Antarctica New Zealand

Vision:
Antarctica and the Southern Ocean: valued, protected, understood.

Purpose:
To further New Zealand’s Strategic influence and interests in relation to Antarctica and the Southern Ocean.

Values:
We are a high performing organisation underpinned by a culture of shared beliefs. These are:

Safety:
We have an uncompromising commitment to each other’s safety.

Sustainability:
We will incorporate principles of social, environmental and financial sustainability into all that we do.

Learning:
Feedback is actively encouraged and we will learn from previous experiences to continuously improve our performance.

Professionalism:
We do the job right every time through adherence to strong operating disciplines.
Welcome

Antarctica New Zealand is committed to “zero harm” to anyone working for the NZ Antarctic Programme and we have an uncompromising commitment to each other's safety. We operate in a high-risk environment that requires leadership, good team membership and sound decision making from everyone. Risk management is everyone's responsibility and must be integrated into all activities.

This manual is designed to support your knowledge, and to provide additional reference information to help you work safely in Antarctica. It contains essential information on first aid, environmental codes, operating procedures and safe practices in the field.

Ensure you and everyone in your team is familiar with the contents of this manual and take it with you whenever you leave Scott Base.

On behalf of Antarctica New Zealand, I wish you and those around you a safe and successful research season in Antarctica.

Graeme Ayres
MANAGER OPERATIONS

Cover Image

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Please recycle this manual after use.
## Team Process

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<td>Understand Context, Purpose &amp; Constraints</td>
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### Task Assignment
- **Context**: situation and background about the task
- **Purpose**: to be achieved by accomplishing the task
- **Quality**: of the output of the task
- **Quantity**: to be produced by the task
- **Resources**: available to complete the task
- **Time**: by which the task is to be completed
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<tr>
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<td>situation and background about the task</td>
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DON’T PANIC

D

SAFETY - CHECK FOR DANGER. Yours and the patients.

R

RESPONSE - Shout “Can you hear me?” No response? Check for a response to pain.

S

SEND OR CALL SB FOR HELP

A

AIRWAY - Open the airway by applying head tilt and chin lift. Remove obvious causes of airway obstruction.

B

BREATHING - Look, Listen and Feel for signs of breathing for at least 10 seconds. If not breathing start CPR 30:2. If normal breathing is present place the patient in the recover position if they are unconscious.

C

CPR – Start CPR 30 chest compressions followed by 2 breaths.

D

DEFIBRILLATION – Attach AED if available and follow voice prompts.

DEADLY BLEEDS – Perform a body sweep checking for bleeding. Check inside over pants and jackets.
1. Initial Accident Procedures

1.1 Aim
The aim is to preserve life, prevent the condition worsening and promote recovery.

a To preserve life:
• maintain an open airway
• begin resuscitation if the casualty is not breathing (CPR, page 9)
• control breathing

b To prevent the condition worsening:
• dress wounds
• immobilise any large wounds, burns and fractures
• place the casualty in the most comfortable position as injuries allow

c To promote recovery:
• relieve the casualty’s anxiety and encourage confidence
• relieve pain and discomfort
• protect the casualty from cold and wet

Apply the four Bs when treating any injury. These are:

1 Breathing — always ensure casualty is responsive, breathing, and has a pulse or sign of life.

2 Bleeding — severe bleeding always treated before minor bleeding

3 Burns — severe burns, always cool and cover

4 Bones — open or closed fractures, always immobilise. Treat severe bleeding before immobilising the fracture.

It is important to allocate priority of treatment, as this is the basis for preserving life.
1.2 Secondary Survey

Once life threatening injuries are stable a secondary survey of the casualty can be undertaken. During the secondary survey its important to establish the mechanics of injury, conduct a methodical head to toe survey and interview the patient to gather vital information. Refer to the Patient Assessment form on page 3 or in the field first-aid kit. Document all information gathered. Remember to only expose limbs/skin as you examine them, and then cover as soon as possible to avoid hypothermia/frostbite.

<table>
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<tr>
<th>Secondary Survey (Examination of Casualty)</th>
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<tr>
<td><strong>Interview</strong></td>
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<td><strong>Observations</strong></td>
</tr>
<tr>
<td><strong>Examination</strong></td>
</tr>
</tbody>
</table>
### Patient Assessment Form

**ASSESS SCENE**

Mechanics of injury: 


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**PRIMARY SURVEY**

**Personal Safety**
- Is it safe?
- Call for help
- Glove up

**Shake & Shout**
- Responds to: Voice / Pain / None

**Airway**
- Clear of obstructions
- Finger sweep any visible obstructions
- Open airway head tilt, chin lift (or jaw thrust re/ c-spine)

**Breathing**
- Look, listen, feel for 5 secs.

**Circulation**
- Carotid pulse-palpate for up to 10 seconds
- No pulse - begin CPR
  - 30-2 (Adult)
    - 5 breaths then 30-2 (Child)
- Body sweep for life threatening bleeding
- Control bleeding – apply pressure & elevate

---

**SECONDARY SURVEY**

Systematic thorough head to toe check

- Document signs (what you see)

  **Head**

  **Chest**

  **Abdomen**

  **Pelvis**

  **Extremities**

  **Back**

- Symptoms - what patient tells you

- Allergies

- Medications
  - what?
  - why?
  - last taken?

- Past Medical History

- Last Meal
  - fluids @?
  - food @?

- Events Prior (to accident - eg black out, dizziness)?

Notes

---

PTO
### ACCIDENT DETAIL

**Time of Accident:**

**Description:**

---

### INITIAL CONDITION OF PATIENT:

<table>
<thead>
<tr>
<th>Airway</th>
<th>Breathing</th>
<th>Pulse</th>
<th>LOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear</td>
<td>normal</td>
<td>full</td>
<td>Alert</td>
</tr>
<tr>
<td>shallow</td>
<td></td>
<td>weak</td>
<td>Verbal</td>
</tr>
<tr>
<td>Required</td>
<td>deep</td>
<td>irregular</td>
<td>Pain – mild</td>
</tr>
<tr>
<td>Attention</td>
<td>ABSENT</td>
<td>ABSENT</td>
<td>Unresponsive - unconscious</td>
</tr>
</tbody>
</table>

- suffered convulsions

<table>
<thead>
<tr>
<th>Pupils</th>
<th>Questions about Person's Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>O – Onset</td>
</tr>
<tr>
<td>L</td>
<td>When did pain come on? How long has it lasted?</td>
</tr>
<tr>
<td>Fixed</td>
<td>P – Provokes</td>
</tr>
<tr>
<td>Equal</td>
<td>What makes pain worse/better?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>R – Region/Radiating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Where is the pain? Point to it / anywhere else?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Questions about Person's Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q – Quality</td>
</tr>
<tr>
<td>Can you describe the pain? Dull, crushing, sharp, burning, tearing etc</td>
</tr>
<tr>
<td>R – Region/Radiating</td>
</tr>
<tr>
<td>S – Severity</td>
</tr>
<tr>
<td>1 – 10 pain scale – minor / moderate / severe</td>
</tr>
<tr>
<td>T – Timing</td>
</tr>
<tr>
<td>Always there? Or come and go?</td>
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### VITAL SIGNS (Every 15 mins until stable then ½ hourly):

<table>
<thead>
<tr>
<th>Date:</th>
<th>Time:</th>
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<tbody>
<tr>
<td>LOC</td>
<td>- AVPU?</td>
</tr>
<tr>
<td>Resps</td>
<td>- rate - character</td>
</tr>
<tr>
<td>Pulse</td>
<td>- rate - character</td>
</tr>
<tr>
<td>L Pupil</td>
<td>- size - react</td>
</tr>
<tr>
<td>R Pupil</td>
<td>- size - react</td>
</tr>
<tr>
<td>Vomit / Incontinence / Convulsion</td>
<td></td>
</tr>
<tr>
<td>Temp</td>
<td>- Oral / Rectal</td>
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<tr>
<td>Circulation / Sensation (distal to injury/bandage)</td>
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### TREATMENT LOG

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<td>Food &amp; Liquids</td>
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2. Consciousness/Responsiveness

It is vital to know whether the victim is conscious or unconscious (responsive or unresponsive) - and remember they may be conscious initially but become unconscious later.

