SECTION 1

PRE-EXPEDITION PLANNING

1 WHAT IS EXPEDITION MEDICINE?

David Warrell, Sarah Anderson and Chris Johnson

An expedition is an organised journey with a purpose. This purpose can be exploration, achieving a particular aim such as reaching the summit of a mountain, scientific research, surveying for minerals or a test of endurance. In the nineteenth century expeditions consisted of rugged Victorians seeking to map and claim some remote piece of land for their Crown and country. In the twentieth century expeditions increasingly had a scientific purpose, but in the populous world of the twenty-first century personal development and cultural exchange are becoming the predominant reasons for travel. Exploration and adventure travel are now big business. While some groups still raise their own funds for independent travel, large charitable and commercial organisations send thousands of young people overseas each year. With specialist tour companies now offering vacations to remote places, the boundary between an expedition and a leisure trip is becoming blurred. North Americans recognise this and call what we are describing in this book "wilderness medicine".

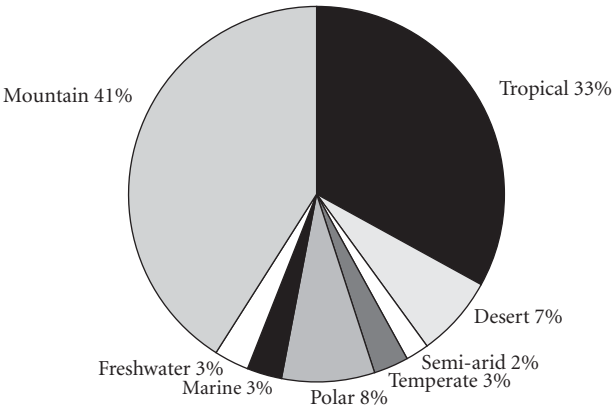

Figure 1.1 *Environments visited by British expeditions (source:* Journal of the Royal Society of Medicine *2000; 93:557–562)*

Expeditions take place throughout the world, but mountains and tropical jungles are the most popular destinations for British expeditions (Figure 1.1). By their very nature, expeditions are more likely to involve exposure to environmental extremes and new and unusual hazards than other types of travel. However, the fact that they are organised implies that those who take part in them can anticipate and prepare for at least the predictable hazards. This book is about the branch of medicine concerned with maintaining health, physical and psychological, under the special stresses and challenges of an expedition. As expeditions usually travel to remote areas where hospitals or even rural health centres are rarely found, the responsibility for dealing with medical problems will fall on the members of the expedition.

Expedition safety

The explorer's worst nightmare may be to catch a dreaded tropical disease or to be attacked by a ferocious wild animal, but for most expedition members the reality is more mundane (Table 1.1). Gastroenteritis, cuts, sprains, bruises and altitude sickness are the common reality. In some countries insect-borne diseases such as malaria and dengue are a real hazard. The risks of serious problems such as road traffic accidents – possibly before or after the expedition proper – mountaineering disasters, drowning and violence can be minimised by advanced planning.

Except in extreme environments death is uncommon. One in six of those attempting to reach the summit of Everest will die, and one in a hundred people travelling to high polar latitudes or climbing above 6,000m in the Himalayas will die. However, few expedition members visit these extreme environments and studies performed at the Royal Geographical Society suggest that travelling with a well-organised expedition is no more dangerous than attending a scout camp or visiting a rock festival in the UK. (Source: *Journal of the Royal Society of Medicine* 2000;93:557–562)

TABLE 1.1 **EXPEDITION MORTALITY**

Perceived	*Real*
Exotic infections:	Gastroenteritis
viral haemorrhagic fevers – Lassa, Ebola, etc.	Falls and other injuries
plague	Altitude, heat stroke
rabies	Infections (malaria, HIV, etc.)
sleeping sickness	Road traffic accidents
Attacks by large animals	Drowning
Venomous bites and stings	Homicide
Cannibals	

However, these figures presuppose proper planning and risk management. Planning the medical provisions for an expedition should start well in advance (Table 1.2). Preventing or minimising risks is based on a careful analysis of the geographical area to which the expedition will travel and a study of its terrain, altitude and climate at the time of year chosen for the expedition. The aims and activities of the expedition may create special risks. In selecting members for an expedition, experience, possession of the necessary skills (for example, diving, caving and mountaineering) and a reputation for psychological stability under stress are among the most important criteria.

