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Editorial

Welcome to the spring edition of the Journal, and we feel there is something here for all readers, be they novice or expert. As always, we aim for the Journal to be both informative and entertaining, thought-provoking and stimulating, and a publication that the reader looks forward to receiving.

The lead article is on Lyme disease, an ever increasing problem not only for travellers to the USA and Europe, but also for UK travellers and residents who love to spend leisure time in our native countryside. I was pleased to see an article recently in my local newspaper about Lyme disease, especially as I live close to Thetford Forest. Local practice nurses tell me they are seeing increasing numbers of patients who require treatment for suspected Lyme disease, so it is heartening to see information aimed at the general population being disseminated at local level.

We have some excellent articles from doctors about their experiences of health and travel in many different parts of the world, giving us some glimpses of lives lived very differently to ours. I have used a similar article about South America that was printed in the last Journal, to help backpacker clients to appreciate just how lacking in medical facilities are many of the countries they propose to visit.

Some of our readers will be coming to the end of a course of study in travel medicine, be it BSc or Diploma level, and will have undertaken a research project as part of their course – do consider submitting research or project work to the Journal. This month we are printing a research project undertaken by a nurse as part of a diploma, and she discusses the problems of the returning expatriate family. These families have a lot of time and energy devoted to maintaining their health and wellbeing whilst abroad, but very little attention has been given, particularly to their mental health once they arrive back.

We do hope you find plenty to enjoy in this edition, and please consider contributing to the next one – this is, after all, your Journal. I'm sure that many of you have areas of knowledge that we could all learn from, so get writing, we are waiting to hear from you.

Sarah Buckley.

Report from the Chair

Firstly I would like to congratulate and welcome back Eric for being re-elected as our President for the next two years.

Secondly, following the resignation of one of our executive committee members, I would like to congratulate and welcome Damian as a fully elected member of the council. I am sure we all agree that Damian has done so much in his short time as a co-opted member and we offer him our heartfelt thanks. I also look forward to the co-option of Dr Kitty Smith and welcome back Mike Townend whose co-option was agreed at the last meeting.

Thanks to the dedication and hard work of the committee substantial progress has been made in many areas.

The website is up and working and it is pleasing to see members using the forum to discuss various matters. Every effort must be made to encourage more active use.

It is pleasing to see student members are now joining through the new membership area on the website. George and Claire have done an excellent job in securing the gold sponsorship from SPMSD and I think we all owe them a big thank you. Funding still remains a priority as the health of the Association depends on a steady stream of available funds. To this end I have managed to secure support for our meetings from GSK by inviting their representative to give us an update of their current research into travel related products. I hope this arrangement can be extended maybe through other drug companies.

The arrangements for the BTHA educational trip to Nepal and India are now complete and the details are available. Mike and I will be running the first trip. Booking can commence and we shall advertise it on the website. There will be a limit of 20 places but if successful it is hoped to run many more.

The preparation for the conference is almost complete. Ruth, our conference organiser has been in hospital but is now at home. I am sure we wish her all the best for a steady return to health.

Claire has liaised with Sandra Grieve and the Royal College of Nursing and arranged a joint BTHA and RCN malaria day in London on the 8th of December at the Cowdry Hall at the RCN. More details will be announced later.

I know there have been some concerns by some members about the role of the BTHA after the Faculty was established. I have given much thought to this and it is now clear to me that there is no conflict at all.

The Faculty is an academic body and to some degree restricted by its obligation to uphold the standards of the Members and Fellows. The BTHA on the other hand is able to have a much broader agenda both in the members it can attract, who may well not be qualified in any travel medicine discipline, and the scope of our activities like the educational trips, conferences, our journal and education days. Therefore I see the BTHA as an organisation that pushes the boundaries on all aspects of travel health for all. An organisation that is fun to belong to, that is representative of all aspects of travel health, that does not require the passing of an exam for entrance. The Faculty may represent the 'text book' of travel medicine, I think we represent the broader reading and for all who wish to join, the key word of the BTHA is 'accessibility'.

John E Davies.

Lyme Disease – What Travellers Should Know

David C Owen

Introduction

Despite the fact that Lyme disease was first described thirty years ago[1] there remains a great deal of ignorance about the condition amongst both medical practitioners and the wider public. It is perceived as a rare condition and the recent article 'Lyme Wars' in the British Medical Journal[2] reinforced this belief and suggested that Lyme disease is a simple infection which is easily treated. There is plenty of evidence which suggests that Lyme disease is neither simple nor, in late cases, easy to treat. As with any medical condition prevention is better than cure and this article will emphasise aspects of prevention while giving advice to practitioners and patients who consider they may have contracted the disease.

Definition and Incidence

Lyme disease is defined as an infection caused by Borrelia species of bacteria carried by ticks of the Ixodes genus. There are numerous pathogenic species of Borrelia and Lyme disease is associated with many types of tick, not just deer ticks. Ticks also carry many other pathogens in addition to Borrelia and it is becoming increasingly apparent that patients with Lyme disease frequently harbour other tick-borne pathogens as well. Following a bite of the Lone Star tick in the southern USA, an illness closely resembling Lyme disease may occur yet Borreliae have not yet been found in Lone Star ticks.[3] Lyme disease is indeed a complex condition.

Lyme disease is the most common tick borne disease in temperate zones. Europe and North America are endemic for Lyme disease but pockets of hyperendemnicity occur particularly in rural areas where a large, freely roaming, mammal population is present.

The incidence of Lyme disease is increasing[4] and it has been suggested that global warming has played a part in this[5], but increasing recognition of the condition is undoubtedly occurring. Lyme disease is not a reportable condition in the UK which makes interpretation of UK data difficult.

Most tick bites occur in the summer months with a peak incidence in July, but occasionally bites with ensuing Lyme disease occur in winter months.[6]

The vast majority of tick bites do not appear to result in harm. Some patients report hundreds of tick bites yet they do not develop Lyme disease. Others develop the condition after a single bite. There are many factors which make a tick bite 'risky'.

These include:

1 Duration of attachment. Risk of transmission is increased as attachment time increases especially where attachment has been over eighteen hours.
2 Larger ticks appear to increase the risk of transmission.
3 Multiple tick bites increase the risk of transmission.
4 Tick bites from ticks which are in the vicinity of sick animals appear to increase the risk of Lyme disease.

A feeding tick becomes engorged with blood and may become massively enlarged up to several millimetres in diameter. Such bloated ticks may appear as blood blisters or scabs and only close inspection will reveal their arthropod nature. The consequences of leaving a large feeding tick attached to the body can be disastrous.

Feeding nymph ticks may remain quite small and cause no irritation. These bites often go unnoticed by a patient. Since tick bites may not be noticed it is essential that travellers in risky areas take precautions against tick bites. Appropriate dress is the most obvious method: Skin should not be exposed especially on the lower limbs and clothing should not be capable of trapping ticks. Tick repellents are useful but cannot be relied upon to prevent bites. Following walks in long grass or wooded areas clothing should be shaken vigorously before it is taken in to dwellings or tents. Showering is useful as it may succeed in washing ticks off the body before they have started to feed.

If a feeding tick is found it should be removed without delay. The method is simply to grip the tick with splinter forceps as close to the skin as possible and pull it off. Parts of the tick are not usually left behind unless the tick has been feeding for a long time.

A tick bite is a worrying event for travellers yet most of us have probably sustained tick bites of which we have been unaware. While some authorities suggest prophylactic antibiotics for high risk tick bites there is no evidence to support their routine use.

Whether or not prophylaxis is received it is important for travellers to be aware of the symptoms of Lyme disease.

Symptoms and signs of early Lyme disease

The characteristic feature of Lyme disease is the Erythema Migrans (EM) rash.

The erythematous rash generally develops within the first few days following a tick bite which has transmitted Lyme bacteria. The rash is classically described as being an expanding red rash over five centimetres with central clearing. A great deal of variation in the rash occurs and misdiagnosis is frequent especially if a preceding tick bite was not noticed. As with tick bites the rash often affects skin folds but any part of the body can be affected. Multiple EM may reflect disseminated infection[7] but in some cases may in fact reflect activation of latent disease.[8]

It is most important to consider EM in the differential diagnosis of any erythematous rash occurring in summer months in individuals who may have been exposed to ticks.

One problem is that the rash may cause little trou-

Lyme Disease – What Travellers Should Know *continued*

blesome itching or soreness resulting in failure to seek medical advice. Patient education is paramount.

Some patients fail to develop EM despite transmission of Borreliosis.[9] These patients may remain asymptomatic reflecting a state of latent disease or they may develop flu-like symptoms. These may include muscle pains, a headache, low grade temperature and sometimes symptoms suggestive of respiratory or bowel infection. The development of 'summer flu' in a patient who may have been exposed to ticks should lead to consideration of a diagnosis of Lyme disease and appropriate treatment should be instituted.[9]

Blood testing should not be relied upon to diagnose early Lyme disease. Withholding or delaying treatment for early Lyme disease where there is clinical suspicion of the condition would most likely be construed as medical negligence in a court of law.

Treatment of early Lyme disease

It is generally accepted that treatment of early Lyme disease is easier than the treatment of late or chronic disease.[10] This emphasises the importance of early diagnosis. A two week course of antibiotics may be sufficient in most cases for the treatment of early disease[7] but in the unlikely event that EM is still present at the end of this period treatment will need to be more prolonged. Since EM is a tissue infection the dosage of antibiotic needs to be high. Doxycycline 100mg BD is frequently prescribed but 300mg daily or even 400mg daily may be needed in some instances such as in larger patients. Doxycycline is usually well tolerated but photosensitivity is common and sun exposure should be minimised whilst on treatment. Tetracyclines should be avoided in children owing to dental staining and in these instances Amoxicillin or Cefuroxime are suitable alternatives.

Following treatment of early disease it is reasonable to test Lyme serology but the absence of antibodies does not exclude a diagnosis of Lyme disease. Presence of antibodies on Elisa testing should be confirmed by Western blot testing. A positive Western blot is a highly specific indication of Borrelia exposure. Whether or not serology is positive patients who have received treatment for early Lyme disease should be advised about the possibility of late or chronic disease occurring.

Late Lyme disease, chronic Lyme disease and Post-Lyme syndrome

A detailed discussion of these topics lies outside the scope of this article. Travellers should be aware that massive controversy surrounds chronic Lyme disease.[11] Some authorities deny that the condition exists, arguing that four weeks of treatment is sufficient to eradicate the infection in all cases.[7] These authorities accept that some patients continue to have troublesome symptoms after Lyme disease treatment. Such patients are said to have post Lyme syndrome, a poorly understood post-infective condition.[7] The fact remains that numerous studies have demonstrated the presence of Borrelia bacteria in animal and human hosts following intensive antibiotic therapy suggesting that chronic infection can and does occur.[12,13]

Further difficulties arise because some patients known to have Lyme disease remain sero-negative on testing.[14] It has been estimated that Western blot testing has a sensitivity of 50% at best.[9] Since this figure is produced by comparison with other tests that are themselves inaccurate this may be a gross over-estimate of the sensitivity.

In clinical practice it is not unusual for patients to test positive for Borreliosis by PCR yet on testing with Western blots the results are negative. Sometimes in these patients bands are found on Western blot testing, but the number and intensity of the bands is insufficient to meet CDC diagnostic criteria.

Some have suggested that chronic Lyme disease should be a clinical diagnosis, as with early Lyme disease,[9] but others have suggested that where there is an absence of physical signs of disease a diagnosis of Lyme disease should not be entertained without positive serology.[7]

Lyme disease is a multi-system disorder. Symptoms of chronic Lyme disease are many and diverse and the medical literature abounds with cases where Borreliosis has been confused with other diagnoses.[14,15,16] Cognitive impairment, fleeting arthralgias, dysaesthsiae and profound fatigue are common in chronic Lyme disease [9] and the symptoms are typically relapsing in nature. Since symptoms are non-specific other pointers towards a diagnosis of chronic Lyme disease may be sought such as Herxheimer reactions at the onset of treatment and amelioration of symptoms with treatment.

The optimum treatment of chronic Lyme disease remains unknown. While some patients appear to require long term antibiotic therapy or combination therapy to remain well such therapy should not be used routinely and then not without a patient's informed consent.

Conclusions

Travellers need to be aware of the dangers associated with tick bites both at home and abroad.

Travellers should equip themselves with splinter forceps for removal of ticks and tick repellents. They should be aware of the symptoms and signs of early Lyme disease.

Those planning to travel to remote places where medical care will not be accessed easily should consider carrying supplies of antibiotics for use in the case of high risk bites or when symptoms of early Lyme disease occur.

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Member of ILADS. In the writing of this article Dr. Owen has no conflicting interests to declare. The opinions expressed are solely those of the author.

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Deer Tick Feeding *photo: Iain McIntosh*

Risk Assessment in Travel Health

Mike Townend

The presence of a disease in a country or a region of a country does not necessarily imply that the traveller is at risk of developing the disease. In order to carry out a risk assessment for a traveller it is necessary to understand the concept of hazard and risk. A ***hazard*** is an untoward event which could occur, and ***risk*** is the degree of chance that it will occur.

As a simple example a hole in a particular road in a particular town is a ***hazard*** which is potentially there for everyone visiting the town, but what would affect the ***risk*** of falling down it? The first and obvious risk factor would be walking down that particular road. The hole would not constitute a risk in any other part of the town. Other factors that would increase the risk may include being a child, being very old, being blind or being drunk. Any combination of these factors would increase the risk further. The risk is therefore dependent on a traveller's precise destination when visiting the town and on the traveller's personal characteristics rather than simply on the visiting a town which has a hole in one of its roads.

Similarly a traveller's disease risk when visiting a country does not necessarily depend on the presence of a disease in the country but on a combination of other factors. Disease hazards in a country depend on factors such as its climate, its infrastructure of water supply and sanitation, the presence of disease vectors such as insects and the presence of human or animal carriers of the disease, but the levels of risk to a traveller are determined by other factors.

What influences health risks for travellers?

Personal characteristics of the traveller such as age and sex may influence risk. Elderly travellers are more prone to infection because of reduced function of the immune system. They may also be living on the edge of normal function in any of their other organ systems and may be tipped over the edge into abnormal function by the physical or mental stresses of travel. Children are more at risk from a variety of infections, notably malaria, and not all vaccinations and antimalarial drugs are appropriate for children, depending on their age. Pregnancy may also cause problems when assessing the suitability of vaccinations and antimalarial drugs, and pregnant women are not allowed to travel on international flights after 34 weeks of pregnancy. The availability of suitable facilities in the event of complications of pregnancy or premature labour must be considered.

Previous medical history must be taken into account. Pre-existing medical conditions may be exacerbated by the physical and mental stress of travel, and previously pre-symptomatic conditions may become symptomatic during travel. The management of diabetes, for example, during travel may pose problems of control, adjustment of insulin dosage, management of hypoglycaemia and proneness to infection. Some medications may not be compatible with some antimalarial drugs, and adherence to dosage regimes may be poor during travel. Medications such as diuretics may be omitted because of unwanted effects on the traveller, with resultant exacerbation of the underlying condition. Immunisation records, important for the traveller, may be absent or incomplete.

Previous travel history may reveal evidence of problems which have occurred on previous trips. Experienced travellers may be better informed than their travel advisers on some aspects of travel, but they may also have absorbed myths and misconceptions about health risks and precautions from other travellers.

Time of travel & length of stay are important factors in assessing risk. Some problems, such as malaria, are more likely to occur in the wet season, while others may be more likely in the hot dry season, for example meningococcal infection in the "meningitis belt" of sub-Saharan Africa. Longer stays than the usual two weeks holiday increase the traveller's exposure to insect and animal vectors of diseases such as e.g. malaria and rabies, food and water-borne infections and risks from trauma and the need for treatment in less than ideal medical facilities. Loneliness in long stay travellers may lead to an increased risk of sexually transmitted infections, and the potential psychological effects on long stay travellers are well documented.

The precise itinerary of the traveller may sometimes be difficult to obtain, especially with backpackers who may make spur of the moment decisions while travelling, but it is of great importance. Whilst there are some disease risks that may occur in specific countries they may not occur in all areas of those countries. Examples are malaria and yellow fever, which are likely to occur in tropical rain forest areas of countries in Africa and South America, but are unlikely to be found in high altitude areas of the same countries, and Japanese encephalitis, which is found predominantly in rural areas of South and Southeast Asia but is less likely to be found in cities. Whilst high altitude may avoid the risk of diseases such as malaria it may bring problems of its own such as altitude sickness and pulmonary and cerebral oedema. Travel to remote areas is more likely to persuade the travel adviser to give rabies vaccination as it may be difficult to obtain the necessary post-exposure vaccination quickly after an animal bite.

The mode of travel to be used may be associated with specific problems for some travellers, whether by air, sea or overland travel. Air travel is unlikely to cause hypoxic problems for most travellers due to the

reduced air pressure in the aircraft cabin, but those with severely compromised cardiopulmonary function may suffer exacerbation of their problems. The problems of thromboembolic disease, especially for the elderly and those with pre-existing medical conditions, is well documented, as are methods of reducing the risk.

Budget & accommodation are important factors for some travellers. The lower the traveller's budget and standards of accommodation and food, the more likely is the traveller to encounter disease risks from food and water-borne infection and person to person transmission of infection. Backpackers are at particular risk, but five star travellers are not devoid of risk from poor food handling methods in their hotels.

The traveller's proposed activities may place him or her at increased risk. Exposure to sunlight or to extremes of heat and/or cold carry their own risks, whilst water-based activities may expose the traveller to risks ranging from immersion and hypothermia to leptospirosis. Alcohol and drug use are likely to increase the risk from all types of activity. Volunteers and health care workers, being exposed to prolonged and close contact with potential human carriers of infection are at particular risk from person to person transmission of infections such as meningococcal infection, tuberculosis and diphtheria in addition to hepatitis B and HIV infection. Sex tourism is the term often applied to those who travel for the purpose of sexual activities, some of which may be outside the law in their own countries. Other travellers may be tempted into unwise sexual contact with local people or fellow travellers. The risk of acquiring HIV or other sexually transmitted infection is high for both groups.

How important is vaccination for travellers?

Vaccine preventable disease is responsible for approximately 5% of all health risks for travellers. It is therefore of the greatest importance for the travel adviser to take all the risks into consideration and not simply to give vaccinations.

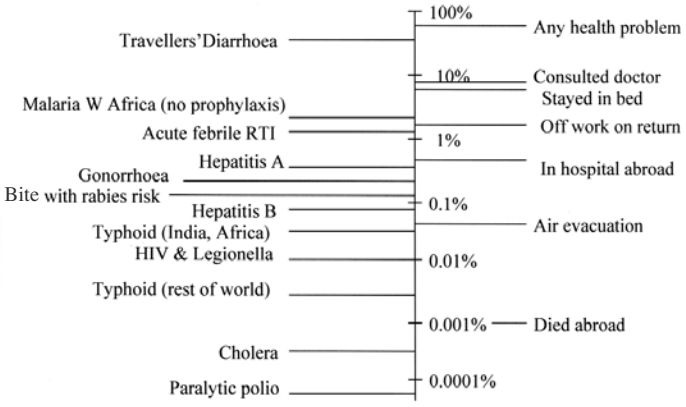
Levels of risk for travellers

Steffen *et al*[1] have estimated the levels of risk for travellers per month of travel to developing countries from developed countries. They expressed their findings in a logarithmic chart which has been re-drawn according to their figures in Figure 1.

What do travellers die from?

On the whole travellers do not die from tropical diseases. Cardiovascular disease is the commonest cause of death,[2] and it is therefore of the greatest importance to carry out a pre-travel medical assessment, especially from the middle years of life onwards. Accidents are the second most common cause and are the commonest cause in younger travellers. Road traffic accidents involving badly maintained or badly driven

Figure 1
Risk per month of travel (after Steffen *et al*, 1997)



This is a logarithmic chart. Each graduation represents a 10-fold difference in risk. 100% would imply that all travellers would be likely to develop the problem, 1% that 1 in 100 travellers would be likely to develop it and 0.0001 that 1 in 1 million would be likely to develop it.

vehicles, badly maintained motor cycles hired without helmets and different or non-existent rules of the road all contribute to a high accident rate in travellers. Swimming and diving accidents and accidents involving unsafe balconies or fire are also sadly not uncommon. Violence, robbery, civil unrest and military or guerilla action are hazards in some parts of the world, and it is wise to consult the Foreign and Commonwealth Office website www.fco.gov.uk) before travelling to such areas.

Sources of information on health risks

Wall charts are a frequently used resource but they may not be up to date, do not give sufficiently comprehensive information and do not allow an individual risk assessment to be made.

Computer databases on the other hand are updated regularly, carry more comprehensive information and enable a more individual risk assessment to be made. The author's preferred information source is the Travax website[3] operated by Health Protection Scotland. It is a subscription service for health care professionals but there is a less comprehensive version, Fit for Travel[4] available for public access free of charge. Travax is provided free of charge by some PCTs.

How to assess & manage travel health risks[5]

- A 20 minute consultation allows time for information gathering and allows time for giving advice
- A printed or computer-based questionnaire as an aide-memoire ensures that no relevant details are overlooked and provides a record of what has been covered. It allows recording of all relevant factors such as
  > Personal information and medical history

Risk Assessment in Travel Health *continued*

  - > Itinerary, length of stay and time of year travelling
  - > Modes of travel to be used
  - > Type of trip, e.g. backpacking, hotel holiday, safari, business trip
  - > Activities planned
  - > Advice & vaccinations given
- Discuss levels of risk with the patient
  - > What level of risk is he/she prepared to accept?
  - > What level of precautions is he/she prepared to accept?
- Give advice on precautions and immunisations
  - > Give written advice/leaflets as there may not be enough time to give all necessary information verbally, and record that they have been given.
- Record everything that has been done. This is essential for medicolegal as well as practical reasons.

Mike Townend, retired GP.
Expedition Doctor and Leader, Cumbria.

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Traveller at Risk

Health Care, Caribbean Style

Ian MacKay

Fifteen years ago the Caribbean Islands were still the vacation retreats of the wealthy. The advent of package holiday air travel then brought many ordinary tourists to the region, content with a sojourn on one of a few islands having direct air connections with Europe. Then came a huge expansion of the cruise ship industry with air to ship transportation bringing the Caribbean within the reach of the mass travel market.

In 2004 there were 22 million tourists to the region an increase of 7% on 2003. 20 million came by ship a year on year increase of 13%. A few small cruise liners used to sail round select islands disembarking passengers by tender for short visits. Now a hundred ships cruise the islands in the European winter season. Many carry over 3000 passengers and 1500 crew.[1,4] They sail by night and next morning disgorge their shipboard complement directly on the quayside of islands large and small.

As many as six great ships can tie up together in the dawn, to swamp facilities and overburden the resources of an island retreat.14,000 passengers can suddenly arrive on an island with a population of 3000. Although each ship carries a doctor and one or more nurses, if a serious medical or traumatic incident occurs on board the patient will be disembarked at the next port of call whenever possible. Local medical resources and onward repatriation may be incapable of meeting demand. Although tourism has brought increased affluence to the islands, medical care on most is of the variable standard found in developing countries world-wide. Some have modern hospitals with good diagnostic and investigative expertise, but there may be a dearth of nurses, doctors, infrastructure and resources.

Many tourists travel the world in a false belief that if they have purchased holiday health insurance this will ensure optimal quality emergency evacuation, medical care and repatriation. It may, but this depends upon local resources at the location of injury or illness. The quality and availability of these resources varies markedly from island to island in the Caribbean, depending upon their size, population, development, colonial history and wealth. Many tourists still travel without travel health insurance cover and elderly people are finding that their current medical problems cannot be covered. They are often now travelling uninsured for the conditions most likely to befall them. These groups will face high medical costs if they require medical attention or hospitalisation in islands unprotected by EC reciprocal health care regulation.

Infection risk for tourists is not high in the islands. However Dengue fever and malaria are on the increase and may become more of a threat with global warming. HIV/AIDS is also a continuing problem on many of the islands and tourists who indulge in sexual activity with residents may become infected. Hepatitis is a special risk in the Dominican Republic. Malaria was eradicated from the region except for Haiti and Dominican Republic, but there has been a resurgence in tourist frequented islands. Jamaica, Puerto Rico and Cuba have recently seen cases and deaths. Reports from Cayman Islands, the British and American Virgin Islands, Guadeloupe and Martinique confirm an increasing number of cases of Dengue fever. One tourist who later went on a cruise was infected in Dominican Republic in 2007.

Cruise ship passengers run the risk of succumbing to norovirus infection and the young and old may become dehydrated and debilitated and require island hospitalisation. An aircraft bringing tourists from Dominica was quarantined on arrival in Glasgow in August 2007 and 27 passengers were found to have norovirus infection. Affected cruise ships may have several hundred passengers infected with norovirus and have to undergo extreme cleaning procedures and quarantine restrictions on return to islands such as Barbados. Badly debilitated tourist sufferers will be disembarked en route, or at departure ports in Jamaica, Puerto Rica and Barbados where they may be quarantined.[1]

Cardiac problems are the medical emergencies most likely to result in premature disembarkation of ill cruise tourists. Trauma comes next in incidence. Many tourists suffer from trauma during a visit or sojourn in the islands. Road systems are often embryonic, poorly maintained and suffer urban congestion. Road traffic accidents befall many tourists who find that ambulance response may be non-existent, or delayed and that accident and emergency facilities are limited and far short of NHS resources.

Tourists flock to beaches and suffer over-exposure to the sun, coral abrasions, swimming and sailing accidents. Quad biking, horse riding and off-road 4x4 vehicle pastimes (often poorly controlled and maintained) are popular tourist activities and accident sources. Raft, river and rapid-running brings with them skin abrasions lacerations and fractures on islands such as Jamaica.

In a review of injury incidence in Barbados, a major tour destination for many British tourists, one million tourists were studied. Half arrived by cruise ship and half by air, with a third being Britons. Patients arrived at the A&E unit by private car, police vehicle or ambulance. There were 704 emergency admissions with 26 deaths. 14% were due to falls, 6% penetrating wounds, 5% water-related and 4.2 % due to road accident. There were 400 non trauma-related and 300 injuries requiring emergency medical evaluation or management per million tourists per year.[4] The authors considered injuries were a major cause of tourist morbidity and suggested development of programmes to

Health Care, Caribbean Style *continued*

educate visitors to the risk and its prevention.