Check response to simple commands and touching. Gently tap the victim or shake and shout, “Are you OK”. If the victim is able to respond and there is no further danger from their location, leave the victim in the position they are in. Remember to be vigilant in your continued assessment of the ABC. Attend to other injuries, make them comfortable. Insulate where possible. Use the recovery position turning the victim towards you the rescuer, keep warm, maintain a stable and safe position, maintain drainage, maintain airway (see page 8 for more detail).

If unconscious and there is spontaneous breathing, put in recovery position (see below). If there is no response shout or radio for help. Send for help if there is more than one rescuer present.

Recovery position

If unconscious and not breathing, start CPR (Cardiopulmonary Resuscitation) procedure (section 4, page 10).
3. Airway and Breathing

3.1 Airway

Open the airway without moving from the original position wherever possible. If this is too difficult gently turn the victim onto his/her back on spare clothing or other insulation. If you suspect the patient has suffered a neck injury then use the jaw thrust to open the airway (see below). Use the Head-tilt, Chin-lift method to open the airway if a spinal injury is not suspected. Place one hand on the forehead and two fingers of the other hand on the boney part of the chin. Tilt the head back using the hand on the forehead, and at the same time lift the jaw upwards with the fingers of the other hand. The fingers should not compress the soft tissue under the chin.

3.2 Opening the Airway using Jaw Thrust

Occasionally cardiac arrest may be associated with other physical injuries. In this case it is possible for movement of the neck to result in paralysis, so any neck movement should be kept to the minimum required for effective airway opening. In these cases the Jaw Thrust method is recommended and the second rescuer can continue the rest of the resuscitation attempt. The rescuer positions him/herself behind the head of the victim with the elbows on the ground, grasps the angles of the lower jaw and lifts the jaw forward with both hands. The thumbs may retract the lips to allow mouth to mouth breathing. Do not tilt the head backwards. Keep the head in neutral position. This method allows the airway to be opened while carefully supporting the head, without tilting it backwards or from side to side.
3.3 Breathing (Use ‘Susaid’ for personal protection)

3a In the original position that the victim was found and keeping the Chin Lift Head Tilt position, place your ear over the victim’s mouth and nose for up to 10 seconds and look towards the chest:

- Look for the chest to rise and fall
- Listen for sounds of breathing
- Feel for air on your cheek

3b IF BREATHING place him/her in recovery position. Keep observing ABC and level of consciousness.

3c If breathing is absent or only occasional gasps and you are alone go for help as long as you can be back within 4 minutes. If breathing is absent turn the victim on their back inside shelter if possible. Look for visible objects in the mouth eg. snow from and avalanche, vomit, food. Dentures should only be removed if they are loose or broken, as they help to provide a good seal.

3d If no response and no breathing then start CPR with 30 compressions then follow with 2 effective rescue breaths using chin lift head tilt each breath taking 1 second. Maintaining the
head-tilt and chin-lift position, pinch the victim's nose and blow in sufficient air to make the chest rise and fall. If vomiting occurs, turn the victim onto his/her side to prevent them inhaling the vomit then return to their back to continue resuscitation. If you are unsuccessful in delivering breaths, consider FBAO (Foreign Body Airway Obstruction).

3e Mouth to nose breathing may be used if the victim’s mouth can’t be opened, if it is injured, or the victim is in water. Lift the chin to close the mouth and blow through the nose. It may be necessary to open the mouth to allow the victim to exhale.

3.4 FOREIGN BODY AIRWAY OBSTRUCTION (FBAO)
FBAO usually occurs during eating.

FBAO in a conscious Adult

If someone is eating and suddenly chokes, a normal reflex is to grasp the throat. The rescuer should ask the victim “are you choking?”

• If the obstruction is not complete, the victim may cough and splutter and there may be wheezing between coughs. Action—encourage the victim to cough.
• If the airway is completely obstructed the victim will be unable to cough, speak or breathe and will rapidly become unconscious. Death can occur within 4-6 minutes.

3.5 Airway Obstruction (Chests Thrusts)
If not responsive and not breathing then reapply airway manoeuvres and jaw thrust and start with 30 compressions and then 2 rescue breaths.

If breathing:
• Is it normal or noisy
• Put into recovery position if unconscious
• Stop bleeding
• Consider shock
• Position appropriately
• Provide shelter

**If the airway is completely obstructed give 5 back blows.**

• Stand to the side and slightly behind the victim
• Support him/her by leaning victim well forward by putting your arm across chest and your hand on victims opposite shoulder. This will allow you to support the victim and when the obstructing material is dislodged, it comes out of the mouth rather than going further down the airway.
• Give up to 5 sharp blows between the shoulder blades with the heel of one hand. Each individual blow should be a separate action, with the intent of relieving the obstruction

**Chest Thrusts**

If the obstruction is not relieved by the back blows, perform Chest Thrusts.

• With an adult, standing or sitting, wrap both arms around the patient, at chest level.
• Place one fist with the thumb side against the middle of the breastbone.
• Grasp that fist with your other hand and give up to 5, separate, inward and upward thrusts.
• Continue the thrusts until the obstruction is dislodged or the patient becomes unconscious.

The chest thrusts are given separately with a check after each one to see if the obstruction has been relieved.

**SPECIAL CONDITIONS**

If the victim is obese or pregnant and the rescuer cannot get his/her hands around the abdomen use chest thrusts. If victim becomes unconscious follow the standard sequence for ADULT CPR. In addition, each time the airway is opened, look for the obstructing object in the back of the throat. If the object is visible, remove using your fingers. If alone use the back of a chair or table or whatever is around you and lean over this firm object. You can perform the chest thrusts on yourself.

4. **Chest Compressions - Cardio Pulmonary Resuscitation (CPR)**

4.1 If no response and no breathing start CPR (30 compressions : 2 breaths).

4.2 Lay the victim on a firm insulated surface, inside shelter if possible, to enable some of the bulky clothing to be removed. Kneel alongside the victim, locate the lower half of the breastbone, measure two fingers upwards, place the heel of one hand on the centre of the breastbone, cover the hand with the heel of your other hand, and lock your fingers together.
4.3 Position hands in the centre of the chest.

4.4 Firmly push down 5cm on the patients chest 30 times.

4.5 Tilt head, lift chin and give two breaths into patients mouth. Continue with another 30 chest compressions.

4.6 Keep going until higher help comes and takes over, you are exhausted or victim starts breathing and becomes conscious. Place in recovery position (Section 6) always being aware of vomiting, heat loss and signs of trauma. When resuscitation is successful, the carotid pulse will return and colour will improve in the victim’s cheeks and lips.
Apply CPR

**DRS ABC**

- **D**
  - Dangers?
  - Consider moving casualty

- **R**
  - Responsive?
  - Send or radio for help

- **S**
  - Shelter for victim & rescuer

- **A**
  - Open airway
  - Stabilise head/neck

- **B**
  - Breathing?
    - **NO**
      - No airflow at mouth
      - Go for help if alone
    - **YES**
      - Normal or Noisy
      - Recovery position if unconscious

- **C**
  - 30 chest compressions
  - 2 breaths
  - CPR 30:2
  - Open airway

-if trained & if available attach AED
 (see section 5)
4.7 Remember to complete a primary and secondary survey before placing the casualty into the recovery position. Keep checking ABC.

