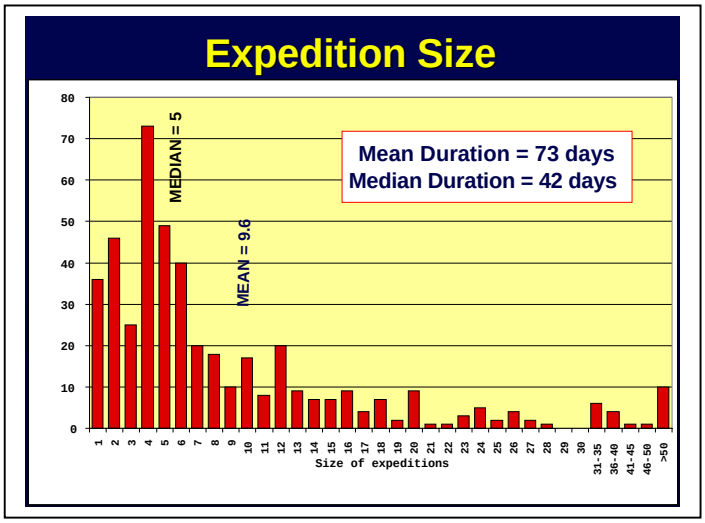
THE RGS-IGB
EXPEDITION HEALTH AND SAFETY SURVEY

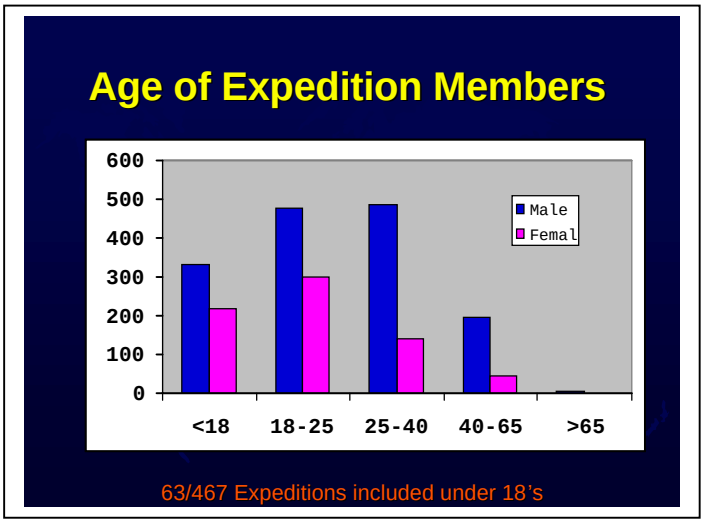
Since 1995, the RGS-IBG Expedition Advisory Centre has collected data about medical incidents on expeditions. By knowing what has happened in the past, future expeditions can prepare better for their journeys. In this summary, the types of medical problem that occur on expeditions are discussed and the relative risks of travelling to a remote area are assessed. Medical planning needs to start well before the date of departure. The RGS book ***Expedition Medicine*** describes the medical problems commonly encountered on expeditions and the precautions you can take to minimise their effects.

ABOUT EXPEDITIONS

Expeditions are very diverse. Most RGS sponsored expeditions are quite small and their typical duration is around six weeks, but a small number of larger and longer expeditions causes a big variation between the median (mid-point) and mean (average) figures.

