

3 EXPEDITION MEDICAL KITS

Robin Illingworth

There may be some explorers who buy a bottle of aspirin and a tin of Elastoplast while waiting for their plane and bring them back unopened 3 months later. Most expeditions take rather more medical equipment but fortunately need very little of it. However, a few expeditions have major medical problems.

Organising the medical kits for an expedition takes a lot of time and effort if it is done properly. It is particularly difficult to know what to take on a small, light-weight expedition travelling in a remote area and carrying all its equipment. A large expedition can take more medical equipment, but however much is taken one could not possibly deal with every conceivable accident and illness that might occur. Inevitably you have to compromise between taking so little equipment that you cannot deal with even the common medical problems, and taking so much that you are weighed down with an enormous medical kit that is never used. It is pointless to have a medical kit that is so big and heavy that it is left behind because no one can be bothered to carry it, or so comprehensive that items cannot be found when they are needed. However, with careful planning most of the common medical problems can be treated without outside help and first aid treatment for more serious conditions can be given if necessary.

The commonest injuries on expeditions are blisters, minor wounds and small burns. If cleaned and dressed properly these should heal without any problem, but if treated badly they may cause considerable difficulties, especially if the person becomes unable to walk. Some sprains and minor fractures can also be treated quite adequately on an expedition. More serious injuries are fortunately rare; first aid treatment will be required before evacuation to hospital.

The common ailments are aches and pains, sunburn, insect bites and bowel disturbances. These usually get better without treatment but simple drugs provide symptomatic relief. These common conditions are the same wherever you go and so the same basic medical kits can serve for many different expeditions. However, some expeditions will encounter particular medical problems, depending on their area and objectives, and so need extra drugs and medical equipment.

Road travel can be one of the most dangerous parts of an expedition. A road accident might cause serious injuries to several people, completely overwhelming any local medical facilities. Minimising risks while travelling and avoiding injuries and illness during the expedition are far more important than trying to plan medical kits to cover every possible eventuality.

The amount of medical equipment that should be taken on an expedition will depend on a number of factors, including the remoteness from medical aid, the size and duration of the expedition, the mode of travel, the organisation of the expedition (in particular the number of camps and the travelling time between them) and the medical skills of the party.

Remoteness of the expedition from medical aid

The time needed to get help is much more important than the distance to a doctor or hospital, and in a remote area the nearest hospital may be small and poorly equipped. If it is easy to get good medical attention you need take only basic medical equipment. If help is available, but difficult and expensive to reach, you should take more equipment and plan to deal with more of the possible accidents and illnesses without outside help, but also have available a communication system to summon help if needed. However, on some expeditions there is simply no help available and so the party must be completely self-sufficient, and also aware of the likely risks and consequences of any serious injury or illness.

The mode of travel

More equipment can be carried if yaks or lorries are available than if everything has to be carried in rucksacks. Weight is usually the most important factor, but the size and shape of the containers may also be significant. On some expeditions the party walks to base camp while the equipment is taken by lorry or helicopter. If this occurs the party must carry some medical equipment. There is no point in having a medical kit if it is not available when it is needed.

The organisation of the expedition

If camps are a long way apart each one must have a separate medical kit, since drugs and equipment for an emergency are useless if they are not available within a few hours. However, for non-emergency drugs and dressings it may be convenient to have small stocks at outlying camps with a larger reserve stock at base camp to replenish the other medical kits if necessary. Each group of people going away from camp for the day should carry a small first aid kit, so that some basic first aid equipment is always available.

The medical skills of the party and training

There is no point in taking drugs and equipment if you do not know how to use

them, since they may be ineffective or even dangerous. A small amount of pre-expedition medical training for the nominated medical officer (MO) in specific procedures, such as suturing, insertion of intravenous lines, local anaesthetic and intramuscular injections, can greatly increase the care offered by non-medical members of the expedition. Everyone should have some first aid training and be able to use basic resuscitation equipment. For every drug in the medical kit there should be specific instructions about when, and when not, to use it, the dose and the possible side-effects. A proper record must be kept when drugs are used. Many expeditions carry drugs that are normally available only on a doctor's prescription; this is reasonable if the drugs are carefully chosen and full instructions are provided, since the potential benefits outweigh the possible dangers. Sometimes medical advice may be obtained by telephone or radio, even from a remote area, and evacuation of the patient to a doctor or hospital may not be needed if the necessary drugs are available.