ONE RESCUER

TWO RESCUERS

5. Automatic External Defibrillator (AED)

THE AED IS LOCATED IN THE FIRST-AID ROOM AT SB.

Safety

• Follow the machine instructions as to Analysis and whether to shock the patient
• Shout ‘stand clear’ and ensure no one is in contact with the patient or on any conductive surface touching the patient prior to each DC shock
• Do not defibrillate in a moving vehicle
• Do not defibrillate in an explosive environment or too close to an oxygen source.
• Do not defibrillate when telephones are within 1.5m of a patient.
• Do not defibrillate patients under 30kg if using an AED
• If no shock advised and you can not feel a pulse commence CPR
AED Algorithm

AED Assesses rhythm

Shock advised
1 shock
Immediately resume CPR 30:2 for 2 minutes

No shock advised
Immediately resume CPR 30:2 for 2 minutes

Continue until Advanced help arrives, the victim revives or the rescuer cannot continue

Attach AED

Open airway

CPR 30:2
2 breaths

30 chest compressions
6. Recovery Position

6.1 If the victim resumes satisfactory breathing as a result of Resuscitation, the rescuer should continue to help maintain an open airway. The airway of a victim who is breathing spontaneously is at risk of obstruction by the tongue and inhalation of vomit and mucous. Therefore, the main objective of the recovery position is to place the victim in a safe stable position, keep the airway open and allow the drainage from the mouth.

6.2 Some compromise is needed when positioning the victim depending on the factors such as injuries. There are many different versions of the recovery position; the following is one example.

6.3 Kneel alongside the casualty facing their chest. Place the arm nearest you horizontally at right angles to their body or above their head. Bring the casualty’s other arm across their chest, bend their far knee to bring the upper leg at right angles to their hip. Keep their other leg (nearest you) straight.

6.4 Grasp their knee with one hand, support their head with your other hand and roll them towards you onto their side. Supporting their body against your knees, adjust their head to ensure airway is open (maximum backward tilt, with face slightly downward). Place their uppermost arm at right angles to their body, with elbow bent to support the upper body. Bend their uppermost knee at right angles and bring their thigh well forward to support the lower leg. Check final position is stable and no more than half their chest is in contact with the ground. Insulate where possible.
6.5 If an injury prevents the casualty from being placed in the full recovery position, then props may need to be used to enable the casualty to be placed in as near a recovery position as injuries permit. Always have the patient facing you and never leave them alone. Continue, always to monitor their vital signs until the casualty can be handed over to medical staff. All recorded information should then be handed over with the casualty.

6.6 The following seven principles should be adhered to when managing the unconscious spontaneously breathing victim:

1. The victim should be in as near a true lateral position as possible, the head positioned to allow free drainage of fluid

2. The position should be stable and safe

3. Any pressures on the chest that impedes breathing should be avoided

4. It should be possible to turn the victim onto his/her side and return to the back easily and safely, and having particular regard for the possibility of spinal injury

5. It should allow good observation of, and access to the airway

6. The position itself should not give rise to an injury to the victim

7. Keeping the victim on his/her side ensures they lose less body heat.
7. Bleeding and Wounds

7.1 Types of Bleeding

Wounds and injuries often result in one or more of three different types of bleeding. These are:

a. Arterial

Arterial bleeding is characteristically bright red in colour and spurts in time with the heartbeat. Depending on the length of time the casualty has been bleeding, the height of the spurting could be very dramatic. All arterial bleeding should be treated immediately after the airway has been cleared and breathing has been confirmed.

b. Venous

Venous bleeding, which is characterised by its much darker shade of red, flows in an oozing manner, its rate depending on the size of the vein severed.

c. Capillary

Capillary bleeding is characterised by a trickling flow, which often stops of its own accord.

7.2 Treatment of External Bleeding

Irrespective of the type of bleeding, the treatment for external bleeding is the same.

a. Check the wound for any foreign bodies (without disturbing any clots).

b. If there is no foreign object seen, apply direct pressure over the wound with your fingers, hand or whatever is necessary to cover the wound, attempting if possible to hold the edges of the wound together. This may be maintained by using steristrips or tape.
c Place a sterile dressing pad over the wound ensuring that the edges of the pad extend well beyond the edges of the wound. Secure the pad with a bandage.

d If bleeding is not controlled by the first dressing, then apply another dressing on top. Do not remove the previous dressing before applying the second as this might destroy any clotting that has occurred.

e If the bleeding is occurring from a site on a limb and no fracture is suspected, then the limb should be elevated and supported.

If a foreign body is present in the wound, then:

a Carefully remove any small foreign bodies from the surface of the wound, if they can be wiped off easily with a swab.

If the casualty has a large foreign body embedded in the skin never attempt to remove it. It may be plugging the wound, therefore restricting bleeding. Moreover the surrounding tissues may be injured further if it is pulled out.

b Make a ring pad from a triangular bandage, the diameter of the centre being just sufficient to fit over the foreign object.
c If the object is too tall to cover then place rolled up dressings either side of the foreign object.

d Secure the ring pad, or dressing with a bandage.

### 7.3 Summary

**External Bleeding**

- **Check for Foreign Bodies**
  - **No Foreign Body**
    - Direct Pressure (hold edges together)
    - Sterile Dressing
  - **Foreign Body Present**
    - Indirect Pressure (direct pressure around edges of foreign object)
    - Ring Pad

- Bandage
- Elevate

### 7.4 Internal Bleeding

a Blood coughed up from the lungs usually is bright red and frothy.

b Blood from the stomach may be darker ‘coffee grounds’ in colour since it is being acted upon by digestive juices, but in severe haemorrhage may look normal.

c Give the patient nothing, absolutely nothing, by mouth. You may moisten their lips with a damp cloth.

d If internal haemorrhage is even suspected from:
  - i External signs of a blow to the abdomen or chest
  - ii Profound unexplained shock
  - iii Tender areas in the abdomen
  - iv Board-like rigidity of the abdomen wall

**This is a serious situation. Advise base as soon as possible.**
7.5 Wounds of the abdominal wall without protrusion of organs

a  Keep the patient on their back with the knees bent, raise the head and shoulders and support in this position.

b  Do not give anything by mouth.

c  Cover wounds with sterile dressings.

7.6 Wounds of the abdominal wall with internal organs protruding the wounds

a  Keep the patient on their back with the knees bent, raise the head and shoulders and support in this position.

b  Make no attempt to replace organs, but cover the area with a large piece of lint or clean dressing, kept damp with saline solution only if temperature is above 0°C.

c  Keep the patient warm but avoid undue pressure to the abdomen.

d  Do not give anything by mouth.

This is a serious injury. Advise Base as soon as possible.

7.7 Small Wounds

Small wounds can be taped together with the steristrips or band-aids. Dry the edges of the wound, squeeze together, and stick the band-aid across the wound. You may need several to hold the cut together. Apply a sterile dressing over the top and bandage. For a larger wound, you can cut ‘steristrips’ from ordinary sticking plaster, and use them to pull the wound together.
7.8 Serious Infection of Wounds

Indications:

- Pain
- Swelling
- Redness, both local and spreading
- Temperature above 36.9°C (98.4°F). (Place the thermometer under the tongue for one minute - read. Make sure that the mercury has been shaken down before using).

