%)	12 (86%)
Mountaineering involving snow & ice	11	1 (9%)	8 (73%)	2	1 (50%)	1 (50%)
Mountain biking (grade 2 or above)	7	1 (14%)	6 (86%)	2	1 (50%)	2 (100%)
Canoeing /kayaking	4	2 (50%)	4 (100%)	1	1 (100%)	1 (100%)
Road cycling (greater than 100 miles total)	4	2 (50%)	4 (100%)	2	2 (100%)	2 (100%)
Jungle treks	2	2 (100%)	2 (100%)	2	2 (100%)	1 (100%)
By level of experience						
Any activity, regularly prior to travel	60	16 (27%)	47 (78%)	21	14 (67%)	16 (76%)
Any activity, had tried before	12	8 (67%)	10 (83%)	8	6 (75%)	8 (100%)
Any activity, never tried before	5	4 (80%)	4 (80%)	4	4 (100%)	3 (75%)
By means of organising activity						
Any activity, organised independently, with/ without local guide/advisor	55	15 (27%)	43 (78%)	21	14 (67%)	18 (78%)
Any activity, organised through commercial company	21	12 (57%)	17 (81%)	11	9 (82%)	9 (82%)

Attitudes to travel health amongst participants... *continued*

Table 3

Type of pre-travel health advice received

<i>Type of advice</i>	<i>No. of respondents</i>	<i>Followed the advice?</i>				
		<i>Yes (%)</i>	<i>Mostly (%)</i>	<i>Some (%)</i>	<i>No (%)</i>	<i>No response</i>
Vaccinations	24	20 (83%)	1 (4%)	-	1 (4%)	2 (8%)
Anti-malarials	17	11 (65%)	2 (12%)	2 (12%)	1 (6%)	1 (6%)
Water purification	3	2 (67%)	-	-	1 (33%)	-
Prevention of diarrhoea, other infections	11	9 (82%)	2 (18%)	-	-	-
Insect bite avoidance	12	8 (67%)	2 (17%)	1 (8%)	-	1 (8%)
Animal bite advice	5	-	-	-	-	4
Altitude sickness	7	2 (26%)	3 (43%)	-	-	2 (29%)
Access to medical services abroad	4	-	1	-	-	-
Travel insurance	9	6 (67%)	-	-	-	3 (33%)
Specific personal health concerns	2	2 (100%)	-	-	-	-

Travel related health risks as perceived by travellers visiting Friends and Relatives in Brazil

C Donnelly

There is evidence that those who travel to visit friends and relatives are less likely to avail of pre travel health care (VFR) and are more likely to encounter travel related health problems.

Aim: The aim of this study was to gain an understanding on how one specific group of potential VFR travellers view health risks for them and their children when travelling to Brazil to visit friends and relatives.

Setting: GP surgeries in two towns in the west of Ireland.

Study design: Questionnaires distributed to consecutive patients from Brazil attending their GP surgery. Demographic information was collected and the respondents were asked to indicate their level of agreement to nine attitudinal statements.

Results: 42 valid responses were collected. The study population were predominantly young (mean age 28), female (76%), parents (76%) from the Brazilian state of Goias (76%). Many felt that there were no

health risks for them (38%), or their children (56%) when travelling to Brazil. There were positive attitudes towards vaccinations with agreement in the importance of primary immunisations (86%), yellow fever (91%) and hepatitis A and B (55%) vaccinations prior to travel to Brazil. 52% disagreed with the statement that bite avoidance measures were not important. 76% disagreed that food and water in Brazil may present health risks. 39% agreed that cost may be a barrier to pre travel health advice whilst 33% disagreed.

Conclusion: Lack of appreciation of risk and cost may be barriers to travel health care for this study group. Nonetheless they expressed positive attitudes towards engaging in health care and vaccinations. Travel health care providers need to be pro-active in adapting to and providing for the individual needs of VFR travellers. Further research is needed to identify barriers to travel health care for VFR travellers.

Schistosomiasis knowledge in short and long-term travellers to Uganda

C Rugsten

Background: Schistosomiasis is highly prevalent in Uganda. All natural fresh water should be considered infected. *Schistosoma cercariae* penetrate through intact skin when humans enter infected water causing disease that ranges from asymptomatic to serious. Travellers to Uganda participate in water activities that put them at risk, but it is not known how often they do this, or how much they know about the disease. Avoiding infected water is the only prevention.

Objective: To determine how the level of knowledge about schistosomiasis in travellers and long-term expatriates in Uganda is related to behaviour in regards to fresh water contact.

Study design: A non-experimental descriptive survey.

Subjects and Method: All non-Ugandan, non-urgent patients, with adequate English were asked to complete an anonymous survey while they waited in the reception of a private clinic in Kampala over a 14 day period in November 2009.

Results: Based on 207 completed questionnaires; 58% (121/207) labelled themselves expatriates and 42% (86/207) travellers; 56% were female; 37 nationalities were represented, the top 3 being the UK (19%), the US (15%), and Germany (10%); 57% of respondents were less than 40 years of age; most expatriates

were in Uganda for business (28%) and most travellers worked in Non Government Organisations (NGO) (27%), tourism came second after NGOs in the traveller group. Seventy-one percent of expatriates and 57% of travellers knew schistosomiasis was prevalent in Uganda; 90% of expatriates and 74% of travellers knew it was transmitted by skin exposure to infected water; 79% of expatriates and 56% of travellers knew that to prevent schistosomiasis one had to avoid infected water; 55% of expatriates and 30% of travellers knew that the disease can be asymptomatic; and 72% of expatriates and 48% of travellers knew that treatment required medication. The difference in knowledge between expatriates and travellers was significant. More expatriates participated in water activities, and did so more frequently, than travellers.