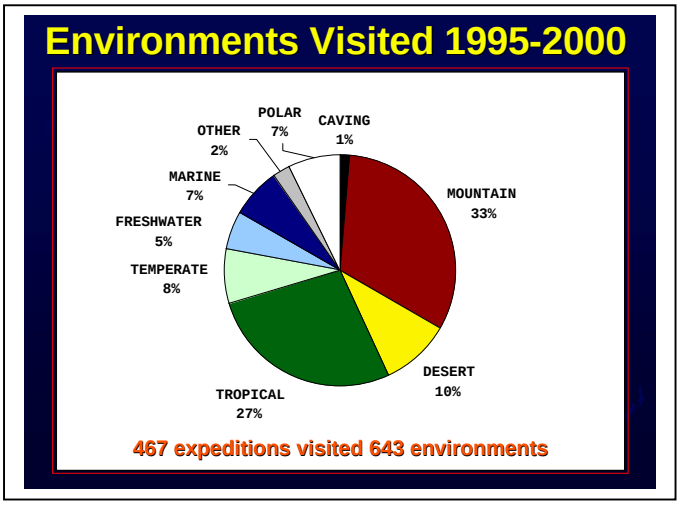


Two-thirds of expedition members are male, although the proportion of women joining expeditions has been increasing. Most people joining expeditions are young and a seventh of all RGS sponsored expeditions include under 18's.

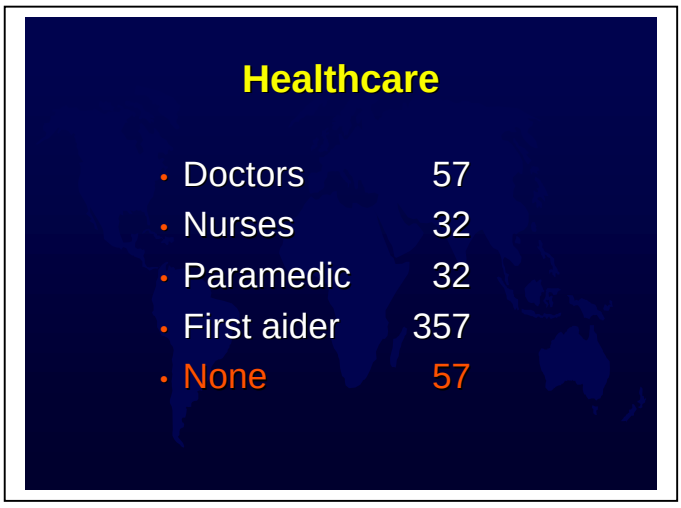


Other organisations besides the RGS encourage and organise expeditions or adventurous holidays for young people. These include quite large concerns such as Operation Raleigh and World Challenge, together with several smaller commercial companies. A growing market in 'charity challenges' is encouraging more mature participants to embark on physically and mentally challenging trips overseas. None of the data presented on these web pages comes from these groups. Although the RGS medical cell has been provided with some initial information about the medical problems involved with commercial and charity trips, we do not yet have enough data to tell whether there is any difference between the risks of travel in these groups compared to independant expeditions.

Mountainous regions and tropical jungles are consistently the most popular environments for expeditions to visit. Each environment has specific hazards associated with it. Knowledge, planning and preparation reduce the risk that a potential hazard will become a serious medical problem