If a serious infection is indicated, advise base as soon as possible.

7.9 Treatment of Wounds

a. Clean the wound with alcohol swabs and betadine antiseptic liquid. Dress the wound with a sterile dressing.

b. Give the patient one synemox tablet three times daily. All medication is given under direction of the SB medic. The medic will advise a drug regime. All drugs are to be recorded in the medical book.

7.10 Amputations

Contact Scott Base immediately for evacuation and treatment of the injury. Partial or complete severance of a limb would be the only time a tourniquet may be necessary, but should only be used as a last resort; that is, after attempting to control the bleeding by direct pressure. A tourniquet can only be placed around the thigh or arm above the elbow. Being placed anywhere else would prove to be ineffective. It should, however, be placed as close as possible to the stump, within the areas stated. An effective tourniquet can be made from a narrow triangular bandage or clothing, such as a belt, all of which will also need tightening once applied. The tourniquet should be tightened sufficiently so as to stop any further blood flow from the stump area.
Once applied, the casualty’s forehead should be marked with a ‘T’ and a label attached to the patient stating the time the tourniquet was applied. The label should be attached to the patient’s outer clothing, preferably to a shirt or coat. As a further precaution, when handing the casualty over to another person inform the recipient that the casualty has a tourniquet on.

**7.11 Surgical Stapler Kits**

If required to use the surgical stapler follow the instruction provided. Contact SB immediately.

### 8. Shock

Shock is a condition of severe depression of the vital functions of the body. It may be caused by: **injury, fatigue or fear**

Its onset may be immediate or delayed; however, you must assume that all casualties are in some form of shock and unless treated may result in the death of your casualty. **If you do not wish to kill your patient then treat for shock** at the scene of the accident. Don’t walk them back to camp, even if they say they are okay.

#### 8.1 Signs and Symptoms of Shock Due to Injury

The absence of signs and symptoms may give rise to a false sense of security or lead to the effects of the injury being underestimated.

Symptoms usually develop gradually and may not be noticeable immediately after the accident. Skin may be pale, cold, moist or clammy. Eyes vacant, lack-lustre, pupils larger than normal. Breathing shallow, irregular or rapid. Nausea, faintness or even unconsciousness. Pulse becomes weak and rapid alternatively, or absent in extreme cases.
8.2 Treatment for Shock

Keep injured person lying flat with head on one side to facilitate vomiting, and with feet 10 to 30cm higher than the head, except when a fractured skull is suspected.

Keep injured person not only warm enough to prevent chilling, but enough to maintain body heat. Do not overheat and cause sweating (the patient may not be able to judge temperature).

If they are thirsty, give a little warm water or tea unless internal haemorrhage is suspected. Then give nothing. **Do not give alcohol in any circumstances.**

If the patient must be moved, this must be done by stretcher. If the patient is not seriously injured, but suffering from shock, allow 48 hours complete rest before resuming normal activities.
9. Cold Injuries

9.1 Hypothermia
A general chilling of the body, leading to a progressive fall in the internal body (core) temperature.

**Description**
In normal conditions the inner core (chest and brain) of the body is maintained by the brain’s thermostat (the Hypothalamus) at a constant 36.9°C (98.4°F).

External temperatures need not be extreme, as deaths have occurred at temperatures well above freezing. Wind vastly increases the chilling effect of cold. Wetness and fatigue also lessens the victim’s ability to protect him/herself.

The first response to the cold is constriction of the blood vessels near the surface of the skin and, later those deeper under the surface. The effect of this constriction is to lower the amount of heat being transported by the blood to the skin surface and, therefore, the surface temperature lowers even further. The cool shell of the skin now acts as an insulating layer for the deeper core areas of the body. Skin temperature may drop to almost as low as that of the surrounding environment whilst the body’s core temperature remains unchanged at its normal 36.9°C.
9.2 Signs and Symptoms

Party members should always be aware of the six ‘Fs’ a casualty from hypothermia is likely to exhibit. These are:

**Fatigue:** Exhaustion precedes the development of hypothermia in almost all cases. The tendency to ‘press on’ has led to many unnecessary deaths.

**Fits of Shivering:** Shivering is the natural body function to produce heat. In doing so, however, the body requires a great deal of energy, thus causing the patient to become more fatigued.

**Funny Speech:** Speech will become thick, slurred and incoherent, as if the patient was drunk.

**Funny Behaviour:** This may include irrational acts, such as taking off clothes, abandoning equipment and violently resisting any attempts of assistance. The patient may also have lapses of memory and hallucinations.

**Falling:** Often resulting from cramps and poor coordination of the arms and legs.

**Fainting:** Followed by stupor, which is accompanied by a slowing of the vital functions. If allowed to remain unchecked, coma and cardio-pulmonary arrest will occur, followed by death.

9.3 Treatment (Hypothermia)

The essential and immediate treatment is to prevent further heat loss by insulating the body.

a If any member of the party shows signs of developing hypothermia get them into shelter immediately.
b Put them into a sleeping bag and heat directly the major artery site, ie groin, core, armpits and alongside the neck by handwarmers or anything warm. If using handwarmers or hotwater bottles don't apply them directly to the skin wrap them in clothing first. Do not warm the patient with body to body contact. Heat the air that is breathed by the patient. Light a Primus in the tent but be careful of fire and CO. Keep the patient horizontal while rewarming, unless other more serious injury dictates otherwise.

c Food and warm drinks should be given to the conscious casualty, as well as the remainder of the party as they, themselves, may be already suffering to some degree from hypothermia and/or exhaustion. Raro from the food box is the best drink. Use the sugar or chocolate from the food box. If the patient apparently recovers and insists that they are quite capable of going on, they should be treated with suspicion and great care. If in a tent, the patient (if serious) should remain in the sleeping bag for several days before resuming normal activities. If the patient must be removed, then this must be done by stretcher.

d The patient should be monitored at all times.

The insulation around the patient must be maintained.
Patient packaging: Hypo wrap

1. The Hypo wrap can be completed without a stretcher and back board.

2. Place the outer plastic wrap and closed cell foam into the stretcher.
3. Place the hypo blanket into the stretcher and open out

4. Place the patient on top in the backboard

5. Wrap the patient in the initial layer

6. Fold over the hypo blanket and secure
7. Fold over the outer wrap, start with the feet
8. Finish folding the outer wrap
9. Secure with stretcher straps

9.4 Risk of Frostbite
A casualty who is unconscious or in shock requires extra heat to the extremities, particularly to the feet, to prevent frostbite and freeze injury. But first prevent further heat loss by insulating the whole body. Always investigate the feet. If they are not frozen, change into dry socks and use some form of additional heat. (e.g. Handwarmers)

If the feet are frozen, treat for frostbite. Never assume that the feet will stay warm because they have an adequate type of footwear. The feet may have been at the point of frostbite at the time of injury.

9.5 Description of Frostbite
Frostbite is caused by tissue freezing. Areas most at risk are the extremities (i.e. the hands and feet), and exposed parts of the body (e.g. ears, nose and face).
Freezing of the tissue occurs when an extremity loses heat faster than it can be replaced by the circulating blood or it may result from direct exposure to extreme cold or high wind.