TABLE 1.2 **MEDICAL ASPECTS OF PLANNING AN EXPEDITION**

Assessment of risks
Team selection
First aid training
Preventive medicine
Medical kit
Knowledge of special health problems
Medical back-up

On bigger expeditions there needs to be medical input during the selection of the team. It is important to identify expedition applicants who may have special problems (Table 1.3). Such problems need not prevent a person joining an expedition, but the stress of travel in remote areas can cause previously stable medical conditions to become dangerously unstable, and could in certain circumstances cause danger to everyone in the group. There are no absolute answers about who should travel; individuals have a right to decide their own attitude to risk, but should not expect others to risk their lives to save them from foolhardiness if things go wrong.

TABLE 1.3 **EXPEDITION MEMBERS' SPECIAL PROBLEMS**

Pregnancy
Immunosuppression (by drugs or diseases)
Chronic illness (diabetes, epilepsy, asthma, ischaemic heart disease, etc.)
Psychiatric problems
Physical/mental handicap
Alcohol/drug abuse

All expeditions should have a designated medical officer and as many members as possible should attend first aid training, which, ideally, should be aimed at the particular needs of the expedition. The minimum this training should cover is clearing the airway, controlling blood loss, treating shock, relieving pain and ensuring the safe evacuation of the injured. The design of first aid training and preventive medicine is based on the assessment and awareness of the particular risks of the expedition. Knowledge of local medical problems in the chosen geographical area will indicate appropriate vaccinations and prophylactic drugs. All members should have a pre-expedition dental check-up and, if possible, unresolved surgical and medical problems should be dealt with well in advance of the expedition. Medical hazards can often be prevented by behaving sensibly, although excessive caution may be considered out of keeping with the "macho" ethos of expeditions. Food and water hygiene is central to the prevention of time-, energy- and morale-wasting gastrointestinal (gut) infections.

Expedition medical kits need to be much more comprehensive than those carried by ordinary tourists. Lightweight emergency insulation must be taken if there is any risk of exposure in severe weather conditions, and an adequate water supply must be assured or taken if the expedition is to desert areas. A lightweight collapsible stretcher should be included for mountaineering and caving expeditions. A few instruments, such as scissors, and a generous supply of large triangular and crepe bandages and adhesive plasters are also important. Expeditions should take a minimum of three sets of syringes, needles and intravenous drip sets in case members have to have blood tests, or emergency treatment, at hospitals that cannot afford disposable equipment. Such items and drugs may cause problems with customs officers at frontier posts. It may be helpful to have a covering letter on official notepaper signed by a doctor, which explains the purpose of the medical equipment.

Local medical back-up must be arranged in advance through the expedition's local agent. The hospitals or medical stations nearest to the site of the expedition must be identified and, if possible, assessed in advance. An emergency plan should be drawn up for evacuation of severely ill or injured expedition members. In some areas, such as East Africa, organisations such as "Flying Doctor" services (AMREF) may agree to be responsible for evacuation of casualties. Medical insurance cover for the expedition must be generous and allow for medical care and, if need be, repatriation of injured expedition members.

Expedition medicine is not just about the treatment of disease; it should permeate all areas of the expedition. Health criteria must be considered when the location of the base camp is decided and the activities on the trip planned. Food, sanitation and psychology are part of the medical officer's work. The medical officer will fulfil many roles on the expedition and will certainly be expected to be a nurse as well as a doctor. At times this may involve listening to and encouraging those who are finding the expedition stressful. The need to accompany a casualty during evacuation may

mean that certain personal goals are not attained, and the medical officer should remain sober enough throughout to deal with any accidents.

Correctly practised, expedition medicine should not constrain the enthusiasms and ambitions of an expedition but, by anticipating preventable medical problems, enhance the achievement and enjoyment of all the participants.