On a personal visit to Grenada while visiting the hinterland of the island, two vehicles in front were involved in a head-on road accident. One of the passengers was a Swede who was knocked unconscious and had a serious head injury. Many miles and hours from the nearest hospital, emergency aid was distant and over bad roads. There was no ambulance facility. We had to pay a taxi driver to carry him to the emergency unit in St. Georges the island capital, as this was the only way he could gain urgent medical attention. Most islands have medical facilities that expect payment at the time of service, and there can be delays in accessing insurers if communications are poor.

The islands usually have radiographic facilities but may not have MRI scanners and have limited laboratory services. To access these may mean a journey to another island or to the mainland of North or South America. Serious cases in Trinidad are often transferred to Venezuela and in the American Virgin Islands, such as the tourist mecca of St.Thomas, to the USA. This means that patients may face very expensive hospital and medical costs.

On a recent cruise I was on, the ship turned round and carried a passenger with a severe myocardial infarction back to Barbados, which had better medical facilities than the small island which was the next destination. After a top speed six hour sail, the patient died en route to the hospital after disembarkation. Very ill patients who are transferred to small islands may face prolonged delay in air transfer to units with better facilities, due to a dearth of land and air transport and the vagaries of the weather. Hurricane, landslide, volcanic eruption and tremor can make roads impassable on many of these islands which are mountainous or subject to flooding. The likelihood of prolonged evacuation to modern medical and nursing facilities, if injured or ill, is not a possibility considered by British tourists, accustomed to prompt NHS ambulance transfer and emergency response in time of need. Professionals involved in pretravel health consultation should bring potential health care shortcomings to the attention of travellers to the Caribbean.

Cruise ships have a preponderance of elderly passengers who may suffer heart attacks and strokes on board and have to be hospitalised at the next port call. High technological cardiac care and rehabilitative resources are unlikely to be available at most ports of call, a situation which should be advised to travellers who travel despite chronic ill health. Ship board dispensaries carry a small range of medications and island pharmacies have a limited range of pharmacological products. A common complaint from ship doctors is that people forget their routine medications and arrive on board seeking replacements which may not be available in the Caribbean. Pneumococcal and influenza illness are common on cruise ships and older people should accept the NHS winter campaign offers for older people and be vaccinated against both before departure from the UK. Vaccination against hepatitis A is also a wise precaution. Antimalarial prophylaxis may be necessary for ships with ports of call with landfalls in Central and South America and yellow fever vaccination is necessary for those calling in to a Venezualan port.

A shortage of water and poor hygiene is evident inland from many of the ports. Increasing affluence is apparent in port and city residents, but in the islands interior and hinterland people are poor, live in shanties or small huts and live frugally. Restaurant and café cuisine and ice cream can be infected, with voyagers returning on board suffering from gastrointestinal infection. Tourists should anticipate problems and remember the adage that ingested food should be boiled, cooked, peeled or rejected if they are to avoid food and water borne infection. Small coastal resort eating places may offer barracuda and amberjack on the menu and there is a risk of cigatuera poisoning from a neurotoxin in fish which feed off reefs.

In general, a visit to the Caribbean islands is associated with low health risk, but trauma or illness can expose the tourist to lower standards of evacuation, immediate and continuing care than that expected in the UK.,

Recommendations for tourists to the Caribbean

Take precautions against sun burn.
Use insect repellents to avoid mosquito bites.
If elderly, have influenza and pneumococcal immunisation.
Have Hepatitis A vaccination.
Avoid tattoos and dental treatment to decrease risk of hepatitis.
Wear seat belts and check for the safety of vehicular transport.
Treat water and food on small islands and in island hinterlands as suspect.

Ian Mackay, Retired Hospital Practitioner.

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Health Care in the Falkland Islands

Roger Diggle

The Falkland Islands are a British Overseas Territory some 350 miles off the East coast of South America at a similar latitude to Oxford in the Northern Hemisphere. Therefore the daylight length is very similar to that of Southern England but lacks the warming influence of the Gulf Stream. Combined with the wind it produces a climate more similar to that of the Outer Hebrides. The main issue that regularly causes problems is the ease with which people get sunburnt. The UV light levels are twice those of the same latitude in the northern Hemisphere and because it does not feel hot people do not realise just how badly burnt they are becoming. Factor 40 or 50 protection is strongly advised.

The majority of the 80,000 tourists per year visit the Falklands on Cruise ships varying in size from small, ice-strengthened vessels, taking 50 or so passengers to massive cruise liners with 2,000 or more passengers. These cruise ships will combine several days cruising around the Falklands with South Georgia and Antarctica. The smaller vessels are more capable of visiting the remoter parts of Antarctica and generally have an expedition type of atmosphere whereas the larger cruise ships have all the facilities of modern luxury ships. In general one would need to be fitter to go on the smaller ships.

A smaller number of land-based tourists visit the Falklands to see the stunning wildlife, take outstanding photographs, indulge in some of the world's best Sea Trout fishing or to obtain Falkland Island stamps.

There are 2 air routes to the Falkland Islands: the Royal Air Force Airbridge from RAF Brize Norton in Oxfordshire via Ascension Island and Lan Chile from Santiago in Chile. The airbridge is every 5 days and opens up the possibility of staying in Ascension Island for a few days or even taking the RMS St Helena from Ascension and visiting St Helena. The airbridge is booked via the Falkland Islands Government Office, The Broadway, Westminster, London SW1. The Lan Chile flight is every Saturday to & from Santiago via Punta Arenas. Once a month the flight also stops in Rio Gallegos in Southern Argentina. Lan is part of the One World Alliance and many travellers to the Falklands are on a round the world ticket including South America and Australasia. The normal route to the Falklands would be London Heathrow to Madrid with either British Airway or Iberia and then Madrid to Santiago with Lan or Iberia, but there are many other alternatives such as British Airways to Buenos Aires then Lan to Santiago or London to New York or Miami then to Santiago. A round the world ticket including the Falklands costs £1600 - £1800. A return ticket London – Santiago – London about £3000 for business class.

Tourist Permits are issued on arrival and require evidence of a pre-paid return flight or sufficient funds to purchase one and evidence of booked accommodation. Camping on private farms is allowed subject to the permission of the landowner, but entry will be refused if the visitor does not have accommodation booked initially.

It is strongly recommended that all tourists have adequate travel insurance to cover medical costs, air ambulance and repatriation if needed.

There are no indigenous diseases or poisonous creatures to worry about. However, travel to the Falklands usually means coming via South America and travellers are advised to check requirements for each country carefully. At the moment there is an outbreak of Yellow Fever in parts of Paraguay, Brazil and Argentina.

The water supply is safe and drinkable although sometimes is a slightly pale brown colour due to peat colouring the water.

Currency in the Falklands is the Falklands Pound but Sterling is fully interchangeable. There are no ATMs in the Islands but many establishments accept the usual range of credit cards (Mastercard & Visa). Diners Club cards are generally not accepted. UK cheques will be accepted with a cheque card guarantee but there is usually a £5 surcharge for this. The local bank is Standard Chartered and it will do cash advances against credit cards but there is a fee for this service.

Stanley Falkland Islands

Health Care

There is a reciprocal health agreement between the UK and Falkland Island Governments which allows free medical treatment for UK residents in the Falklands. This does not cover dental care nor does it apply to British passport holders who are not resident in the UK. It also does not apply to other EU citizens. The reciprocal agreement does not cover medical care in Ascension Island nor in St Helena.

Medical services are provided by the Falkland Islands Government and are based in the modern, 27 bed, well-equipped King Edward VII Memorial Hospital (KEMH) in Stanley. There are 4 General Practitioners with extended skills, 1 consultant anaesthetist and 1 consultant surgeon and 28 nurses, a

Health Care in the Falkland Islands *continued*

physiotherapist, speech and language therapy, health visitor, district nursing and a well equipped laboratory that can undertake most of the tests that a small district general hospital would do. Other tests are sent to the UK and generally take about 4 weeks for a result. There is 1 radiographer with a range of modern digital plain X-ray equipment. There is no CT or MRI scanner. There is a small intensive care unit. The pharmacy is well stocked with UK pharmaceuticals but it does not carry the whole range of medications available in the UK. Tourists are strongly advised to bring enough of their regular medication to cover the whole duration of their holiday. A surprisingly large number of tourists do forget to bring medication. The pharmacy will always do its best to provide a suitable alternative if the precise medication is not stocked.

Given the small size of the hospital, the limited range of diagnostic facilities available and the limited ability to manage intensive care patients, coupled with the lack of complex treatments such as kidney dialysis, it is normal to stabilise a critically ill person and then transfer then to a larger hospital. Normally a Chilean Air Ambulance Company, Aerocardal, is used for the transfer and the KEMH has an agreement with the Clinica Alemana (The German Hospital) in Santiago which provides world quality care. However the reciprocal health agreement does not cover this and so every tourist must be insured to cover this potential cost. Aerocardal costs in the region of US$ 30,000. Fees of the Clinica Alemana are comparable to a private hospital anywhere in Europe so it would be highly likely that the costs there could be in the region of $40,000 US or more.

Although the RAF airbridge does have a stretcher fit and alternate Wednesdays there is an aeromedical team on board, the RAF normally will not consider transferring a tourist as a patient even if they are UK passport holders and even if they have a pre-paid return ticket as a normal passenger. Therefore it is perfectly possible that a family who had travelled to the Falklands with the RAF and have a return ticket may not be able to travel that route if a member of the family develops a condition requiring medical care in flight. Under exceptional circumstances the RAF may consider assisting a tourist, but in this unlikely event they will charge the full commercial rate to the UK. At the time of writing this article it is not clear exactly how much this would be, but the author thinks it likely to be in the region of £150,000.

During the tourist season, October- March, the doctors at the KEMH regularly have to treat foreign tourists and the hospital is very used to dealing with travel insurance companies and organising long-distance repatriation and aeromedical transfers. English is the main language, but Spanish is spoken by a significant number as a second language. Because of the foreign fishing fleet, there are a high number of patients who do not speak English or Spanish and there is an extensive list of interpreters for other languages available. Every now and then we come across a language for which we have no interpreter – Burmese and Vietnamese, for instance and in those cases we normally contact the Embassy or Consulate in London for telephone translation assistance.

Lan will accept medical passengers under the same restrictions as all other commercial operators. If they will not accept the patient then the only alternative is Aerocardal.

A sample of the charges at the KEMH for non-entitled patients is:

Inpatient	£500 per day *(fully inclusive of all care & consumables)*

The area of the Falklands outside of Stanley is called Camp (from the Spanish word *Campos – country*). The KEMH doctors have a weekly routine flying doctor service to the settlements in the local airline's Britten Norman Islander Aircraft. Each settlement is visited roughly every 6 weeks or so. Each settlement has a "Camp Medical Chest" which contains a small supply of the most commonly prescribed items. Following a telephone consultation you may be advised to take some medication from the Camp Chest and then a replacement is sent in the post. More serious illness or accidents will result in an Island Aircraft fitted out with a stretcher being flown to the settlement usually with a doctor or nurse on board. The aircraft can be ready in 20 minutes but people are often surprised at the size of the Falklands and quite a few settlements are up to 1 hours flying time away from Stanley. The round trip may take up to 3 hours from the first call for help. If the incident is at night or occurs some distance from an airstrip then the RAF will be asked to provide assistance with a search & rescue Sea King helicopter.

The standard of medical care in the Falklands is broadly very similar to the UK but tourists must bear in mind the limitations imposed by the size of the hospital, the range of specialists available and the limited range of diagnostic equipment available (ie no CT or MRI scan etc).

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Papua New Guinea – Aspects of Medical Care

Jen McWilliams

How much do we, in our affluent, cosseted and, dare I suggest neurotic Western society take for granted, especially in the field of Medicine! We hear and see a great deal about poverty, malnutrition and starvation in Africa and some parts of the Americas, due chiefly to relatively easy access by the 'Media' and their communication systems. These countries tend to receive international aid of various types and forms more readily, others get little attention in the West.

In a country, almost half a world away from the Europe some ten time zones in front of the UK., lying between 141°and 155° East and 10° and 12.5° South, lie the island countries named collectively as Melanesia surrounded by the Bismarck and Coral Seas. These names give indications of the history of this part of the world, although remote and hard to find on some maps. These islands form part of the Pacific 'Ring of Fire'. They have many active and some dormant volcanoes which have caused, and continue to cause, much hardship by eruptions and subsequent tsunamis with considerable loss of life and hardship to the survivors, by the destruction of homes and fishing vessels.

History and geography relates to the medical scene with all its problems on these islands.

Until the first World War, most of the contacts were from planters, and merchants. They came to exploit natural products, fish, copra, timber. This was because of the topography of the islands, with great mountain ranges, the highest being Mount Wilhelm at 4509 m, forests, low lying coastal plains, 'middle' areas with rolling hills. Only 4.9% is arable land.

There was no road system and, even today, much of the interior can be reached only after many days of trekking though muddy jungles and bush, or by helicopter. The other hindrance to lack of development lay in the fact that there are about 350 languages spoken. 'Pidgin English' is the only common tongue, only 1-2% of the population can speak English.

At the time of the First World War, there was no 'modern' equipment and no opportunities to gain access to remote areas, so no improvements to the health and welfare of the indigenous population were possible. Even though this was German territory, the people were not at all affected by this particular war. Sick people, mostly 'whites' would be taken to Port Moresby and then transferred across the Torres Strait to Australia.

However, in the Second World War, due to the proximity of Japan with its stated intention to threaten Australia, there was an influx of white people mostly from Australia with different customs and standards. Inevitably, there was then an erosion of the long established tribal system normally sustained by the elders chosen from among the native people. These men were held in great respect for their knowledge and wisdom. Now, there were new religions introduced by accompanying missionaries, new customs, and even though to Western eyes there were still the appalling customs of head hunting and cannibalism, some degree of law and order was kept by chieftains.

During this war, much practical help was given to the armed forces, especially Australians, fighting in remote terrain of Papua, Local people ran considerable risks to help Australians. In addition, they themselves were subjected to much cruelty, starvation and death since they formed slave labour for the Japanese in building extensive tunnels in the limestone cliffs to conceal armaments from air attacks.

After the war, the population once more accepted the inevitability of the arrival of more 'white' and more enlightened people who were now able and willing to repay the Papuans for their help in wartime.

Heath care now is supported very extensively by Australians, teaching in the main hospital at Port Moresby and exporting skills to the larger towns of Lae, with its own University and Madang, the 'capital' town. Both towns have fairly large paved airstrips and there are about 500 unpaved airstrips and 2 'heliports' for the truly remote areas, inaccessible on foot.

Transport has improved considerably to bring in supplies of all kinds. There are very few locally owned ships so much reliance is placed in the ships of other nations which bring in heavy equipment required for new industries.

Since the last war, there has been much spent, in time, money and effort in investigation and, indeed, exploitation of the newly discovered natural resources of, in particular Papua. This has brought unexpected problems, adding to the poverty of the country Mining companies extract gold, copper ore, natural gas, palm oil, coffee, and have interests in commercial fishing especially of crayfish which are 'tinned' locally, but compensation has not been paid to the farmers displaced from their mountain lands.

A civil war has simmered for the past thirty years leading to an increase in the poverty and reduction of health and welfare of the populations. There are still reports of inter-tribal warfare, especially in the remote Highlands, but there now seems to be a reduction in the old custom of 'head hunting'. There has also been a breakdown in the distribution of wealth. People living in coastal areas are more likely to be in contact with the outside world, have more money and resources than people living in the middle areas and the most inaccessible Highlands.

However, the old practice of 'bride price' remains but this display is probably more for tourists!. Enormous towering platforms with extending arms are festooned with local currency notes and paraded through the streets, accompanied by men dressed n the ancient costumes decorated with feathers – most-

Papua New Guinea – Aspects of Medical Care *continued*

ly from Birds of Paradise. In addition, the men sport pig's tusks and other artefacts through their noses.

Since there is no system of state funded health care, it is difficult for a family to buy even one injection for measles or polio prevention costing three Kina, subdivided into one hundred toea, when a monthly wage is about thirty kina.[1]

The average family size is almost 4 per family; infant mortality is almost 49 per 1000 live births; life expectancy is 65 years. How can a poor family decide which of their children if any, can receive any prophylactic measures? There is a huge range of illnesses in the countries, ranging from falciparum (chiefly) malaria, tuberculosis, tetanus, especially neo-natal, measles, varicella, poliomyelitis, vector borne food and waterborne diseases. The benefits of eradication of poliomyelitis have not yet reached these islands.[2]

Added to these are the 'new' problems of HIV and AIDS; many people smoke, diet is poor especially for those living in the Highlands, and middle areas between there and coastal areas.

This fact probably leads to the increase in crime because of envy. As in many developing countries, e.g. Iran, Greenland, there is now an increase in obesity, smoking related illnesses, alcoholism and attendant domestic violence to which can now be added, diabetes, and hypertension. Most common injuries occur from falls from trees. Foreign based companies in the Highlands seem to provide reasonable care only for their employees.

Many people survive by hunting small bush animals such as wild pigs, giant rats, quails, possums and small wallabies. Tusks of wild pigs were once treated as currency but are now favoured as a mark of rank and importance to their owners, to be worn preferably as a pair, on special occasions! Many of the villagers breed and fatten pigs for food - tended lovingly below the bamboo and rattan huts, until ready for slaughter. Visitors are expected, at the time of a visit to a remote village, to provide a live pig, suitably trussed, slung on a pole and then transported on men's shoulders to the villagers.

In some areas of the country, there has now been a decline in the numbers and work of foreign missionaries and a return to traditional influence and judgements of respected local elders of tribes. This return appears to be having a better influence on people. Yet, the crowd of men and women outside the local magistrates court, just across the 'green' from the Maternity and Child Welfare clinic, never seems to get less. Foreigners are less able and willing to understand and accept the various traditions of the many tribes, especially in remote areas.

People living near the sea fish endlessly and cultivate usually very fertile plots of land. Some of these enterprising people, especially one whom the writer visited at Kieta on Bougainville, grow herbs and spices. Supporting hill farmers they try hard to establish markets in the West. No financial support is given to them by the government, communication is poor and electricity supply quite minimal and very intermittent. This poor 'farmer' had his home burned down six times during the civil wars and rebuilt it each time, living in the bush until rebuilt. All along the very rough and potholed road to his 'farm' are rows of burned out houses, now covered almost entirely by tropical plants, lianas and flowers. He made his own huge mortars and pestles to render down his herbs and spices, a different one for each of those so as not to mix the flavours.

The next step in preparation to market these is the use of an ancient 'Kenwood' mixer, when there is an intermittent electricity supply, to render them to powder.

On arriving at Madang, I had intended to visit the local hospital where treatment is reported to be free. Since they were busy with an emergency, I went instead to the local Maternity and Child Welfare clinic. There is much crime, including domestic violence present in this land, related to drug and alcohol abuse The little clinic was competently staffed and well run by dedicated nurses trained in Port Moresby. There were about twenty women waiting to be seen by the midwife and were well supplied with educational posters and leaflets, in both Pidgin and English.

The first injection for pregnant women is tetanus toxoid as tetanus is very prevalent especially in the Highlands.The neonate also receives this injection as soon as possible after birth. Blood is taken for ABO grouping but no test seemed to be available for Rhesus factor. All other tests and measurements are routinely taken and women are encouraged to deliver in the local (and only) maternity unit in the whole of the islands, since infant mortality remains high. Women are given their own record card, in English and Pidgin, to keep as well as the card for the newborn. Diet is poor and malnutrition is common especially in the Highlands, because of living conditions. The vast range of languages also contributes to health and social education problems Much emphasis is placed on and much advice given for the puerperium. Breast feeding is strongly encouraged in the hope of reducing infant mortality. Nurses are aware that many births occur in remote villages and there is little chance of good midwifery being available there due to location. Most maternal deaths are eventually notified to Madang, where statistics are kept and maintained. The accuracy of these always have to be doubted, given the difficulties of communication. It is reported, even today, that there is the possibility of the existence of tribes in the Highlands, completely unknown, as yet, to the outside world.

Good postnatal contraceptive advice is offered, mostly by 'injectables'; use of condoms, oral contraceptives, both COC and POC, all again limited by cost and distance from availability. Vasectomy is actively encouraged and performed in the hospital at Madang.

Nurses and midwives are permitted to prescribe a limited amount and type of antibiotics and anti-malarials. Staff can refer patients directly to hospital, particularly for maternity problems.

Mental illness does not seem to be recognised at all in Papua New Guinea. The diagnosis and cost of treatment of this would probably be prohibitive and the diagnosis would probably be unacceptable to the indigenous populations.

School meals for the numerous outlying islands have, by nature of the geography of Papua New Guinea, to be delivered by small outrigger canoes or larger canoes with a small outboard motor for the several hundred more inaccessible islands. Outriggers are paddled by the teacher at the stern with one man at the 'sharp end' and one woman keeping an eye on the midships food container!

On a previous visit to these islands six years ago, I elected to visit the A&E department at a small hospital at Lae, the 'second' town of Papua. This hospital had the minimum equipment and I wondered how on earth the doctor could manage any trauma, under those conditions. The most commonly reported trauma is fractures from falling from trees, as well as domestic violence. Most people prefer and should wait until the coconuts fall from the trees, instead of making the potentially hazardous effort to climb trees to collect the nuts. A very small pathology laboratory was near the A& E department. The doctor's main desire was to have a pulse oximeter. In this department, there was even less equipment, even of a diagnostic type, than in an average UK GP's surgery. There was no 'high tech' equipment. Much trauma from domestic abuse is suffered by women and there has been an increase in their death rates because of this. Women are now also being blamed for causing HIV and AIDs and are killed in some remote areas for being 'witches'.

In addition to the more 'active', immediate medical difficulties, in those volcanic islands with little or no arable soil, the disposal of the dead causes difficulties for Public Health doctors. Arable land is more important for feeding the people. Cremation here is therefore preferred but since the cost of this procedure is mostly beyond the majority of people, most of the bereaved wait until there is an accumulation of bodies and then have a mass cremation.

The mortuary consists of a tiny tin shed at the side of the main road. Health education and treatment of the many illnesses in these islands have a long way to go to have any impact on health. Many of our 'Western' illnesses, such as diabetes mellitus, hypertension, smoking related illnesses, HIV and Aids have arrived in this country as in many other countries of a similar type.

It will be several generations before health can be improved, even though much has been done over the past fifty years, especially by Australians who have encouraged doctors from that country, as well as Malaysia, Indiana, Indonesia and the occasional 'Westerner' to come and work here, bringing and teaching their skills to others. Geography and inaccessibility continue to make life difficult for all in PNG., especially medical staff.

History repeats itself, reflecting the time a few centuries ago, when Western nations brought 'simple' disease such as measles to the Pacific nations, thus decimating their civilisations. There is nothing NEW in the world!

Jen McWilliams is a retired GP.

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photo: Jen McWilliams

photo: Jen McWilliams

Injury and First Aid in the Taurus Mountains, Turkey

Allan Melrose

Istanbul *photo: Iain McIntosh*

The Taurus Mountains rise in southern Turkey. We travelled into their hinterland, passing houses tucked into corners of impoverished fields growing sparse crops of grain and a splatter of opium poppies. Local transport was by mule, horse and foot. Leaving civilisation, the scene was dominated by Demerkazik, 3425 metres high, our mountain objective. Soon, high above the distant patchwork of tiny fields, we were in an arid region grazed by black haired Angora goats, often found tugging at leaves three metres up the occasional tree. Yellow ochre sandstone terraces reflected the sun and a harsh light bathed the land.

Climbing in this roasting landscape was debilitating and dehydrating, but the occasional patch of snow provided melting water to assuage increasing thirst. A high plateau runs across Asia at this latitude. Under the approach cliffs of the primary massif we found a tiny shelf for the tents in a wilderness of shattered rocks and cliffs reminiscent of a lunar landscape. On the featureless plateau, a sterile, arid land swept by wind and bleached in sun – an inhospitable environment – a family of desert nomads was living in black hessian tents. Herding a few horses, goats and sheep they lived simply. Guarded by ferocious dogs to keep wolves away, the open weave of their tent walls allowed ventilation from wind, which blew smoke away from the internal open fire. Small children all had burns and scalds in different degrees of healing or infection, after falling in to the flames when wandering from the narrow sleeping shelf. The parents offered us unleavened bread and goats cheese in exchange for proffered first aid assistance.

Above the tents, cliff-girt heights led to our mountain. Attaining the summit would leave a permanent mark on my physical frame and psyche. Setting off at dawn, we climbed in a threesome, scrambling over broken rock, across splintered cliffs rent with gullies. By midday, two thirds of the way up, the mountain took on a different character with rock faces barring progress. Roping together we had to climb awkward pitches, hammering in pitons to provide anchorage for rope belays. Hopefully, these would protect us after a slip or fall. Progress slowed and high altitude began to have an effect. The dry, low oxygen atmosphere sucked moisture from lungs and breathing passages. Breathing became shallow and laboured.

As lead, I climbed a pitch, belayed and called for my buddy to ascend. Then he would bring up his partner as I reconnoitered ahead. We settled into a rhythm mastering the mountain pitch by pitch. I was soon climbing on rock that tested climbing skills. Great fractured buttresses barred the way, with narrow chimneys cleaving between them. I was moving well, until traversing along a narrow ledge, I ran out of potential holds. There were no belay points, but across the metre gap which separated me from the neighbouring buttress, I glimpsed an escape route.

A 300 metre drop lay below my last belay and the next move was an oblique bridging of the chimney on to a 10cm mini-ledge running laterally and upward. It required an awkward move, a leap of faith, across the void. I went for it and lunged over and upward, to scrabble with slipping feet on the narrow rock projection. The rock beneath crumbled. I altered balance and thrust awkwardly for a wider platform just revealed a metre below. An uncalculated move, the position was dangerous and a fall imminent. With body twisted and straightened legs, I landed precariously and with a vicious body thump as I swung on to the rock wall which restrained, forward impetus.