Frostbite is divided into two broad categories depending on the degree of injury incurred. These are superficial frostbite (also known as frostnip), which involves the skin and/or the immediate tissue beneath. The second form of frostbite is deep frostbite, which not only involves the skin and tissue beneath but also the deep layers extending to the bone.

**Note:** Identification of superficial and deep frostbite may be difficult prior to rewarming.

### 9.6 Superficial Frostbite (Frostnip)

**Signs and Symptoms (pre-thaw)**

a. Uncomfortable sensation of coldness, followed by numbness and skin anaesthesia.

b. Skin turns red, then pale or waxy-white.

c. Skin becomes cold and frozen on the surface, but remains soft and pliable when *gently* pressed.

**Treatment**

Only superficial frostbite can be treated effectively in the field, sufficiently for the person to be able to resume normal work. If noticed promptly it can usually be treated by the firm, steady (no rubbing) pressure of a warm hand or the blowing onto it with one’s breath. Superficially frostbitten feet are best treated by removing the patient’s footwear the moment there is any suspicion of danger and rewarming them immediately on a companion’s abdomen,
whilst remaining protected from the wind during the process. After thawing is complete put **dry socks** on the affected feet and replace footwear loosely, to ensure that adequate circulation and warmth is maintained.

### 9.7 Deep Frostbite

**Signs and Symptoms (pre-thaw)**

a. Waxy-white skin

b. Toes and fingers become solid (like a piece of chicken taken from the freezer). They feel wooden and the skin cannot be rolled over the bone.

c. Huge blisters form, usually between the third and seventh day. These finally dry up, usually, blacken and slough off leaving an exceptionally sensitive red thin layer of new skin.

d. Swelling of the entire hand, or foot, which limits the mobility of the injured toes or fingers.

e. Blue, violet or grey (worst) discoloration.

f. After two days, severe throbbing and shooting pains.

**Treatment.**

Contact Scott Base for professional advice.

Rewarming should not be attempted in the field if there is any possibility that the affected part may become refrozen. In such cases, keep the affected part frozen until it can be rewarmed rapidly under suitable conditions.
Refreezing invariably leads to gangrene.
Contrary to popular belief a strong person can walk a long way on frozen feet without further injury. Remember - if a frozen foot or toe is rewarmed on the trail the patient immediately becomes a stretcher case. Immediate evacuation to McMurdo Hospital should be arranged.

If thawing has commenced in the field, then:

a. Move the patient to a heated shelter
b. Loosen or remove all constrictive clothing from around the frozen area.
c. Protect the frozen area from additional exposure and sources of trauma.
d. Attempt to maintain and/or restore core temperature by using protective clothing, hot drinks, etc.
e. Commence a course of penicillin - one tablet three times a day. If allergic to penicillin, then one Erythromycin six hourly.
f. Commence one Asprin daily
g. Treat as a stretcher case.
h. Evacuate to McMurdo as quickly as possible.

Rapid Rewarming
McMurdo is the best place for treatment but if evacuation is impossible, and providing there is no risk of refreezing, then the following actions should be carried out, but only after checking with base.
a Heat water in a vessel (large enough to accommodate the entire affected part without touching the sides) to 42-43°C (hot enough so that the hand can just tolerate it). This temperature is critical.

b Whilst the water is being heated warm the entire body of the patient as much as possible (hot drinks, cuddling etc). Keep them constantly warm throughout treatment.

c Remove all clothing from the injured part and place the injured part in the warm water, which has been carefully checked. If a large enough container cannot be found to hold the injured part completely immersed, the part should be wrapped in towels and warm water constantly poured over it.

d Keep the injured part immersed, adding warm water and stirring the water to maintain a constant temperature until the digital tips (ends of fingers or toes) turn pink or burgundy red. This takes approximately 20 minutes to one hour. When adding water, take care that the water is not more than 44°C and is not poured too close to the injured part.

e Severe pain usually accompanies this process, but is often bearable. If pain relief is required administer two Panadol tablets and, if necessary, a 5mg tablet of Valium, unless the casualty also has a head or internal injuries or is above 10,000 feet.

After rewarming is completed, give no further pain relief except Panadol which can be given at the rate of two tablets four-hourly when necessary.
DO NOT:

• use the rapid thaw method if the affected area has previously been thawed.
• rub the frozen part before, during, or after rewarming.
• rub the affected part with snow or thaw it in cold water.
• expose the affected area to an open fire, really hot water or any other intense form of heat.
• use the patient’s frozen limb to test the temperature of the water.
• burst blisters.
• cut off any tissue - nature will effect its own removal.
• give alcohol or cigarettes.
• apply ointments, lotions or greasy dressings.
• cease to keep patient warm.
• thaw if refreezing is at all likely to occur

Post Thaw Treatment

a  Protect the thawed extremity with sterile, soft, fluffy dressings, separate the toes and fingers with cotton wool. Wrap the whole part lightly with gauze bandages. Do not change dressings unless they get dirty. If changing the dressing use Betadine to clean the area by dabbing - never rub.

b  Elevate the injured limb(s).

c  Commence antibiotic treatment.

d  Provide a high protein-calorie diet.

e  Keep the patient absolutely still, lying down.

f  Evacuate back to McMurdo as quick as possible.
9.8 Prevention

**Frostbite is almost always avoidable.**

a  A ‘buddy system’ should be established to observe any sudden blanching on the face or ears of a companion.

b  Any sudden blanching or tingling of the face, ears, feet or hands should be treated by warming immediately.

c  Face and extremities should be exercised periodically to detect areas of numbness and to improve circulation.

d  Use liberal applications of lip and nose protectors. The greasy layer acts as an insulator.

e  Dress intelligently to maintain general body warmth. In cold, windy weather protect the face, head, neck and hands. Enormous amounts of body heat can be lost from these areas despite ample protection elsewhere.

f  Socks and boots should fit snugly, with no points of tightness. In putting on socks and boots, carefully eliminate all wrinkles in the socks.

g  Always carry extra socks and mittens in your pack.

h  Disassemble CW boots, knock off ice and dry the inners every night.

i  Wear mittens instead of gloves in the extreme cold, except when doing specialised work such as photography or surveying where great manual dexterity is required for short intervals of time. In these situations wear a mitten on one hand and a glove temporarily on the other if possible. If more finger dexterity is required, use
polypropylene gloves or cover all metal parts which must be touched with adhesive tape. Remove thumb and hold a fist in the palms of the mitten occasionally to regain warmth to the whole hand. Put hand warmer inside mitt to rewarm fingers.

j Do not wash hands or face too thoroughly when living under rough weather conditions. Tough, weather-beaten faces and hands resist frostbite more effectively.

k Do not exercise too strenuously in extreme cold, particularly at high altitudes. Very cold air brought too rapidly into the lungs will chill the core of the body.

l Avoid perspiration under conditions of extreme cold. Perspiration evaporates, causing the body to chill.

m Eat plenty of the right sort of food to produce maximum output of body heat. Diet in cold weather should tend towards fats, with carbohydrates next and proteins the least important.

n Avoid the following which influence the occurrence of frostbite:
- smoking
- alcohol
- excessive coffee and tea drinking
- excessive fatigue
- improper or inadequate eating habits
- unnecessary medication
- fuel spillages, especially onto bare skin

o All personnel should drink two to three litres of water per day.

p If you become frostbitten, keep calm. Panic or fear will result in perspiration and shock, both of which will aggravate the condition.
9.9 Immersion Foot

Immersion foot is a tissue injury of the feet (or hands) resulting from prolonged exposure to wet cold at temperatures above freezing. Injuries of this nature have occurred due to the wearing of damp footwear for long periods whilst driving tractors and motor toboggans.