Cost of medical equipment

If possible the cost of medical equipment should not determine how much is taken in the kit. Some drugs and equipment are expensive, but the cost is small compared with the cost and inconvenience of getting outside help for a condition that could have been treated adequately in camp.

Personal medical kit

Each expedition member should take some personal medical equipment, including Elastoplast or similar dressings, sun cream, lip salve, insect repellent, foot powder, simple painkillers and rehydration sachets (e.g. Dioralyte). For people who need to take a drug regularly it is best if they carry the main supply and someone else looks after a reserve stock. People who are allergic to Elastoplast should take a roll of Micropore tape which does not cause irritation.

Travel to the expedition area

While travelling to the expedition area the main medical kits may be packed and inaccessible, but some medical supplies must be kept available at all times. It is useful to have a small kit containing a few plasters, tablets for headaches, diarrhoea and travel sickness, and water purifying tablets (see also Chapter 11). If travelling outside Europe and North America a small pack of sterile needles, syringes and sutures must be available in case emergency treatment is required.

EXPEDITION MEDICAL KITS

Recommendations for expedition medical kits are based on the kits that have been used on many Brathay expeditions. There are three standard kits: the field kit, the mobile camp kit and the base camp kit. A typical expedition of 20 people to south-

east Iceland might have one base camp kit, one or two mobile camp kits and four field kits. Extra drugs can be added and special medical kits made if required for particular expeditions. For example, a Brathay expedition to Sabah (Borneo), involving 18 people as well as local guides and porters, took two base camp kits, one mobile camp kit, four field kits and four extra boxes of drugs, intravenous fluids and other items, a total of 27kg weight of medical kits.

The doses of medication in the following lists are those generally used for an average-sized adult. Specific advice needs to be sought for children since different drugs may be recommended and doses would need to be adjusted for body weight and age. Appropriate substitutions would also be needed if a team member has a known allergy to a drug or dressing.

TABLE 3.1 DIVISION OF MEDICAL SUPPLIES

1. Field kit	A basic kit containing limited supplies of first aid equipment to be carried for a small group of people while away from base camp for the day
2. Mobile camp kit	Supplies for each group camping away from base camp a few days at a time.
3. Base camp kit	The main medical kit for the trip. Also used to replenish the other kits and provide a reserve stock of medicines for individual members
4. Accident kit	Part of the base camp kit – a pre-packed emergency kit in case of a serious accident. This needs to be portable and available quickly to team members

Field first aid kit

The field kit contains basic first aid equipment for a small party away from camp for a day. When items are used the kit can be replenished from the base camp kit.

TABLE 3.2 FIELD FIRST AID KIT

<i>Item</i>	<i>Quantity</i>
<i>Dressing material and equipment</i>	
Large plain wound dressing No. 15 (note 1)	1
Crepe bandage 10cm x 4.5m	1
Triangular bandage	1
Release non-adherent dressing 10cm x 10cm	1
Elastoplast – waterproof and fabric dressings	12
Adhesive tape 1.25cm x 5m	1 roll
Antiseptic swabs (for cleaning small wounds)	6
Steri-strip adhesive sutures (6mm x 100mm) (note 2)	1 sheet
Blood lancets (for blisters or splinters)	2
Safety pins	2
Scissors	1 pair

Disposable gloves (medium)	2
Emergency message form and pencil	1
Medication	
Paracetamol tablets 500mg (note 5)	10
Ibuprofen tablets 400mg (note 5)	10
Chlorpheniramine tablets 4mg (note 6)	4

See notes on pages 29–31.

Mobile camp kit

The mobile camp kit is intended for a group of about six people away from base camp for a few days and carrying all their equipment.