Excruciating pain lanced through my back, knifing from waist to big toe. Its sudden onset was unexpected agony and the immediate, conditioned body reflex to "double up", almost hurled me down the rock chute below. I grabbed for the rock beside me, desperately seeking a hold as my body pitched forward, on the start of a parabola which would spiral me off the mountain. Fingers scraped over bare stone tearing unprotected flesh as forward motion continued. I could see the distant rock scree far below, which would receive my falling body and inevitably break bones. Almost at the point of no return, with balance lost, a flailing hand caught a minute protuberance and held for a moment, long enough to slow momentum.

With a despairing, desperate swing I found a hold with the other hand. Back pain was so intense I could hardly focus thought on further moves needed for survival. I could not muster the resources needed to improve and protect the stance. Most muscles seemed to have gone into spasm and my back was an uncon-

trolled board of pain, with the slightest move increasing the agony. For long seconds I remained poised for a plunge down the precipice, while trying to overcome natural body reaction to severe physiological trauma. Mind finally won over matter and I edged into safety, body clenched in board-like rigidity, pinned against the rock face, with heels still over the void. Transcending mind over dominating pain, I eased a piton into the rock, hammered it in and belayed on, to protect the stance. I dared not move while trying to master pain and make further moves to safety. The massive neurological shock from major spinal disc damage, which threatened to dissect my spinal cord, had triggered extensive protective muscle and nerve reactions. This response was effectively combating ability to move further.

For long minutes I hung suspended by a rope sling from a dubious rock belay, which might yield at any moment. A plunge down the mountain seemed imminent as racing thoughts tried to find a way out of the predicament. I could hear buddies chattering out of sight below me, but my inaccessible station made it impossible for them to assist. Bolstering courage, I tried a tentative move when the excruciating pain had eased a little. Immediately the stabbing agony lanced from back to toe again with such intensity that I almost jerked off the stance. How was I going to get off the mountain? The intensity of the pain was robbing me of logical thought and further movement seemed impossible without assistance. Climbing companions could not help as the nearest was 30 metres below at the full length of the climbing rope, which snaked across and down the chimney to disappear round the massif to their stance. They also lacked the skill to reach me from below.

Shouting instructions to wait, I too awaited, immobile, momentarily secure but desperately searching for an escape route. Defying pain and spasm for a few seconds, I fought to move an unwilling body a few inches and eased into an uncomfortable lying position, semi-supported by climbing harness and belayed sling.

My perch near the top of the mountain provided an unbeatable view across the parched, sun-baked heartlands of inaccessible south Turkey. Mere dots below were our tents belonging to a different world from the one I now occupied. Focus was restricted to my problem. The likelihood of a safe return to camp seemed elusive.

I could now see the narrow ledge extended and widened above me to exit on a boulder scree chute. If I could reach the scree, I could reach safety. The pain had eased as I rested, but each tiny move brought its vicious return. Calling up all my hypnotherapeutic powers and reservoir of strength, I ventured a tiny move along the edge. There was no immediate conditioned reflective response of nerve pain! Inch by inch, rest after rest, I eased along the shelf until the encroaching rock walls offered climbing protection. I abandoned the belay sling and shouted for the others to retrieve the rope and find another route to the summit. Over time, a long time, I traversed the shelf and reached the rock scree, which funnelled from the summit to the plateau far below. A scree descent is a body-jarring experience and escape downwards was not an option. A crawl to the summit was the only way ahead. I lay for a while warmed by the sun, which seemed to relieve the immobilising muscle spasm.

Crawling over shattered rocks and boulders was not an attractive prospect, but tight into the funnel wall I made progress. Miraculously the pain eased and suddenly was not there. There was no flash of intense pain down the leg with minute movement and even the dull backache diminished and all but disappeared. Hardly daring to believe the improvement I very, very cautiously straightened posture without a return of the severe pain. As if walking on eggshells I continued upwards as sunlight gave way to dusk. In the red glow of a southern sunset I reached the bald dome of the mountain top and my colleagues.

I made light of the incident wondering if perhaps I had displaced a spinal vertebral process rather than a disc and it had returned to its normal position. Mightily relieved at the change in physiological status, I prepared for the descent. While gingerly navigating a route off the mountain, 300 metres from the summit, darkness descended and we bivouacked for the night above a cliff.

Recumbent on a thermal foam mat, belayed to rock, I drowsed through a chilly night marvelling at the brilliant panoply of stars in a pollution free sky. Meteorite showers and falling stars spun across the sky in a lengthy fireworks display. A brilliant red dawn spread its light over the highest mountains of the Taurus range to illuminate and warm us.

As we descended the mountain, I had no further pain, not even a backache, and congratulated myself on escaping serous back injury. Pain- free, close escape from serious disability was almost forgotten. I had yet to learn that physically my body was not as indestructible as it had been and physical ability had peaked and passed. A weakened bony skeleton was in decline. The episode on the mountain had left its mark with an impact still to come but I had been fortunate to avoid a difficult, prolonged mountain rescue by manned stretcher and mule.

Injury and First Aid in the Taurus Mountains, Turkey *continued*

Striking camp, I was last to leave a deserted, rarely visited mountain. Carrying a heavy load, I sped down the descent and soon entered a vast amphitheatre of shattered rocks, riven pinnacles and battered buttresses which was difficult to cross and navigate through. This was formidable terrain of rock-lined chutes, screes and spiky rock gendarmes, lying like a prehistoric stone forest across my path, Concentrating on downward progress, I circumvented the obstacles steering a safe route with difficulty.

I thought I heard a bird-like whistle, but the place was a deserted wilderness, with nothing apparently moving other than myself. Companions were long gone. I descended rapidly and then again heard an almost inaudible whistle. Stopping the descent momentarily to listen, it was not repeated. I prepared to continue downwards. To climb back up the mountain again was not an enticing prospect. Sliding fast down rock rubble on the easiest route forward, subconsciously however I found myself drifting back up the slope There was nothing untoward to be seen. No sound, no movement and yet I hesitated, uneasy to continue downward. Then it came again a faint whistle from higher up the mountain. Grudgingly, I made towards the sound. Emerging on to more open ground, it became recognisable as intermittent whistle blasts - the three long and three short blasts of the emergency distress signal.

I scrambled back up the slopes and into another broken area of pinnacles, cliffs, and shattered cascading rock. Between crude contortions of rock, I could not identify the location of the sound while quartering difficult terrain. Suddenly the ground dropped before me above a cliff. It plunged 150 metres vertically before pausing for a further drop. To one edge of the precipice, a narrow chasm separated cliff wall and a buttress and in its gut, six metres below the rim, a youth was lying. Separated from comrades and off route he had stumbled and fallen head first over the cliff edge. If undiscovered, resultant search would have been the classic needle in a haystack challenge. Knocked out in the fall, on 'coming too', he had started to blow his whistle. By good fortune I had heard him.

Tossing climbing rope down to his ledge, I abseiled to him. With a probable arm fracture, he could not climb unassisted and I had perforce to piggy-back him up the rope. We made a slow, careful descent off the mountain and reached the village at nightfall.

Many hours later his arm was treated professionally and we experienced the rude health care available in rural Turkey. Facilities and resources were basic and limited and I was grateful that I personally had not required emergency medical attention.

However, my physical support for the stranded youth, plus carriage of a heavy backpack had reawakened waist pain, which ached steadily on the prolonged return by coach and aeroplane to the UK. I returned to work unaware that retribution was imminent.

Ten days later when bending over the trunk of the car reaching for a parcel, agony returned with a vengeance. Severe, lanceolating back pain also ripped down both legs. A serious L3-4 disc lesion was diagnosed, with the protrusion impacting on sciatic nerves. Totally incapacitated for weeks, I wondered if I would ever walk pain-free again. It would be 2 years before the pain receded down the legs to the foot and finally disappeared. I did return to climbing. Never again however would I be able to carry a heavy pack or lift a buddy. The psychological effect of a climbing mishap and first aid response would remain with me always, but I had thankfully escaped exposure to inadequate foreign health care, difficult mountain evacuation and complicated repatriation.

Allan Melrose, Retired GP. Expedition Doctor and Leader.

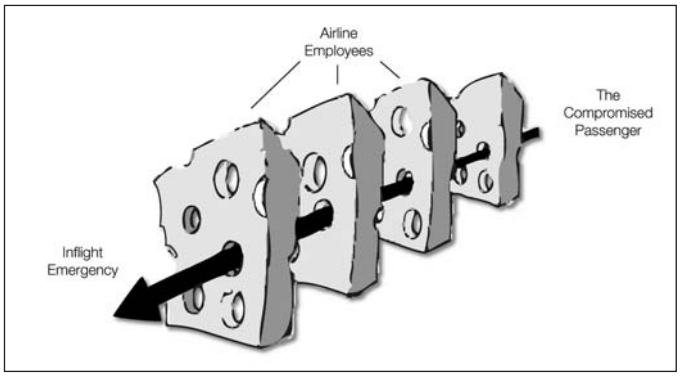
The Determined Traveller

Garrett Kwakkestein

A sense of urgency can compromise a passenger's health

Regional airlines are becoming more and more efficient, with many implementing electronic ticket kiosks and outsourcing the security check-in process to third parties. However, along with these efficiencies comes a decreasing amount of human contact between the airline and passengers – including travellers who are determined to board a flight, even when potentially ill.

That is why it is even more important for gate agents and crew members to pay close attention during the boarding process – especially to passengers who are influenced by family and friends to "get there". Few of them understand the health risks associated with flying and the unforgiving influences of altitude and flight duration, In times past, there were greater numbers of human interventions between passengers arriving at the airport and presenting to airline staff. Today, human contact is reduced significantly, resulting in the "Swiss Cheese Model of Safety".



The Swiss Cheese Model of Safety

Imagine a series of slices of Swiss cheese stacked next to each other. With the holes in random places, one can imagine the potential for a compromised passenger to slip through the holes in "the system" of trained observers. What many of these compromised travellers fail to understand, however, is the pathophysiology of their disease process; the resulting impact of air travel on their condition; how to manage their disease in-flight; and the warning signs of their condition when it deteriorates.

This mindset has been called *Go-Syndrome*, defined as "an overwhelming desire to compromise risk for potential results". A prime example is the traveller determined to get to the destination at all costs.

When patients do not fully understand their medical condition, they can set the course for a medical crisis in flight.

It is common for an individual to arrive at the gate with bottled oxygen in use, stating he "needs it," but "can go without it" in flight. These statements can be far from the truth. Such passengers will commonly mislead staff, or simply change facts when they sense that their flight is in jeopardy. When this occurs, it becomes prudent for the crew member to investigate.

Safety comes first. Simple crew member awareness can stop a chain of potentially harmful events from ever occurring. When a member of the crew denies an ill traveller passage, he or she prevents that person from endangering himself or others from a medical condition that that may worsen in flight, and could even result in death. Such actions may also prevent diversion of the aircraft into a remote part of the world, and avoid the costs associated with accommodations and meals for the re-routed passengers and crew. Missed flights may be avoided.

This chain of events can occur as a result of one person, unaware of his disease, with only *his/her* overwhelming desire to get to the destination - at all costs - placing everyone at risk.

Gate agents, cabin crew, and flight crew who are alert and aware of passengers travelling with compromising medical conditions can effectively minimise that risk for everyone, and potentially prevent a sometimes-irreversible cascade to disaster.

Garrett Kwakkestein, Registered Nurse Case Manager. MedAire's 24/7 Global Response Center. 15 years experience in pre-hospital emergency medical services, emergency room and intensive care nursing.

UPDATE FOR NOVICE AND EXPERT

Significant Event Analysis of Deep Vein Thrombosis

What happened?

A 52 year old woman presented at an evening surgery with a painful leg and gave a history of having run a marathon 10 days earlier. She developed L. sided knee pain after the race, prior to flying home from abroad. Swelling behind the knee was discrete and well circumscribed and the problem was compatible with a Bakers cyst. Advice to re-attend if the situation failed to resolve, the patient had attended the local A&E unit a week later and diagnosed as having a sports injury. The following day she developed chest pain, was admitted to hospital with a diagnosis of DVT and PTE. D dimer test was strongly positive.

Why did it happen?

Failure to diagnose a serious medical problem. When seen by another GP after discharge, he volunteered that she had had a thorough assessment when seen at the practice.

Having reflected on the case it is difficult to attribute all the patient problems to DVT only. She certainly could have sustained an injury related to running the marathon but it is possible her DVT could have occurred on the outbound or homeward flight. Clinical diagnostic accuracy of DVT is only approximately 50%. I would have been better to refer her, given her history of long haul flights. WHO states there is one case of DVT in every 600 journeys over 4 hours.

What has been learned?

Reviewed information including the SIGN guideline 62; DOH guidance on travel related DVT; BMJ clinical evidence.

What have you changed?

Have now a higher index of suspicion for DVT. It may not present with classical signs.

Propose to carry out a "probability assessment".

Greater knowledge of D dimer test and compression ultrasonographay.

Suggested that the probability assessment should be adopted as part of the assessment of patients with a possible DVT.

How common is DVT?

Incidence is 1:100 patients per year. Untreated DVT has a 1:20 risk of death from PTE. Untreated DVT 50% go on to have PTE and 30% of these potentially fatal. DVT above knee and popliteal are strongly associated with PE.

What are diagnostic signs?

Common physical signs are local pain and tenderness of calf or along path of deep veins and or oedema with swelling of whole limb. Some are asymptomatic.

Clinical diagnostic accuracy is no better than 50% therefore investigate if any suspicion. D dimer has high sensitivity 95% but low specificity 50% often used as a preliminary screening test as the negative predictive value is high. Contrast venography is the gold standard but compression ultrasound is non invasive so is often used.

Can the risk be quantified?

A validation model classifies patients before investigation as having a high, intermediate or low probability of deep vein thrombosis. It can be used to reduce the need for diagnostic tests in patients with suspected deep vein thrombosis.

Clinical feature	*Score*
Active cancer (treatment ongoing or within the previous six months or palliative)	1
Paralysis, paresis, or recent plaster immobilisation of the legs	1
Recently bedridden for more than three days, or major surgery within four weeks	1
Localised tenderness along the distribution of the deep system	1
Entire leg swollen	1
Calf swelling by more than 3cm compared with the asymptomatic leg (measured 10cm below the tibial tuberosity)	1
Pitting oedema (greater in the symptomatic leg)	1
Collateral superficial veins (non-varicose)	1
Alternative diagnoses are as likely or wider than that of deep vein thrombosis (for example, ruptured Baker's cyst	2
Superficial thrombophlebitis or infective cellulites)	

0 or less = low probability; 1-2 = moderate probability; 3 or more = high probability.

What are the risk factors

Hormone replacement therapy doubles the risk of venous thromboembolism in current users, resulting in 16 to 23 excess cases per 100 000 users per year. The risk is greater in the first year of use. The risk in people taking low dose oral contraceptives is also increased by up to six times that of non-users, depending on the preparation used. The absolute risk is low, however, at 3 to 4 per cent per 10 000 person years.

Other risk factors and conditions predisposing to venous thromboembolism are related to abnormalities in blood flow, blood clotting components, or vessel walls (Virchow's triad), singly or in combination.

They include:

- Previous venous thromboembolism
- Prolonged immobility or bed rest
- Paraplegia

- Surgery – major pelvic or abdominal operations or lower limb orthopaedic operations such as joint replacement within last 3 months
- Trauma – lower limb fractures, spinal injury
- Severe obesity
- Myocardial infarction, ischaemic stroke, congestive cardiac failure, acute respiratory failure
- Cancer, especially adenocarcinomas, which may not yet be clinically apparent
- Age (40 years or older)
- Genetic coagulopathies – factor V Lieden mutation (activated protein C resistance), protein C deficiency, protein S deficiency, antithrombin deficiency prothrombin gene mutation
- Acquired coagulopathies – lupus anticoagulant and antiphospholipid antibodies, hyperhomocysteinaemia, dysfibrinogenaemia, myeloproliferative disorders such as polycythaemia rubra vera
- Very tall
- Pregnant or recently delivered
- Venous obstruction due to external compression from pelvic masses or lymph nodes

What investigative tests are there?

Plasma D dimers are specific fibrin degradation products. Their concentrations are raised in patients with venous thromboembolism. They have a high negative predictive value, low concentrations – used with clinical probability, plethysmography, or ultrasonography – can therefore help to rule out the need for imaging. D dimers are sensitive but not specific, and high concentrations may occur post operatively, in the elderly, in malignancy or pregnancy, and in other conditions.

Enzyme linked immunosorbent assay and latex agglutination are laboratory based tests (enzyme linked immunosorbent assay is the more sensitive). Rapid near patient tests include SimpliRed, a whole blood agglutination test that produces a result in 10 minutes, and Simplify, an immunochromatography test that has not yet been fully evaluated.

Ultrasonography is the best non-invasive test, with a sensitivity and specificity of 97% for proximal deep vein thrombosis (75% sensitivity for symptomatic calf deep vein thrombosis).

Compression ultrasound is the simplest and most commonly used method. Thrombosis is unlikely if the vein is compressible with no residual lumen. In patients with suspected calf vein thrombosis where compression ultrasound is less sensitive, it may be combined with a pre-test clinical model or repeated after five to seven days.

Serial ultrasonography is inconvenient and more expensive, but untreated patients with two negative tests over a week have less than a 2% chance of proximal extension or subsequent deep vein thrombosis. It has been suggested that serial scans may not be needed if compression ultrasonography of the proximal leg veins is combined with a pre-test probability model.

Duplex ultrasonography has an additional pulsed Doppler signal that detects phasic blood flow fluctuations during respiration. Absence of a phasic pattern implies venous thrombosis. Colour flow duplex imaging is duplex ultrasonography in which false colour is used to indicate the direction of blood flow.

Healthy Air Travel for Infants

10 Tips for Healthy Air Travel

True or false:

Healthy newborns must be one month of age to travel by air.

Infants need lots of fluid in flight to prevent dehydration.

Avoid air travel when infants have ear problems.

Decongestants help infants avoid earaches.

Answer – *All False.*

There is nothing novel about infants travelling by air. They have been doing so since time immemorial, long before adults. Legend has it that they were "delivered" by storks, and were never the worse for their trips. Of course, stork flights skimmed rooftops, eliminating concerns of high altitude and accompanying ear issues, dehydration, and excessive stomach air. Each newborn was a sole passenger, enjoying fresh air, with no worry of acquiring illnesses from disease-causing organisms exhaled, coughed up and sneezed out by other passengers.

Here is how to make today's skies healthier and friendlier for your infant:

1 **With few exceptions, modern air travel is as safe for newborns as were stork flights!** Airline's lower age restrictions are unnecessary for healthy infants. The rules stem from early days of aviation when aircraft were poorly pressurized, oxygen was sometimes required, and little was known about newborn physiology.

Infants with significant medical issues – premature birth or heart and lung problems, for example – even if they are otherwise healthy, could have difficulty compensating for lower oxygen concentrations at cruising altitudes. Such infants should be medically cleared for air travel.

2 **In-flight dehydration is a myth; feed infants no**

Update for Novice and Expert *continued*

more fluids in flight than at home. Adult air travelers erroneously interpret their parched mouths and throats as dehydration. This dry feeling results from air conditioning removing most of the moisture from the cabin air. Adults who eat and drink during flight accumulate fluid, as evidenced by swollen legs and feet.

3 **Feeding infants frequently during flight is counterproductive.** Conventional wisdom says feed infants during ascent and descent, and often during flight. At cruising altitudes the air in the stomach and intestine is already expanded by 20%, the result of lower atmospheric pressure. (This gives many adults a bloated feeling.) For infants, sucking adds more and unnecessary air and food to the stomach, and may cause fussiness.

4 Infants need not be sedated, even for long flights. Surprisingly few infants cry considering that air travel disrupts their sleep and feeding schedules, they rest in unfamiliar and sometimes uncomfortable positions, and, if they are on your lap, are disturbed every time you move. Moreover, there are no studies as to which medication is effective and how much and when to give it. Some sedating medications, antihistamines, for example, make some infants more active.

5 **Air travel appears to be safe for infants with upper respiratory infections and nasal allergies.** No one is sure whether infants experience ear pain in flight. (Older children occasionally do.) There is no evidence that air travel damages infants' ears. While decongestant and nose drops seem to minimize ear discomfort in adults, these do not seem to help infants. Air pressure regulating ear plugs do not appear to reduce ear discomfort in children.

6 **Air travel is also safe for infants with ear infections.** In flight ear pain is due to expansion and contraction of air in the middle ear as the aircraft ascends and descends. Ear infections generally obliterate this space, eliminating the chances of pain.

Aerating tubes in ears (inserted into the ears of children with frequent ear infections to drain fluid) is NOT a contraindication for air travel. Tubes connect the ear canal with the middle ear air space, equalizing pressure, eliminating the chnces of pain.

7 **Child Restraint Systems (CRS) (Safety Seats) increase safety, but barely.** Infants are the only items that need not be battened down for take off, turbulence, and landing. In case of severe turbulence or survivable crashes a 20-pound infant sitting on your lap effectively becomes a 300 pound weight that you can not restrain. Serious injuries have resulted. Ideally, infants should be in CRSs, but such turbulence and accidents are so rare that placing all infants in CRSs would avoid one serious injury/death every ten years. Most airlines charge full or partial fares for the seat for the CRS. Authorities conclude that mandatory CRSs use would cause sufficient families to switch to cheaper automobile travel, a more dangerous form of transportation, increasing injuries/deaths of infants.

8 **Watch your step at airports, literally.** Holding an infant in your arms may obscure the floor immediately in front of you. Common injuries include falling over luggage and having luggage and carts fall down escalators on you. Using an infant carrier/sling improves your view and frees hands, making you steadier. Leave a few stairs or a short distance empty before entering an escalator or moving sidewalk. Be careful with strollers. On down escalators, the first few steps are level at the onset, forming a platform, giving you a sense of security.

9 **Place infants in a window seat.** About 4,000 passengers, nearly all sitting in aisles seats, are injured each year by baggage falling from overhead racks. Window seats protect infants from flight attendants and other passengers serving or holding hot beverages. Sudden movements by the aircraft or by an infant have caused infants to be burned.

10 **The risk of infants contracting respiratory infections is small.** Cabin air is replaced every few minutes with air from outside (air at high altitudes is sterile) or recycled through sophisticated filters. Nevertheless, adults have contracted influenza and other infections, usually from passengers sitting nearby, and usually on long flights.

Washing your and your infant's hands and wiping surfaces (organisms survive for days on seats and armrests) may reduce risk. If possible, change seats if a nearby passenger coughs and sneezes.

Thinking of Setting up a Practice Travel Clinic?

Sarah Buckley

People of all age groups are travelling more frequently, and to more exotic locations than ever before, and travel health is now a recognised medical speciality, with a faculty within the Royal College of Physicians and Surgeons of Glasgow. Training in this field has historically been rather ad hoc, learnt on the job rather than formally. This is changing rapidly, and doctors and nurses considering setting up a travel clinic within their local practice should consider carefully the challenges they will face.

Consider first your reasons for considering setting up a clinic – are they primarily financial, or driven by a member of the practice team who has an interest in this field? The whole team must be included in this decision as a travel clinic will impact on all of them. You will need to carry out a simple audit to ascertain how many travellers you see on average every week. Are there enough to justify the expense of setting up a clinic?

There are many advantages in having a dedicated travel clinic:

- The practitioner is in 'travel health mode' and attuned to patient queries
- Equipment required is all in one place
- Adequate time can be given to the traveller
- Travellers are presented with a professional setting and can feel confident of a good service
- Required databases can be set up in advance
- Travel goods and medical kits can be displayed ready for sale
- Travellers registered with other practices may be attracted by a specialist organised service

Some practice members may feel that travel health is already being dealt with adequately in day to day clinics, but it is highly likely that in the future, clinical governance in trusts and primary care groups will require effective measuring of standards of care and outcomes of service delivery. This may be difficult when care is delivered in such an ad hoc manner.

At present many practices will see travellers with 'simple' needs, and refer others to a specialist clinic, and some practices will undertake partial care of the traveller, leaving the rest to those establishments that stock the more esoteric vaccines. Which does your practice do at present? What is considered to be 'adequate' care? Administering the correct vaccinations for a proposed trip does not in itself constitute adequate care – the advice given to a traveller is of paramount importance. Even a rather 'ordinary' trip to the Mediterranean should include adequate advice about food and water precautions, sunburn, travel insurance, and personal safety – all rather more than can be dealt with in a standard consultation. How much time do your travellers get at an initial consultation? Travellers planning a holiday in the tropics need at least half an hour, and those undertaking complex itineraries need considerably more. Can your practice devote this sort of time to your travellers?

Many travellers are understandably confused about their travel health requirements, as they may receive conflicting advice from their practice staff and a practitioner at the specialist clinic. This is not a satisfactory situation, and may result in the traveller losing confidence in their practice staff. The conclusion may be that a practice should either invest in the time and/or training required to provide a high quality service to travellers, or should consider opting out of providing this field of care. Diabetic and asthmatic patients have for some time now been cared for by practice staff who have devoted time to specialist study and qualifications, and travellers must receive the same high quality of care.

What training should be considered a baseline for practice staff giving travel health care and advice? A study day will stimulate interest, but is unlikely to provide adequate training in itself, as not all required subjects will be covered. However, study days are very useful for keeping up to date and networking with other travel medicine professionals. A basic accredited course is a good place to start, be it a distance learning or residential course – (details of some courses are given below). This will involve a financial and time investment. Nurses who are experienced in travel health, but may not wish to undertake any formal travel health training, could use the RCN competency framework to progress their level of expertise.

The practical aspects must also be considered – the room, vaccine fridge, equipment, resuscitation equipment, databases, information sources, leaflets, policies and protocols, travel equipment for sale, and PGDs must all be organised. Would you use your normal practice IT software, or would you consider specialist travel medicine software?

Providing a high standard of care in pre-travel health is no longer a question of sending the patient into the practice nurse for a couple of vaccinations – the traveller should expect and deserve more than that. Travel health practitioners should be highly skilled in giving advice and information, in counselling and public health education – they can also benefit from specialising in a rewarding and much appreciated service.