**Signs and Symptoms**

- a. Area becomes cold, swollen, waxy-white and mottled with burgundy-to-blue splotches.
- b. Skin becomes numb and deep sensation is lost.
- c. Movement of the affected area becomes difficult.

**If allowed to continue untreated:**

- d. The area becomes red, hot and swollen.
- e. Blisters appear.
- f. Constant throbbing and a burning sensation is experienced.
- g. Numbness is aggravated by heat and relieved by cold.

**Treatment**

- a. Remove wet footwear. Gently and rapidly rewarm the affected part by immersion in warm water (about 40°C).
- b. Keep the patient lying down, with the affected part exposed and elevated, in a warm room.
- c. The injury must not be rubbed or massaged.
- d. Blisters should be kept clean and dry - no ointments.
e  Two Panadol tablets four-hourly may be administered if required, for pain.

f  Evacuate to McMurdo Hospital.

**Prevention**

a  Feet should be checked frequently during wet cold operations.

b  Feet should be kept warm and dry by wearing protective footwear.

c  Footwear should not be constrictive.

d  Footwear should be cleaned and dried at every opportunity.

e  After getting wet, feet should be dried as soon as possible. They can be warmed by the hands. Foot powder should be applied and dry socks put on.

f  In the field, extra pairs of dry socks should be carried next to the abdomen under the shirt. Wet socks can be dried by placing them next to the abdomen, either inside or outside the shirt.

g  If it is necessary to wear wet socks and footwear for any length of time, then the feet should be exercised at regular intervals by wriggling the toes and bending the ankles.
10. Altitude Sickness

10.1 Definition
Altitude sickness (also called Acute Mountain Sickness or AMS) is a range of symptoms caused by the body not adapting to the reduced availability of oxygen with altitude. These symptoms may range from a minor lethargy to death so any symptom must be treated with caution. Anyone can get altitude sickness; it is not related to physical fitness. Fit individuals may be more liable to it by ascending faster and being more active at altitude. It gets more common with greater altitude. Healthy individuals may develop symptoms as low as 2500m. At over 3000m 75% of people have mild symptoms of Acute Mountain Sickness (AMS). The symptoms usually start 12 to 24 hours after arrival at altitude and begin to decrease in severity around the third day. Mild AMS does not interfere with normal activity but communicate that you have these symptoms to others so you can be monitored.

Parties in Antarctica can be exposed to altitudes where acclimatisation problems occur (e.g. on the Polar Plateau; South Pole is 2,834m, Concordia 3,233m, Vostok 3,488m) with several areas over 4000m. There are considerable areas of the Transantarctic Mountains above 3000m and a major area of activity and altitude problems is Mt Erebus at 3794m. In polar areas due to the thinner atmosphere altitudes have less pressure than their lower latitude equivalents, e.g. 3000m (10,000ft) at the equator equals 2600m (8,500ft) at the pole.

Altitude problems can be greatly increased by rapid ascent to altitude (e.g. by aircraft) and sufficient acclimatisation must be allowed for. The critical factors seem to be the rate of ascent and the sleeping height increase each night. When flying into a high
sufficient acclimatisation must be allowed and minimum work planned for the first few days.

10.2 Altitude Sickness Symptoms

Note some of these symptoms can indicate other conditions.

**Headache:** especially if occurs at night and still present in the morning and persists despite treatment, an early warning sign, aspirin and oxygen may help but descent 300-500m from sleeping height will usually help.

**Insomnia:** difficulty in falling asleep and frequent wakening, all sleeping medication should be treated with caution at altitude, oxygen may help, and DIAMOX may help where periodic breathing is occurring i.e. 4 breaths followed by up to 15 seconds with no breath when sleeping.

**Lassitude:** weariness, indifference and fatigue; distinguished from exhaustion in that rest and fluids don’t overcome lassitude. May then progress in 12 –24 hours to unconsciousness. If associated with ataxia (loss of coordination), lassitude becomes a crucial sign to recognise and oxygen and descent are required.

**Loss of Coordination** (Ataxia): Caused by oedema of the brain (swelling) and low blood oxygen, which causes coordination loss. Test for ataxia if any other symptoms of altitude sickness are present. Test by getting the person to walk a straight line drawn on the snow putting their feet with heel to toe touching, if mildly ataxic then will sway but walk the line for 3-4m, if moderately ataxic will step off line, if seriously ataxic will fall over.

**Peripheral Oedema** of the eyes and face. Swelling can occur in face and hands and occasionally feet, often worse when waking up. Check for any other symptoms of altitude sickness. Can be treated with descent or diuretics if no other problems. Needs to
be monitored in relation to effects on vision or constriction of hand circulation e.g. with rings.

**Pulmonary Symptoms:**

**Cough:** Dry cough with exertion is not uncommon in cold dry climates, however if it persists with severe breathlessness on exertion or at rest suspect altitude problems. Wet cough, only when the problem becomes more advanced will pinkish or rusty coloured sputum appear, the problem is serious at this stage and weakness will increase.

**Shortness of breath** on exertion or at rest suspect altitude problems

**Fullness or tightness** in chest suggests early Pulmonary Oedema (see 10.3)

**Irregular breathing,** i.e. periodic breathing of 4 breaths followed by up to 15 seconds with no breaths at night, is common at altitude in absence of other symptoms is not usually a problem

**Gastrointestinal Symptoms:**

**Loss of appetite** (in isolation as a symptom is ok but in combination with headache and insomnia is serious, good appetite usually indicates acclimatisation)

**Nausea** (quite common and will subside with acclimatisation)

**Vomiting** (more serious than nausea especially in combination with headaches or irregular breathing, evacuate to lower altitudes, ‘flu’ symptoms or food problems may also cause by itself, dehydration from vomiting is a serious problem again evacuate)

**Reduced urine output** Can also be caused by dehydration but it is an ominous sign at altitude. Regardless of cause 6-8 litres of intake per day is required. If you are passing what you pass at sea level it
is too low for altitude. The lighter the colour and the more frequent the urination the better the acclimatisation.

**Weakness**

*Legs feel ‘heavy’*

### 10.3 Pulmonary Oedema
(Sometimes called High Altitude Pulmonary Edema, HAPE)

This is an extremely serious condition, it is caused by accumulation of fluid in the lungs, and it can develop very rapidly. Early symptoms are marked breathlessness on exertion, breathlessness at rest and decreased exercise capacity. Pulse and respiration rates increase (e.g. respiration of 26 breaths / minute at rest can occur). Pulmonary oedema is usually associated with other symptoms of altitude sickness, especially headaches, lassitude and reduced urine output. Can be associated with Cerebral Oedema in serious cases. Fluid accumulation in the lungs can produce ‘rales’ sounds, you need a stethoscope to hear properly but may be heard by ear in seriously advanced cases. In serious cases there is rust coloured or pinkish sputum and ‘cyanosis’ bluish colour of lips and fingernails. **Immediate descent is the only treatment.** Oxygen will assist the patient. Acetazolamide (DIAMOX) may be useful in prevention but is not a substitute for descent. The same applies to pressurisation in GAMOW bags which helps evacuation but isn’t a cure. Once someone has had Pulmonary Oedema they are more susceptible in the future.

### 10.4 Cerebral Oedema
(Sometimes called High Altitude Cerebral Edema, HACE)

The accumulation of liquid in the brain occurs usually from two to four days after going to altitude and is very dependent on sleeping
elevation. Headaches, vomiting, ataxia, lassitude and reduced urine output can be the symptoms. Often associated with pulmonary symptoms also. There is high variability in consciousness and hallucinations can occur. Oxygen will assist the patient. **Immediate descent is the only treatment.** GAMOW bags may assist in handling of a patient for transport.