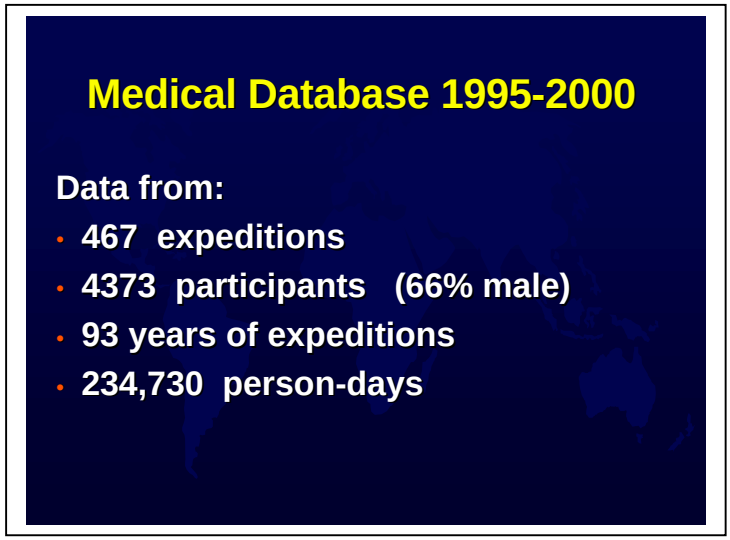


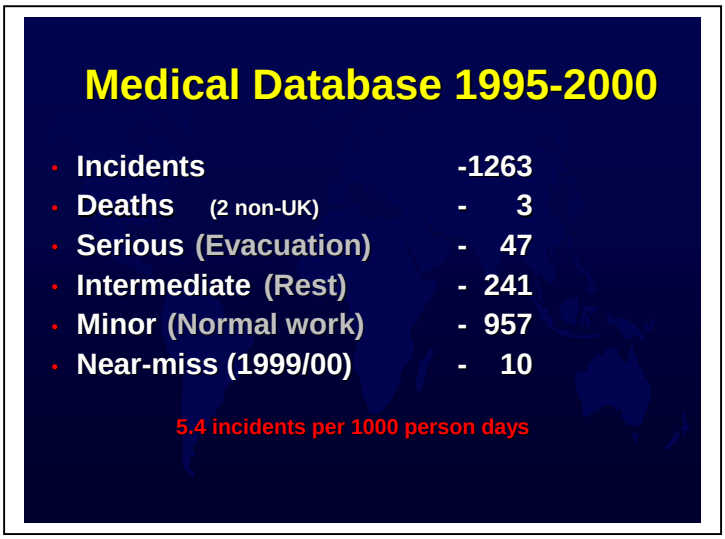
The RGS-IBG encourages all expeditions to designate someone to look after health during the journey. As a minimum we think that some team members should have gained first-aid skills before departure. Larger, more



complex expeditions, and those including youngsters, should include personnel with greater medical abilities. Most but not all expeditions currently include someone with some healthcare knowledge. Medicine in the wilderness differs from providing healthcare in the UK and we recommend that doctors, nurses or paramedics travelling on an expedition should read about the problems of expedition medicine and, if possible, attend some form of expedition medicine course (links). The availability of training and the quality of care provided on expeditions is improving, and this may account for the reduction in numbers of serious medical incidents that we have seen over the past twenty years.

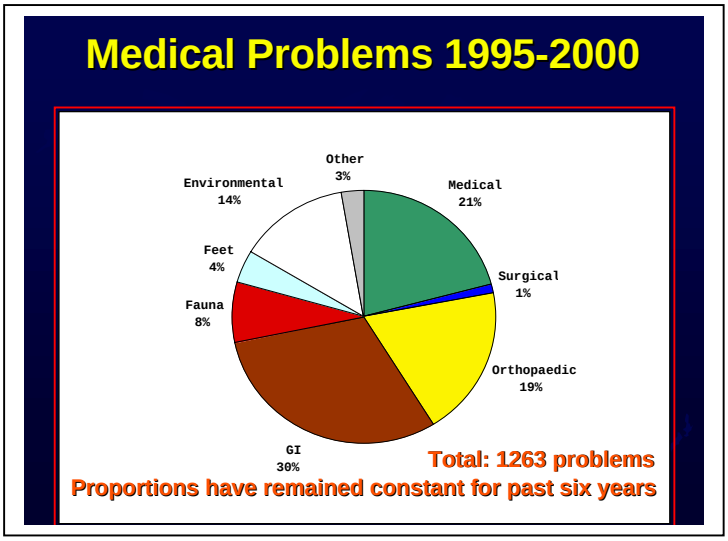
As part of their report, expeditions sponsored by the RGS-IBG are asked to complete an anonymous medical questionnaire (link). Completion of this form is voluntary. To ensure confidentiality, the information is stored and analysed separately from other RGS databases, so that we cannot link any report of any health problem to an individual. Our reporting system is voluntary, only 30-40% of expeditions return a form and so we do not know about everything that happens. However our total database contains information from over 450 expeditions and results have been consistent for the six years of the study.