TABLE 3.3 MOBILE CAMP KIT

<i>Item</i>	<i>Quantity</i>
<i>Dressing materials and equipment</i>	
Large plain wound dressing, No. 15 (note 1)	1
Medium plain wound dressing, No. 14 (note 1)	1
Release non-adherent dressing 10 x 10cm	2
Triangular bandage	1
Crepe bandage 10cm x 4.5m	1
Elastoplast – waterproof and fabric dressings	12
Steri-strip tapes 6mm x 100mm	10
Elastic adhesive plaster 2.5cm x 5m	1 roll
Savlon or Hibicet antiseptic concentrate (note 3)	20ml
Gauze swabs, 7.5cm x 7.5cm, packets of 5	3 packets
Antiseptic swabs	10
Safety pins	4
Paper clip (note 4)	1
Blood lancets (for blisters or splinters)	2
Scissors	1 pair
Disposable gloves (medium)	2 pairs
Thermometer	1
Cotton-wool-tipped sticks (for removing objects from eyes)	4
<i>Medication</i>	
<i>Painkillers</i> (note 5)	
Paracetamol tablets 500mg	20
Ibuprofen tablets 400mg	10
Co-codamol 30/500 tablets	10
<i>Allergy</i> (note 6)	
Chlorpheniramine tablets 4mg	10
<i>Gastrointestinal</i> (note 7)	
Loperamide capsules 2mg or Lomotil tablets	20

EXPEDITION MEDICINE

<i>Antibiotics (note 9)</i>	
*Ciprofloxacin tablets 500mg	10
*Erythromycin tablets 250mg	20
<i>Eyes (note 10)</i>	
*Amethocaine eye drops 1%, single dose units	2
*Chloramphenicol antibiotic eye ointment	1 tube
<i>Skin (note 11)</i>	
Silver sulphadiazine cream 20g	1 tube
<i>Optional since need extra skills (note 12)</i>	
*Nalbuphine injection 20mg in 2ml (note 5)	2 ampoules
*Prochlorperazine ampoule 12.5g in 1ml	1 ampoule
Syringe 2ml and needle 38mm x 0.8mm (for injections)	2
Documentation (in a polythene bag)	
Booklet <i>First Aid on Mountains</i> by Steve Bollen	
Emergency message form, pencil, notebook	
Instructions on use of drugs and dressings	
Medical history cards for team members (confidentially stored)	

* Available on prescription only.

See notes on pages 29–31.

Base camp kit

The base camp kit is designed as the main medical kit for an expedition of about 20 people for about 4 weeks in an area such as Iceland, where medical help is available within 1 day. Part of the base camp kit is the accident kit, which contains equipment that might be useful at an accident away from camp. This should be kept intact at the top of the box where it may be found quickly in an emergency.

TABLE 3.4 BASE CAMP KIT

<i>Item</i>	<i>Quantity</i>
Accident kit (in a polythene bag with list of contents)	
Dressing materials and equipment	
Large plain wound dressing, No. 15	2
Medium plain wound dressing, No. 14	2
Small plain wound dressing, No. 13	2
Release non-adherent dressing 10cm x 10cm	4
Triangular bandage	4
Crepe bandage 10cm x 4.5m	2
Elastic adhesive plaster 2.5cm x 4.5m	1 roll
Safety pins	6
Scissors	1 pair

Disposable gloves	4 pairs
Injection swabs	10
Cervical collar adjustable to variable neck lengths	1
Splints if available (note 13)	

Oral and injectable medication (note 12)

*Co-codamol 30/500 tablets (note 5)	10
*Lignocaine (lidocaine) 1% injection (5ml)	2 ampoules
*Nalbuphine injection 20mg in 2ml (with instruction for use) (note 5)	2 ampoules
*Prochlorperazine ampoule 12.5g in 1ml	2 ampoules
Syringe 2ml and needle 38mm x 0.8mm	5

Optional since need extra skills (note 12)

Sutures	3 packets (3/0 and 4/0 nylon)
Suturing instruments (sterile pack with needle holder, fine forceps and scissors)	

Documentation (in a polythene bag)

Medical assessment and accident recording forms (see Appendix 3)
 Insurance details, evacuation plan and emergency communication details
 Medical history cards for each team member (stored confidentially)
 This book *Expedition Medicine*
 Instructions on use of drugs and dressings
 List of contents of medical kit
 Emergency message form, notebook and pencil

Main base camp medical kit**Dressing materials and equipment** (in a polythene bag with list of contents)