Courses

Introductory Course. TREC 'Basic Requirements'. Glasgow and Edinburgh. Cost £250. Email admin@trectravelhealth.co.uk

Online course. London School of Hygiene and Tropical Medicine. Can apply at anytime. Cost is £200. Email contact - shortcourses@lshtm.ac.uk

London School of Hygiene and Tropical Medicine. Five day course held annually in the spring. Cost is £720 at present. Email contact - shortcourses@lshtm.ac.uk

Thinking of Setting up a Practice Travel Clinic? *continued*

Health Protection Scotland. Foundation Course. Six month distance learning course with 2 residential days at Royal College of Physicians and Surgeons of Glasgow. Course are twice yearly. Cost of course £700. Further information email TMdiploma@hps.scot.nhs.uk or Tel: 0141 300 1132

Health Protection Scotland. One year diploma course, with two residential weeks at Royal College of Physicians and Surgeons of Glasgow. Course run annually. Cost of course £2200. Further information email TMdiploma@hps.scot.nhs.uk or Tel: 0141 300 1132

Publications giving information on setting up a travel clinic:

Travel Health for the Primary Care Team. Dr Mike Townend. Chapter 8, Setting up a travel service in the practice. MA Healthcare Limited 2006. £25.99. ISBN 1 85642 267 4

Immunization Childhood and Travel Health. Dr George Kassianos. Chapter 49, Travel Clinics. Blackwell Science Ltd. 2002. £41.99. ISBN 0 632 05581 2

The following is also essential reading:

Competencies: an integrated career and competency framework for nurses in travel health medicine. J Chiodini, S Grieve, L Boyne, A Jordan. Royal College of Nursing 2007. ISBN 978 1 904114 39 0

Sarah Buckley is a specialist nurse in travel medicine.

CASE STUDIES
Post-Travel Diarrhoea

Up to 50% of travellers to developing countries develop diarrhoea during or after their trip. The following two case studies illustrate some of the diagnostic pitfalls awaiting the GP consulted by returning travellers.

The traveller with diarrhoea and fever

Christine is aged 55. She returned from a two week holiday in Kenya with her husband several days ago and complains of diarrhoea and feeling hot. She is producing a large number of liquid stools per day but has not noticed any blood in her stools. She spent part of her holiday at a beach resort near Mombasa and also spent several days on a game safari. She had typhoid, hepatitis A and yellow fever vaccinations as advised by her GP and took chloroquine and proguanil for malaria prophylaxis. She refused to take mefloquine (Lariam) as she was afraid of possible side effects, rejected Malarone as too expensive and did not want to take doxycycline. She wanted to sunbathe and was afraid of photosensitivity. She ate in her four star hotel restaurant and at the relatively luxurious game lodge while on safari. It also provided packed lunches to eat on safari, and did she not eat in any local restaurants, though did occasionally eat ice cream on the beach.

What is the most important possible diagnosis?

Malaria is the most significant possible diagnosis and must be excluded first. Christine has travelled to an area where there is chloroquine resistant *P falciparum* malaria and has not taken the most effective prophylactic drugs. Chloroquine and proguanil are only about 50% effective against chloroquine resistant *P falciparum* malaria in this part of Africa while the other drugs mentioned are over 90% effective. If this type of malaria is not diagnosed and treated promptly it will cause severe illness and could be fatal. One of the principal presenting symptoms of malaria is fever, which Christine has, but *P falciparum* malaria may also cause diarrhoea or other symptoms such as jaundice, as it can produce severe multi-organ disease.

What are the most significant differential diagnoses?

Travellers' diarrhoea is commonly experienced in developing countries. Its causative organisms may include strains of *E coli, Salmonella, Shigella and Campylobacter,* and some of these infections may be associated with fever. It may also be caused by viral infection, though this is less frequent than bacterial infection. While some of the organisms referred to may on occasions cause the appearance of blood in the stools this is not always the case. Infection is transmitted by faecal-oral transmission by ingestion of contaminated water or food. Four star hotels are not devoid of risk as even relatively high standards in the kitchen can be let down by careless personal hygiene of food handlers. Buffets may breed bacteria by being kept warm and packed lunches may easily become contaminated. Ice cream is also a frequent source of infection, and Christine recalls eating it on several occasions.

Christine may possibly be suffering from a combination of problems and her fever and diarrhoea may have different causes, For example she may have malaria *and* a gastrointestinal infection or a gastrointestinal infection accompanied by, for example, a respiratory viral infection.

What are the less likely diagnoses?

Typhoid is unlikely as it presents initially with a fever, and diarrhoea, if it occurs, is a later symptom. Although Africa is a relatively high risk area Christine had typhoid vaccination which offers a high level of protection. Protozoal infections such as amoebiasis and giardiasis are also less likely as they tend to produce less acute diarrhoea, but may need to be considered.

How would you deal with her in your practice?

Blood should be taken immediately and sent without delay for examination of thick and thin films for malaria. At the same time blood may be taken for a differential white cell count, which may give a clue to the presence of bacterial or viral infection. Stool microscopy & culture are also important in this case in order to identify any pathogenic organisms present. Blood should be sent to the laboratory for serological tests for enteric organisms.

Would she need referral and if so, to whom?

If Christine is severely ill or dehydrated, or if malaria is strongly suspected, she should be admitted as an emergency, preferably to an Infectious Diseases unit where the medical, nursing and laboratory staff are familiar with the types of infections from which she may be suffering.

The traveller with diarrhoea and blood in the stools

Louise is aged 27. She returned from a two week holiday in Morocco 2 days ago with diarrhoea. She and her partner stayed in a 4 star hotel at a beach resort but visited several small restaurants in the nearby old town in order to sample local food. Her diarrhoea began just before leaving Morocco and she

Case Studies *continued*

attributed it to "something she had eaten", but she is worried because she has just begun to notice the presence of blood in her stools. She has no previous history of bowel disease or passing blood in the stools. She was given typhoid and hepatitis A vaccinations prior to travel. She was advised that Morocco is a low risk area for malaria and did not take any antimalarial medication though she used an insect repellent combined with a sun block cream. She did not swim in the sea as the waves were too big, but she did swim in the hotel's swimming pool most days.

What is the most important possible diagnosis?

The most likely diagnosis is that Louise has acquired a gastrointestinal infection with one of the types of organism capable of invading the wall of the intestine causing bleeding. Such organisms include invasive strains of E coli, Campylobacter, Shigella, or Salmonella. Infection is transmitted by faecal-oral transmission by ingestion of contaminated water or food. Four star hotels are not devoid of risk as even relatively high standards in the kitchen can be let down by careless personal hygiene of food handlers. Food hygiene in small local restaurants is likely to be of a lower standard. Infection may also be acquired via the water in inadequately treated swimming pools.

What are the most significant differential diagnoses?

She may be developing inflammatory bowel disease unrelated to travel. She is in an age group in which such problems often begin to arise and the history of travel may be completely misleading. She may also have a simple diarrhoea complicated by bleeding from piles, which may or may not have been diagnosed previously.

What are the less likely diagnoses?

Protozoal infection such as amoebiasis is less likely as it tends to produce less acute diarrhoea over a longer time scale, but needs to be considered.

Although there are some pockets of schistosomiasis (bilharzia) in North Africa this is not a likely diagnosis, as the development of diarrhoea and blood in the stools would occur over a much longer time scale. Although schistosomioasis is acquired by contact with water it is unlikely to be acquired from a chlorinated swimming pool which does not have a population of snails as the intermediate host.

Malaria is an unlikely cause of diarrhoea in this case. Louise was correctly advised that Morocco, especially in the tourist areas, is a low risk area and although malaria can cause diarrhoea it does not usually produce blood in the stools.

How would you deal with her in your practice?

Louise should be asked to provide a stool specimen for microscopy and culture in order to identify the infecting organism. In addition to the usual physical examination she should also have a rectal examination to exclude the possibility of bleeding from piles.

Would she need referral and if so, to whom?

If no causative organism is found on repeated stool examination or if the presence of blood in the stools persists in spite of treatment she should be referred to a gastroenterologist for endoscopy as she may be developing inflammatory bowel disease.

Mike Townend, retired GP and expedition leader, Cumbria.

The Traveller with Jaundice

Ravi is a student aged 19 of Indian parentage born and living in the U.K. He spent his whole summer vacation on a trip to India to stay with his uncle in Mumbai (Bombay) with visits of several days at a time to other relatives living in villages in more rural areas. During the last two weeks of his visit he felt unwell and had a fever. A local doctor in a clinic in a small town close to the village where he was staying told him that he had probably caught a virus and gave him an injection and a prescription for some tablets whose name he does not remember. He began to feel much better on his return home about two weeks ago but is now worried because he has become jaundiced. His family came to the U.K. as immigrants 25 years ago and have visited India twice since then without any injections or tablets of any kind. They did not think it necessary for their son to take any either, so he did not obtain any advice or vaccinations prior to travel.

What are the most important possible diagnoses?

Hepatitis A is a strong possibility. It is highly endemic in the Indian subcontinent and virtually all those born and spending their childhood there acquire natural immunity from exposure to the virus by the end of their childhood. Ravi's parent would almost certainly have had such immunity and would not have needed protection by vaccination, but immunity is not transmitted genetically and Ravi would be susceptible to infection. It is transmitted by faecal-oral transmission by ingestion of contaminated water or food. **Hepatitis E** is acquired by a similar route and is also a possibility.

What are the most significant differential diagnoses?

Hepatitis B should be included in the differential diagnosis as Ravi may be just within the lower limit of

the incubation period of the virus. It is a blood-borne infection acquired by contact with blood or other body fluids, and could have been acquired by sexual contact, trauma or medical treatment. Although medical facilities in Mumbai are likely to be very good Ravi had an injection in a rural clinic where safe use of invasive medical equipment may not have been practised. Hepatitis B is also a problem amongst injecting drug users in India, and if Ravi has indulged in this pastime he may also have acquired hepatitis C.

Leptospirosis should also be considered. It is acquired from contact with rodents or their urine and Ravi could have been at risk, especially when staying in rural areas. It can also be acquired during participation in water sports in water contaminated by the urine of rats.

Although **malaria** can cause jaundice it is not a likely cause in this case. *P falciparum* is the species likely to cause jaundice and it is unlikely that Ravi would have started to feel better at the onset of jaundice. This is more typical of hepatitis A; if he had *P falciparum* malaria he would almost certainly be feeling ill and feverish as well as being jaundiced.

How would you deal with him in your practice?

Blood should be sent to the laboratory for liver function tests and serology for hepatitis A, B, C and E. Serological testing for leptospirosis should also be carried out, and it would be wise to have thick and thin blood films examined for malaria parasites even though this is an unlikely cause of Ravi's symptoms.

Would he need referral and if so, to whom?

If any diagnosis other than hepatitis A is reached it would be wise for Ravi to be referred to an Infectious Disease physician. Hepatitis A can in many cases be handled in the community but referral would be needed if careful monitoring did not show a gradual return of liver function to normal or if Ravi were to become more ill at any stage.

Mike Townend, retired GP and expedition leader, Cumbria.

Altitude and the Elderly

A retired publisher had led a very active life, playing tennis and skiing when younger, then progressing to long ocean voyages in his yacht after retirement. He served in the Far East during the Second World War, visited India frequently over a long period, and had travelled throughout the world both for his work and for pleasure. He came from a long-lived family with no record of inherited disease.

At about the age of eighty he developed typical angina pectoris, which was mild, occurred only on walking moderate distances, and was not much of a handicap because he had matured into a fairly sedentary life style. He had seen a consultant cardiologist who diagnosed angina and prescribed appropriate drug therapy with partial benefit. The patient told the consultant that he was planning to visit Machu Picchu in Peru and the Galapagos Islands. The consultant said that he himself had enjoyed a holiday in Peru and, presumably aware of what this would mean for the patient, gave his full support without mentioning the risks of high altitude. The patient had long-standing travel insurance arrangements and he used a private travel agent who had previously given good advice and made good travel arrangements but gave no warning about high altitude on this occasion.

The patient, accompanied by his younger wife, coped with the flight to Miami then on to Lima without trouble. They had accepted the advice of their personal travel agent on where to tour round Peru. After a few hours sleep in Lima they flew on to Arequipa at an altitude of 2380 meters where they were met by their private guide and private driver. There the patient felt slightly short of breath when climbing the steps into the hotel but, he was fit enough to enjoy lunch at an open air restaurant followed by a tour of the city in their private car. That evening he suffered anorexia and malaise so went to bed early and did not sleep well.

On the following day their tour took them by car over a high pass and into a high valley where they stayed for one night. On this journey he developed unpleasant dyspnoea and angina at rest. He had no cough, oedema, or fever. The hotel manager gave him oxygen which he had available, presumably because other guests had developed the same problem. The oxygen gave some symptomatic relief while he was using it but he was nevertheless limited to resting in his room and felt unable to eat. On the following day the guide changed the tour plans because of the patient's symptoms, and drove them back to Arequipa, an eight-hour journey, again over a high pass. On arrival, they managed to find a hotel room and sought an urgent visit from a cardiologist. This doctor admitted the patient to her private hospital as an emergency. His wife was advised to join him at the hospital and share his room. The cardiologist carried out extensive investigations including echocardiography and diagnosed heart failure from coronary artery disease which she treated with standard drug therapy along with oxygen therapy. He did not have a coronary angiogram performed at that stage. He received generous amounts of information but of limited value because on only one occasion did he have an interpreter. The patient made considerable improvement

Case Studies *continued*

and after four days he was given a detailed typed case report in Spanish, a supply of his drugs, and discharged directly to a flight to Lima at sea level.

At this point the patient's wife was able to contact their insurance company who advised that they return to London immediately. Having got so far, the patient decided that they should visit the Galapagos Islands first. He felt much better at sea level so enjoyed some sightseeing, and coped with the flight to the Galapagos. The treks round the islands proved tiring and he spent much of the time back on board their small cruise ship. The doctor on this ship considered that no particular change to his treatment was required. The return to England looked like a welcome relief. However their flight route took them to Quito at an altitude of 2820 meters for an overnight stay at a hotel. Here his symptoms returned with a vengeance, dyspnoea, angina, anorexia and malaise. He was seen by the hotel's doctor and alterations made to his drug therapy but with no noticeable benefit. It was a struggle to get him on the plane the next day, but as soon as the plane was pressurised he felt dramatically better. He was lucky that his travel insurance company reimbursed him for his medical costs.

The problems of high altitude tend to be associated with younger travellers who are contemplating high altitude climbing, trekking or skiing. This case highlights the importance of considering the effects of high altitude on older travellers. Frequently the altitude is higher than appreciated by the tourist. Tour companies and their advisers should be meticulous in their knowledge of high altitude destinations and firm with the information they impart. Travel brochures and guide books should quote the altitudes of all destinations and transit points which are over 2000m. In these guide books there should be a mention of the symptoms of high altitude sickness in their health sections. In practice, organisers of group tours are probably more likely to be aware of risks because they want to avoid a whole group being inconvenienced by illness in a single member. Nevertheless such tour operators are subject to market forces that pressurize them to fill up the maximum number of places in a group. Small privately arranged tour operators are more likely to be lax because they are trying to please an individual client.

Medical advisors should consider several points. When asked about fitness to travel, Consultants and GPs should ask the patient to show them the tour company's printed itinerary listing destinations and, the altitude of any situated over 2000m. They should be aware of the risks and give very firm advice to patients who are elderly or have cardio-respiratory problems. Secondly, when these matters arise, they should provide fitness certificates for only restricted travel. Similarly, when dealing with elderly clients or those with cardiac and respiratory diseases, Travel Health Insurance Companies should be meticulous in seeking out the names of high altitude destinations. They should probably refuse to provide insurance cover when they are in doubt. Lastly the medical profession should promulgate clear unambiguous advice for patients in the printed information pamphlets for chronic cardiac or respiratory diseases. Market forces drive the public into travel adventures with scant regard for health risks. The insurance companies as well as the patient may suffer when disasters occur.

Mike Townend.

Machu Piccu *photo: Mike Townend*

A Gnashing Adventure

I had been invited to visit my good friend Sean who was a schoolmaster at the Banda Prep School, just outside Nairobi.

After 4000 miles of travelling to the Ethiopian border, we were driving through the Meru Game Park when we came upon a spring that had been converted into a pool for wayward stragglers. Before ducking into this tiny pool, we walked into a marshy area of water about two feet deep to do our washing up. Returning to the pool, we were ensconced in cool relief when another vehicle arrived kicking up much dust. The parents joined us while their two young

children went to the nearby marshy area.

"Daddy, Daddy – crocodile" came a scream from the girl.

Looking up we lazily discounted the calls until the boy was flipped over and disappeared in much splashing! Never did four people move so fast! First to arrive was Mother who had run straight to the boy, while Father ran in a circuitous route in an attempt to minimise time in the water. Third to arrive was Sean – schoolteacher. I arrived last!

As I ran, a thought came to me. In the Land Rover, we had a massive panga, which I diverted to pick up. "Where was it? Can you ever find anything when immediately needed?"

Arriving, I handed it to Sean while I observed that Mother was pulling the boy, Father was trying to wrench the beast's jaws apart and Sean was delivering blows to the head! (He was top at boxing at school!)

The croc had the boy securely around the waist. Sean proceeded to deliver two blows on the back of its neck with the panga which caused it to release him – for a second – then it regained a hold on his leg. Another good blow and it finally let go and slunk off.

Blood was everywhere, another vehicle arrived with parents of a new baby. Clean terry-nappies make the best form of bandage covering the whole of his midriff. She was a nurse too. What luck!

Asking how old the boy was, Father said "he's six" to which the boy sat up and shouted "No I'm not. I'm seven." A week later, there was a picture of him sitting upright in bed after a 200 mile drive to Nairobi Hospital.

On returning to the UK, I related this story to my father who knew someone in the press, who printed the account. The headline read: "Son of local man saves schoolteacher from crocodile"! There was no mention of the boy!

Mike West, Steeple Morden
A shortened version of this appears in the latest edition of *Bugs Bites & Bowels.* Reproduced by kind permission of the Author.

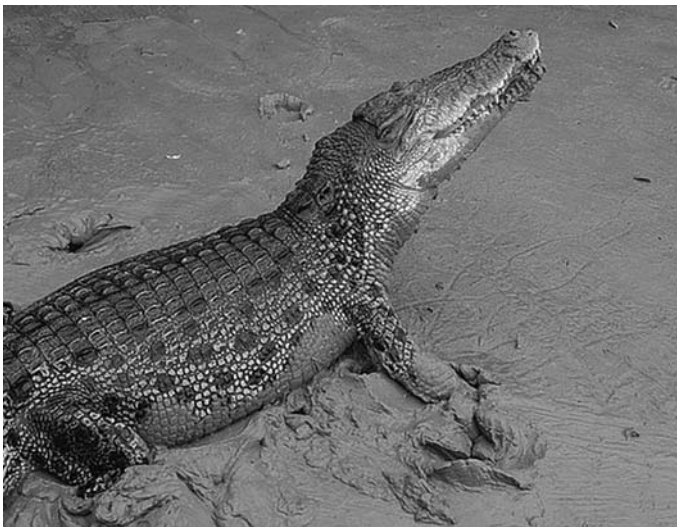


photo: Iain McIntosh

Questions and Answers

Jane Wilson-Howarth

Question
Visitor to Friends and Relatives
A 35-year-old British woman came to see our practice nurse for jabs for an imminent trip to West Africa. She was travelling with two sons. The children's father, who is West African, was not travelling. Mum has ME and is hepatitis C positive. Her homeopath told her that her liver wasn't strong enough to stand taking malaria prophylaxis, but she wanted to travel with stand-by treatment for malaria for the three of them. The family was going up-country to Dad's village and expected to be at least five hours by local bus from the nearest clinical facility. The children had received none of their routine childhood immunisations, but Mum asked for them to have hepatitis A and typhoid. Mum reported that she has had malaria before and it was cured in a few hours.

After throwing up your hands in despair, what do you offer?
Answer

There is no perfect answer to this question but I thought it would be helpful to share what actually happened. Some readers will have handled this differently and may be critical of my stance, but thinking through the issues is – I hope – instructive. This is a 'real' case. I would welcome any responses or discussion of this case.

This kind of family puts any practitioner into a difficult position because it is most unlikely that either the practitioner or the patient/client will be happy with the outcome of this consultation. By the time I met Mum she had already seen two experienced, competent and travel-savvy nurses who were both very concerned about these children going to a remote corner of Africa for more than a month during the school term. Mum had already talked through the issues for more than an hour. Mum was frustrated and appeared to want a full discussion, but even so had booked in for a 10-minute slot to get prescriptions for three patients.

She opened by saying that she and the children had received 'all the recommended immunisations'. What she meant by this was she'd had the NHS free of charge travel immunisations (the children had not received DPT etc.) but they weren't covered for meningococcal disease. Mum had read that meningococcus was recommended for some journeys and had interpreted this as it being optional and therefore unnecessary. They were venturing into the meningitis belt during the meningitis season and staying with relatives in a village. They also had arranged yellow fever immunisation only 48 hours before travel.

Her agenda was she wanted stand-by antimalarials. I was not happy to prescribe these and wanted her to think about other risks. I aimed to persuade them to take prophylaxis. I explained that prophylactics protect from becoming precipitously ill and give time to get to a proper clinical facility for an accurate differential diagnosis. She countered by saying that antimalarials made the kids vomit, when they'd previously been on another extended trip during school term – to India. She was uncertain which preparations they'd taken but it sounded like C&P. She accepted that there was a malaria risk but stated that she couldn't afford Malarone.

Since Mum's most recent LFTs were normal I felt the choice for her was mefloquine or doxycycline; she opted for the latter. I prescribed mefloquine for the children, explaining that neuro-psychiatric side-effects are pretty much unknown in children. I didn't have enough time to raise my favourite point that homeopathic malaria prophylaxis doesn't exist and is actually contrary to homeopathy theory. Nor did I feel it appropriate to challenge the homeopath's judgement of Mum's liver function. I also abandoned the idea of getting the family covered for meningococcus since there was simply not enough time for the family to get this done. Mum left – after a 25 minute consultation – with very little useful information (I'd even failed to remind her about proper travel insurance) but I felt I had achieved something when Mum took prescriptions for prophylactics for the three of them. They are in Africa now but whether any tablets will be taken and whether they will be taken properly remains to be seen.

Dr Jane Wilson-Howarth, GP and Author.

Scenarios from the NaTHNaC Telephone Advice Line

Alexandra Jordan

The National Travel Health Network and Centre (NaTHNaC) is a Government funded initiative, developed by the London School of Hygiene and Tropical Medicine, the Hospital for Tropical Diseases, Communicable Disease Surveillance Centre (now part of the Health Protection Agency), the Liverpool School of Tropical Medicine and the Defence Medical Services.

The telephone advice line service provides detailed advice for health professionals advising travellers with special needs or complex itineraries, between the hours of 9am – 12pm and 2pm – 4.30pm, Monday – Friday. 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

It was felt that some scenarios from the calls 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, 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.

Scenario 1

A 43 year-old female is travelling to Mombasa, Kenya for a 7 day business trip in 3 weeks time. She is HIV positive with a CD4 count of 460 and an undetectable viral load. Her current medication is Sustiva and Kivexa. She was born in Zimbabwe and is a regular traveller to Africa often visiting yellow fever endemic areas. She does not think that she has ever had yellow fever vaccine before. The caller would like to know what would be recommended.

The advice of the on-call physician was sought to help answer this question.

The risk of yellow fever in East Africa is felt to be relatively low as it is many years since human cases have officially been reported. This is not a guarantee against disease because cases may be occurring and not being officially reported. It is not known whether this situation might change in the future.

There is no requirement for an International Certificate of Vaccination or Prophylaxis for travel to Kenya from the UK. However if the traveller is unable to receive yellow fever vaccine she should be offered a letter of medical exemption. NaTHNaC provides a template, available at: http://www.nathnac.org/yellow books/pdfs/ appendix1.pdf

The health professional should question the lady about other travel around Africa. Zimbabwe is not a yellow fever risk area, so vaccine not recommended if she travels home to visit family, but what other areas does she go to? Resources are available to help determine the risk of yellow fever at the destination.[1,2,3,4]

The specialist HIV consultant/nurse should be involved in the decision regarding yellow fever vaccine.

Yellow fever vaccine can be given with a current CD4 count >200 cells/mm3[5] as studies have shown that seroconversion rates of approximately 70% can be achieved in this group. The length of protection that she will get is unknown, but it may be reduced compared to healthy individuals.[5]

The traveller needs to be fully informed of the risks of the disease at the destination and the potential risks of receiving a live virus vaccine.

Scenario 2

An 18 month-old baby boy is travelling to Singapore to live with relatives for 18 months. The parents are anxious about the risk of chickenpox and want to know if the baby should be vaccinated. The child is up to date with the routine schedule. He coincidentally had exposure to chickenpox from another child at the crèche a week ago, but he remains well with no symptoms. What would you advise?

The advice of the Health Protection Agency Immunisation Department was sought to help answer this question.

It was felt that the risk of chickenpox in Singapore is similar to that in the UK, therefore a low risk. The vaccine is not routinely recommended for travellers either adults or children, it is only available on a named patient basis, its use is unlicensed.[6]

Further advice on the need for vaccination should be sought from the Department of Health.

Scenario 3

A 25 year-old female is going backpacking around Central and South America, including the Amazon Basin, for two months leaving in two weeks time. There is no medical history of note. What malaria prophylaxis would you advise?

The risk of malaria on this trip varies according to the countries that she is visiting and different areas within those countries. There is a high risk in the Amazon Basin in South America, medium risk in rural areas of Central America and very low risk in high altitude areas such as the Andes Mountains.[7]

There are two possible approaches to malaria prophylaxis for this traveller. The first option would be for the traveller to take chloroquine for the Central American portion of the trip, and then to change over

Scenarios from the NaTHNaC Telephone Advice Line *continued*

to doxycycline, malarone or mefloquine for South America, and then continue on this drug for the remainder of the trip.