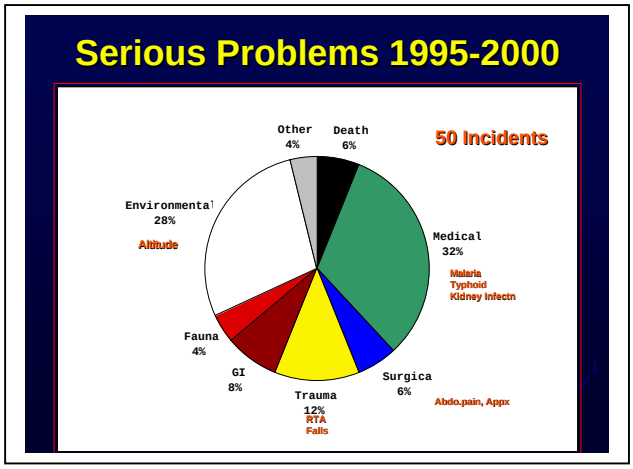


1263 incidents have been reported by the expeditions. We define a *minor* medical incident as something that causes the medical kit to be opened. Cuts, grazes, headaches and sprains fall into this category that includes over three quarters of all reported problems. *Intermediate* incidents are serious enough to stop someone carrying out their normal duties, but not serious enough to require outside help. Included in this group are significant bowel upsets and some infectious diseases. A condition is *serious* if the casualty has to be evacuated from their place of work, either to base-camp, a local medical facility or repatriated.

We categorise our data for analysis. *Gut problems*, usually diarrhoea, are the commonest problem encountered by expedition members. *Medical problems* can range from minor coughs and colds through to serious infectious diseases such as typhoid and malaria. *Orthopaedic problems*, mostly minor strains and sprains, but also including injuries from falls and accidents form another large category. Disease or injury caused by the prevailing *environmental conditions* produces about one in seven problems. This category includes heatstroke, frostbite, altitude sickness and sunburn. Injuries as a result of *animal attacks* are also surprisingly common. Most problems from these last two categories occur because people are



unfamiliar with the conditions in which they are working and fail to take basic precautions against accident. *Foot problems* generally result from unsuitable or new footwear and, while possibly not entirely avoidable, breaking footwear in before travelling abroad could reduce some of the discomfort and problems. Some *surgical conditions* such as appendicitis are unavoidable, but dental problems fall into this group and could often be prevented by appropriate check-ups before departure.



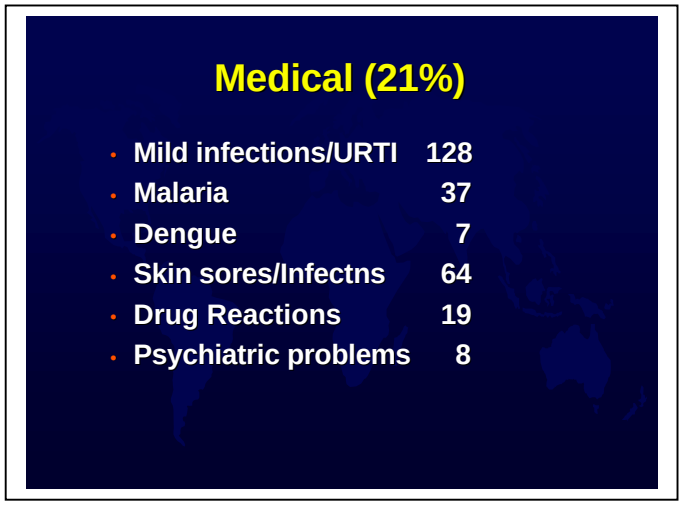
Comparing the overall pattern of problems with the serious problems, two categories stand out – a high proportion of serious problems come from the *environmental* and *medical* categories. Altitude sickness affects a significant number of mountain climbers and often means that the victim has to be evacuated for a period back to base-camp. Malaria remains a serious threat to travellers to the tropics.

SPECIFIC MEDICAL PROBLEMS

This section looks in more detail at the medical conditions expeditions encounter.