Antiseptic swabs	20
Savlon or Hibicet antiseptic concentrate	100ml
Cotton-wool balls, sterile, packets of 5	10 packets
Gauze swabs 10cm x 10cm, packets of 5	10 packets
Release non-adherent dressing 10cm x 10cm	10
Release non-adherent dressing 5cm x 5cm	10
Jelonet paraffin gauze dressing 10cm x 10cm	10
Elastoplast – waterproof and fabric dressings (plasters)	60
Elastoplast dressing strip 3.8cm x 1m	1
Steri-strips 6mm x 100mm x 10 tapes	3 packs
Elastic adhesive bandage 7.5cm x 4.5m	1 roll
Adhesive tape 1.25cm x 5m	1 roll
Tubigrip elastic tubular bandage, size C & D	1m each
Crepe bandage (10cm x 4.5m)	3
Eye bath	1
Cotton-wool-tipped sticks (for removing objects from eyes)	10
Eye pad, sterile, No. 16 BPC	2
Disposable gloves	10 pairs
Scissors	1 pair
Splinter forceps	1 pair
Plastic dressing forceps, sterile	2 pairs

EXPEDITION MEDICINE

Blood lancets	6
Disposable scalpel, No. 15 blade	1
Paper clip	1
Safety pins	6
Polythene freezer bags (note 11)	2
Resuscitation mask (Laerdal mask)	
Medication	
<i>Painkillers (note 5)</i>	
Paracetamol tablets 500mg	100
Ibuprofen tablets 400mg	50
*Co-codamol 30/500 tablets	20
<i>Allergy and asthma medicines (note 6)</i>	
Chlorpheniramine tablets 4mg	50
*Salbutamol inhaler	2
Spacer device (in case of severe asthma attack)	1
*Prednisolone tablets 5mg	50
<i>Gastrointestinal medication (note 7)</i>	
*Hyoscine (buscopan) 10mg	50
*Prochlorperazine (Buccastem) 3mg (note 8)	10
Antacid tablets	50
Loperamide capsules 2mg	60
Senokot tablets	20
Xyloproct ointment	2 tubes
<i>Antibiotics (note 9)</i>	
*Ciprofloxacin tablets 500mg	50
*Co-amoxiclav (e.g. Augmentin) tablets 375mg	60
*Erythromycin tablets 250mg	60
*Flucloxacillin tablets	60
*Metronidazole tablets 400mg	60
<i>Nose, ear and eye</i>	
Otrivine nasal spray 0.1%	1
*Otosporin eardrops	1
*Amethocaine eye drops 1%, single dose units (note 10)	3
*Chloramphenicol eye ointment	1 tube
<i>Skin (note 11)</i>	
Calamine cream	2 tubes
Eurax (crotamiton) ointment	2 tubes
Miconazole cream	1 tube
Silver sulphadiazine cream 20g	2 tubes
<i>Other medicines</i>	
Aspirin tablets 300mg (anti-inflammatory or for cardiac pain)	20
Throat lozenges (e.g. Bradosol)	40
*Antimalarial standby treatment (appropriate to area being visited)	2 courses

Optional since need extra skills (note 12)

Sutures	3 packets (3/0 and 4/0 nylon)
Stitching instruments (sterile pack with needle holder, fine forceps and scissors)	

Injectable medications (note 12)

*Nalbuphine injection 20mg in 2ml (strong painkiller)	5 ampoules
*Prochlorperazine ampoule 12.5g in 1ml	5 ampoules
*Lignocaine 1% injection 5ml (local anaesthetic and for nerve blocks)	2 ampoules
Syringes 2ml and 5ml plus 38mm x 0.8mm needles	5

Anaphylaxis medications (essential if taking injectable drugs)

*Adrenaline injection for intramuscular use 1mg in 1ml (1 in 1000) (Or EpiPen 0.3mg or child size 0.15mg)	2 ampoules 1
*Chlorpheniramine injection 10mg in 2ml (note 6)	2 ampoules
*Hydrocortisone injection 100mg	2 vials

Emergency dental kit (note 14)

1

Diagnostic equipment

Thermometer (low reading and normal) (note 15)	1 each
Blood pressure instrument (consider if taking fluids)	1 (portable type)
Stethoscope	1

Extra drugs and equipment as required for the particular trip or a specific team member (note 14)

Paperwork

Medical history cards for each team member (stored confidentially)
Insurance details, evacuation plan and emergency communication details
Instructions on use of drugs and dressings
List of contents of medical kits

* Available on prescription only.