Conclusions: Expatriates had significantly more knowledge about schistosomiasis than travellers, and they had somewhat significantly more frequency of fresh water exposure. There are notable gaps in traveller knowledge about schistosomiasis, but more data is needed. Travel health practitioners need to fully educate their travellers to the considerable risk of schistosomiasis in Uganda.

Cindy Rugsten RN, BN.

BOOK REVIEW

Inflammatory Bowel Disease

Ed Targan, S Shanahan, F Kamp, L Wiley Blackwell

Chichester Sussex. 2010. ISBN 9781405169097

This book is written by experts in gastroenterology to provide a complete review of the basic science involved in the field of inflammatory bowel disease, including the evidence base for diagnosis, treatment and management of often chronic conditions. The chapter by Professor Michael Farthing on conditions of infectious origin will be of particular interest to professionals working in the travel health field. Estimates suggest that up to 15% of travellers returning from abroad with diarrhoea have more chronic inflammatory bowel disease.

In 50 chapters authors cover the most up to date treatments for many conditions with specific attention to advances in medical and surgical treatment, to provide a comprehensive information source. Chapters also cover nutrition, imaging and complementary medicine with the latter revealing the rather thin evidence base for its practice, although patients give weight to this mode of management.

As in any multi authored tome the plethora of authors ensures a measure of repetition and the progression of chapters is far from logical with therapy often far divorced by many pages from clinical management and manifestations. With Crohn's Disease for instance. Treatment is considered in chapter 31 and 32 and differential diagnosis in 21. This does not make for ease of information access for the time pressured doctor seeking quick enlightenment. The 730 pages may also be easily damaged and are not of the quality one might expect from an expensive manual.

However this is a comprehensive text book with up to date data and information embracing the gamut of inflammatory bowel disease, with much of interest for the family practitioner and specialist dealing daily with this wide spectrum of disease. The infectious origin chapter gives extensive cover to the cause, diagnosis and management of diarrhoea which can plague returning world travellers and be a difficult diagnostic problem for Gp's. and those working in the travel health field. It will prove a useful library resource for professionals looking for state of the art advice on diagnosis and management relating to these conditions.

RESEARCH

Katayama syndrome : A group fever

S Hélios*, R Andry**, T Harimanana*, F Lucia**, M Jean de Dieu**, R Manitrana*, H Régis* and R Fahafahantsoa**

Abstract

We report on Katayama syndrome, also known as Safari fever or Acute Schistosomiasis, in five Turkish expatriates living in Madagascar. Katayama syndrome should be considered and empirically treated, in cases of group fever following exposure to untreated water by expatriates living in Schistosomiasis endemic areas.

Introduction

Katayama syndrome, also known as Safari Fever or Acute Schistosomiasis, is an early manifestation of infection with *Schistosoma* species in non-immune individuals exposed to cercariae infested water in endemic regions.^{1,2} Although schistosomiasis is prevalent in Madagascar, no case of Katayama Syndrome has previously been reported. We report on Katayama Syndrome in Madagascar for the first time.

Case report

A 30 year old Turkish male who had resided in Madagascar for approximately one year, presented with fever ranging from 39 to 40° C for the preceding two weeks. History revealed the patient resided in Ampefy, in the central west region of Madagascar, a Schistosomiasis endemic area.^{3,4} He also reported bathing in untreated water approximately two to three weeks prior to the onset of his symptoms. He denied pruritus, but reported asthenia, diarrhoea, dyspnoea, dry cough, headache, and pleuritic chest pain. Physical examination was normal. Laboratory investigations revealed: normal serum transaminase; normal blood and stool cultures; and negative malaria testing. However, Erythrocyte Sedimentation Rate (ESR) and C-reactive protein values were elevated (60 mm, and 80 mg/L, respectively). Additionally, hyper-eosinophilia was present at $1,300 \times 10^6/L$ as well as *Schistosoma mansoni* eggs, which were detected upon stool microscopy. Katayama syndrome was diagnosed, and the patient was treated with a single dose of Praziquantel at 40 mg/kg. The patient's symptoms resolved. Following successful diagnosis and treatment, two of the patient's associates came forward and reported similar symptoms with history of bathing in the same untreated water. Two more associates reported bathing in the untreated water but were without symptoms. Anti-schistosomal antibodies were discovered in all four individuals. They all received Praziquantel at the same 40 mg/kg dose with favourable outcomes.