Alternatively, the traveller might prefer to take doxycycline, malarone or mefloquine for the whole trip.[7] If the itinerary is largely unplanned and she is not entirely sure of when she will be moving from medium to high risk areas, taking one drug for the whole trip may be preferable. This would ensure the optimum protection for high risk areas, although it may not be the best protection for medium risk areas; mosquito bite precautions and seeking medical advice in case of symptoms are of prime importance. An additional benefit could be that taking one drug is easier for the traveller who may have difficulty remembering a more complex regimen.

Recommended vaccines would include yellow fever, diphtheria/tetanus/polio, hepatitis A, typhoid, hepatitis B and rabies.[1] The health professional should check that she had received two doses of MMR in the past and if not, bring this up to date.[6]

Other health risks for discussion include the effects of altitude (see Scenario 5 for a detailed discussion about altitude), dengue fever[8] and schistosomiasis.[9]

Scenario 4

A 35 year old lady is travelling to Goa in India in 5 days time for two weeks holiday. She is fit and well with no significant medical history. She started taking chloroquine and proguanil, for malaria prophylaxis, two days ago. This morning she reported to her GP surgery with stomach cramps and vomiting for which she was in A& E last night. She has taken malarone previously and had no adverse events. She still wants to travel what would you advise?

The advice of the physician on-call was sought to answer this question.

Other causes of gastrointestinal upset should be excluded but chloroquine is well known to cause this type of problem. It is unlikely to be due to paludrine if she had no problems taking malarone. She should be advised to stop chloroquine and proguanil immediately, if she had not already done so and take nothing for two days.

Two days before travelling she should start taking malarone, continue throughout the trip and for seven days afterwards. It is a sub-optimal choice for the destination (the first choice being chloroquine and proguanil),[7] but her previous experience of taking it and tolerating it well indicates that the risk of further adverse events this time is low and it is hoped that this will increase compliance.

Mosquito bite precautions and reporting the symptoms of malaria are exceedingly important as she is not taking the first choice prophylactic for her destination.

There is a risk of malaria in Goa, with cases being reported in travellers from the UK.[10]

Scenario 5

A 60 year old man is going trekking in the Himalayas in three weeks time for three weeks. He is medically well. He has come to you for advice on the use of diamox for altitude sickness. What would you advise?

The caller was advised to discuss the importance of acclimatisation and recognising symptoms of altitude.[11] The use of diamox is not a substitute for acclimatising; it should not be used to facilitate a quicker ascent and is not a guarantee against altitude sickness (AMS). If symptoms do not improve it is essential that they descend.

The recommended dose of diamox would be 125mg twice daily for two days before ascending to altitude above 3,500m and continued for at least two days after reaching the highest altitude.[12,13] It should not be necessary to take it for longer, as after this they should be descending or acclimatising to the altitude.

A trial dose of diamox would be recommended before departure. This should prevention confusion as the adverse effects of diamox can appear similar to that of AMS, notably nausea and tingling of the fingers.[11]

Following qualification, Alexandra spent ten years as a Practice Nurse in Central London. During this time she studied for the MSc Travel Medicine through Glasgow University. In 2000 she was appointed to a Staff Nurse post at the Hospital for Tropical Diseases, rotating between the Travel Clinic and the Out-patients Department. In 2002 when the National Travel Health Network and Centre (NaTHNaC) opened, she was assigned the position of Specialist Travel Health Nurse Advisor.

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Advance Notice – Date for Your Diary

Joint RCN / BTHA
Malaria Study Day

Monday 8th December 2008

Cowdray Hall
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Further information from: www.btha.org

RESEARCH AND REVIEW

Psychological Features of Travel – Two Decades of Change

Iain B McIntosh

Abstract

A literature review considering the psychological effects of travel on the individual, over a period when international travel was limited, to current time when global air transit has become the norm. Stressors, fears, phobias and behavioural responses are investigated and clinical effects considered. Recommendations are made, to diminish their impact on traveller and transport system.

Introduction

International relocation is associated with psychological stress, behavioural reaction, covert and overt distress.[1] National and global transportation is stressful on the individual.[2] Air travel in particular is associated with anxiety and fear even in the absence of health threat, recent air disaster or terrorism. Many travellers exhibit anxiety at aircraft takeoff and landing.[3] The aviation environment provides physical, psychological and emotional stressors which can affect the comfort, health and safety of passengers and particularly vulnerable individuals.[4]

Some people fear, travel over water, transport through a tunnel or confinement in an aeroplane, while others are phobic of air, sea or train transportation.[5] Terrorist activities on trains, aircraft and at passenger terminals, with associated increased security measures and transit delays, have increased the psychological distress experienced by many travellers and brought behavioural responses. The relationship of deep vein thrombosis and air travel is now a concern for many travellers

Travel related stressors have increased in number over recent years. Their effect on the travelling public can result in minor or major anxiety which receives scant recognition by transport management. They can trigger major behavioural reactions and in the extreme can result in transport avoidance, with serious impact on global transportation systems. Many more people are now exposed to the vicissitudes of global travel and related stressors. Cheaper air travel has encouraged them to use this travel mode at a time when airport congestion, aeroplane delays and inefficient management has become the norm. Media speculation and anecdote suggest there has been a change in travel related anxieties and behavioural responses. These need to be identified, quantified, health-risk assessed and receive the attention of travel health professionals, to ensure appropriate management. This paper reviews two decades of study of public worries, anxieties, fears, coping responses and behavioural responses relating to international travel and air transportation in particular.

Expansion in air travel

Only 16.5 million passengers were transported annually in Britain in 1988. Commercial airlines now carry 1.5 billion passengers per year, a figure expected to treble by 2015. 2.4 million flights are scheduled within UK each month, an increase of 70,000 since 2006. Air travel has become the normal mode of travel for long and short haul journeys for millions of people.[6] However this transport mode does have a psychological effect on passengers.[3] and now airport transit is also having a disturbing physical effect on passengers.[7]

Former travel related anxieties and fears

Twenty years ago it was noted that one in four air travellers admitted a significant degree of anxiety or fear[8, 9] with one in ten seriously affected.[10, 11] 19% of air travellers admit to actual fear of flying.[10] 13% of the general population has intense fears of flying.[12] In 1980 we reported that in Britain 1.2 % of adults admitted to a phobia of flying with a female to male preponderance of 2:1.[10]

More recently(1996), in a large random sample survey of general public, 24.4 % of people admitted to travel worries about flying,[3] with more females than males admitting to air travel concerns and experiencing a greater degree of worry. 36 percent of business travellers reported travel related stress with 15% reporting physical or psychological health problems due to travel. They scored very negative ratings of 4-5 on a five-point Likert scale for intensity of feelings.[13]

More Recent surveys. In a 2003 survey of travellers and non travellers, regarding psychological and physiological stressors affecting the general public and health professionals and their behavioural responses relating to commercial flying, **30**% were worried about flying **58**% of these - moderately or very worried about air travel.[14]

TRAVELLERS ANXIETIES	*%*
accident	32
explosion	18
hijack	16
being airborne	15
transportation delays	13

In recent years world terrorism has brought the blowing-up of buildings, aircraft and trains with marked effect on world travellers. People tend to fear "dread risks" - low probability, high consequence

events - disproportionately. In September 2001 in the USA, the crashing of civilian airliners into buildings shocked people world-wide, precipitating a marked behavioural response with avoidance of flying. There were 16% fewer international and domestic flights in the immediate aftermath of the disaster, One year later, there was a 15% shortfall in traffic between the US and Europe. Five years later international travel recovered, but air travellers have a greater awareness of perceived risk in flying and transiting air and train terminals.[15]

Studies six months after the disaster, recorded that intensity of people's anxiety had increased, with 46% saying their anxiety was considerable, or very high. 11% were avoiding flying and intended to decrease their exposure to air transport. Over 65 year olds were more worried than younger people. More women (41%) were worried than men (24%) and in-flight explosion was now a major source of anxiety.[16] A further study one year later showed that 54% of the public were still considerably, or very worried about air travel, 7% said they intended to fly less and 1 % said they would never fly again.[17]

WORRY	%
Deep vein thrombosis	41.8
Air accident	21.5
Being airborne	15
Explosion in the air	12.3
Hijack	10.6
Flight delay	8.7

When people were asked about the effects of Sept 11, 4 years after the event, 11% were still a lot more nervous about flying and 6 % were not going to fly again.[18]

Current anxieties and fears

A survey in 2005/6 reported a flying phobia prevalence of 0.75%, an apparent decrease to Burn's report of 1989. Other stressors have however appeared on the air transit scene.[19] Rayman identified the range of stressors relating to air travel as: travel to airport, check-in, security clearance, flight delay, airport tumult.[20] No new studies have been reported on their frequency and intensity, but indirect evidence demonstrates their effects on travellers.

In the UK in 2006 there has been substantial increase in flight delay, cancellation and baggage loss with British passengers worst affected internationally by delayed flights and cancellations. In 2007 BA, the national carrier was the worst performing airline for delayed or lost baggage. This resulted in worries about delay and luggage loss becoming more prominent in air travellers. There have been increased complaints to the Air Transport Users Council[21] with the UK responsible for 1/3 of 18,000 complaints, twice that of French and three times that of German complaints. Britons were responsible for 1931 complaints out of 6452 regarding cancelled flights. This increased anxiety about delays and airport transit seems to be world wide. In a similar study of 1000 randomly selected flyers in the USA, the complained of:

flight delays - 55%
queuing - 41%
lost baggage - 37%

Anecdotal and some statistical evidence suggests that travellers are reacting by avoidance of London hub airports for better managed less stressful regional airports. Events at T5, Heathrow in 2008 have encouraged avoidance of this airport.

The anxiety produced and the large number of people affected, is now attracting the attention of investigators. In a study undertaken at Heathrow airport in 2007, passengers had heart and finger monitors fitted to record blood pressure and pulse rate while in the airport en-route to flight departure. Skin conductance - a reliable measure of stress, was also measured. Readings were correlated with the amount of psychological stress they experienced.[7]

Passengers passing through the airport showed monitored stress levels equivalent to on-duty riot police, in subjects who were young, healthy and not exercising. During the test, there were marked physiological changes. ECG and BP monitors showed immediate and sustained changes:

Within minutes of entering the terminal, heart rates had increased from 55 beats per minute to over 70 per minute in the non-exercising state.

In the 4 hours it took to reach the aircraft the rates continues to rise and rose to more than 200 beats per minute in transit, before boarding the aircraft, with a rise also occurring in blood pressure.

Queues at check-in and security clearance increased blood pressure levels from average of 123/81 mm Hg to 170/99mm Hg. There was a marked increase in skin conductance with a rise of 100 times that in a relaxed state. Associated stress levels peaked four times but were sustained at a high level overall. Causes of peaking were queues, unfriendly and unhelpful staff, and lack of or misinformation.

Monitoring on the return journey revealed that

Psychological Aspects of Travel *continued*

return transit through the air port is almost as stressful as departure, primarily because of queues at immigration, security channels and lost luggage.

A similar study comparing passengers travelling by air, Eurostar train, road and train confirmed the stress felt by delayed passengers.The pulse rate of train passengers increased with the queue for departure and while the train was in the channel tunnel. Car drivers were stressed on boarding the ferry and adapting to foreign driving. Only coach passengers remained relaxed during travel.[22]

A separate report on a study of 1009 passengers transiting an airport[7] reported that 69% stated that rude staff were a contributory problem to stress with 52% considering this a major cause of travel related stress. Behavioural responses are also evident with 42% of travellers admitting to repeatedly checking travel documents prior to the flight and international journey, with these obsessive compulsive tendencies greater in women. A third admit they check passports at least five times from arrival at the departure point and boarding, although they do not normally exhibit obsessive behaviour.

Coping strategies for Air Travel Anxieties

Half of all worried travellers do nothing to minimise their anxieties. Many admit behavioral responses.

Several coping strategies are adopted for air-travel worries:

9% avoid flying if possible
16% use relaxation and distraction techniques
13% use alcohol drinking for relaxation in flight
6% resort to sedatives[3]

Virgin Atlantic now offers in-flight audio meditation programmes with tips on relaxation from a psychotherapist to help diminish passenger stress.

Avoidance – Some people react by avoidance and refuse to travel by plane, air or ship. This avoidance phenomenon is very marked after an air disaster and particularly after a major terrorist event affecting transportation. It also affects decisions on the vacation holiday destination. Kenya and Sri Lanka are currently being avoided by tourists and Bali is only now recovering from the terrorist bombings of tourists. Bookings to Egypt are still below pre-terrorist levels. International tourism to London fell off dramatically after tube explosions.

In the last 10 years and particularly the last 5 years, there has been a huge increase in flying in UK, involving people of all social classes and every age, the result of cheaper air travel, increased affluence and leisure time in the population. There is some evidence that although the number of flyers has increased over that time, the increase may be at a level lower than it might have been if the distress factor associated with air travel had not increased.The behavioural change of avoidance may be being demonstrated in potential travellers. There has been an increase in long haul train travel and increased popularity of travel in cruise ships departing directly from UK ports.

Other effects of anxiety on the traveller

Anxiety generated by relocation and transportation is also associated with travel fatigue which can last for a day or two after arrival.[23] Of more concern is the increase in heart rate and blood pressure associated with airport transit which may only discomfit a fit traveller. This can be very disadvantageous in older people, and the number of elderly air passengers is steadily increasing.[24] In those with cardiac problems this may precipitate arrhythmia, myocardial infarction and stroke.[25] This psychological disturbance to the physiological state in air passengers occurs before actual boarding. With flights there are further challenges to the cardio and pulmonary compromised with prolonged immobility, potential venous thrombosis and anoxia. The potential effects on those with chronic or underlying medical problems may be serious. Passengers may be more likely to become ill on a long haul flight after prolonged hours in a tumultuous airport.[24] Travel related Dvt risk received little attention, but now 66% of the travellers are moderately or very worried about the possibility of Dvt development, when asked specifically about deep vein thrombosis in a survey.[26]

Air rage – The increase in prevalence of air rage may also be associated with the psychological and physiological demands made upon the air traveller in pre-flight transit. According to the Civil Aviation Authority the number of incidents of air rage has doubled since 2003.[27] A serious incident of disruptive passenger behaviour occurs on board in 1 in 30,000 flights, but many more occur in the airport. Most incidents relate to verbal abuse of crew or passengers. 80% involved were male.[28] Panic states are the most common cause of medical incident on aeroplanes. Some of these may have been precipitated by airside events before boarding with the passenger primed into a high state of tension before arrival on the aircraft.

Discussion

Travel related stress has waxed and waned in frequency and intensity over twenty years. Studies formerly reported aircraft take-off and landing as major sources of anxiety, but these have become less important factors, possibly due to relief that the hubbub of airport transit and delay lies behind. New stressors have appeared on the scene with queuing, flight delay and security clearance, becoming prominent sources of anxiety. A decade ago hijack and mechanical failure on aeroplanes were primary concerns but the Sept 11 events in USA turned attention to explosions on aircraft and the London tube bombings

and Spanish explosions in train attacks. People now give less concern to hijack and mechanical failure and are more concerned about explosions on their transport.

Terrorism has had a marked effect on travellers attitudes and worries. The behavioural response of avoidance it encourages, can affect travel for more than a year, then the psychological effects on the individual tend to disappear, although some people retain the same degree of anxiety and maintain avoidance behaviour years after the September 11 event.[7]

Despite its ubiquity, commercial air travel continues to cause a significant proportion of the public to feel anxious. When this anxiety reaches a level that significantly interferes with the person's ability to travel by air, it becomes a fear of flying. Severe anxiety and fear can trigger behavioural responses some of which are realistic[29] and some disproportionate to the stressor. The terrorist attacks of 2001 brought a disproportionate response in that many Americans and Britons gave up flying and took alternative transport. Analysis of fatal accidents suggested the number of Americans who lost lives on roads, to avoid flying, was higher than all those killed on affected flights.

Their behavioral response was disproportionate to the actual personal risk of flying. This risk misperception bringing change in behaviour is still affecting some people today[15] Anxiety about developing deep vein thrombosis with prolonged flying is common, with the public relatively well informed about the risk, but poor in its risk assessment.

In terms of fear amounting to phobia, flying phobias may now be slightly less prevalent, perhaps due to greater familiarity with flying for many people and a good air safety record despite terrorist threat.

Misinformation by management adds to apprehension such as, the visual display which carries erroneous departure information e.g. a flight depicted as departed when the display is merely inaccurate, or a wrong flight destination against a flight code (as in the illustration) where the destination is shown as a mystery tour, inferring that staff do not know where it is going! Accurate positive information in times of delay or mishap can reassure the psychologically vulnerable and prevent further anxiety and distress. The most common complaint about air transit is the lack of information passed to the public by managers and employees when procedures are disrupted.

Hester[30] quotes several examples of distressed, agitated passengers boarding aircraft. Their aberrant in-flight verbal and physical behaviour stimulates adverse flight attendant response which further upset the passenger in a spiral of psychological upset, behavioural response, reaction and deteriorating customer/employee relationship. This encourages the stressed individual to have recourse to alcohol to allay stress. Over-indulgence in liquor further compounds inappropriate behaviour and encourages air rage.

Mystery Tour! *photo: Iain McIntosh*

Conclusion

There has been change over two decades in public worries regarding global travel and air travel in particular. Stressors have changed with people less concerned about mechanical reliability of aeroplanes and being within one. Concerns, anxiety and physiological responses to airport transit are now major considerations for many. Security measures intended to decrease risk to the traveller are creating their own stressors and bad management is compounding the problem. The disproportionate reaction to dread risk events merits reconditioning of the individual and education in risk assessment.

Continued failure of airport management to consider effects of stress on customers may mean that more passengers will be overtaken by physiological responses to psychological disturbance. They will become ill, outraged, or exhibit avoidance which will remove some potential travellers from exposure to air transportation.

People are now worrying about different elements in the transit and transportation process than some years ago, with take-off an and landing being of less consequence in anxiety but delay, loss of baggage, and fear of explosion now seriously stress many. Passengers are showing changes in their behaviour, some using avoidance to eliminate exposure to perceived risk. Health professionals, particularly those working in the travel scene, should be aware of the stresses relocation and transit have on people and be particularly aware of the risk to well-being of older and vulnerable people embarking on international travel. They deserve travel health risk assessment before departure, information on potential health challenge and encouragement to take measures to minimise the threat.

Recommendations

Education of travellers with:

Informative facts on actual risk and dread risk..

Correction of misperceptions.

Psychological Aspects of Travel *continued*

Appropriate precautions eg (dvt).
Advice on available therapy (eg panic states and phobias).

Management considerations should:

Address causes of public concerns about air travel.
Consider passengers anxieties in airport.
construction and lay-out and traffic flow.
Improve workforce/crisis management eg security.
Be involved in proactive management of surges in customer footfall (eg queues).
Improve communication especially with flight delay.
Give attention to passenger information, misinformation, disinformation.

Staff and Health professionals need to:

Have training to reduce the psychological and physiological risks of air related travel on travellers attending clinics.
Acknowledge that people have serious worries about global travel and air travel in particular.
Put pressure management to address the causes.
Educate the public on potential health risk related to long distance trave1.
Encourage prophylactic measures in avoidance of dvt.
Provide appropriate therapy for aircraft phobia.

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Reverse Culture Shock in Expatriate Wives

Elaine Richardson

Abstract

This questionnaire-based descriptive study looks at the reverse culture shock experience of expatriate wives returning from living overseas with their families. Results show a significant morbidity in this group of women. 70% admitted adverse psychological effects such as homesickness, loneliness, boredom and depression. Many faced important practical difficulties, the most frequent of which were related to house and home (65%), finding employment (30%), or finding an NHS dentist (30%). Half of the respondents had difficulties relating once again to their friends in UK, but a smaller number (30%) also had problems relating with their extended families. Participants were asked to offer advice they would give to other expatriate women. The data obtained has formed the basis for an advice sheet.

Introduction

Reverse culture shock includes the physical, social, psychological, financial, educational, and cultural trauma that may be experienced when an individual

or group of individuals (such as a family) return from one culture to their culture/country of origin.

Whilst there may be some support for students, business personnel and other professional workers, I was unaware of any facilities for expatriate wives to receive a debrief, attend a repatriation workshop or be given any formal advice on preparation for repatriation.

Aim

The purpose was to ask these women to draw on their own experiences, and give contemporary advice that they "wish I had been told".

My aim is to improve such advice, and accessibility to this advice.

Objectives

To gain a general understanding of the problems of reverse culture shock. .

To obtain information and advice from women returning from overseas

To develop a fact sheet of information and advice.

Project Design and Implementation

Methods

1 Literature search in journals, books and through the internet to document previous research in this subject.
2 Develop a questionnaire to use as a tool for gathering information. This is a questionnaire based descriptive study. It is fundamentally a qualitative study but some questions allow a degree of quantitative analysis.
3 Implement this questionnaire by using a sample of repatriated wives.
4 Analyse results.
5 Information obtained was used to produce a fact sheet.

Participants – A questionnaire was circulated to women who were repatriated to the UK, following a period of at least one year living and/or working in another culture. I gave questionnaires to my own personal contacts who in turn passed these on to their contacts.

Instrument – An anonymous questionnaire was for mulated, asking:

i) reason for return,
ii) details of any difficulties experienced,
iii) what shocked you most,
iv) factors which may have influenced the severity of reverse culture shock.

The final two questions gave women the opportunity to offer advice that should be given to other expatriate women:

i) before leaving for abroad, and
ii) before returning home.

A variety of questions reflected my view that all aspects of family/home life impact profoundly on a wife/mother, which have a direct influence on her level of re-entry shock.

Data Analysis – Results were reviewed using simple analysis and presented descriptively to provide a verbatim reflection of the information.

Results

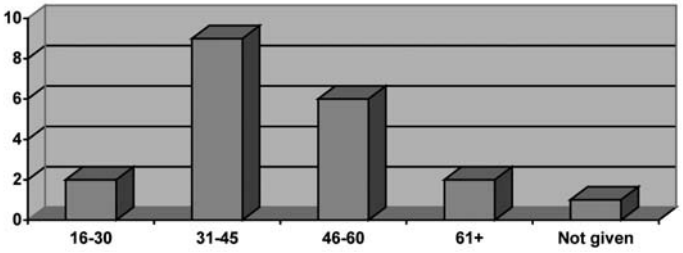
Number of questionnaires returned: 20

Anonymous Personal Identification Details

i) Age of women on return to UK:

Most (45%) of the women were in the age bracket 31-45 years.

Figure 1: Age of Women on Return to UK



ii) Children accompanying family

13 (65%) of the respondents had children with them when they returned to UK. 3 (15%) had no children and 4 (20%) had children who had already left home or who had gone to university by the time of return.

iii) Host Countries:

13 women had returned from resource-poor countries, and 7 from resource-rich countries.

Difficulties Experienced on Return to UK

i) Difficulty in husband finding a job, re-integrating into previous position, or being demoted?

Yes: 6 (30%) No: 12 (60%)

In two cases this question was irrelevant because the husband was retiring.

ii) Impact on relationship with husband/partner:

Better: 11 (55%) No difference: 5 (25%)
Worse: 3 (15%)

One participant did not respond.

Sample quotes

Worse:

"Made a distance between us as each tried to cope with individual stresses."

iii) Financial strain?

Yes: 4 (20%) No: 16 (80%)

"difficult to get a house initially as we could not open a bank account as we had no credit rating. Couldn't get credit rating as we had no bank account!"

"returning from Nepal (we) felt very determined to live simple lives and not become trapped in pursuit of materialism……sadly, some of that has worn off."

Reverse Culture Shock in Expatriate Wives *continued*

iv) Personal experience of adverse psychological effects:

6 (30%) participants claimed to have not had any homesickness, loneliness, or any other problem in this area, but the majority (70%) admitted to difficulties.

Table 1:
Adverse psychological experiences on return to UK

Experience	*Number (percentage)*
Homesickness for previous country or lifestyle	13 (65%)
Lonely	7 (35%)
Boredom	4 (20%)
Depression:	4 (20%)*
Requiring Counselling	1 (5%)**
With use of extra Alcohol	2 (10%)

**one 16 year old daughter also had depression on return.*
***on an informal basis.*

"The most difficult thing was ****(husband) being depressed for the first 3 years. Also, not knowing what the 'form' was for birthday parties, dinner parties etc. and the 'dress' code. You need to fit in."

v) Practical Issues:

Table2:
Practical difficulties experienced by repatriated wives/partners

Difficulties	*Significant*	*Minor*	*Not Applicable*
House/Home	13 (65%)	0	
Children's schooling	2 (10%)	1 (5%)	4 (20%)*
GP and Dentist services	6 (30%)**	0	
Own Employment	6 (30%)	1 (5%)	4 (20%)***

*Either no children or no longer of school/ college age
**All 6 had difficulties finding an NHS dentist, several "going private".
***Retired or not looking for paid employment.

Sample quotes:

House/Home difficulties:

"Tenants left 2 months before we returned, therefore we had a reduced income."

"Used to house-staff. Had to learn to do everything again!"

Schooling difficulties:

"Bit frosty about us being late for school term dates."

"First child used all our savings for private education."

Dentist/GP difficulties:

"Hard to get a dentist."

"Remained registered with local surgeries – visited annually during leave."

Own employment difficulties:

"Difficult to keep up with my profession. Bought membership of my professional body, journals, text books and some short training courses."

"Had to take 'Back to Nursing' course, despite actively nursing in Canada."

Friends

"Probably got a bit fed up with the mention of ….."

Friends - lack of common ground

Family

"Frequently missed family events."

"Family – worse being near them and blissful over seas!"

d) What has shocked you most on your return?

Of the 28 answers, 8 (29%) were concerned with other people's attitudes, 5 (18%) morals and behaviour, 4 (14%) living standards. There was a wide variety of comments, as follows:

Attitudes & Interests

"Odd views of Africa."

"Uncaring people. Excess materialism and wasted resources."

Morals and Behaviour

"Deterioration of moral standards."

"The number of violent crimes particularly involving children and teenagers."

Living Standards

"House prices."

"Degree of choice."

Personal Issues

"Feeling I don't belong here anymore."

"How little you see of family and friends, despite being back in the country."

e) Factors which may have influenced the severity of reverse culture shock:

Were (nuclear) family in agreement to return to UK?