Notes to Tables 3.2, 3.3, 3.4

- Dressings** – the *plain wound dressings* (sometimes called *sterile compressed wound dressings*) come in three sizes: large (No. 15), medium (No. 14) and small (No. 13). Each consists of a sterile pad (20cm × 15cm in the large dressing) to cover the wound, with a long bandage to hold the pad in place. They are intended as first-aid wound dressings but could also be used to fasten the legs together after a fracture, the soft pad being placed between the knees or ankles. These dressings are compressed to take up the minimum of space. They are available from Data Southern Enterprises Ltd. *Ambulance dressings* are similar to *plain wound dressings* and are more widely available but they are less tightly compressed and so take up more space: the *No. 2 ambulance dressing* is equivalent to the *No. 15 plain wound dressing*, and the *No. 1 ambulance dressing* is the same as a *No. 14 plain wound dressing*.
- Steri-strips** – adhesive tapes can be used to close some wounds which would otherwise need

to be sutured. The wound must first be carefully cleaned and the skin dried. Steri-strips should not be placed encircling a finger since they may restrict the circulation.

3. **Savlon and Hibicet Hospital Concentrate antiseptics** contain chlorhexidine and cetrimide and are used for cleaning wounds. The concentrated solution is diluted with clean water and the wound is cleaned using cotton-wool balls or gauze swabs. Some small wounds can be cleaned by irrigation with water alone, but in dirty wounds the diluted antiseptic acts as soap to help loosen dirt. When the wound looks clean it should be irrigated with water to remove any remaining antiseptic.
4. **Paper clip** – this is used to treat subungual haematomas, a blood blister under the finger nail. If the fingertip is crushed blood may be visible through the nail and the finger throbs painfully. This can be treated by melting a hole through the nail using an opened paper clip heated to red heat in a flame. This is surprisingly painless and gives immediate relief.
5. **Painkillers** – a range of painkillers of different strengths is useful.

Paracetamol (“acetaminophen” in the United States) is an analgesic which relieves minor pain with minimal side-effects and also reduces fever. The maximum dose of 8 tablets per 24 hours should not be exceeded.

Ibuprofen is a non-steroidal anti-inflammatory analgesic drug which is useful for pain from sprains or bony injuries. Ibuprofen should not be used in patients with peptic ulcers, nor in asthmatic patients who are allergic to aspirin or related drugs. It sometimes causes indigestion. In severe pain ibuprofen can be taken at the same time as paracetamol.

Co-codamol 30/500 contains codeine phosphate 30mg and paracetamol 500mg in each tablet; for maximum pain relief two can be taken at a time: this combination provides stronger analgesia than either paracetamol or codeine alone but the codeine may cause drowsiness, dizziness and constipation.

Nalbuphine (trade name Nubain) is an injectable strong analgesic but is not subject to the legal restrictions covering drugs such as morphine and pethidine which make them impracticable for most expeditions.

6. **Chlorphenamine** (also called chlorpheniramine) is an antihistamine used to relieve allergic reactions and itching from insect bites or stings.
7. **Gastrointestinal medication**

Loperamide is for controlling diarrhoea. Most cases of diarrhoea last only a few days and do not need drug treatment. Replacing fluids is more important. Loperamide may be particularly useful if diarrhoea occurs while travelling (see Chapter 18 for more information about diarrhoea).

Hysocine (Buscopan) is used to reduce the smooth muscle spasm associated with gastrointestinal disorders.

Dioralyte sachets contain a commercial salt–sugar oral rehydration solution. A similar solution can be made from household ingredients using a plastic measuring spoon produced by TALC (Teaching-aids At Low Cost), PO Box 45, St Albans, Hertfordshire AL1 4AX, tel. +44 1727 853869 (see also Chapter 18).

Xyloproct ointment – for haemorrhoids (piles) and soothing painful anal conditions.

8. **Prochlorperazine** is used to treat nausea and vomiting, either from travel sickness or as a side-

effect of nalbuphine. Prochlorperazine may be given by injection or as a tablet (Buccastem) which should be placed between the upper lip and gum and left to dissolve.