Discussion

We believe this to be the first case of Katayama Syndrome reported in Madagascar, the syndrome being rare in chronically exposed populations.² Our patients are Turkish expatriates who resided in a Schistosomiasis endemic area within Madagascar. The index patient presented with fever, which is present in up to 71 % of Acute Schistosomiasis cases^{1,6} and occurs approximately 14 to 70 days after exposure to contaminated water. In our patient fever appeared 34 days after exposure. The second most common parasitic disease after malaria is Schistosomiasis⁵ and we were able to rule out malaria because of negative malaria testing. In addition to fever, the patient also reported asthenia, abdominal pain and dyspnoea which are typical for the "invasive" phase of Schistosomiasis.^{1,2} Our patient also reported diarrhoea, so *Shigella*, *Entamoeba histolytica*, *Salmonella typhi* and *paratyphi* were ruled out by stool microscopy. The strongest information provided in the patient's history however, was exposure to untreated water in a Schistosomiasis endemic area and the presence of similar symptoms in associates, which defined *Group fever*.⁷ Even though everyone in the group was not symptomatic, all received serologic investigation and were found to have anti-schistosomal antibodies. Up to 42.5% of Katayama Syndrome patients can be asymptomatic and 87.6 % of infected patients display anti-schistosomal antibodies.⁶ Praziquantel is the standard treatment for Katayama Syndrome¹ and a single dose was sufficient to resolve all symptoms in our patient. Treatment prevents Chronic Schistosomiasis and its possible sequelae: tumours of the bladder, tumours of the colon, central nervous system impairment and liver cirrhosis.^{2,6}

In cases involving expatriates residing in schistosomal endemic areas, who present with fever after bathing in plain water, Katayama Syndrome should be considered and empirically treated.

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Face dimension and passports requirements

H A M Daanen^{1,2}, A J Krul¹, R Ball³

ABSTRACT

In China, The Netherlands and Greece the requirements for a photo in travel documents include a ratio between head height and face width. 2.7 to 4.7% of the population falls outside the ratio limits. Therefore, millions of travelers do not meet the criteria. In practice, they generally do receive a passport but sometimes after elaborate discussion and procedures. We recommend abolishing face width as a criterion to bring rules and common practice more in line.

INTRODUCTION

Face recognition is important for border control. The photo in the passport therefore has to meet a large list of criteria in each country where the passport is issued. ISO/IEC 19794 part 5 specifies the biometric data interchange formats of the face. EU directive C92006_2909 of June 28th 2006 further specifies the criteria. A corrigendum of ISO/IEC 19794, published July 1st 2008, presents results of a study in which 7200 digital passport images of various countries were processed. About 6% of the images did not meet the ISO 19794 criterion that the center of the face should be in the upper half of the image.

In order to prevent drop outs during passport control, criteria are enforced during submission of a photo when applying for a passport.

The criteria generally include clearness of the picture, resolution of the picture, facial expression, positional orientation towards the camera, type of glasses and reflection in glasses, opening of the eye and mouth.

Another requirement is that a considerable part of the photo is covered by the face, since this contains most information. For citizens of Australia, for instance, the length of the photo has to be from 45-50 mm and the distance from the chin to the top of the head (head height) has to be 32 to 36 mm (<https://www.passports.gov.au/Web/requirements/Photos.aspx>). This means that the percentage of length that is covered ranges from 64 to 80%.

In the US the required percentage of the photo covered by the face is less (http://travel.state.gov/passport/guide/composition/composition_874.html)

but the photo has a larger size. The facial length is allowed to range from 28 to 35 mm on a picture of 51 mm length. This means a covered range from 55 to 69 %.

Table 1 shows an overview of photo requirements for selected countries, including the ten most populated countries in the world.

Three countries have requirements regarding head height and face width: The Netherlands, China and Greece.

The Dutch requirements

(www.paspoortinformatie.nl/nederlands/Reisdocumenten/Pasfoto) require the head height to be from 26 to 30 mm (58 to 86% of photo height) and the face width has to be between 16 and 20 mm (46 to 57% of photo width). The consequence is that the ratio of head height and face width has to fall between 1.3 (equals 26/20) and 1.875 (equals 30/16). For China, the ratio has to be from 1.17 to 1.57. Face width for the Chinese passport is defined as the maximal width including the ears (and even the hair when it is wider than the ears). For the Netherlands passport, the face width excludes the ears. The Greek limits in head height / face width ratio are 1.24 and 1.75.

The risk of the approach to use head height/face width ratios may be that some citizens may have head dimensions that are outside of this ratio. In that case, the civil servant can apply a rule that the citizen is considered as an exception and still supply a passport, but this takes extra time and is often unpleasant for the citizen. The purpose of this study was to investigate how many citizens from The Netherlands, Greece and China would be excluded from a passport for this reason.

METHODS

The database from the Civilian American and European Anthropometry Resource (CAESAR) anthropometric survey was used for the calculations regarding The Netherlands (Blackwell et al., 2002). This survey included manual measures and 3D whole body scans from the US, Italian and Dutch population. In The Netherlands 1247 subjects representative for