Once someone has had Cerebral Oedema they are more susceptible in the future

**10.5 Prevention**

It is usual in Antarctica to fly to altitude thus raising the chance of altitude sickness. On Mt Erebus (3794m) having a camp at the Fang Glacier (2800m) with at least two nights acclimatisation seems to have lowered the problems noted during the 1970’s. Unfortunately because of the scale of the area it is usually not possible to have acclimatisation camps for Polar Plateau work.

- If possible don’t fly to sites of 3000m or greater but walk up.
- If flying to altitude do no exertion for the first 24 hours at a minimum.
- Once over 3000m limit your net gain (sleeping height) should be no more than 300m per night.
- It is best to go higher than a sleeping altitude during the day i.e. don’t sleep at your maximum altitude for the day. “Climb high, sleep low.”
- For every three nights of ascent above 3000m take an extra night to sleep at the same altitude.
- Stay properly hydrated, 6-8 litres / day, till urine loses yellow colour
- Avoid alcohol, sleeping tablets, pain medication and tobacco.
10.6 Altitude Sickness Medication

Medical advice must be sought prior to ascent to altitude. There are no hard and fast rules and the decision to take altitude medication is an individual’s choice after medical advice. These medications are not part of the standard issue Field First Aid Kit. The SB medic will organise the required medication.

Acetazolamide (Diamox) used in a preventative situation.
- Dose usually 250mg twice daily starting one or two days prior to ascent and continuing for three days once the highest altitude is reached.
- Side effects of Acetazolamide include tingling fingers, toes and face, excessive urination and occasionally blurring of vision.
- It is worthwhile an individual taking a trial course before ascending to be sure that a severe allergic reaction does not occur at a remote site where it cannot be treated.

Dexamethasone is another option as a preventative.
- Dose of 4mg twice a day beginning at time of ascent.
- Take for several days.

Nifidipine may be helpful for high altitude pulmonary oedema by decreasing pulmonary artery pressure.
- Dose of 20mg 6-8 hourly.
- As a blood pressure lowering agent blood pressure and dizziness must be watched.

Frusemide may be helpful for pulmonary oedema if the lungs are full of fluid but in the situation of dehydration it could lead to collapse and low volume shock.

If altitude sickness develops going to lower altitudes is of fundamental importance.
Oxygen would be helpful as well as using Diamox and/or Dexamethasone.

10.7 Key Points

- Anyone can get altitude sickness, it is not related to physical fitness.
- When flying into a high site (2500+) sufficient acclimatisation must be allowed and minimum work planned for the first few days.
- It is the sleeping altitude that is critical.
- **Treat all symptoms with caution.** (they can be confusing and there are possible other causes) Don’t go higher until symptoms decrease.
- **Prevent Dehydration.**
- **Avoid** tobacco, alcohol and other depressant drugs including barbiturates, tranquillisers, sleeping pills and opiates.
- **Oxygen:** For headaches, pulmonary or cerebral oedema, 6 litres / minute initially back to 2-3 litres when improved. Don’t delay descent to give oxygen.
- **Acetazolamide (DIAMOX):** For prevention starting one or two days before ascent but there are side effects (tingling fingers etc) and caution is needed. Diamox will only be issued to a party in special circumstances e.g. SAR and after medical advice. Note: will not treat the more severe symptoms of altitude sickness.
- **GAMOW Bag:** For treatment of patient by increasing the air pressure, it can create a patient 'atmosphere' equivalent to 900 to 1500m lower than actual altitude, but descent still required.
- Descent is the best cure
11. Burns

11.1 Description

Any burns in the field must be treated as serious. Major burns result in rapid loss of blood plasma, leading to severe shock, which in turn may cause a loss of life. Treatment and evacuation back to base must be considered urgent.

Minor burns may be treated in the field without evacuation; however, as the healing process is very slow in Antarctic conditions, the risk of infection should be considered as high for several weeks.

The extent of the burn can be calculated by a method called the ‘rule of nines’. This rule divides the body into 11 equal parts each of 9% with the remaining 1% representing the genital area (see diagram). For an adult, anything more than 10% is considered to be a serious burn, irrespective of the depth of the burn. Two exceptions to this are any burns to the face or genital areas, which are always considered to be serious.

11.2 Treatment

Because infection is such an issue it is very important to have good personal hygiene when treating a patient with burns. You should wash your hands well, wear medical gloves when treating burns and keep all dressings sterile.
a Burns can be extremely painful, especially when exposed to air. Take the heat from the burn immediately by cooling the area with flowing cold water or snow for at least 15-20 minutes. Continue until pain ceases. Remove, at the same time, any items such as watches and rings that might either retain heat or be constrictive within the burn area.

b Before administering any treatment contact SB for medical advice. For minor burns cover with a sterile dressing. For a major burn cover with a paranet dressing and then cling film. DO NOT remove any loose skin or apply cream. Keep the wound as clean as possible.

c Give fluids in small amounts and check that the patient is urinating normally.

d Treat for shock.

e Give antibiotics. Synmermox six-hourly. If allergic to Penicillin, then give one Erythromycin, six hourly.

f If redressing the burn, avoid touching or disturbing any blisters or the burnt area. Infection of the burn is the biggest risk.

g Advise Base immediately.

12. Fractures and Dislocations

A fracture is a broken or cracked bone. All fractures, if mishandled, may result in further tissue damage or damage to the surrounding major organs. The fracture may be directly over the point of impact, or at a distance from the point of impact. In the latter case, the force of the impact is transmitted from one point to another, eg falling on an outstretched arm may cause the collarbone to fracture. It is important therefore to re-examine the casualty after the primary
treatment has been completed to ensure that all injuries have been detected.

There are three broad types of fractures:

12.1 Closed Fractures
The skin surface around the fracture remains unbroken.

12.2 Open Fractures
There is either a bone protruding through the skin or there is a wound leading down from the skin surface to the fracture site.

12.3 Complicated Fractures
The fracture is further complicated by affecting a major organ (which includes nerves and blood vessels).

Signs and Symptoms
a  Pain - at the site of the break.
b  Open wound - due to bone protruding from the wound.
c  Discolouration of the skin (i.e. blueness) or bruising
d  Loss of movement - the casualty will be unable to move the affected part in the normal manner.
e  Swelling - due to blood and fluid leaking into the tissue; this might later mask the true extent of the injury.
f. Deformity - the affected part does not look normal/natural or is different from its comparative opposite.

g. Irregularity - loss of continuity to the bone surface, eg a depressed fracture of the skull.

h. Unnatural movement - the affected part is capable of making movements, which normally it would be unable to do. This should not be tested for.

i. Crepitis - a grating noise caused by the two bone ends rubbing against each other. This also should not be tested for.

j. Tenderness - point tenderness means that there is one specific point which gives excruciating pain when gently pressed. When the bone is tapped in the longitudinal axis of the suspected fracture bone, this produces a mild, but sharp pain. Example - for a suspected fracture of the ankle tap the heel gently on the bottom, towards the knee.

k. Shock - Section 7 page 21.