9. **Antibiotics** – it is crucial to be aware if any team member is allergic to penicillin.
 - Ciprofloxacin** is an antibiotic especially useful for diarrhoea, chest and urinary infections. It is relatively expensive.
 - Co-amoxiclav** (Augmentin) is an antibiotic useful for treating ear, chest, urinary and gynaecological infections, and infections from animal bites. It must not be used in people allergic to penicillin.
 - Erythromycin** is an antibiotic useful for throat, chest and wound infections and for those allergic to penicillins.
 - Flucloxacillin** is a penicillin-based antibiotic useful for skin and wound infections.
 - Metronidazole** is an antibiotic useful for gynaecological and dental infections and also some forms of diarrhoea (for example, amoebic dysentery and giardiasis).
10. **Eyes** – **amethocaine** eyedrops are a local anaesthetic used when examining the eye for a foreign body that cannot be flushed out or if there is an injury. After use the eye must be padded up for a few hours till sensation returns.
11. **Skin** – **silver sulphadiazine** cream (trade name Flamazine) is useful for extensive burns. Burns of the hand should be covered in Flamazine, placed in a polythene bag and taped around the wrist. The polythene bag keeps the burn wound clean but allows movement of the fingers and some use of the hand. **Eurax** ointment is applied to itching insect bites, **hydrocortisone** to patches of eczema, and **miconazole** or **clotrimazole** will treat the extremely common fungal infections of scalp, feet and skin.
12. **Injections, suturing and intravenous drugs** – these can be safely used on expedition by ‘non-medical’ people with suitable training. Using these can greatly increase the range of problems that can be successfully treated or stabilised in a remote setting. The fluids are heavy, but in the right hands are indispensable in the event of a major accident or illness. The user must know what to do in case of an allergic reaction and is also responsible for safe disposal of any ‘sharps’.
13. **Splints** are fortunately rarely needed, and on most expeditions materials for making makeshift splints will be available. The most versatile ready-made splint is a SAM splint, a sheet of foam-covered aluminium 91cm × 11cm which rolls up to 8cm diameter × 11cm and weighs 140g. This could be used to splint a broken arm or ankle, or as an emergency cervical collar. SAM splints and a video demonstrating how to use them are available from SP Services and other suppliers (see Appendix 5). Fibreglass canoe repair kits could be used to make an emergency splint, but great care should be taken because the heat produced when the material sets can burn the skin.
14. **Dental** – an emergency dental kit includes equipment to apply a temporary filling or a dressing for a damaged tooth. One suitable kit is the Lifesystems Dental First Aid Kit which is available from many travel equipment suppliers. Dental kits for expeditions can also be purchased from The Dental Directory +44 800 585 586 or www.dental-directory.co.uk (see Chapter 22).
15. **Thermometers** – diagnosis and monitoring of hypothermia need a special low reading thermometer. For detecting fever and heat stress, the standard glass mercury thermometers,

although fragile, are probably better than either the temperature-sensitive strips or the electronic machines.

Extra drugs and equipment

Many expeditions require extra drugs and equipment in addition to those listed above, and for a major expedition much more equipment will be needed. If there is a doctor or nurse in the party more drugs and equipment should be taken. However, he or she may not be available immediately when needed and so it is best to have basic medical kits which anyone can use if necessary and a separate kit for the doctor or nurse's use only.

Sterile equipment kits

Expeditions to areas outside Europe and North America should carry packs of needles, syringes and sutures and make sure that they are available and used if medical treatment is needed in an emergency. In many developing countries medical equipment is often reused without sterilisation and there is a high risk of transmission of infection, especially hepatitis and HIV (the AIDS virus). Suitable kits for small expeditions are listed below. Large expeditions will need more equipment and should seek advice well in advance.

TABLE 3.5 SMALL KIT OF STERILE MEDICAL EQUIPMENT

<i>Item</i>	<i>Quantity</i>	
Disposable syringes	2ml	2
	5ml	2
	10ml	1
Injection needles	38mm x 0.8mm (green)	5
	25mm x 0.6mm (blue)	2
	20mm x 0.5mm (orange)	1
Sutures with needles	Novafil 3/0	1
	Novafil 4/0	1
	Softgut (catgut) 3/0	1

TABLE 3.6 LARGER KIT OF STERILE MEDICAL EQUIPMENT

(As above, in larger quantities, plus the following)		
<i>Item</i>	<i>Quantity</i>	
Intravenous cannulae (e.g. Venflon) 18g	4	
Intravenous infusion sets	2	
Intravenous fluid	– sodium chloride 0.9% (saline) 500ml	4
	– gelatin (e.g. Gelofusine) 500ml	2

Additional drugs

Extra drugs will be needed if any expedition members have pre-existing conditions such as asthma or are allergic to foods such as nuts or to any drug in the medical kit. Problems may occur suddenly at any time, often while travelling, when the main medical kits may be inaccessible. Careful planning is essential so that any necessary drugs are available immediately. Reserve supplies must be taken in case the main stock is lost.