Face dimension and passports requirements *continued*

Table 1
Overview of photo requirements for selected countries

country	photo		head height		face width		vertical range		length/width ratio	Remark
	length mm	width mm	min mm	max mm	Min mm	max mm	min %	max %		
Australia	45	35	32	36			71.1	80.0		Photo length up to 50 mm is accepted no specific requirements
Bangladesh	50	40								
Brasil	45	35	31	36			68.9	80.0		
Canada	45	35	31	36			68.9	80.0		
China	48	33	28	33	21	24	58.3	68.8	1.17 - 1.57	
Finland	47	36	32	36			68.1	76.6		
France	45	35	30	30			66.7	66.7		head height should be about 3 cm
Germany	45	35	32	36			71.1	80.0		
Greece	60	40	31	35	20	25	51.7	58.3	1.24 - 1.75	
India										specifications change from state to state
Indonesia	50	50	25	35			50.0	70.0		
Italy	40	30								no specifications
Japan	45	35	33	35			73.3	77.8		
Netherlands	45	35	26	30	16	20	57.8	66.7	1.3 - 1.875	
Nigeria	45	35								head should cover 70-80% of photo
Pakistan	51	51	25	35			49.0	68.6		
Russia	45	35								head should cover 70-80% of photo
UK	45	35	29	34			64.4	75.6		
USA	51	51	25	35			49.0	68.6		

the Dutch population were measured. The measurements were performed in 1999-2000 and included ages 18-65 years.

The face width was determined using calipers. The head height was calculated indirectly as the sum of the menton-sellion length for the lower part of the face and the difference between sitting height and eye-height sitting for the upper part of the face. It is previously shown that the eye height is lower than the height of the sellion: for males 9 mm has to be added and for females 22 mm (Open Ergonomics Ltd, 1998). Therefore, this correction was applied to the Dutch data.

For China, the measurements were taken from Size China (www.sizechina.com). This 3D-anthropometric survey of Chinese head shapes included 783 males and 780 females, measured in six locations (Beijing, Chongqing, Guangzhou, Hangzhou, Lanzhou and Shenyang). A random sample of 70 males and 70 females was used for this study. All subjects were 18 years or older. Head length and face width were calculated from frontal views of the 3D scans.

For Greece, the data of the NATO survey of 1071 Greek military was used. The ratio between head length and bizygomatic breadth (distance between most protruding parts of the cheek bones) was used as the dependent variable. Unfortunately, only relatively old anthropometric data was available for Greece (Hertzberg et al., 1963).

The statistical processing of the Dutch population was performed using ANOVA with the ratio between head length and face width as the dependent variable

and gender and age group as main effects (Statsoft, 2007). All interaction terms were included in the analysis. The distinguished age groups were 18-30 years, 31-45 years and 46-65 years. For the Chinese population the same ratio was taken as the dependent variable. For both the Dutch, Chinese and Greek population, the number of subjects outside the ratio boundaries was determined.

RESULTS

For The Netherlands, the ratio between face length and face width should be at least 1.3 to satisfy the criteria for a passport. Only 0.08% of the Dutch population did not meet this criterion. However, 2.65% had a ratio exceeding 1.875. Thus 2.7% of the population should have fallen outside the criteria when they applied for a passport. In The Netherlands there are about 14 million subjects older than 14 years that are obliged to have a piece of identity. This means that over 378,000 subjects in The Netherlands do not fulfill the requirements.

Age and gender have an influence on rejection rate (significant main effects $p < 0.001$). In particular young females are prone to rejection: 7.5% of the females aged 18-30 years would fall outside the criteria range.

For China, four subjects (2.9%) had a ratio lower than 1.17; one subject had a ratio exceeding 1.57. Therefore, a total of 5 out of 140 subjects (3.6%) did not meet the criteria. The average ratio was 1.32, the middle of the criteria was $((1.17 + 1.57) / 2) 1.37$. Therefore, the subjects had a relatively low ratio as compared to the criterion.

For China, four subjects (2.9%) had a ratio lower than 1.17; one subject had a ratio exceeding 1.57. Therefore, a total of 5 out of 140 subjects (3.6%) did not meet the criteria. The average ratio was 1.32, the middle of the criteria was $((1.17+1.57)/2)$ 1.37. Therefore, the subjects had a relatively low ratio as compared to the criterion.

For China, the population amounts to 1.345 billion inhabitants (www.geohive.com) and about 80% is older than 15 years (http://en.wikipedia.org/wiki/Demographics_of_the_People's_Republic_of_China). If we assume that this group may be eligible for a passport, 3.6% of 1,076 billion which is at least 38 million inhabitants would face problems in getting a passport.

For the Greek population, 50 of the 1071 subjects (4.7%) had a ratio lower than 1.24. The average ratio was 1.33 (range 1.15-1.54, standard deviation 0.06). None exceeded the ratio upper limit of 1.75. Greece has about 11 million inhabitants (www.geohive.com) and 85% is older than 14 years (<http://en.wikipedia.org/wiki/Greece#Demographics>). If we assume that this group may be eligible for a passport, 4.7% of 9.35 million, which is almost 440 thousand inhabitants, would face problems in getting a passport.

DISCUSSION

It is important for face recognition that the photographs on the pieces of identity are uniformly defined and that the face occupies a large part of the picture. Therefore, exact dimensions are given for head length in all investigated countries. Since no distortion (different scaling of horizontal and vertical axis) of the photo is allowed in any country, the resulting face width on the photo of each individual is dependent on head length. In The Netherlands, China and Greece, however, specifications are given for face width as well. This is not necessary according to ISO/IEC 19794-5; this standard offers several options for image face types and criteria. The Netherlands follow the recommendations 'best practices for full frontal images on travel documents' (annex 3.2.3) that contains minimal and maximal requirements for head length and face width.