Yes: 16 (80%) No: 1 (5%) Equivocal: 3 (15%)

All women reported at least one form of communication with "home". The younger and those more recently posted abroad were more likely to have used e-mail facilities. The older responders relied on traditional letters.

Was your partner/ spouse able to help you and your family back "home"?

Yes: 17 (85%) No 3 (15%)

One of the 'No' replies stated that her husband went abroad again immediately "while the kids and I struggled with everything else". She apparently ended up having a massive row with her mother-in-law.

v) On return to UK, did you have a "debrief" of any kind?

Yes: 3 (15%) No: 16 (80%)

Not applicable: 1 (5%)

Was your overseas experience of value/used?

Yes: 17 (85%) No: 2 (10%)

Not answered: 1 (5%)

f) Impact of Returning Home on Children

There were a total of 35 children in the 20 families of women surveyed in this research project, not counting those children who were already "grown up" and had left the family home. An analysis of severity scores according to age shows that there is a gradual tendency for an increased severity score as children get older.

Table3:
Average Severity of Difficulty Score (in readjusting to "home" life) according to Age Group of Children

Age Group	*Average Severity Score for Group*
1 to 5 years	3.4
6 to 11 years	5.3
12 to 18 years	6.5

There seems to be some evidence from this study that 'the older the child the greater the trauma'. One 16 year old did find it very traumatic and became depressed.

g) Sample of Respondents' Suggested Advice Before Leaving for Overseas

"How will you spend your time?"

"What's not available in local area."

"Try to arrange annual trips home to maintain relationships and re-familiarise with UK life/cost of living."

"Don't be afraid to admit homesickness."

"Don't expect to automatically get along with other expats. They are as foreign to you as the nationals, be prepared for differences."

"Learn the language."

h) Sample of Respondents' Suggested Advice before Returning from Overseas

"Be realistic about your chances of re-integrating into the UK workforce. You may have to update or retrain."

"Expect it to be more challenging to return than leave."

"Minimise the number of new things – there will already be plenty of readjustment to make."

"Your children may not be 'coming home'. To them the UK is another culture."

"Be prepared for people not to be interested in your adventures."

"Think of yourselves as making a new start in a new place."

Discussion

I sent far more questionnaires than I had returned to me but achieved a 62% response rate.

There was a reasonable age spread of respondents, and a variety of countries in which they had lived. The limited number of replies does not allow a reliable comparison of responses; a larger study would be necessary to achieve this.

Reverse Culture Shock Difficulties Experienced on Return to UK

This research project has identified the significant morbidity experienced by repatriated wives. 70% admitted adverse psychological effects such as homesickness, loneliness, boredom and depression. Many faced important practical difficulties, the most frequent of which were related to house and home (65%), finding employment (30%), or finding an NHS dentist (30%). Although 6 (30%) of the study population experienced employment difficulties for their husbands, only 3 (15%) related a worsening of their relationship as a result of return to the UK.

One participant writes,

" It can be worse the longer you are away, but also the more intensively you are involved with the host culture. …I was doing research and living with local families..13 months …..became totally absorbed in Indonesian culture…..return was very difficult…depressed…lonely…had problems in my relationship with my husband."

Expat memories

Only 3 (15%) of my study group received a debrief. Failure to hold debriefing meetings or to offer ongoing support may leave repatriates suffering crippling reverse culture shock for many months.

While the results of my questionnaire showed only two adults and one 16 year old suffering depression on re–entry, the majority claimed homesickness and loneliness which gradually faded away.

Americans lead the way

From books and internet sites I have researched it is obvious that the Americans are far more geared up to the issues of repatriation, its difficulties, the need for debriefing and support of staff, their spouses and "Third Culture Kids" (children who have been born in one culture, spend most of their childhood lives in another, and then return to a changed culture of origin). Hopefully, with many businesses becoming more global, this need will be better addressed in the future in the UK.

General comments

Your country is your home. You expect to feel secure, at ease and familiar with the way of life and with the family and friends you had left behind. It comes as a surprise to discover that rather than feeling relaxed and enjoying being back, you feel somewhat detached, even alien.

Home alone

It is harder for a woman to face the various responsibilities of re-entry if her husband is not there to help and support or if either of them is trying to deal with psychological issues. With pre-re-entry planning, it is possible that women may be able to arrange for support and guidance.

Reverse Culture Shock in Expatriate Wives *continued*

Family and friends

The reactions of family and friends may be confusing, ranging from barely having time to have the shortest of conversations to the other extreme, of almost suffocation, due to their desire to meet your needs.

From my questionnaire, 50% of expatriates had problems re-engaging with friends and 30% had problems with family.

Results indicate that there is a need to keep relationships alive and fresh. Sharing of life's day to day triumphs and trials with those 'back home' is important.

Leaving the host country

Stress levels are high when organising departure from the host country, saying goodbye to friends, helping the children say goodbye to their friends, and organising the next stage of the family life back in UK. Eakin writes:

> "In order to make a successful re-entry, attention must be paid….to a good leave-taking of the country of assignment. Closure must be put on the overseas sojourn".

Exhaustion from packing and leaving and disorientation on arrival all add to the stress. My questionnaire results highlighted the fact that 65% of the participants had housing problems on their return to UK resulting, in some cases having to use temporary accommodation and then face the upheaval of moving yet again in a short space of time.

Emotions

Daily routine abroad may well have begun as early as 5a.m. in the host country. Waking automatically at this hour in UK can be frustrating and particularly difficult if it is cold, wet and generally depressing outside. Any sense of not being able to cope can be distressing and embarrassing.

Practicalities

There may be difficulties finding employment and paying bills, which have soared in the utilities sector in recent years! Interhealth in London has a careers counsellor who will give informed advice, help and ongoing support. There is the expense of buying one (or possibly two) cars and the time consumed doing this. Eakin also says:

> "it is important for each member of the family to have a little breathing space…..too much togetherness can exacerbate frustrations. Teenagers especially need some private time".

Loneliness

The loneliness of re-entry can be bought on by: 1) a sense that no-one cares, they are all too busy leading their own lives; 2) a homesickness for the place, friends and lifestyle now passed; 3) the hectic pace of life in UK especially if the overseas posting was rural or remote; 4) the volume of traffic and people; 5) the overwhelming amount of things that need to be done and arranged. It can result in heavy drinking/smoking, family disputes and a strong desire to return overseas (run away!) Some families may make the time to take a long holiday on the way home, but the pressures of careers, school term dates and the many other issues which draw us into a hectic lifestyle are hard to resist.

An alternative view

On the whole repatriates, especially wives, just seem to 'get on with it'. Re-entry is best regarded as entering into 'another culture' If the UK is viewed with the same sense of adventure and open-mindedness as was applied when first going out to the host country, then hopefully the traumas and frustrations will be minimised.

Recommendations

a) Planning for repatriation

Having a home base to return to goes a long way to making the homecoming far less stressful. Knowing where you will be living helps to plan future schooling for the children, and the wife has some idea of the possibilities for her work/career and the proximity of family and friends. Endless hours of speculation and uncertainty are avoided. This all hinges of course on where the husband will find employment.

b) Maintaining close communication with family and friends is crucial.

c) Practical Recommendations

Applications for nursery/schools/colleges and university need to be underway.

Updates or retraining may be needed in order to continue in employment. Courses/seminars can be arranged to coincide with leave during the contract. Have appropriate journals/ magazines sent out to enable ongoing familiarity with professional matters.

Arrange communication links, - may be difficult if in remote areas where there may be poor electricity supply to keep frequent contact via the internet. Enquiries need to be made about these possibilities.

Keep home 'alive' with good communication, visits from friends and family and visits back to UK.

Take a copy of Craig Storti's excellent book, 'The Art of Coming Home'.

"I'm afraid I may be becoming readjusted…..readjusting would take me back to what I was before" which may make the time overseas seem very surreal".

Keep contact with friends made abroad, whilst also seeking out other repats in your home area – thereby enabling long chats about difficulties, sharing experiences abroad without the listener becoming bored (!), and mutual support and laughter.

Maintain a sense of humour.

d) Provision of a Fact sheet

The data I obtained has enabled me to produce an information leaflet containing advice to help minimise the impact of reverse culture shock. It is designed to empower women to bring their families back to UK

with the minimal amount of distress possible. It could be offered to wives at travel health clinics and GP practices or by occupational health services. "Forewarned is forearmed".

Conclusion

This questionnaire survey has highlighted the degree and variety of difficulties experienced by wives returning to UK. During the gradual readjustment to life at home it is important to incorporate the positive aspects of the host country experience with the positive aspects of the 'new' life in the United Kingdom.

The suggestions made in this survey will go someway to highlighting the important role of travel health advisors, practice nurses and occupational health workers in advising women of the reality of reverse culture shock, how to recognise it and ways of reducing the incidence or severity. Organisations must become more aware of the need for debrief as a 'duty of care'. Critically, preparation for repatriation will go some way to avoiding some of the difficulties, frustrations and heartbreak.

> "Make no mistake about it: Re-entry is an experience to be reckoned with, but when the reckoning is done and the accounts are cleared, you're likely to find that the price for your overseas sojourn was the bargain of a lifetime".
>
> Elaine Richardson, SRN, SCM, DTM (Glas).

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Primaquine Resistant Plasmodium Vivax Malaria – A Therapeutic Challenge

M J M L Hakeem, S Asamoah, D N Bhattacharyya,

ABSTRACT

Although P.vivax infection has been referred to as "benign" malaria symptoms are frequently severe and debilitating leading to significant morbidity and economic losses especially in cases of relapsing illness. Standard treatment of P.vivax malaria includes chloroquine, followed by primaquine (PQ) terminal prophylaxis. Reports of true PQ failure and subsequent P.vivax relapse are unusual as most suspected cases are ascribed to poor patient adherence, recrudescence of a chloroquine-resistant strain or P.vivax reinfection. We report a case of P.vivax malaria relapse, after therapy with standard dose of chloroquine and PQ, and again on three occasions despite quinine and various regimens of PQ in a patient who contracted malaria from travelling to Brazil. We also explore treatment options for this serious therapeutic challenge.

CASE REPORT

A 34 year old man was admitted to hospital with a 4 day history of headache, myalgia, fever and profuse vomiting. He had been admitted to another hospital three months before with similar symptoms, after returning from a six weeks holiday in Brazil where he had travelled to the Amazon River basin. He was treated for P.vivax malaria then with chloroquine followed by two weeks of daily 15 mg PQ. He had taken Atavaquone-proguanil as malaria prophylaxis during his travel and completed the course two weeks after his return.

He was not on any regular medications and admitted to being compliant with his previous malaria treatment. On admission his temperature was 38.5 C, Pulse rate was 110 beats per minute and his blood pressure was 100/67 mmHg. Cardiovascular, respiratory, gastrointestinal and neurological examination was unremarkable. Blood tests showed a white cell count of 4.8 L^{-1}, haemoglobin of 13.4 g dL^{-1} and a platelet count of 107 L^{-1}. Renal and liver function tests were within normal limits. C-reactive protein was raised at 154 mg/L. Peripheral blood smears showed presence of scanty malarial parasites of several stages of development consistent with P.vivax. Glucose-6-Phosphate dehydrogenase screening test was normal. Blood cultures were negative and the chest X-ray did not reveal any abnormality.

He was initially commenced on intravenous Quinine 600mg 8 hourly because he appeared extremely unwell and as he was vomiting profusely.

Primaquine Resistant Plasmodium Vivax Malaria… *continued*

Quinine was also chosen to cover possible recrudescence of a chloroquine resistant strain of P.vivax although he had responded to chloroquine 3 months before. This was switched to oral Quinine 2 days later. Repeat blood films did not show any malaria parasites after the second day. He was discharged home on the forth day and was advised to complete a total 7 days of Quinine and to start Primaquine 15mg daily for 4 weeks after.

He was readmitted to hospital 3 months after his discharge (6 months after his first episode) with symptoms of fever and vomiting. He denied any foreign travel since his first admission. Thin blood film again showed all stages of P.vivax parasites, with 1% parasitaemia. Malaria antigen test was positive for P. vivax and the PCR test was also only positive for P.vivax. He was commenced on intravenous Quinine again mainly due to severe vomiting. This was later changed to oral Quinine when his vomiting settled. Malaria parasites were undetectable on blood films after the fourth day. He was discharged home after he completed 7 days of Quinine, and was advised to take 45 mg Primaquine once weekly for 8 weeks. He was reviewed at the out patient clinic 4 weeks after his discharge and he reported feeling well and admitted to being strictly compliant with the treatment. Also repeat blood film was negative for malaria parasites at this stage.

He was readmitted to hospital once again 10 weeks after his discharge (8.5 months after his first episode) with similar symptoms. He had finished his Primaquine course 2 weeks before. Thin blood films showed early trophozoites of P.vivax, with a parasite load of 0.15%. A malaria antigen tests were again positive for P. vivax and PCR test only confirmed P.vivax. Immunoglobulin and complement tests were normal. He was again commenced on Quinine and the blood film was negative for malaria parasites after 2 days. He was discharged home, and this time advised to take 30 mg of Primaquine for 2 weeks after completing 7 days of Quinine.

He was reviewed at the out patient clinic for 12 months after his discharge and he did not have any further relapses of P.vivax malaria.

DISCUSSION

Malaria is an ancient disease that has influenced human evolution and history. It remains a major public health problem although it was initially discovered in 1897.[1] Of the four species of malaria that can infect humans, most experimental attention is directed toward P. falciparum. However, a second species of malaria, P. vivax, also has a major adverse impact on global health, accounting for up to 80 million cases annually. It is responsible for over 50% of malaria outside Africa, notably in Southeast Asia and Central and South America, and has a particularly strong impact on the Indian subcontinent.[2]

Unlike P. falciparum malaria, P. vivax causes relapses which derive from persistent liver stages (hypnozoites) of the parasite.[3] The likelihood of relapse by P. vivax, and the duration between parasitaemia and relapse varies in relation to latitude and seasonal abundances of anophiline vectors. In the temperate regions, the parasite lies latent in the liver through seasons in which vector activity cannot endure. In the tropics, P. vivax exploits the same capability, but tends to relapse quickly because feeding activity by competent vectors often occurs all year round.

Latent stages of P. vivax in the liver constitute an important reservoir of infection. Attacking that reservoir demands specific chemotherapy. Drugs used to treat P. vivax malaria such as chloroquine or quinine attack the blood stages of the parasite, but exert no known direct effect against the liver stages of the parasite. PQ is the only drug available for this purpose and its appropriate use may help prevent relapses. PQ was first synthesised in United States of America during the Pacific war (1941-1945) as part of a massive undertaking of antimalarial drug development.[4]

Unlike other anti-malarial drugs, PQ exerts a broad spectrum of activity against various stages of the parasite. It kills both latent and developing asexual stages in the liver and sterilises the sexual blood stages (gametocytes). A standard regimen also clears the blood of asexual trophozoites of P. vivax. Neither its complex metabolism nor mechanism of activity is fully understood. A wide variety of metabolites, some of them, highly reactive hydroxylated species, apparently disrupt parasite mitochondrial membranes. This could account for the relative susceptibility of parasite stages with a paucity of mitochondria.[4]

Standard anti-relapse therapy is generally considered to be a single daily adult dose of 15 mg of PQ base for 14 days. This well tolerated regimen amounted from early experimental clinical studies showing that many strains of P. vivax are nearly completely susceptible to a total dose of 210mg PQ. It is important to point out that initially all the data showing that standard PQ therapy works well (>90% efficacy) is at least 40 years old. Even before food and drug administration approval of PQ in the United States of America, in 1951, PQ failure was documented in experimental cases of the Chesson (tropical) P. vivax strain. Additional reports soon followed, citing dosing differences as the likely reason for P. vivax relapse.[5] A regimen containing 30 mg daily for 14 days is widely recommended for these cases, because infections acquired in south-east Asia and southwest pacific area show an efficacy of only about 80% to PQ therapy.[4,6]

An alternative regimen for PQ tolerant infections is the intermittent, weekly administration of 45 mg PQ for eight weeks (360 mg total dose of PQ). This is based on early observations by Alving *et al*.[7] Eight week regimen also appeared to be mere effective than a daily dose of 15 mg against infections with a

Chesson strain.[4]

Clinical studies have supported the view that the total dose of PQ, rather than schedule of dosing, determined the efficacy of treatment. A total dose of 360-420 mg PQ delivered over a period of 7 days, 14 days or 8 weeks prevented relapse of PQ tolerant Chesson strain of P.vivax equally effectively.[4,8] One of the major disadvantages of prolonged daily or weekly course of drug administration is patient compliance. Shorter regimens could improve compliance and higher doses could improve efficacy.

PQ causes acute intravascular haemolysis in people having a genetic deficiency of G6PD. Many dozens of variants of this abnormality occur in varying degrees of frequency among most human populations. In the absence of definitive evidence of either G6PD- normal status or documented tolerability in a given variant, PQ should not be administered.

Tolerability and safety of high dose PQ is an issue that needs to be considered. Clayman *et al*.[9] gave a range of single dose of PQ to fasted volunteers. They reported abdominal distress in 5%, 10%, 35%, and 100% of subjects given 15mg, 30mg, 45mg or 90mg of PQ, respectively. The same report describes complete relief from these effects, even at the highest dose applied when PQ was administered with food. However further studies in various ethnic groups are needed to determine the tolerability and safety of such high doses administered over a short period.

PQ causes methemoglobinaemia in normal subjects given standard therapy. Methemoglobinaemia of <20% does not cause symptoms or signs in most people. Methemoglobinaemia in subjects given 30mg daily for 20 weeks or 52 weeks was no more pronounced than in subjects receiving 15mg daily for 14 days.[10,11] PQ induced methemoglobinaemia thus appears mild and self limiting in most people. The impact of higher doses over shorter periods on methemoglobinemia has not been evaluated.

When high dose regimens of PQ fail suppressive doses of chloroquine, 300mg/week for several months to years could be considered to prevent relapses.[5] Ideally an alternative to PQ should be found that is well tolerated, safe and easily administered over a brief period. A new synthetic analogue of PQ, originally called WR 238605, was developed by the Walter Reed Army Institute of Research. It is now known by the generic name tafenoquine.[12] Findings in the first human study with tafenoquine and preclinical studies reveal that the drug was superior to PQ in efficacy with lower toxicity and a longer half life.[13]

In summary most cases of P. vivax relapses are attributed to poor compliance, recrudescence of chloroquine resistant strains or reinfection of P. vivax. Our patient was compliant with his treatment; did not travel to a malaria region after his first episode of P.vivax infection, and therefore did not have any chance of re- infection; was not infected with a chloroquine resistant strain as evident by his response to chloroquine when it was used during the first attack and further relapses despite using quinine in subsequent attacks. He had three relapses despite using different PQ regimes as terminal prophylaxis. He was initially treated with a standard terminal prophylaxis regimen of primaquine (15mg/day for 14 days-total dose 210mg). He then received 15mg/day for 28 days (total dose 420mg), followed by 45mg/week for 8 weeks (total dose 360mg). However his relapses were only prevented after using 30mg of PQ over 14 days (total dose 420 mg). Thus it may be worthwhile considering the use of shorter regimens and higher doses of PQ for terminal prophylaxis as this could improve the ease of administration, compliance and efficacy of PQ. We recommend 30 mg PQ over 14 days as terminal prophylaxis for P. vivax malaria in keeping with a recent publication by David et al.[13] Further studies are however needed to assess the safety and tolerability of using higher doses over a period shorter than 14 days. If high dose PQ regimens fail, long term chloroquine prophylaxis could be considered.

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Pre-Travel Health Care for Immigrants Visiting Friends and Relatives

P A Noone, M Callaghan †

Abstract: VFRs (visiting friends & relatives)

Compared with travellers for other purposes, VFRs[i] going to developing countries are at greater risk for travel-related illnesses. Disparities exist in rates of malaria, typhoid and hepatitis A reported. VFRs account for a disproportionate burden of illnesses compared with tourists. Barriers to pre-travel advice include financial costs, language and cultural beliefs. Adherence to pre-travel advice is low.

Objective: To examine adherence to travel health advice in order to improve the quality of care to this high risk group.

Methods: Retrospective analysis of 78 VFR attendances at an Irish travel health clinic from 1.01.2003 to 31.12.2006. Data was extracted from the combined pre-travel risk assessment questionnaire, advice notes and vaccination record of each VFR attendee. The data was entered into an SPSS data file and descriptive statistics were obtained.

Results: VFRs constituted 78/1470(5.3%) of all consultations. VFRs cancelled or missed 26(25%) of appointments compared to 206(12.3%) appointments overall, OR 2.4(95% CI 1.5-3.8). The mean trip duration was 4.8 weeks (SD 2.9). The mean stay in southern Africa was 4.5, compared to 5.6 weeks elsewhere. Consultations occurred a mean 4.3 (SD3.8) weeks before departure. Malaria prophylaxis was declined by 13% of VFRs. Hepatitis A and typhoid vaccines uptake was 97.2%, 91% overall and 100%, 88% in children respectively. 3 VFRs declined yellow fever vaccine. Rabies vaccine uptake was low at 2% overall. 12 (44%) VFRs travelling home for over 30 days declined hepatitis B vaccine.

Conclusions: The audit shows difficulties in meeting the needs and providing acceptable advice to VFRs. Research is needed to overcome barriers to seeking and adhering to pre-travel heath advice.

Introduction

Dedicated specialist travel health clinics provide individual pre-travel risk assessments and improve services for travellers, many of whom seldom seek health advice before travel.[1] The importance of providing appropriate services increases in relation to an increased incidence of travel related disease and imported infections. For those who visit friends and relatives in developing countries, travel-related care becomes an important component of their primary care. The character and content of the trip will reflect that need.

Foreign travel by Irish residents to more exotic destinations with a high burden of infectious diseases is increasing. The growing importance of travel-related illness has been highlighted by recent literature,[2,3] and primary care faces increasing demands as the first point of contact both for pre-travel advice and for travellers returning with an illness.[4,5]

United Kingdom(UK) residents primarily travel for holidays, but in 2003, trips to 'visit friends and relations' were the second most popular reason for travel and overtook visits for business reasons for the first time.[6] United States(US) research[7] estimates there were 10 million trips abroad for "visiting friends and relatives" by U.S. residents in 2002. Marked disparities were apparent in the number of reported cases of preventable travel-related illnesses in U.S. VFR residents and their children, compared with tourist travellers.

Compared with travellers for other purposes, VFRs going to developing countries are at greater risk for many travel-related illnesses. These include diseases routinely vaccinated against in childhood, including hepatitis B, and tuberculosis.[8,9,10,11] Disparities exist in the number of cases of malaria,[12,13] typhoid fever[14] and hepatitis A[6,15] reported. Determining risk estimates for vaccine preventable illness is extremely complex and few studies which have tackled this issue.

Increasing numbers of Irish residents were born or raised in countries endemic for malaria. In the UK, half of malaria cases occur in minority ethnic groups settled in the UK, who acquired it whilst visiting family and relations overseas.[6] The numbers of reported cases of malaria in the Republic of Ireland increased by 62% in 2005. All cases were associated with travel and immigrants returning from malaria-risk areas within Africa.[17] *P.falciparum*, accounted for 75% of notified cases (n=33) with three *P. vivax*, one ovale, one P.

malariae and one mixed *P. vivax, ovale* infection. This mirrors the species distribution for imported malaria reported in the UK and Europe.[18]

In addition to transnational efforts to control and eradicate disease, preventing illness in resident VFRs requires focused efforts to remove barriers to care. These barriers are poorly studied in Ireland and there are significant limitations with the current surveillance systems for most travel-associated illness. These include: existing surveillance systems bias identification towards the most severe cases, missing less severe illness none-the-less still causing personal and economic costs; Travel history is generally under-reported and it is not generally possible to distinguish traveller imported disease as opposed to imported disease in immigrants or foreign visitors; also the classifications used in surveillance systems are inconsistent *eg* for countries visited or organism identified; Incomplete demographic data in most surveillance systems prevents analysis of which particular groups of people are most at risk. This is concerning for Ireland with it's growing immigrant population.[19]

The determinants of elevated risk to infection are unclear but are thought related to a number of factors, including higher exposure and inadequate protection measures. VFRs appear less likely to seek pre-travel health advice or to be adequately vaccinated.[20,24] They more often stay in remote rural areas,[21] having close contact with local populations,[22] consuming high-risk foods and drinks,[23] travelling at the last minute for longer trip durations.[24] Barriers to appropriate pre-travel care for VFRs can occur at many levels. Broadly these can be summarised as: a) system level; b) traveller-led; and c) provider-led barriers to care. Faced with increasing numbers of VFRs clients we set out to examine our experience and uptake of advice given to this group of travellers.

Methods

Theoretically, the term "VFR" could mean any person who travels to visit friends and family abroad. However, it is generally accepted that the term specifically refers to immigrants who are ethnically and/or racially distinct from the majority population of their country of residence and who return to their homeland to visit friends and/or relatives.[25] This includes VFRs who had originally been immigrants (immigrant VFRs), VFRs who have not originally been immigrants (traveller VFRs), but excluding tourist travellers.

The former definition was used to select the study population from the clinic diaries. The health record of each VFR was then obtained and the data extracted tabulated. Due to the relatively recent onset of immigration into Ireland 'traveller VFRs' are uncommon. and robust evidence that stratification of 'risk' by classification into "immigrant visiting friends and relatives", and "travellers visiting friends and relatives" reliably predicts travel-related risk or health outcomes remains unclear.[26] Hence we did not apply this sub classification to our VFR population. This is a retrospective audit of our travel health clinic encounters with VFRs in a regional clinic north of Dublin from 1st January 2003 to 31st December 2006. We describe: demographics; travel duration and destinations; acceptance of anti-malaria prophylaxis and travel-related vaccinations appropriate to destination/activity risk. We consider likely systems; traveller or; provider level barriers to appropriate pre-travel health care.

From StatCalc Epi-info ©2002 for cohort or cross-sectional studies, assuming 12% missed appointments in tourist travellers, this study would have 90% power to detect an OR>2.5 with 95% confidence.