Gastro-intestinal upsets are a common problem for travellers. 40% of expeditions had members who developed a gut upset and most of these cases prevented normal activity, at least for a day or so. Most cases of travellers' diarrhoea sort themselves out within 48 hours and require no specific treatment. Anti-diarrhoea treatments such as loperamide *(Immodium*) are best reserved for days when regular frantic trips to the toilet are impossible or socially impractical – for instance if giving a lecture or making a long bus trip. However expedition members may develop more serious forms of diarrhoea such as dysentery or giardiasis. *Giardiasis* is a parasitic infection that comes from contaminated drinking water and leads to abdominal bloating, cramps and very offensive fatty motions. *Dysentery* may be caused by parasitic or bacterial infection of the gut and results in very watery diarrhoea, severe cramps and possibly bloody motions. Persistent diarrhoea in hot weather can lead to severe dehydration and may require electrolyte supplements or even intravenous fluids. Remember that a guppy tummy may mean that other oral medications, including anti-malarials and the oral contraceptive pill, may not be absorbed properly.

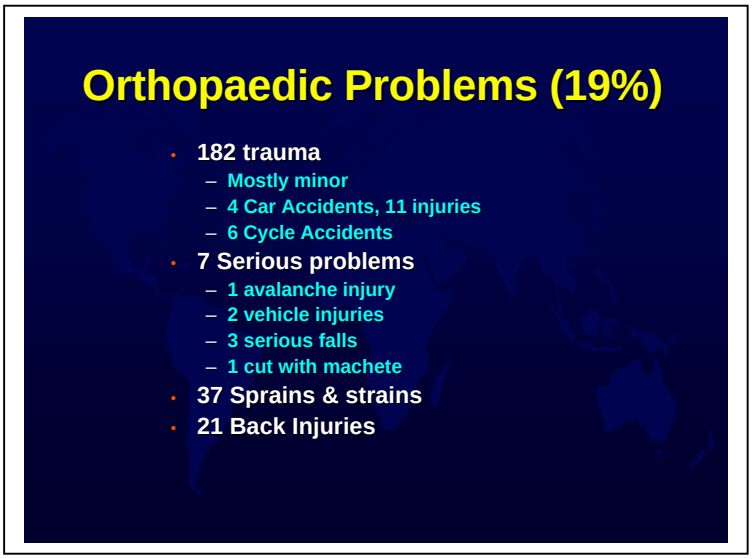
Infectious diseases are a significant threat to travellers in the tropics. Malaria and Dengue fever affect significant number of travellers and can cause very serious illness. Our database contains thirty-seven reports of malaria, including seven travellers who required hospitalisation, and two cases of typhoid fever. The risks of infectious disease should be considered and expert advice sought about disease prevention.



Malaria is a serious disease. Simple preventative measures like impregnated mosquito nets are cost effective. Expert up-to-date advice on anti-malarial therapies must be sought before departure, patterns of drug resistance are changing rapidly. Certain anti-malarial drugs have received significant adverse publicity in recent years. In reality, all anti-malarial drugs have some side-effects, and these problems need to be balanced against the seriousness of malaria and the steadily rising death-toll that the disease is causing amongst British travellers. Take a trial dose of the recommended anti-malarials before departure to discover if you develop any side effects. If you do have problems, try an alternative drug, do not travel unprotected to a malarial area. If you fall ill within a few weeks of returning home, always tell your doctor that you have been travelling.