The combination of head length and face width leads to a range of accepted ratios. In The Netherlands the acceptable ratio of head length to face width equals 1.3 to 1.875. Although this is a wide range, the variability in face dimensions exceeds this range. About 2.7% of the Dutch population aged 18-65 falls outside the specified range. The same is true for 3.6% of the Chinese population, but the reliability of the estimate is less since the dataset is smaller. In practice it is not ethical to refuse people for this reason and subjects do receive this piece of identity, albeit sometimes after long discussions. ISO/IEC 19794 allows for individual exceptions, and in The Netherlands the civil servants generally accept deviating photographs.

The number of complaints reaching the Ministry of Internal Affairs and Kingdom Relations is very small.

Since the practice is in conflict with the requirements, we recommend abolishing the requirements for face width.

There were no direct measurements of face length in the CAESAR database. Therefore, it had to be assessed using three other dimensions: menton-sellion length, sitting height and eye height sitting. The sellion is located higher than the eye. Therefore, we used the correction factors of 9 mm for males and 22 mm for females (Open Ergonomics Ltd, 1998) for each individual. These correction factors were similar for the population of the UK and the USA. Unfortunately, no correction factors were available for the Dutch population.

The Dutch database contains subjects aged 18 to 65 years. The population that needs a piece of identity, however, is aged from 14 years onwards. Therefore, differences in the ratio may exist for subjects 14-18 and over 65 years old. The real impact of this effect is unknown, but it is known that head dimensions vary less than other body dimensions in growing adolescents (Sinclair and Dangerfield, 1998).

In summary, we showed that combining requirements of head length and face width for photos in a passport leads to exclusion of about 2.7% for the Dutch, 3.6% for the Chinese population and 4.7% for the Greek population. Therefore, we recommend setting only requirements for vertical face dimensions, as is current practice in most countries.

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Face dimension and passports requirements *continued*

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A Research Network in Travel Medicine

L I Goodyer¹, J M Johal¹, G Flaherty²

Introduction

Research in travel medicine is actively conducted at both a national and international level but is arguably in its infancy, with many research questions currently being identified and an evidence base that is sometimes quite actively debated. Research in this discipline in the British Isles has traditionally been somewhat piecemeal with a few individuals conducting pieces of work in relative isolation, although this may be a reflection of the relatively low level of funding such research attracts. This is particularly true of the work that attempts to investigate the activity of practitioners and the behaviour and attitudes of travellers.

It has been proposed by the British Travel Health association (BTHA) and the Travel Medicine Society of Ireland (TMSI) that a useful exercise might be to explore setting up a collaborative research network amongst its own members. This network could potentially gather data to help answer specific questions in travel medicine that had been identified as relevant to practice by the membership of the two organisations.

The aim of the project was to gauge the interest and potential involvement of BTHA and TMSI members in a research network as well as to identify what they perceived as the type of projects that could be usefully conducted through such a network.

Method

Members of the BTHA and TMSI for whom email addresses were held were sent a simple electronic survey to gather and explore the opinions of various healthcare professionals involved in travel medicine, including Doctors, Pharmacists and Nurses. The survey tool has been previously validated and piloted and consists of mainly structured closed questions with free text boxes where appropriate. The email and web link for the survey was disseminated over summer 2009 and data were analysed using Microsoft Excel. The chi squared test was used to analyse the statistical significance of categorical data using Minitab 10.

Ethics approval was granted from the De Montfort University Health and Life Sciences ethics committee.

Results

Email addresses were available for 328 members of the BTHA and 310 members of TMSI. A total of 106 questionnaires were received through the BTHA (response rate 32%) and 39 through TMSI (13% response rate). 75% of BTHA respondents were interested in participating in a research network compared to 43% of TMSI. The profile of respondents is shown in Table 1.

Figure 1 compares the respondents' views of the main barriers to research in travel medicine from the following:

- Insufficient time
- Lack of financial incentive
- Lack of motivation
- Not having a personal interest in the topic
- Poor support from employer

Figure 2 gives an indication of the methods of data collection respondents would be willing to undertake.

Figure 3 shows the responses concerning how areas of research could be prioritised, which were:

- The quality of advice given to travellers during a pre-travel consultation
- Incidence of travel health related illness on return
- Knowledge, attitude and compliance of travellers to advice given
- Accidents and trauma abroad.
- Comparison of level of service delivery between travel clinics
- How the cost of travel medicine is perceived by the traveller

In the UK more nurses than doctors considered lack of support from the employer (69% v 34%, $p < 0.001$ chi square = 3.9, DF=1), and not having a personal interest (37% v 18% $p < 0.001$, chi square = 11.7, DF=1) as potential barriers. In the UK more nurses than doctors gave a higher priority to research into the quality of advice (77% v 50%, $p < 0.05$ chi square = 5.6, DF=1).

Discussion

For the BTHA survey only about half of the members' email addresses were available at the time survey and the TMSI response rate was relatively low.

However the data does give an indication of the preferences and views of travel medicine practitioners in the two jurisdictions. It would therefore be reasonable to repeat the survey in the future to gain a greater representation of views.

In both regions time seems to be the biggest barrier to research being conducted in travel medicine. In the UK it was felt that a lack of support from employers contributes to potential barriers, however in Ireland no such issues were highlighted.