An exacerbation of asthma will need treatment with inhalers of salbutamol and ipratropium bromide, preferably with a spacer device, and also prednisolone tablets. Ampoules of salbutamol, aminophylline and hydrocortisone should also be taken if a doctor is available.

Anyone who has had a severe allergic reaction (anaphylaxis) to a food such as nuts must carry adrenaline (epinephrine) for injection and know how and when to use it: a pre-filled syringe such as an EpiPen is the most suitable for emergency use. Repeated doses of adrenaline may be needed and also injections of hydrocortisone and chlorpheniramine.

Wound care

On any expedition suturing equipment and local anaesthetic may be needed for closing wounds, and could be used by non-medical people who have had suitable training. A small brush such as a toothbrush is useful to remove embedded dirt from an anaesthetised wound. Tissue glue (such as Dermabond or LiquiBand) may be used for closing some wounds that would otherwise need to be sutured.

Other equipment

Other items of medical equipment that could be useful if there is a doctor, nurse or paramedic in the party are oropharyngeal and nasal airways, auriscope and ophthalmoscope, urethral catheter, nasogastric tube, and a chest drainage catheter and Heimlich valve for treatment of a pneumothorax. Dental forceps and other dental equipment could be taken if someone has the skills to use them. Intravenous fluids are heavy but indispensable in the event of major trauma or severe illness: the most useful fluids are saline (0.9% sodium chloride) and gelatin (Gelofusine or Haemaccel). Some expedition doctors take enough surgical equipment for an emergency appendicectomy, but non-operative treatment of appendicitis with fluids, analgesics and antibiotics is much safer than emergency surgery outside a hospital. Fluids could be given rectally if intravenous fluids are not available. It is unrealistic to plan for major surgery even if there is a surgeon in the party. Local anaesthesia is adequate for repairing most wounds and can also be used for pain relief, especially femoral nerve block for fractures of the femur, using bupivacaine (Marcain). Midazolam could be useful for reduction of a dislocated shoulder. In the very rare circumstances where general anaesthesia is unavoidable during an expedition ketamine is the most suitable anaesthetic drug.

Extra drugs should be taken if particular medical problems are likely. These are discussed in more detail in Chapter 7.

SPECIAL HAZARDS OF PARTICULAR AREAS AND ACTIVITIES

Tropical areas (see Chapters 19 and 24)

In the tropics infectious diseases are common, especially malaria and bowel infections. Even if antimalarial prophylaxis is taken regularly drugs for treating malaria must be readily available. Tinidazole or metronidazole is useful for amoebiasis or giardiasis (see Chapter 18), chloramphenicol for typhoid and piperazine (Pripsen) for roundworms. Gastroenteritis is a major problem in hot countries. The large amounts of fluid lost from the gut may be replaced by oral glucose and electrolyte solution (for example, Dioralyte) or by a solution of sugar and salt measured with a special plastic spoon (obtainable from TALC, Teaching-aids At Low Cost; see also Appendix 5). Wound infections are common on expeditions to hot, wet places such as tropical rain forests. Many people may need treatment with oral antibiotics such as erythromycin or flucloxacillin. The risk of infection can be reduced by cleaning wounds carefully. Fungal skin infections may require miconazole cream. Clotrimazole vaginal tablets are useful for women suffering from thrush. Snake bite is rare if sensible precautions are observed. Few expeditions need to carry antivenom but expert advice about this should be obtained in high-risk areas (see Chapter 20).

Mountaineering (see Chapter 26)

At high altitudes this activity carries risks of mountain sickness and frostbite as well as the usual hazards of illness, injury and sunburn. Substantial quantities of medical supplies may be needed on a large expedition. The paper by A'Court, Stables and Travis (see Appendix 5) lists the medical supplies taken on the 1992 winter Everest expedition. Pollard and Murdoch's *High Altitude Medicine Handbook* provides further information.

Sailing

Members of sailing expeditions are liable to suffer from chapped hands, salt-water boils and excessive sun. Neutrogena hand cream may be needed in large quantities. Cinnarizine tablets often prevent sea sickness, but occasionally injections of an antiemetic such as prochlorperazine (Stemetil) are required. Salt and water depletion is common while sailing in the tropics. Trauma may occur while sailing in bad weather. Falling overboard in bad weather is likely to be fatal, so life jackets and safety harnesses must be used.