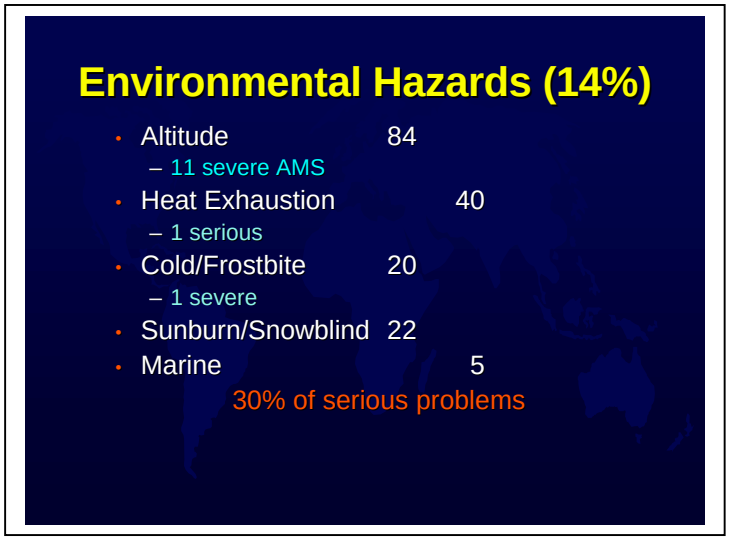
We have received no reports of sexually transmitted diseases from our expedition members. As it is a self-reporting system, perhaps this is not surprising! The levels of HIV/AIDS and other STDs are high in many developing countries and restraint or appropriate precautions should be adopted.

Orthopaedic Problems



It is inevitable that injuries will occur if people take part in any form of strenuous activity. Sprains and minor back injuries are common, while travel on dubious roads, often in decrepit transport inevitably results in accidents. Risk management procedures on expeditions must give serious attention to developing policies that minimise the risk of travel.

Environmental Hazards



Many problems abroad arise because travellers are unfamiliar with the hazards of unfamiliar environments. Injuries resulting from environmental extremes represent about one in seven of all the problems that expeditions encounter, but make up nearly a third of all the serious incidents – that is, the medical problems that were potentially life-threatening, or required

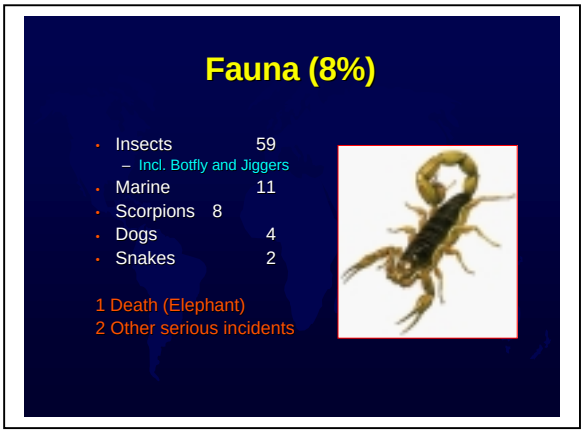
the casualty to be evacuated. In many instances the seriousness of the casualties condition may go unrecognised because they do not complain of any problems, and indeed may vehemently deny that there is a problem. Serious environmentally-induced conditions, whether caused by height, heat or cold may be associated with the "umbles". The casualty mumbles, grumbles, fumbles, stumbles and tumbles. Given this scenario, colleagues must interfere to prevent a disaster.

Altitude sickness, may take the form of either breathing problems (pulmonary oedema), or brain swelling (cerebral oedema) which is particularly dangerous. It is commonest when visitors ascend rapidly to high altitude and has lead to many evacuations from expeditions. All expeditions planning to climb to high altitudes should be aware of the symptoms of high altitude pulmonary oedema and cerebral oedema and know how these problems can be treated. It takes several days to acclimatise to height, and the use of drugs such as acetazolamide (diamox) may relieve some of the symptoms, but certainly does not prevent a small proportion of visitors becoming seriously ill. Larger climbing expeditions should consider taking a recompression (Gamow) bag.