The form of data collection that appears to be most favoured in both regions is inviting travellers to complete questionnaires. For priorities of research both regions favoured quality of advice to travellers, incidence of illness and adherence issues. Accidents and trauma, level of service delivery and cost issues on the other hand had a low priority. Any data from the TMSI should be viewed in the light of the low response rate which may have biased the data.

Conclusion

The main barrier to travel medicine research is time and asking travellers to complete a questionnaire is the most favoured method of data collection. There appears to be no differences in main priorities for research between the two countries. Based on the numbers of people volunteering to take part in a research network this seems to be a viable proposition.

- 1 Leicester School of Pharmacy, De Montfort University United Kingdom.
- 2 School of Medicine National University of Ireland, Galway.

Table 1
Profile of Survey Respondents

	BTHA (%)	ISTM (%)
<i>Profession</i>		
Nurse	56 (53)	9 (23)
Doctor	40 (38)	30 (77)
Pharmacist	5 (5)	0
Other	5 (5)	0
<i>Setting</i>		
GP practice	44 (42)	35 (90)
Private clinic	13 (12)	1 (3)
Pharmacy	3 (3)	0
Occupational health	18 (17)	2 (5)
Hospital	8 (8)	0
Other	20 (19)	1 (3)
<i>Time Qualified (yrs)</i>		
<1	1 (1)	1 (3)
1-5	13 (12)	8 (21)
6-10	27 (25)	9 (23)
>10	64 (60)	21 (54)

Figure 1
Identified Barriers to Research in Travel Medicine

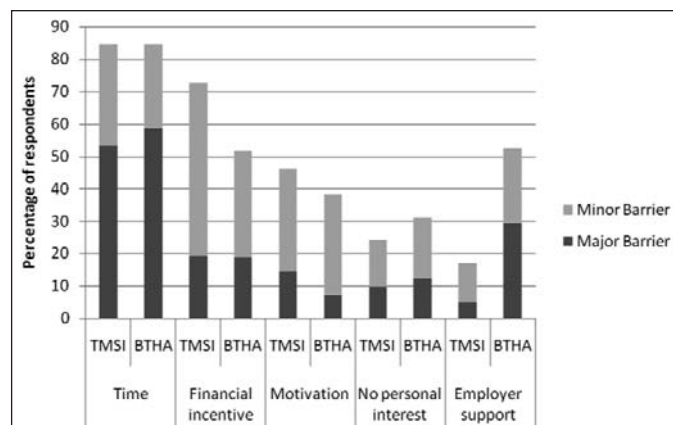


Figure 2
Preferred Method of Data Collection

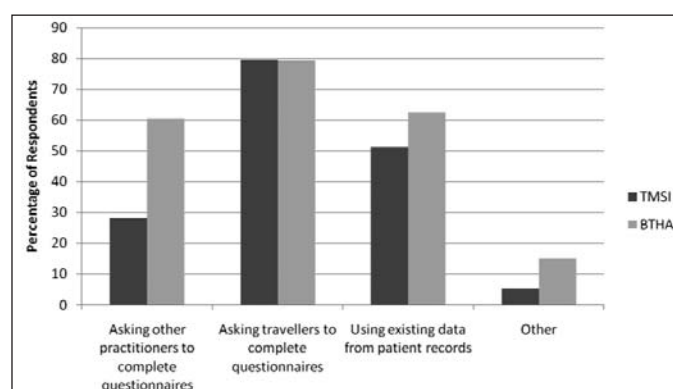
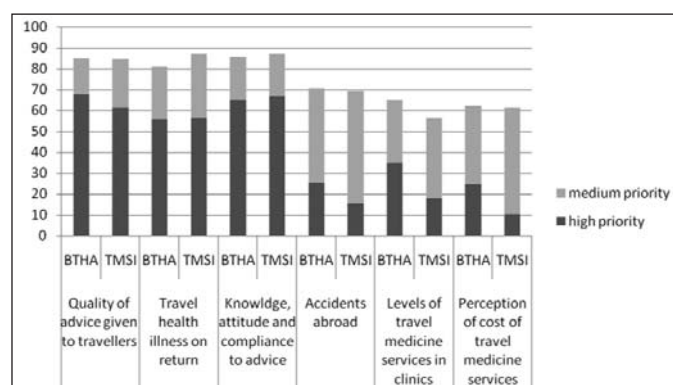


Figure 3
Priorities for Travel Medicine Research



IN THE NEWS

SEA TRAVEL

Cruise ship snippets

The widow of a British man who died after contracting Legionnaire's disease during a cruise has been awarded £70,000. He was visiting Lapland and St. Petersburg on the MS "Black Watch" when an outbreak occurred on board. An inquest found that Fred Olsen Cruise Lines exposed Mr Heath to the disease and that two doctors failed to adequately respond to his worsening condition.

Royal Caribbean International has introduced a tagging system for children aged between three and 11. The children must wear a wristband containing an electronic device that enables parents to locate them anywhere on the 16 decks of the cruise ship Oasis of the Seas, which can carry up to 6,300 passengers.

Up to 1.5 million Britons take Mediterranean location holidays annually. There were 549,000 UK passengers on sea cruises in 2007.