Diving (see Chapter 27)

Diving expeditions share the same problems as sailing expeditions with respect to exposure to sun and water. Ear infections (otitis externa) are particularly common, especially if swimming near coral. Olive oil drops and antibiotic ear drops (such as Otosporin) should be taken.

GENERAL POINTS ABOUT MEDICAL SUPPLIES**Treating the local people**

Local people may seek medical attention from a visiting expedition. Plans for this situation should be made in advance: some of the issues to consider are discussed in Chapter 9. People with chronic conditions should be referred to local medical services but those with acute illness or injury may need emergency treatment or evacuation for medical care. Paediatric doses of some drugs may be required. Local people employed as expedition guides or porters should receive the same medical treatment as other expedition members, and additional supplies of dressings, analgesics and antibiotics may be needed to allow for this.

Where to get drugs and dressings

Many of the drugs recommended are available in the UK only on a doctor's prescription. A National Health Service prescription may not be used for drugs for use overseas, but a doctor may write a private prescription to enable travellers to purchase drugs. Some suppliers of dressings and medical equipment are listed in Appendix 5.

Packing and labelling drugs

Blister packs of tablets are convenient for expedition use, but they take up more space than the same tablets in a bottle. Any bottles should be plastic with screw tops and clearly labelled with the generic and trade names of the drug. The labels should be covered with waterproof tape. Instructions about the dose and the indications for using the drug may be included on the labels, but full information must also be available, especially about warnings and common side-effects. The most convenient source of information is the *British National Formulary* which is published twice a year and sent to every practising doctor. The trade names of drugs often differ in different countries. Occasionally, the official names are also different; for example paracetamol in the UK is the same drug as acetaminophen in the United States.

Packing and labelling the medical kits

Medical kits must be packed to protect the contents from water, dirt and damage but should allow items to be found easily in bad weather and poor light. Packing and labelling the kits require thought, time and effort. Many items should be wrapped in

resealable polythene bags, with labels visible to identify the contents without opening the bag. Similar items such as dressings may then be grouped together in a larger polythene bag, again labelled with the contents. Plastic boxes are convenient for small medical kits or for drugs and instruments: if the lid is clear plastic the label may be attached inside so that it is visible without opening the box. The outer container of a medical kit must be durable and weather resistant to protect the contents. The expedition members must be able to identify it as a medical kit but labelling it as such could sometimes attract unwelcome attention or the theft of drugs and medical equipment.

Drug export and import arrangements

There are no restrictions on exporting medicinal products from the UK, except for controlled drugs such as morphine, for which a Home Office certificate is needed and for which there are special storage and prescription requirements. Special permission would also be needed to import such drugs into another country. Even with the relevant documents delays and legal difficulties are likely if morphine or similar drugs are carried. There are equally effective alternatives that are not affected by the same legal and practical problems and these are the medicines recommended here. Expeditions taking reasonable quantities of other drugs are unlikely to encounter problems at customs. A doctor's letter on official headed notepaper listing the drugs and stating that they are for the use of expedition members and not for commercial use can be useful at border crossings. It may be helpful to check in advance with the embassy of the country concerned that there will be no restriction on importing the drugs in the medical kits. A detailed list of the drugs with approval from the relevant embassy is a great asset. British drug export certificates are not needed for expeditions unless the host country specifically requests one. A certificate can then be obtained from the Department of Health (Medicines Division), Market Towers, 1 Nine Elms Lane, London SW1 5NQ, tel. +44 20 7720 2188 ext. 3408.

During the expedition

During the expedition the medical officer should make sure that medical kits are actually available where they might be needed, rather than left behind in base camp. It is best if one person looks after the kits, but everyone should know what is available in case an emergency occurs. Notes must be kept if any drugs are used.

After the expedition

Any comments and suggestions for improving the medical kits should be recorded before they are forgotten. The RGS/EAC would be interested to learn of your experiences and ideas. If most of the items are unused they may be kept for future expeditions, or possibly donated to a clinic or hospital in the expedition area. Most drugs have an expiry date printed on the container. Other drugs and dressings should be usable for at least three years if stored in reasonable conditions.