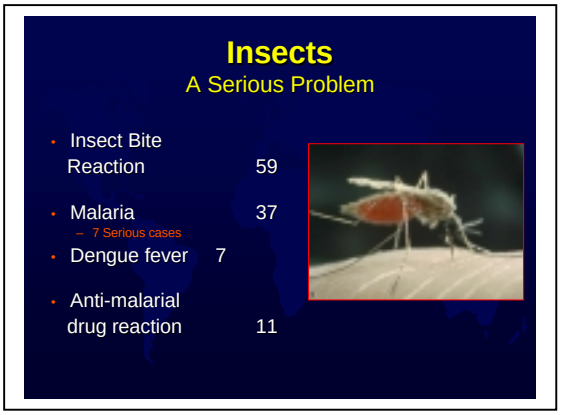
Hypothermia is commonest in cold wet environments, particularly when clothing is inadequate or damp. It is relatively common in the UK. However only a small proportion of expeditions visit temperate or polar climates, they are generally well equipped and no cases of hypothermia have been reported to our database. *Frostnip*, chilling of the skin surface associated with cold windy days is common in polar areas. Colleagues should look out for the waxy white skin appearance, and exposed areas re-warmed and protected. Given proper clothing, frostbite should be a rare condition unless someone is injured. *Sunburn* and *snowblindness* (sunburn of the front of the eye) can easily be avoided if adequate eye protection and good quality sunscreens are used.

Heat exhaustion, caused by inadequate salt and fluid intake is relatively common amongst newcomers to a tropical climate. The potentially fatal condition of heat stroke is rare and few UK doctors know much about it. *Heat stroke* can be difficult to diagnose and may be confused with tropical diseases such as malaria. If someone appears confused and ill in a tropical climate, their body temperature should always be measured and steps taken to cool them if it is high. It takes one to two weeks for someone to adapt to working in a hot climate. Until acclimatization is complete, prolonged strenuous exercise must be avoided.

Fauna



Unfamiliar plants and animals cause quite a lot of injuries to travellers. At home one almost unconsciously avoids contact with plants known to sting or scratch, but these instincts do not help overseas. Relatively slight skin injuries may progress to tropical sores if there is no chance to keep the skin dry and clean.

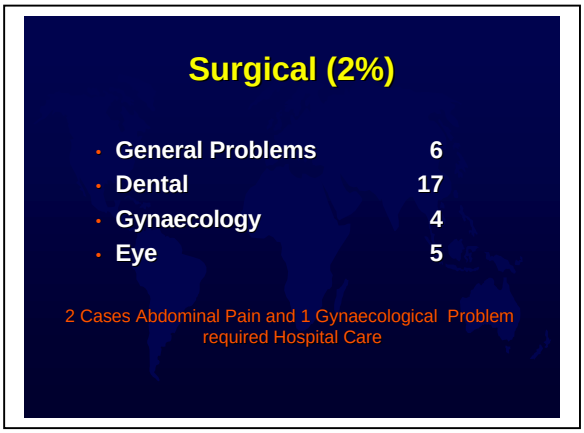


Animals, large and small, can cause direct injuries or may be the carriers of disease. Attacks by large animals such as elephants, bears or sharks are rare, but very serious when they do occur. Common problems for travellers include standing on sea urchins, being stung by scorpions, or bitten by wild dogs. Insects may cause nasty skin sores or may transmit malaria or dengue fever.

Foot Problems

Cuts, bruises and blisters on the feet rarely cause serious problems but can make travel a misery. Well-worn footwear is always more comfortable than a newly purchased pair of boots. Appropriate ankle support can prevent sprains and strains, while tough material will prevent bruises and cuts in rocky terrain. Tight footwear is usually undesirable, and in cold wet environments, or during white-water rafting can lead to prolonged circulatory problems (trench foot/pernio).

Surgical Problems



Sudden surgical emergencies such as gall bladder inflammation, appendicitis or gynaecological problems are frightening and unpredictable. Hospital diagnostic facilities may be essential to make a diagnosis and cure the condition. Though they occur rarely, it is essential that all expeditions make contingency plans to evacuate casualties to medical assistance.