AIR TRAVEL

Portable Oxygen Concentrator (POC)

A passenger with a (POC) was not allowed to take it on board a recent Jet2 flight. He was told he could not take the concentrator because it was dangerous, and could only take oxygen bottles, which are heavy. He had paid £3,000 for the concentrator to ease his travel burden. Jet2 cited "safety reasons" and "the increasing number of models being introduced, with different standards of oxygen concentration", as reasons for refusing to allow the use of any POCs. They stated that passengers with serious health conditions and POCs should fill in the appropriate medical form and get permission to fly, before making a confirmed reservation. The Civil Aviation Authority, responsible for health and safety on British airlines, states there are no safety problems with use of POCs on board aircraft but, it does allow airlines to make their own decisions. Jet2 is the only British airline to refuse the use of POCs on board. Austrian Airlines, Alitalia, Qantas, Qatar, MAS and Wizz Air also refuse. The US Federal Aviation Authority requires airlines to allow the use of POCs and has an approved list of 15 models.

The Pulmonary Hypertension Association published a report on the attitude of airlines that fly from Britain towards passengers who need oxygen during a flight. It found an abysmal lack of knowledge about POCs among customer-service staff. The association's website – phassociation.uk.com – has a list of airline policies and charges for using oxygen cylinders and

POCs. (Click "Living with PH" and then "Travelling with PH").

Obese passengers

Air France and its Dutch subsidiary, KLM, now insist that "passengers with a high body mass" book a second seat at 75 per cent of the original fare.

The definition of overweight depends on the cabin: In economy class, the airline says its seats are designed for passengers with a waistline up to 135cm (53 inches).

Boeing 737s, though, are one-size only, and one passenger in 200 cannot fit into them.

Obese passengers comprise a growing problem for airlines on several counts. With average weight across the population rising, fuel consumption is increased. With more overweight flyers, more passengers experience discomfort from sitting next to them. Airlines are filling a higher proportion of seats, with less room for manoeuvre on board for the cabin crew to shuffle passengers around.

LAND TRAVEL

Danger hour of driving abroad

Britons driving abroad have been warned that they are most at risk from an accident during the first hour of their journey. Research for the Foreign office shows that during this time, driving on the wrong side of the road, unfamiliarity with a rented car and fatigue are most likely to prove a danger.

Prof Geoff Beattie of Manchester University, who produced the research, said "People are in a happy-go-lucky holiday mood when they hire a car or moped, but the chances of having an accident are increased by rushing onto the roads."

Foreign Office research also reveals that a quarter of younger travellers have ridden a moped or quad bike abroad without checking insurance coverage.

DISABLED TRAVEL

There are approximately 10 million adults and 750,000 children in the UK who suffer from some form of disability.

"Leonard Cheshire", a British charity that supports disabled people, has given warning that many airports still fail to meet the needs of disabled passengers, despite EU laws introduced in 2008 that make it the responsibility of airports to provide assistance to disabled travellers. Britain's leading travel companies are failing to serve the needs of disabled travellers, new research has found. The study, carried out by "Tourism for All", a British based charity that specialises in travel for the disabled, found that 85 per

cent of respondents did not believe travel agents understand the needs of disabled travellers, and 78 per cent did not feel they were catered for by high street agents. The survey also found that 35 per cent would not consider booking with a mainstream travel agent.

Keith Richards, head of professional development at ABTA, the travel association, admitted that the level of awareness of disability issues within its membership was not as high as it should be.

He said, "In June we will be launching our e-learning tool on accessible travel for all our members. We're developing this jointly with the Equality and Human Rights Commission to tackle the issues raised here."

Co-operative Travel, which commissioned the "Tourism for All" research, has promised to improve its service to disabled travellers. They have launched a new tailored service aimed specifically at disabled travellers" and trained staff.

Expedia, the online travel agent has launched new search tools designed to help disabled travellers find accessible accommodation.

American Health Care

President Obama's signature on sweeping health reform legislation was an achievement. The Health Insurance system in America currently excludes too many people. Even those who have coverage may be one diagnosis away from financial catastrophe. By some estimates, 30% of the more than \$2 trillion Americans spend on healthcare each year, goes towards treatments that are unnecessary and even harmful. U.S. hospitals often have cutting edge technology, but the country has a population whose health and life expectancy lags behind those of most other industrialised democracies.

The bill Obama signed, is far from a finished product, for there is no proven strategy in the reforms anticipated in the bill. Many economists believe it will be impossible to bring healthcare spending under control, unless everyone is covered. This is because the uninsured tend to wait until they are very sick to seek treatment, then they show up in the emergency room, where costs are astronomical.

In the next 10 years, the new bill will spend about £350 billion on subsidies for 24 million low and middle income Americans who buy insurance independently. The uninsured will receive immediate access to coverage through high risk pools, if they are uninsured because of pre-existing conditions.

Reformers hope to rein in rising costs by rewarding doctors and hospitals on the basis of health outcomes – such as chronic-disease management and effective treatments for injuries – and not the volume of services they provide. In a system where providers are reimbursed separately for every procedure and service

rendered as at present, costs are skyrocketing.

Medicare introduced into law in 1965 and now covering 38 million, is one of the most popular social programmes in U.S. history, therefore health reform legislation, in the early stages, will not fundamentally change the way the programme operates. Americans 65 years of age and older will continue to receive comprehensive health insurance: doctors and hospitals will continue to be paid per procedure.