The pre-travel risk assessment records of the travel clinic based in the Lourdes Hospital Drogheda Ireland were accessed for the study. The same record format for the standard pre-travel risk assessment and vaccinations has been used in the clinic since 1998. Records for VFR attendees between the 1st of January 2003 and 31st December 2006 were scrutinized. Basic demographic data including stated age, gender, nationality and marital status were extracted. Dates of clinic attendances, dates of departure and time between first appointments and departures were extracted. Acceptance of malaria prophylaxis recommended vaccinations appropriate to destination risk were recorded. We used the traveller and country specific recommendations of the Travax[ii] online database for each attendee. Vaccines and anti-malarial prophylaxis were recommended following evaluation of specific individual traveller and journey specific characteristics of risk.

Data was collected anonymously and analysed with SPSS *(Version 14.0, SPSS Inc, Chicago,USA).* Data are presented as the mean ± SD or median, with confidence intervals for proportions. Comparisons between groups were performed using the chi-square test for binary or categorical variables and the Mann-Whitney *U* test for continuous variables. As this was an observational study using anonymised data for audit of quality of care, no ethical approval was required.

Results

Over the period 78 (5.3%, 95%CI 4-6.5) consultations with VFRs were identified from a total of 1470 clinic consultations over the period. All VFRs were returning to their country of origin (fig 1). The mean age of VFR attendees was 16.5 yrs (SD 14.9). There were 32 (41%, CI 30-52) males and 46 (59%, CI 48-70) females. Males had a mean age of 16yrs (95% CI 10-22), median 8, with marked positive skew. Females were slightly older (mean 17yrs, 95% CI 13-21), median 10.5, also with evidence of positive skew. The difference in means was not significant (p>0.8, CI -7.9-

Pre-Travel Health Care for Immigrants… *continued*

Fig 1. Destination of VFR Clinic Attendees, 2003-2006

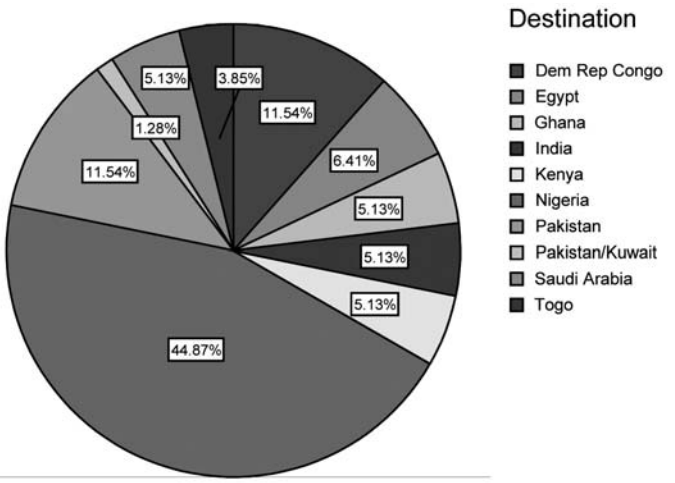

Fig 2. Occupations of VFR Travellers

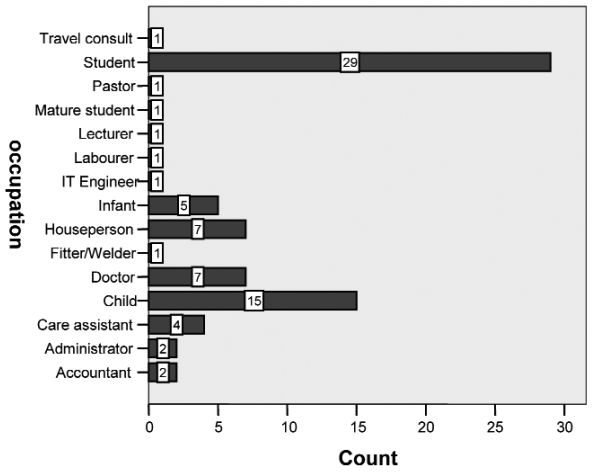

Table 1. Summary of 'Take-up' of Recommended Anti-Malarials and Vaccinations

	Accepted	Via GP	Declined	Not applicable	Total
Malaria prophylaxis	53	8	8(13%,CI 4.6-22)	9	78
Yellow Fever	43		3(6.5%, -0.6-13.6)	32	78
Polio Salk	21	2	6(8.6%, 6.5-38)	49	78
Typhoid	63		6(8.7%, 2-15.4)	9	78
Rabies Vaccine (HDCV)	1		74(98.6%, 96-101)	3	78
Tetanus-Diptheria	10	1	11(52.3%, 31-74)	56	78
Hepatitis B Vaccine	20	13	30(60%, 46-74)	15	78
Hepatitis A Vaccine	68		2(2.8%, -1-6.8)	8	78
Meningitis A,C,W135,Y.	27		34(56%, 43-68)	17	78
Influenza vaccine A&B			5(100%)	73	78

Table 2. Summary of 'Take-up' of Recommended Anti-Malarials and Vaccinations for children (defined<16yrs of age)

	Accepted	Via GP	declined	Not applicable	Total
Malaria prophylaxis	36	6	4(1%, CI 0.7-19.3)	2	48
Yellow Fever	26		3(10.3%, -0.7-21)	19	48
Polio Salk	3	2	0(0%)	43	48
Typhoid	38		5(11.6%, 2-21)	5	48
Rabies Vaccine (HDCV)			48(100%)		48
Tetanus-Diptheria	1	1	0(0%)	46	48
Hepatitis B Vaccine	17	11	16(48%, 31-65.5)	4	48
Hepatitis A Vaccine	44		0(0%)	4	48
Meningitis A,C,W135,Y.	17		20((59%, 38-70)	11	48
Influenza vaccine A&B			0(0%)	48	48

6.0). There were 48 (61.5%) children and 30(38.5%) adults. Of these adults 7/11(63.6%) males and 18/19 females (95%) were married. The stated occupations of attendees is summarized in fig 2.

Table 1 summarises the proportions of adults and children accepting anti-malaria prophylaxis or recommended vaccines. Consultations occurred at a mean of 4.3 weeks before proposed date of travel (SD +/- 3.8) The mean declared intended duration of trips were 4.8 weeks (SD +/- 2.9). The mean declared duration of trips for VFRs to Sub-Saharan Africa was 4.5 weeks, compared to 5.6 weeks for VFRs from elsewhere.

Last minute appointment cancellations[iii] were an administrative problem, as this left no time for these appointments to be re-allocated to other clients. The overall rate of cancellations for all appointments made over the period was 206/1676(12.3%). VFRs cancelled 26/104(25%) of their appointments compared to ordinary tourist travellers OR 2.4 (95%CI 1.5-3.8). VFR consultations grew to 20/410 (4.8%) of all new consultations in 2006. The overall cancellations/DNA rates for 2006 was 48/410 (11.7%, 95%CI 8.6-14) (of which 15 were VFR's). Cancellation rates for VFRs grew to 43%(15/35) in 2006 compared to 7.7%(33/428) in travellers for other purposes, OR 9.0, (95%CI 4.3-19)

Discussion

This is the first study on VFR pre-travel health in Ireland and compares with other studies in this complex area.[24,27,37] Ascertainment for attendances over the study period is complete. Although the true target population and true denominator of all VFRs from our clinic catchments area remains elusive, the direction of misclassification or selection bias is likely towards the underestimation of any association.

From the literature it's unclear whether the apparent excess health risk to VFRs arises from their greater exposure[7] in that they are 'over represented' as travellers or because they are at increased risk of disease. It's debatable whether the classification of 'VFR' (with variable defnitions) is an accurate proxy for travel health exposure risk or is confounded by factors such as economic status, health beliefs, consulting behaviour or cultural attitudes.

This is an observational study and selection effects or confounding by personal health factors (cultural, behavioural, genetic, socio-economic or linguistic), administrative classification bias, reported travel destination(s) disease prevalence risks or duration of travel, must be considered. The numbers are small in that only 5.3% of clinic attendees were VFRs however

this compares favourably with international studies in this area.[27] However these factors limit the degree to which the findings can be generalized more widely.

Referral routes and patterns of access to travel health services no doubt differ from those of the indigenous population.[28] The Irish General Medical Services does not cover travel health vaccines, prophylactic medication nor risk advice, so financial resources and willingness to pay no doubt influence consultation behaviour and uptake of advice given.

Notwithstanding selection bias into or out of the study population, such studies can be used to explore the aetiology of observed effects. This can assist planning healthcare by determining risk factors prevalence of in the population. The magnitude of selection effects operating in this study are estimated by the precision intervals.

Large studies in academic centres focus on relative differences in consulting characteristics and vaccine uptake in different traveller groups but have not estimated the true incidence of pre-travel consulting and acceptance of vaccines, prophylaxis or advice because the true denominator is unknown. Because of these complexities information needs to be triaged from a variety of sources. Our study captures one facet of this 'elusive' VFR target population. Our results confirm the difficulties in meeting the needs of this population found in other studies on this group of high risk travellers.[24,26,27,37]

VFRs attending our clinic and travelling to sub-Saharan Africa reported shorter mean trips (4.5 weeks) compared to those reported in other studies [7,24,37] Mean trip duration was shorter than VFRs attending our clinic but going to other destinations(5.6 weeks), This is most likely due to random variation or reporting bias rather than a true difference. Socio-economic factors are relevant also, (Fig. 2).

Anti-malarial prophylaxis was declined in 13% of travellers to whom it was recommended based on destination risk. Due to financial pressures parents maybe neglecting their own health in favour of protecting their children as prophylaxis was declined for only 1% of children travelling to a malaria risk destination.

Three travellers (one adult and 2 children) travelling to endemic areas refused Yellow Fever vaccine. Cost maybe a concern, as they defaulted or declined other recommended vaccines also. No difference was found between acceptance of YFV in children and adults. (Yates $\chi 2$ 0.03, $p>0.9$). No cases of yellow fever were reported in Ireland in recent years.[29]

Hepatitis A virus is the most frequently acquired vaccine-preventable travel disease.[30,31] Uptake of recommended Hepatitis A vaccine was high at 97.2% overall and 100% in children.

Typhoid fever is vaccine preventable and is disproportionately represented in VFRs.[32] Typhoid vaccine (6) was declined more often by VFRs than hepatitis A vaccine(2) in our study, (OR 3.0, 95%CI 0.7-13). Those declining were traveling to Nigeria. Typhoid vaccine uptake was 91.3% (CI 84.7-91.3%) overall in our study group and 88.4%(CI 79-88.4%) in children. Five cases of typhoid arising in India, Nigeria and Pakistan were notified in Ireland in 2005 and 2004.[29]

Pre-exposure rabies vaccination is recommended in VFRs travelling to endemic areas for more than 30 days. Recommendations for vaccination targeted children at higher risk as cost factors limited vaccine uptake. The intradermal route was offered to reduce costs.[33,34] Despite this 98.5% (CI 96-101%) of all VFRs and 100% of children declined the vaccine in this study.

Clinically recognised hepatitis B infection is rare in children but evidence points to higher infection rates in children from certain ethnic minorities.[35] There are no specific Irish recommendations on hepatitis B vaccination of VFRs. Hepatitis B vaccine was recommended to 50 VFRs on basis of risk and 30 (60%, CI 46.4-73.6%) declined it. 12 VFRs (44%, CI 25.7- 63) travelling to an endemic region for over a month declined vaccine.

Classification of travel-acquired meningococcal disease is difficult[36] and is usually inferred from isolation of rare strains.[6] Recommendations advocate a low threshold for use of meningococcal in VFR travelers to endemic areas.[36] Only 44% of 61 VFRs recommended to receive meningococcal vaccine accepted it. 59%(CI 38.5-79.6%) of 22 VFRs spending more than a month in Sub-saharan 'meningitis belt' accepted quadrivalent vaccine.

VFRs are six times more likely to acquire influenza than other group.[37] Routine immunization is recommended to assist in eliminating confusion in diagnosis.[38] All five persons to whom influenza vaccine was recommended on the basis of travel risk declined it.

Although few studies have examined the reasons why travellers consult travel clinics before departure, knowledge and risk perception appear to be linked with seeking pre-travel health information.[37,38,39,40] Time constraints, and limited geographical or financial resources constitute barriers to obtaining pre-travel information.[41] But the contribution of socio-demographic characteristics (age, sex, education level, socioeconomic status) and travel attributes (destination, purpose, and duration of trip) and traveller characteristics (previous travel experience, and previous health problems associated with travel) are unclear.[42]

Conclusions

Systemic illnesses more commonly received by VFRs, are partially preventable with pre-travel advice and vaccination. Given the low proportion of VFRs who seek pre-travel health care,[20,37] it is important we provide a cost effective and culturally acceptable service. For VFRs on limited budgets, greater assistance to prioritize vaccines and choose less expensive malaria

Pre-Travel Health Care for Immigrants… *continued*

prophylaxis is important to outcome.

In this high-risk population, resources saved by restricting coverage are probably offset by the costs of treating the resulting preventable diseases. Policies related to financing travel-related services for VFRs need to be carefully evaluated. A co-ordinate approach through primary care, specialist travel medicine clinics, population health surveillance centers and government departments covering immigration issues seems prudent.

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i VRFs' was defined for the purposes of the study as, immigrants who are ethnically and/or racially distinct from the majority population of their country of residence and who return to their homeland to visit friends and/or relatives.
ii TRAVAX (subscription only) – advice line, website and discussion forum for health professionals www.travax.scot.nhs.uk/
iii Defined as a communicated cancellation within 24hrs of scheduled appointment or 'DNA'.

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Bacillus Cereus Food Poisoning, a Consideration for International Traveller

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Abstract

Frequent travel and affluence among immigrants from developing countries would be an important feature of disease associated with Bacillus cereus food poisoning. Mild illness usually lasts less than 24 hours but can be sufficient to force the traveller to miss train or flight connections or for those on business travel to skip any prior appointments. Travel associated B. cereus intoxication, albeit mild, deserves attention.

Background

Travel associated morbidity is a constant irritant for travellers to distant locations. Travel disorders might require hospitalization during or after travel. There may be minor ailments that can upset travel schedules or business appointments. One minor irritant has been mildly debilitating food intoxication by *Bacillus cereus.* Frequent travel and emerging affluence among immigrants from developing countries may be an important factor in morbidity linked with *Bacillus cereus* food poisoning.

Bacillus cereus was recognized as an agent of food poisoning during 1955 and causes two types of foodborne intoxications. One is characterized by nausea and vomiting and abdominal cramps and has an incubation period of 1 to 6 hours: the short-incubation or emetic form of the disease. The other type is manifested by abdominal cramps and diarrhoea with an incubation period of 8 to 16 hours; a small volume or profuse and watery diarrhoea. In either type, the illness lasts less than 24 hours after onset though symptoms may last longer in some cases. The illness is due to the presence of the bacteria in improperly cooked foods, which can be further compounded if the food was improperly refrigerated, encouraging bacterial spores to germinate. Everyone with this infection should stay off work or school while symptomatic. Infants or children in daycare, school pupils, students, food workers, child-care workers, teachers, and health/ care workers are very prone to the disease.[1]

Predisposing background

B. cereus spores are heat-resistant and survive boiling of food items. They can multiply rapidly and produces a heat resistant toxin that cannot be eliminated by cooking or reheating. The bacteria or its toxin cannot be detected by smell or sight. *B. cereus* food poisoning occurs year-round and is without any particular geographic distribution. The foods incriminated have included meat, vegetables, milk, fish, sauces, soups, casseroles, and pastries. Most cases of *Bacillus cereus* food poisoning are reported to resolve themselves without medical treatment though rehydration, either orally or intravenously, might be needed to replace fluids lost through vomiting or diarrhoea. Even such mild illness might be adequate for force the travellers to miss train or flight connection or for those on business travel to skip any prearranged appointments

Emerging alarms

Recent reports on B.cereus intoxication are worth attention. In and around Nairobi, 57 percent of the milk and milk product samples were contaminated with *B. cereus*.[2] A commercial product for infants containing cereal mixed with dried infant formula produced rapid projectile vomiting in two infants. Examination of multiple samples of the cereal product revealed significant contamination with two spore-forming species, *Bacillus subtilis* and Bacillus cereus.[3] A *Bacillus cereus* cytotoxin that originated from a strain in Norway had caused a severe food poisoning outbreak with three fatal cases.[4]

Immigrants on return travel to native-land may be offered lavish hospitality by relations, business contacts and friends. They may be served quite a lot of dishes which were prepared earlier on a number of occasions. The edibles, irrespective of quality of refrigeration, would be warmed up before serving the guests. Furthermore, there might be frequent participation in ceremonial occasions, receptions and banquets. Alternatively, the guests might reciprocate and invite natives to meals in rather costlier restaurants. *Bacillus cereus* outbreaks have been linked with part time caterers.[5] Affluence and working schedules in affluent communities provide only occasional opportunity, say once in 7-10 days, to cook dishes in the

Bacillus cereus food poisoning… *continued*

house. Aliquots would be stored frozen and warmed up in micro wave ovens before consumption. The food might even have been stored in a single lot to be heated on several occasions and would be the obvious choice for hosts.

To conclude, irrespective of travel status or otherwise, it would be prudent to consider intoxication associated with *B. cereus*. One should insist on hot, freshly cooked meals avoiding raw vegetables, salads and unpeeled fruits. Any indisposition, albeit minor, can be disastrous for any traveller. Accompanying infants and babies should be fed freshly prepared/reconstituted powdered milk or breakfast to guard against *B. cereus* intoxication.

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8-Site Intradermal Post-Exposure Antirabies Vaccination for Major Animal Bites

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Follow up of 8-site intradermal post-exposure antirabies vaccination for category III (major) animal bites compared to the 2-site regimen with rabies immunoglobulin: a clinical audit.

Abstract

Background: In 2002, the eight-site intradermal regimen (0.1ml of purified inactivated vero cell vaccine-VERORAB) was given to the patients with category III (major) exposures, due to the lack of rabies immunoglobulin(RIG) in Sri Lanka. Our objective was to study their incidence of rabies at the end of two years after exposure in comparison to RIG and 2–site intradermal regimen.

Methods: Data were collected prospectively from patients who presented to the Teaching Hospital, Peradeniya in 2002 and 2003.

Results: We compared 667 patients who received eight-site regimen (study group 1) in 2002 with a group of 670 patients who had both RIG and 2–site intradermal regimen in 2003 (study group 2). The mean age of study group 1 was 25 (SD 18) and study group 2 was 25 (SD 20) years respectively. Parameters such as gender, type of biting animal and the severity of bite were similar in both groups. However, study group 1 had 70.6% of stray animal bites compared to group 2 which had 71.5% domestic animal bites. Most of the bites were on hands and legs in both groups. There were no deaths reported in either groups due to rabies by the year 2005(two years after exposure).

Conclusion: We report a supportive clinical evidence for 8-site intradermal regimen as a post exposure prophylaxis in situations where RIG is not available for management for category III exposures. However, administration of rabies immunoglobulin should remain the best post-exposure therapy for these patients.

Introduction

Rabies encephalomyelitis is caused by a rhabdovirus, transmitted commonly by animal bites. Although human rabies is considered as an invariably fatal disease, it is eminently preventable following an exposure to the virus. Rabies is endemic in Sri Lanka and is a major health problem that reportedly causes 60 - 100 deaths annually.[1] Primitive nervous tissue Semple vaccine produced in goats was replaced with tissue culture vaccines since 1995, thereby causing heavy expenditure on the government of Sri Lanka for post exposure prophylaxis.[2,3] This ever-increasing

demand for tissue culture vaccine had led to the introduction of economical intradermal regimen, which became the standard practice in Sri Lanka as a cost saving measure.[4,5,6] Currently practiced post exposure intradermal regimens(2-site and 8-site) use only 40% of the vaccine required for the standard intramuscular regimen.[7,8] The 2-site intradermal regimen involves two injections (0.1ml of purified Vero cell vaccine-PVRV at each site) over the deltoids on day 0, 3 and 7 and single-site boosters on day 28 and 90.[9,7,1] This regimen should to be used with rabies immunoglobulin(RIG), following category III (major) animal bites. Of the RIGs, human RIG is prohibitively expensive compared to equine RIG and is not common to cause allergy.

In a situation where RIG is not available, 8-site intradermal regimen was recommended.[10] This regimen involves eight sites of intradermal injections (0.1ml/site) on day 0, four sites on day 7 and single site on days 28 and 90. The evidence of the clinical efficacy of the eight-site method is found in the original research where a randomised controlled clinical trial showed no deaths in patients who were bitten by proven rabid animals (36 severe and 42 mild cases) having received this vaccine regimen where only severe cases had received RIG.[6] In 2002 there was a severe shortage of RIG in Sri Lanka and the eight-site intradermal regimen (0.1ml of purified inactivated vero cells vaccine - VERORAB) was practiced in the Government Hospitals for category III major animal bites. We followed up these patients who received eight-site regimen and compared them with a group of patients who received the combined 2-site anti rabies vaccine regimen and RIG in 2003. The outcome of either regimen was studied two years later and presented.

Materials and Methods

We collected case records of 667 patients who had eight-site intradermal injections for category III exposures (major animal bites) in 2002 (study group 1). They had received 0.1ml of purified inactivated vero cell vaccine - VERORAB *(Aventis Pasteur)*, at eight-sites intradermally on day 0, four sites on day 7 and a single site on days 30 and 90. This was compared with 670 patients who had both equine rabies immunoglobulin (Changchun Istitute of Biological Products,P.R. China) and 2–site intradermal rabies vaccine (0.1ml of purified inactivated vero cells vaccine - VERORAB *(Aventis Pasteur)* in 2003 (study group 2). The 2-site intradermal regimen involved two intradermal injections (0.1ml/site) over the deltoids on days 0, 3 and 7 and single-site boosters on days 30 and 90. In 2005, patients in both groups were investigated for development of rabies (two years after post-exposure treatment) from the human rabies surveillance report maintained at the Epidemiology Unit of the Ministry of Health, Colombo, Sri Lanka.

Statistical method

Data were analyzed using the statistical software package, SPSS version 11. Initially the two sets of data were analyzed according to the patient's demographic characteristics, sites of bites on body and the type and behaviour of the animal involved. Chi square and Student's t tests were appropriately used for the analysis. Since there were no deaths identified in both sets of data no further analysis was carried out.

Results

The mean age of study group 1 was 25 (SD 18) and study group 2 was 25(SD 20) years respectively. The rest of the parameters such as gender of the patients, type of the animal and the severity of bite were similar in both groups (Table 1). However, study group 1 (eight-site) had 70.6% of stray animal bites compared to group 2 which had 71.5% domestic animal bites. Most of the bites were on hands and legs and the two groups were similar but bites on head and neck regions were observed to be higher in the study group 2 (Table 2). There were no deaths in both groups due to rabies by 2005.

Discussion

In this study we found no treatment failures in either regimens used as post-exposure prophylaxis. We used this rare opportunity to provide clinical evidence in favour of the 8-site regimen, which is already in practice. However, we were not able to confirm rabies infection in the biting animals that remains the main drawback of the study. As there are no data on the prevalence of rabies in dogs available in Sri Lanka, we are not in a position to calculate an approximate value of infected animals in the study. However, it is

Table 1 Comparison of parameters between two groups

Parameter		Group 1 (Eight site)		Group 2 (RIG)*		P Value
Gender	Male	369	55.3%	356	53.1%	0.422
	Female	298	44.7%	314	46.9%	0.422
	Total	**667**	**100.0%**	**670**	**100.0%**	
Type of animal	Dog	527	79.0%	546	81.7%	0.411
	Cat	122	18.3%	105	15.7%	0.411
	Others	18	2.7%	17	2.5%	0.411
	Total	**667**	**100.0%**	**668**	**100.0%**	
Behavior	Domestic	25	29.4%	241	71.5%	<0.001
	Stray	60	70.6%	96	28.5%	<0.001
	Total	**85**	**100.0%**	**337**	**100.0%**	
Type of bite	Bite	626	95.1%	614	92.7%	0.069
	Scratch	32	7.3%	48	7.3%	0.069
	Total	**658**	**100.0%**	**662**	**100.0%**	
Age		25.26 (Mean)		25.46 (Mean)		0.848

*Rabies immunoglobulin + 2-site rabies vaccine

Table 2. Site of the animal bite

Site	Group 1 (Eight site)		Group 2 (RIG)*	
	N O	%	NO	%
1. Head & neck	25	5.9	88	15.2
2.Hand	175	41.3	192	33.2
3.Arm	43	10.1	43	7.5
4.Leg	181	42.7	256	44.1
Total	424	100	579	100

*Rabies immunoglobulin + 2-site rabies vaccine

8-Site Intradermal Post-Exposure Antirabies… *continued*

noteworthy that 70% of the animals were stray dogs where the patients were administered the 8-site regimen. Stray dogs were responsible for 46% of 76 human rabies cases reported in 2003.[11] The Medical Research Institute of Sri Lanka has received 807 animal heads in 2000 which represent a tip of an iceberg, and 71% of them were positive for rabies.[11] Considering the above information and a large number of animals involved in the study, we could presume that a sizable proportion of them may be infected with rabies at the time of bite. Furthermore, estimation of serum neutralizing antibody titres, that we were unable to determine, would have enhanced the findings of the study.

The Thai Red Cross did a study on 100 patients severely bitten by proven rabid animals. They were given 2-site intradermal vaccine regimen and RIG and followed up. There were no deaths after one year and a randomly selected subgroup of 10 patients had shown seroconversion testifying the efficacy and safety of the 2-site regimen.[9] Meanwhile, Khawplod[12] showed the 8-site regimen to give significantly higher antibody levels than the 2-site regimen from day 7 onwards using purified chick embryo cell vaccine (PCECV). However, Sriaroon used the 8-site double dose rabies vaccine that resulted in higher antibody titers than the 2-site regimens by day 14, but hardly any significant titers by days 5 and 7.[13] Hence, the administration of rabies immunoglobulin into and around the bite wounds on the first day of rabies prophylaxis combined with anti rabies tissue culture vaccine was stressed as the best post-exposure therapy for all category III exposures. However, 8-site regimen remains as the best option when RIG is not available, which specially occurs in rabies endemic countries with limited resources. But safety of 8-site regimen in very severe bites is questionable now, as a treatment failure has already been reported. A child, bitten on the face by a proven rabid dog with severe exposure was given 8-site PCECV as RIG was not available in the hospital and had died due to rabies after 15 days in Thailand.[4]

The answer to this dilemma of post-exposure prophylaxis would be to develop an effective equine rabies immunoglobulin that is affordable even for a poorer nation. Furthermore, development of monoclonal antibody technique would be the best option for the future to overcome the shortage of this life saving biological product.