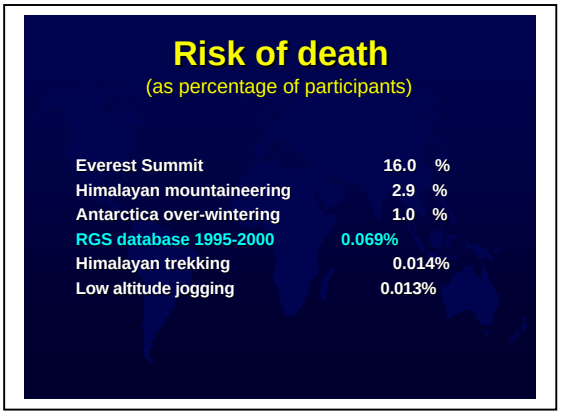
Dental problems can also be very uncomfortable. Most can be avoided, at least on short expeditions, if appropriate dental treatment is completed before departure. A simple dental first-aid kit can dress cavities if a filling is lost, replace a lost crown, while simple antibiotics will usually suffice to control a dental abscess.

Personal Threat

Many parts of the world, including areas of Britain, are potentially dangerous to visit. 6% of expeditions encounter personal threat, which may arise as a result of isolated street crime or more organised criminal or politically-motivated activity. We know of expedition members that have been robbed and raped, vehicles that have been machine-gunned and groups taken prisoner by guerrillas. Information must be sought from diplomatic, governmental and local sources to define whether the journey is safe and sensible. In urban areas the boundaries between safe and high-risk neighbourhoods are not always well-defined.

THE RISKS OF EXPEDITION TRAVEL

Anytime that ones travels away from a familiar environment, one takes a risk. Expeditions, by their nature, entail greater risks as individuals set themselves physical, mental or intellectual challenges in a remote environment. For many participants, risk is part of the challenge.



Different individuals accept different degrees of risk. Climbing Everest is an extremely dangerous pastime, 16% of people climbing to the summit have died in the attempt. Less extreme activities such as high altitude mountaineering or overwintering in Antarctica carry risks of death of 1 to 3%; still higher than many people would wish to contemplate. The risk of death on a typical expedition is very much lower than this and is

comparable with the risk of other outdoor activities. All participants in an expedition should be aware of the risks that they will encounter and accept them. Careful discussion of risks is essential particularly when young people, who may lack the experience to judge the degree of danger involved. It is also essential to recognise that youth may evaluate and accept risk differently from older individuals so that parents must be brought into discussions when young people plan to participate in potentially hazardous trips. Complete safety can never be guaranteed, but a well-organised expedition will make suitable contingency plans to deal with likely problems.

Rate of medical incidents

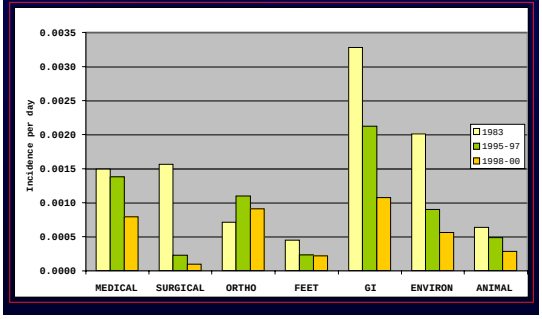
Marathon	28	per 10^3 days
Rock festival	17	per 10^3 days
Scout camp	10	per 10^3 days
'Rave' party	9	per 10^3 days
RGS expeditions	5.4	per 10^3 days

The rate of medical problems (as opposed to death) on expeditions matches that of many other vigorous activities. Over the period of our studies on expedition medicine, we have seen reductions in the number of medical incidents reported. These improvements have occurred in all categories of problems, suggested that the improvements are due to better knowledge, education and preparation for the trips.

Improvements in Safety

	Exped	Man-days	Incidents	Per 1000 man-days
82/83	56	26,837	221	7.4
95/97	247	126,736	839	6.6
98/00	220	107,994	424	3.9

Improvements in Safety (2)



For further information on how to contribute to the survey: www.rgs.org/medicalcell