The new law addresses some problems with the current system by phasing out wasteful subsidies to private insurers that contract with the federal government to provide Medicare type benefits to seniors. After 2014, the health care system will be more uniform across the nation than it is now. However conservative legislators in 39 states have introduced bills – or plan to – that would exempt their citizens from the new law's requirement, effective in 2014, to have health insurance or else face a fine.

With 32 million Americans gaining healthcare, who will actually perform the blood pressure checks, treat the cancers and monitor the diabetes? Family physicians, who are on the frontline of this surge in demand, are already in short supply, as are nurses. By 2020 The American Academy of Family Physicians predicts a shortfall of 40,000 in the ranks of primary care providers to treat them. The new law, recognises that doctors should not be the only ones to provide care and that hospitals and physicians' offices can't be the only places where people receive health services.

INSURANCE

Britons who would not dream of drink-driving continue to ski when inebriated. Now insurers say they will not pay out for alcohol-related accidents. A quarter of Britons who go skiing are over the drink-driving limit first thing in the morning. According to More Than Insurance, many Britons on the piste will have seven or more units of alcohol still in their blood streams from the night before.

Drinking on the slopes will increase the chances of having an accident and it could also invalidate any subsequent claim. High altitudes can also heighten the effects of alcohol.

Figures released by comparison website www.confused.com show that one in four skiers are affected by the behaviour of people who have too much to drink. More than a quarter of skiers aged between 31 and 35 will drink two or more glasses of wine at lunch before skiing in the afternoon.

EHIC INSURANCE

The EHIC card does not offer the individual full insurance against injury or damages. Instead it offers up to 80% off medical bills in hospitals that accept the card, though there is no guarantee that the patient will end

up in one of these hospitals, or that the card will be accepted. The EHIC will not cover transportation to hospital.

If injured on the ski slopes, resort pisteurs will probably take the patient straight to a private clinic, where the EHIC will not cover medical treatment.

Case History

On holiday in Turkey a patient was climbing out of a boat onto the quay and thought he pulled a muscle in his back. The next morning the pain was getting worse and a foot was numb. The Travel Insurance's Companies emergency line advice was to go to hospital. After examination by a specialist and an MRI scan, the patient was told he had a herniated disc and required immediate surgery, Travel Insurance finally told him that it would not meet the cost as he had a pre-existing condition. The hospital bill was £4,500, and total costs nearly £6,000.

Insurance Company Comment

A year before the patient had been diagnosed with sciatica in the same area of back. The GP telephoned the insurer to say that he did not believe there was a pre-existing condition as there was no history of any back pain in over forty years. From then until the incident at issue, there was no back pain at all. The patient believed event to be trivial and had forgotten it ever happened, as he had only been told to do stretching exercises and take some painkillers.

The travel Insurance company believed that technically this should have been declared. They reviewed this matter, particularly focusing on the initial phone call made when the policy was purchased. This was not made by patient but by the partner, unaware of the sciatica episode.

The person making such a call should be aware of their partner's medical conditions as they are acting on their behalf. Any medical condition that is not declared on purchase can invalidate a policy.

Tick Borne Encephalitis

A survey, sponsored by Baxter Healthcare, was conducted at the Royal College of Nursing (RCN) Travel Health Forum Annual Conference 2009 (Royal College of Physicians, London 19 September 2009) regarding attendees attitude to vaccination against Tick Borne Encephalitis (TBE). Only a fifth of the nurses stated they would always recommend vaccination to some-

one planning outdoor activities or an adventure holiday during spring and summer in a region of Europe where the disease is endemic. They would be twice as likely to consider protection from food and water-borne infections rather than TBE in Europe, with 67 per cent citing Hepatitis A as a vaccine "they think of" for patients compared to 35 per cent naming TBE, the research showed.

The survey also revealed that there is an apparent lack of willingness to recommend TBE vaccination for certain high risk travellers. Three-quarters were aware that a pre-travel vaccine for TBE is available and many cited at-risk groups such as hikers/walkers (57%), outdoors enthusiasts (47%) and campers (32%) as those whom they would advise had the immunisation.

This may be due to ignorance among holidaymakers as the survey suggests. Travellers too are not aware of the serious risk of TBE, or are not taking the risk of TBE seriously enough. Almost a third (31%) of nurses said they never saw patients wanting advice for spring and summer outdoor holidays in Europe, 20 per cent saw patients frequently while just under half (47%) reported only seeing patients occasionally.

The International Scientific Working Group on Tick Borne Encephalitis (ISW), a group of scientists and health experts investigating TBE – which is now endemic in 27 countries in Europe – say, for unimmunised tourists, the likelihood of contracting TBE is similar to the risk of contracting typhoid in India.

Professor Michael Kunze, head of the ISW, said: "Holidaymakers from the UK heading for many parts of central Europe this summer, as in previous years, risk contracting this potentially debilitating and fatal tick disease but are not told to protect against it as they are with other travel-related illness."

The ISW estimates there are 10,000 people every year in Europe needing hospital treatment for TBE.

"TBE is preventable, not treatable in the same manner as other tick diseases, and more must be done to persuade UK travellers of the need for vaccination," added Professor Kunze.

Medical professionals can register on the website www.tickalert.org for access to further information and advice about TBE in Europe.

The survey was funded by Baxter Healthcare as part of its Tick Alert campaign to raise awareness of TBE in Europe among travel health professionals. The company also supports the work of the ISW.