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Authorship

S A M Kularatne was the principal investigator, designed the study, and wrote the paper. MMKP SKCP, SW and UB undertook data collection. PVRK analysed the data. OW made intellectual contribution.

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IN THE NEWS

Cyclists Beware

Cycling is great exercise, environmentally friendly, and also surprisingly safe. A study of nearly 2500 New Zealand cyclists showed that the incidence of crashes bad enough to disrupt normal activity for at least 24 hours, was 0.5/cyclist/year. Wearing fluorescent colours to make riders more visible substantially lowered the risk of accidents.

Cyclists need to know that:

- If they can't be seen, you're more at risk of collision
- Wearing high visibility clothing will reduce risk
- Cyclists who cycle slowly and do not weigh much, may be at greater risk, so they should take even more care to be visible.

Source: Injury Prevention 2008;14:11-18

Snow Sport Injuries

Skiers and snowboarders can bomb around on steep slopes without control and expertise. Boots have been developed to lessen the risk of ankle injuries, but not back injury. Over 6 years, 728 patients were admitted to a tertiary trauma centre in Bern as a result of snow sports. 73 (63 skiers and 10 snowboarders) had severe spinal injuries like a fracture, and half of these had fractures at more than one level. None of the boarders had persistent neurological sequelae – perhaps because they were younger than the skiers. Suggestions for preventing spinal injuries: wearing spine protectors, sticking to slopes you can manage, checking that all equipment fits properly, and swallowing your pride and having lessons to refresh technique.

Source: *British Journal of Sports Medicine* 2008; 42:55-58

Novovirus

Queen Elizabeth 2 was the first ship in 2007 to suffer a serious outbreak of norovirus with about 16% of passengers taken ill. The ship sailed from Southampton on a 106 day world cruise and was boarded in Acapulco by US Centres for Disease Control staff to check on cleaning procedures.

Source: *Travel Health Forum* Newsletter, October 2007

Coral Reefs and Suntan Prevention

Tourists who wear sunscreens may be contributing to the death of the Great Barrier Reef and coral reefs around the world.

Scientists in Italy believe that up to 10 per cent of coral reefs are threatened by bleaching caused by chemicals.

Between 4,000 and 6,000 tonnes of sunscreen wash off swimmers annually in oceans worldwide, mostly in warm tropical climates where reefs are popular tourist attractions.

Many brands of sunscreen contain ingredients that can stimulate viruses in the algae, known as zooxanthellae, which live within corals. Zooxanthellae play an essential role in providing the vibrant colour associated with corals by supplying food energy through photosynthesis.

Chemicals found in sunscreens cause the viruses to replicate until their algae hosts explode, spilling viruses into the surrounding seawater, where they can infect neighbouring coral communities. Without the algae, the coral turns white and dies.

Advice for Disabled Travellers

Be completely honest in stating degree of disability and its effects. For example mobility impairment, incontinence, problems with eating etc. Point out facilities required at the destination e.g.

Ramped or level access to accommodation. Ground floor room or suitable access to lift. Lift should be large enough to accommodate a wheelchair user and companion. Suitable access to bedroom and bathroom, with enough space for wheelchair manoeuvre. Doors wide enough to allow access. Level surroundings with access to local beach, shops, amenities etc.

If no ground floor bedrooms

A lift, medium size 3'10" deep, 2'6" wide, must be available to reach rooms. A maximum of 2 steps to an entrance. A ramp is acceptable although in some cases it can be portable. A public or private lavatory must be available with minimum dimensions of 5'4" x 3'7" to enable a wheelchair to be manoeuvred. Entrance doors should be at least 2'6" wide, as should doors to bedrooms, bathrooms and public rooms. If the dining room can't be reached easily then room service must be available.

Space Tourists

Later this year, ground will be broken on the New Mexico spaceport. By 2009 flights will start. After three days training tourists will be strapped into SpaceShipTwo. After take-off, slung beneath the carrier aircraft, WhiteKnightTwo, they will be able to walk around inside as they circle up to 50,000 feet. Then they will be dropped off into a short glide before the rocket fires, shooting them vertically to 68 miles (almost 110km) above the Earth in 90 seconds. The wings will flip into a "shuttlecock" position, steering the ship in an arc before it re-enters the atmosphere in a slow, low-friction glide.

Medical Tourism

Health travellers are having surgery as part of a holiday or business trip. It is possible to combine cosmetic surgery or dental treatment with a safari in South Africa, and a hip replacement or knee surgery with a trip to Thailand or India.

In the UK, the least you could expect to pay for a fairly basic check would be about £250, and a Classic check-up provided by Bupa would set you back £430.

A journalist in India on assignment decided to have a "well woman" health check at the MS Ramaiah Memorial Hospital in Bangalore. The check-up, with

In the News *continued*

chest x-rays, full torso ultrasound, lung function test, electrocardiogram and a battery of other blood, urine and diagnostic tests, cost just £23. Included in the price was a consultation with a doctor to discuss any worrying findings and make recommendations on health improvements. The patient was given all x-rays, printouts and reports to show her GP at home.

The Foreign & Commonwealth Office warns that, although medical treatment abroad may be cheaper, "standards of care in some countries may not be the same as those in the UK, and emergency facilities such as intensive care may not be readily available. In some countries there may be a risk of transmission of blood viruses such as HIV, hepatitis B and hepatitis C during medical procedures."

Last year more than 50,000 Britons went abroad for surgery; this year the number is expected to soar to at least 75,000, according to Treatmentabroad.net, a web-site for medical tourists.

Among the more popular treatments are cosmetic surgery and dentistry, which are expensive in the UK and often may not be covered by private insurance.

The cost of a cheap flight plus the cost of the surgery along with a few days of rest and recuperation may work out cheaper than having the work done at home.

Killer Bees

The Africanised bee's "killer" reputation is greatly exaggerated, but it does have some basis in fact. In isolated instances, people and animals have been stung to death. Africanised bees do not roam in giant swarms looking for victims to attack. Like most animals, these bees react defensively only when they feel threatened.

For the non-allergic individual, bee stings are reasonably harmless – it is estimated that if attracted by a swarm of bees an average non-allergic male would need at least 1,500 separate bee stings before the venom becomes life threatening (10 stings per pound of body weight).

One of the more common causes of anaphylaxia is a reaction to stings.

Anaphylaxis is an extremely dangerous allergic reaction. It is caused by a massive over-reaction of the body's immune system. It is rare. The main chemical that the immune cells release is histamine. Resuscitate as necessary. The bad news is that bee venom appears to contain more proteins than wasp venom and therefore there is a greater likelihood of being allergic to bees than wasps.

Further information go to:
http://www.insecstings.co.uk/sting.shtml
www.anaphylaxis.org.uk

AIR TRAVEL

Contaminated Air in the Cabin

The Government has began a study into this subject. The Department of Transport says that it is about to undertake "ground-breaking" research into incidents involving fumes. "The DofT commissioned the Committee on Toxicity (CoT) to examine this issue." A spokeswoman said.

In 50 years of commercial flights, aviation has changed beyond recognition. Little has been done about the fact that both passengers and crew are breathing in air that comes straight from the engines.

When commercial flights began in 1958 passengers breathed in air supplied directly from the atmosphere using compressors. But this was deemed to be too expensive, so in 1962 a system was installed to draw air from the heart of the engines –known today as "bleed" air.

Air is drawn out of the compression section of the engine and cooled. It then enters the cabin, where it mixes with recirculated air that has passed through filters designed to remove bacteria and viruses. These "recirculated air" filters do not remove any fumes or vapours from the engine.

Is there technology available to filter out such toxins? Yes. To install it would cost airlines millions of pounds.

Nearly all types of aircraft have been affected by contaminated air, but CAA records show that the British Aerospace 146, the Boeing 757, the Airbus A319 and the Embraer 145 seem to be particularly susceptible.

The CAA continues to deny that there is a health issue or that incidents involving fumes are not being reported, its equivalent in the United States, the Federal Aviation Administration, said in 2006 that it was seriously worried about under reporting.

When the issue of under reporting was raised in the House of Lords, the Transport spokesman, Lord Bassam, insisted there was no cover-up, adding that only one in some 2,000 flights are affected by "fume events" and that the numbers of people who reported feeling unwell as a consequence are very small. But with 2.4 million flights in and out of Britain each year, that would mean almost 1,200 flights.

Improved Leg Room in Cabins

Airline passengers should be given at least two inches more legroom to protect them from the risk of developing deadly blood clots in cramped seats, peers have warned.

The gap should be widened from the current minimum of 26 inches to at least 28.2 in because people are getting fatter and taller, it was claimed.

Members of the House of Lords science committee said the current amount of space between aircraft seats would not provide enough room for taller pas-

sengers to adopt the "brace position" in an emergency.

There are also fears that passengers are at risk of developing blood clots known as deep vein thrombosis if they have to sit immobile in cramped seats.

Any move to increase the minimum seat pitch will have to be taken on a European-wide basis by the European Aviation Safety Agency, the Civil Aviation Authority said. "The current requirements are determined on safety grounds and not for health or comfort grounds," a spokesman said.

Aircraft Crashes

The number of people who died in passenger airline crashes fell by 20 per cent last year compared with the total for 2006. There were 631 passenger fatalities worldwide last year – 159 fewer than in 2006, according to aerospace information company Ascend. In the 1990s, the average was 954 passenger deaths a year.

New Polar Air Service

The first regular jet passenger service to Antarctica has been started from New Zealand to service scientific stations. There are as yet no plans to offer flights to tourists.

Ships

Last year nearly 60,000 British tourists took cruises. Numbers up threefold in just five years.

The number of British cruise passengers may reach two million by 2012, according to the cruise industry's annual report.

If it does, the number of passengers will have doubled in eight years. A rise of 15 per cent to 1.5 million is predicted for this year.

Antarctic Ship Travel

Twenty four Britons abandoned their cruise ship in sub-zero Antarctic seas after it had been holed by an iceberg. 78 holidaymakers leapt into rubber life-rafts in temperatures of minus 5C. MS Explorer began sinking as water gushed in through a fist sized breach in the hull, near the South Shetland Islands. MS Explorer's safety procedures had been criticised by an inquiry last May.

Passengers huddled in life-rafts and 8 zodiac inflatables and 4 life-boats.

The vessel struck what shipping authorities described as a "significant" chunk of ice, near King George Island, largest of the South Shetlands.

It was leased by holiday firm Gap Adventures and was 12 days into an Antarctic cruise. Air temperatures were around minus 5C and the sea is around minus 1C. Passengers had to wait in open lifeboats, and questions arise whether a vessel visiting icy waters with elderly passengers was as well-equipped as it might have been.

The 2,400 tonne MS Explorer, operated by Noble Caledonia of London, is 38 years old. An investigation in Greenock last May by the UK Maritime and Coastguard Agency uncovered shortcomings, including missing search and rescue plans, plus lifeboat maintenance problems.

Watertight doors were "not as required" and the fire safety measures were criticised. All faults rectified before it sailed.

Cruising Mishaps in Antarctica

All passengers from the stricken Antarctic cruise ship were rescued without loss of life. Cruising in the Antarctic is not a risk free holiday.

This is not an isolated incident. In January this year the MS Nordkapp, carrying 295 passengers, hit the rocks near Deception Island, off the Antarctic Peninsula. The impact left a 25m (80ft) hole in the ship's side, and all passengers had to be evacuated.

The MS Explorer was a properly equipped expedition ship, with an ice-hardened hull. Just 154 passengers could be evacuated relatively swiftly into lifeboats.

Mark Dickinson of the maritime union Nautilus UK issued the following warning after the Explorer incident: "The growing trend to run cruises in increasingly exotic and remote locations, often in inherently dangerous conditions, is an issue of increasing concern. There are many questions about the suitability of some ships to operate in such potentially adverse conditions."

Antarctica remains a thoroughly hostile environment, prone to savage storms, sub-zero temperatures even in summer and howling winds of up to 200mph.

Such conditions are not inevitable on an Antarctic cruise, but not common either. The Drake Passage is one of the roughest stretches of ocean in the world, and winds of hurricane strength blow through here on average every three weeks.

In the Antarctic wilds, with the nearest port at least 36 hours away across the Drake Passage, should disaster strike a ship such as this – whether as a result of fire or a rogue lump of ice – how long would it take to decant thousands of passengers and crew into lifeboats? How many rescue ships would be needed to scoop them up?

The Antarctic cruising boom could be heading for a disaster of Titanic proportions.

I B M

BOOK REVIEWS

Principles of Health Care Ethics

Ed R.Ashcroft.A Dawson. H.Draper.J McMillan.
2nd. Edition
Pub.J. Wiley. Chichester

This is a source book of considerable proportions, ranging over the widest field of health care. It covers the ethical aspects of topics important in the provision of professional health services. There are 20 chapters on political and social issues. Multi-authored often with two authors to a chapter, it inevitably suffers from a measure of repetition of content but does provide the benefit of different opinions on contentious points. Part one deals with methodology and perspectives. Part 2 is on issues and health care practice and part three on medicine in society. The final section deals with the ethics of research.

The initial chapter looks at different theories and religious attitudes to clinical practice and professional ethics providing a useful aid for those working in a multiethnic society. The chapter on consent and informed consent considers salient points of interest to all practising nurses and doctors.Many other facets of inter patient and health professional relationships are also considered in depth.

This is a large, costly book of profound and extensive content. Publication of a second edition is evidence that it meets a need. It is not a book to be read from end to end but is a valuable resource to search for enlightenment and guidance to help negotiate the ethical minefield of current professional practice. It merits a place in the resource centre and will be a valuable resource asset for those working in the travel health related field.

IBM.

War and Health

Ed H. Lee and E Jones. J Wiley Chichester

British military forces are posted to locations scattered across the globe. They are perforce world travellers and are exposed to travel related illness and trauma, like any globe trotting tourists. They also suffer from the additional stresses and trauma of active and war service and the Gulf War brought specific symptoms which still affect veterans. This paper back book is edited and largely written by two professors who have extensive experience of working in the assessment and care of military casualties in recent conflicts. They consider historical, clinical, medical and psychological aspects of claims relating to "Gulf War Syndrome" and the evidence that no unique syndrome/illness peculiar to that war has been discovered despite careful investigation by many objective sources.

They consider post combat disorders from the Boer War to present day and look at how symptoms and professional, bureaucratic and public opinion have changed with time. The book reviews the multiplicity of research investigating Gulf related disorder and distills it into readable sections valuable to clinicians, GPS. and nurses dealing with veterans and casualties of military conflict. It is well referenced, easy to read and provides some insight into presentations which may appear in primary and secondary care.

IBM.

Rational Diagnosis and Treatment

4th Ed. Gotsche P Wyley Pub Chichester. 2007

Travel medicine calls for rational decision taking regarding, risk, diagnosis and treatment and most practitioners would benefit from a read of this book. Even if they only apply recommendations in the critical reading of journals and publications.

The author contends that clinical decision taking must be made from first principles by asking relevant questions, for instance in the questioning of data one asks is the disease classification logical?

Based on the scientific and statistical approach to evidence based medicine it draws attention to strengths and weaknesss found in clinical research. It looks at the problems and pitfalls engendered by such research. What is the true value of published rsearch? It sometimes leaves as many questions unanswered as answered. The book also deals with screening exercises their design limitations and advantages and it certainly stimulates consideration of the many faults of rational diagnosis and treatment.

The chapter on alternative medicine and pseudoscientific thinking is illuminating and might have been expanded to bring out the differences between scientific and pseudoscientific thinking The author believes that alternative medicine is an anachronism in modern therapeutics - a rather sweeping condemnation when there is good research evidence that acupuncture and hypnotherapy can be of value in treatment.

IBM.

How to Shit Around the World

(paperback 150 pages)
Dr Jane Wilson-Howarth
Published by Traveler's Tales, Palo Alto, California, 2006
(Available from Amazon UK)

Dr Wilson-Howarth is already very well known to travel health professionals and their clients as the author of *Bugs, Bites and Bowels,* and *Your Child Abroad,* both practical and readable guides for worldwide travellers. In *How to Shit Around the World* she brings her formidable experience to bear on that most common of travellers' ailments – diarrhoea.

And how well she does it! Having no new novel or travel book to read one bedtime, I retired with *How to Shit Around the World.* I thought an advice guide might prove to be soporific, but found myself still reading (and often giggling) at one in the morning. This book is informative and entertaining, which is a winning combination. Jane (known in her medical student days as the Shit Doctor, such was her interest in all things pertaining to parasites and poo), interweaves sensible tips with sometimes hilarious anecdotes. I have already passed some of those tips onto my clients, especially the young back-packers. I do believe some of them have absolutely no idea of what they may be facing, and think that the worst type of loo they are likely to face is of the French stand-up variety. I beg them to add a head torch to their list, and if they are female, to pack a skirt….. They invariable look surprised, and go away with another subject to research before they leave behind the wonder of the flush toilet.

I cannot recommend this book highly enough – get your own copy and I am sure you will agree.

Sarah Buckley,
Nurse and Travel Clinic Owner.

Travel Health Pocket Guide

Ted Lankester
First Edition 2007; 144 pages, with illustrations.
Berlitz Publishing Interhealth
Berlitz Publishing, PO Box 7910, LONDON SE1 1WE.

Ted Lankester and Interhealth have teamed up with Berlitz 'Pocket Books' to provide an excellent 'Guide Book' of Travel Health.

The description on the inside front cover boldly states, " From dog bites to snake bites, upset stomachs to dengue fever, this book covers every travel health eventuality, with an in-depth look at preparation and prevention, symptoms and treatment. Written by a recognised authority on the subject, it is geared to holiday-makers and long term travellers as much as to aid workers and other professionals working in the developing world."

This might be hard to believe in a book not much bigger than a passport. However, Ted Lankester manages to cover a vast amount of information and advice in his usual conversational and humorous way.

The Introduction encourages the traveller to get informed, and take precautions, and then "stop worrying about what might (but probably won't) happen". A description of *Illness by Region* follows,

including 2 pages of maps. A feature of this *Travel Health Pocket Book* is the very liberal use of illustrations and there is at least one photograph, cartoon, or information box, on every double page spread, all in brilliant colour and on glossy paper. Many travel scenes are included and there are many 'people' photographs, as well as pictures of scorpion, mosquito, snake and hippos.

Chapters on "Before You Travel", and Survival While Away", are followed by "Special Advice", - travelling with Children, Women Travellers, Pregnancy and the Older Traveller, and while the risk of infectious disease is adequately dealt with, particular attention is given to Avoiding Accidents: Sex, Sense and HIV: Alcohol and Drugs, and Climate and Altitude, as well as Creatures, and "Body Problems". Over 20 possible tropical diseases, with brief descriptions, are covered in a single page, and non-tropical causes such as appendicitis, and earache are not ignored.

As would be expected from Ted Lankester and his team at Interhealth, there is expert information on stress and culture shock, and 'reverse' culture shock back home is also described. If this is experienced, the reader is encouraged not to "feel crazy".

Ted invites travellers to '*Pause for Thought*, on returning home, and reflect on the circumstances of the people of the country visited. Two pages of "Further Information" include suitable Book Titles, Websites and addresses. The only negative comment that I would make is that the BTHA website does not get a mention! This valuable little book will rightly sit alongside other Berlitz Guide Books. It also has a place on the travel adviser's bookshelf even as a 'guide book' for Travel Diploma Students, who can quickly find very useful pegs of information on which to hang as many meaty clothes as they feel necessary!

Travel Health Pocket Guide, is a very good read. It should now be available in UK bookshops.

Dr Reggie Cooke,
GP & Travel Health Adviser.

FROM THE JOURNALS

HEPATITIS ACQUIRED BY TRAVELLERS

A short review in the current *Transactions of the Royal Society of Tropical Medicine & Hygiene* **102**, pp 211-2 by Khin Saw Aye Myint & Robert Gibbons is a useful update on the other, neglected hepatitis acquired by travellers: hepatitis E. The transmission route is faecal-oral as for hepatitis A but hepatitis E can be much nastier, especially in pregnancy. A vaccine trial conducted in Nepal shows that the hepatitis E vaccine using baculvirus-expressed recombinant hepatitis E capsid protein is effective: 95.5% efficacious, and it has few side effects. Now it remains to be seen whether anyone will put up the money to develop this vaccine, which will be of most benefit to the poor living in regions lacking basic infrastructure.

Jane Wilson-Howarth.

SEVERE FACIAL OEDEMA AT HIGH ALTITUDE

Gill S, Walker NM; JTM 15 (2), 130-132 2008

COMMENT

A complication associated with high altitude of unusual severity. Pronounced facial oedema developed in a 27 year old woman during a trek to Kilimanjaro, Tanzania.

A 27 year old English woman, on a trip to the summit of Mount Kilimanjaro, with no previous exposure to high altitude (>2,500m), developed severe facial oedema at approximately 4,000m above sea level. A designated, recognised rote was used, with one night spent at each of the following altitudes:1,500m, 3,000, 3,840, and 3,900.

On leaving camp at 3,900m, on day 4, slight swelling of her forehead and back of her hands was noted. That night, camp was at 3,965m. During the following morning the swelling had worsened and she had headache, nausea, and loss of appetite. The whole group abandoned the ascent and descended to 1,500m. The symptoms of acute mountain sickness (AMS) soon disappeared, and the swelling resolved after 2 days. She had been well hydrated and had taken acetazolamide before the ascent. However, because of its known diuretic effect, the tour manager advised her to stop it.

DISCUSSION: Peripheral oedema, including facial swelling, is not a symptom of AMS, although it can occur with AMS. It is common in newcomers to high altitude. Significant sodium retention, (peaking on day 5) was associated with modest water retention, resulting in considerable increases in plasma and interstitial fluid volumes at the expense of the intracellular compartment. These shifts in fluid balance are due to activation of the rennin-aldosterone system during exercise.

Those who develop AMS have higher aldosterone levels, retain more sodium, and tend to have antidiuresis. The increase in extracellular fluid volume results in the dependant and periorbital oedema often seen in patients with AMS.

Acetazolamide has a well known indication in the prevention of AMS. Concerns about potential diuresis and dehydration are incorrect.

The ascent profile exceeds the recommended rate of 300m a day, once over 3000m, with a rest day every 2 to 3 days.

Dr Reggie Cooke.

INFLUENZA

Pennington TH; Scottish Medical Journal. Volume 53 Issue 1 February 2008.

COMMENT

The big influenza question is, "when will the next pandemic start?" It is a question that belongs to a category defined as "trans-science" – scientific questions of fact that can be stated in the language of science, but which are unanswerable by it: they transcend science. Influenza viruses are circulating all the time in humans and birds. Yet human pandemics are exceedingly uncommon. Only five have occurred since 1889:

1889 - name and source unknown:
1918 – Spanish flu(H1N1):
1957 – Asian flu(H2N2):
1968 – Hong Kong flu (H3N2):
1977 – Russian flu (H1N1)

But by being unable to predict the timing of the next pandemic does not mean that we should not be making plans to deal with it. The 1918 flu is still considered the reference point. It came in three waves, the first having many cases but little mortality. The next two waves had high mortalities from pulmonary complications. Whether the next pandemic virus will have the same virulence as these two waves is also a trans-scientific question.

Will H5N1 turn into the next pandemic virus? If it does will it retain its 60% mortality? Again, these are trans -scientific questions. The best policy is to hope for the best, but plan for the worst. How effective will oseltamivir be? Will there be better vaccines by the time the pandemic starts? In 1976 there was a consensus that pandemics occurred every decade. When influenza virus H1N1, of the swine sub-type, was isolated from a US Army recruit who died after a forced march, the US President, on expert advice, authorised a $350million vaccination programme which started immediately. It was suspended when a few cases of Gullain – Barre were considered to be a complication of the vaccine. There was no pandemic. Analysts of this fiasco concluded that important causes were: the insufficient attention paid to quantitative risk assessment and to managing television output.

Easy to say, but almost impossible to do.

Dr Reggie Cooke.

From the Journals *continued*

THE IMPACT OF RESPONSE TO THE RESULTS OF DIAGNOSTIC TESTS FOR MALARIA: COST-BENEFIT ANALYSIS

Lubell Y, Reyburn H, Mbakilwa H et al: BMJ 2008; 336: 202-205

RESEARCH ABSTRACT

OBJECTIVE: Rapid diagnostic tests for malaria seem cost effective in standard analysis, but these do not take account of clinicians' response to test results. This study tested the impact of clinicians' response to rapid diagnostic tests or microscopy results on costs and benefits of testing at different levels of malaria transmission and in different age groups.

DESIGN: Cost-benefit analysis using a decision tree model and clinical data on the effectiveness of diagnostic tests for malaria, their costs, and clinicians' response to test results.

SETTING: Tanzania.

METHODS: Data were obtained from a clinical trial of 2425 patients carried out in three settings of varying transmission.

RESULTS: At moderate and low levels of malaria transmission, rapid diagnostic tests were more cost beneficial than microscopy, and both more so than presumptive treatment, but only when response was consistent with test results. At the levels of prescription of antimalarial drugs to patients with negative tests that have been found in observational studies and trials, neither test method is likely to be cost beneficial, incurring costs 10-25% higher, depending on the transmission rate, than would have been the case with fully consistent responses to all test results. Microscopy becomes more cost beneficial than rapid diagnostic tests when its sensitivity under operational conditions approaches that of rapid diagnostic tests.

CONCLUSIONS: Improving diagnostic methods, including rapid diagnostic tests, can reduce costs and enhance the benefits of effective antimalrial drugs, but only if the consistency of response to test results is also improved. Investing in methods to improve rational response to tests is essential. Economic evaluation of diagnostic tests should take into account whether clinicians' response is consistent with tests results.

Dr Reggie Cooke.