**12 Treatment**

Specific fractures require specific forms of treatment, however, there are some general rules of treatment which apply to all fractures.

a. Treat any respiratory problems, severe bleeding, unconsciousness and shock before fractures.

b. When splinting the fracture pad un-natural and natural gaps. Splint the limb in the position found and immobilise the joint above and below the fracture sight.

c. After immobilising the fracture support the limb before moving the patient. Don't leave the limb exposed to the elements and check for frost nip/bite frequently.
d  If clothing cannot be removed (if necessary) without aggravating the pain or necessitating movement of the limb, then cut in a straight line over the fracture, sufficient enough to get your hands over the fracture site. **Do not rip or cut more than you have to. It might be needed to protect your casualty later.**

e  Constantly check the circulation of the fractured limb. The circulation may cut out at any time due to swelling. The part of the limb beyond the fracture will become cold, white or mottled, and possibly paralysed. Check the colour under the finger or toe nail. This normally appears white when pressure is applied to the nail. When the pressure is released the colour under the nail should become pink if circulation is present, and the part feels warm. If there is no circulation below the injury call Scott Base for immediate evacuation. If circulation is lost after treating the injury, loosen all the bandages and splints, (except for the figure of eight) and elevate the part if the fracture allows, until circulation returns. Then re-bandage and re-splint. (For figure of eight see the relevant section on broken thighs. Section 11.12.

f  Evacuate back to Base and hospital for x-rays and treatment.

g  Open fractures - if the bone is not protruding through the surface of the skin then treat as you would for a wound (refer Section 7.9). If the bone is protruding through the surface then treat as you would for a wound with a foreign body (refer Section 7.2 page 18). Wounds should always be attended to first, before the fracture itself.

**12.4 Fracture of the Spine**

Immediately immobilise the patients neck. If the neck is out to one side align the neck back into the neutral postion with controlled movement and pad behind the head (3cm) once aligned. The patients head and neck need to be kept in-line until they are firmly secured on a backboard.
**Signs and Symptoms**

a. Severe pain in the neck or back accompanied by a ‘feeling of being cut in half’.

b. The casualty cannot open or close fingers, or grasp your hand if the neck is broken. An inability to move the feet or toes may indicate a fracture lower down the spine.

c. Loss of sensation. This can be tested by touching the patient with a sharp object (e.g., safety pin) below the suspected fracture site and asking them to describe the sensation (dull/sharp/nothing at all).

d. Irregularity of the spine may be felt on gentle examination.

e. A conscious casualty with a spinal injury is, often, immediately aware of having sustained a fracture of the spine or express a sixth-sense feeling about it.

f. Midline point tenderness

If any of the above symptoms is even suspected do not, if at all possible, move the casualty until medical aid arrives. You could always erect a tent or shelter over them.

**Treatment**

Immovilise the patients neck. Use a neck collar if one is at hand or improvise with clothing. Contact Scott Base to get further information on fitting a neck collar.

a. **DO NOT** allow the casualty to move.

b. **DO NOT** allow the casualty to eat or drink.

c. Keep them warm and treat for any other injuries, as best as possible, but not forgetting shock.
d Pad the sides of the casualty, to prevent them rolling, especially the head. If possible, make a cervical collar out of a rolled up closed cell foam mat or some other firm pliable material.

e Place some padding between the thighs, knees and ankles. Apply a figure-of-eight bandage around the ankles, followed by a broad bandage around the thighs and knees.

f Constantly monitor all vital signs.
12.5 Movement of Casualty

If it is absolutely necessary to move the casualty from an area, then you require a minimum of five people (preferably eight). The team must have a recognised leader and the remainder work without question on the signals of this one person.

To move the patient to safety or shelter use the log roll to move them onto a backboard or blanket for transport.

Throughout this procedure the patient’s body needs to stay inline as much as possible and there should be little sagging. If at any time during the procedure anybody is unclear on their role then stop and revisit the procedure. Everybody is to follow the instructions of the leader once the procedure is underway. There needs to be at least 5 people for the log roll and 2-3 people to move the backboard/blanket into place.

Preparation:
Place some form of insulation (blanket or foam mat) on the backboard first. Be aware this will move around on the backboard so secure the patient before moving them. Make sure there is enough blanket tucked under the body that it will come up around the body on both sides when lifted.

The backboard or blanket should be on the opposite side of the body to the personal and ready to be moved under the body once the log roll has been performed.

Log Roll:
1. One person is to be positioned at the head of the patient. Once they take up this position they will stay there till the end of the procedure. This person also takes on the responsibility of talking to the patient and the leadership role. Immobilise the head and keep the c-spine in line. Place hands either side of the head with the index finger resting below the jaw and the remaining fingers supporting the neck.
2. A 2nd person is supporting the shoulders and chest. Place one hand on the shoulders and the other on the side of the chest.

3. A 3rd person is supporting the hips and top of the thigh.

4. A 4th person is supporting the thigh and knees. Some padding can be placed between the knees to keep them in line.

The team should position themselves next to the patient with their knees against the body. Once the team are ready in their positions and have a firm grip on the patient, the leader will give the call on 3, 1-2-3 roll. The backboard/blanket will be moved under the body as far as possible. Once the backboard/blanket is in place the leader will call to lower the patient on 3-2-1. It is important to maintain a stable spine throughout the process.

Packaging the patient on a stretcher will require a range of padding and strapping to secure the patient in order to move them to a safe destination. Moving the patient will require clear communication and monitoring. Shelter and transportation should be considerations made early in the process.

### 12.6 Skull Fractures

A casualty with a skull fracture may have any or all of the following:

a. Altered conscious state, often deteriorating over time.

b. The pupils may dilate or become unequal in size. Blurred or double vision.

c. There may be straw coloured discharge from either the ear, nose or mouth.

d. There may be obvious signs of a head injury. If in doubt, treat as a skull fracture anyway.
   - Thumping or pounding headache.
- Loss of balance and coordination.
- Loss of short term memory

**Treatment**

a. Treat for a spine or neck injury and immobilise the neck.

b. Check airways are clear and vital signs every two minutes.

c. Treat any wound present by using a ring pad over the wound.

d. If conscious, place the casualty (if possible) in a half-sitting position and provide support for the head and shoulders. If unconscious place the casualty in the recovery position (or as near as injuries permit).

e. Turn the head towards the injured side, if there is any straw-coloured discharge or bleeding. If the discharge is from the ear, cover with a sterile dressing.

f. Treat for shock (refer section 8).

g. **Constantly monitor and record vital signs.**

h. **Do not** give any form of pain killer.

i. **Do not** leave the patient alone.

j. If the evacuation is to be carried out by helicopter, ensure that the pilot is aware that flying is to be limited to a low altitude.

k. keep the patient warm and reassure them that everything is ok.
12.7 Jaw Fractures
Fractures of the jaw may be complicated by:

a  An obstructed airway, caused by bleeding into the lungs, tongue falling back, broken and detached teeth or swollen tissues in the throat, and

b  Inability to cough, which would allow blood or mucous to flow unimpeded into the lungs.

c  Jaw fractures can be associated with a head injury so treat for this.

Signs and Symptoms

a  Pain when moving the jaw.

b  Difficulty with speech.

c  Wound in the mouth.

d  Swelling and, later, bruising at the site of the fracture.

e  Irregularity along the underside of the jaw.

Treatment

a  Ensure that a clear airway is maintained by keeping the head forward whilst the casualty sits (if conscious) or with the head turned to the side whilst the casualty lies in the recovery position (if unconscious).

b  Control any bleeding and treat wounds.

c  Place a soft pad over the fracture site and ask the casualty (if conscious) to support the jaw, whilst holding the pad. If unconscious, rest the head on the pad.
Secure the pads with a narrow bandage around the head and tied on top of the casualty’s head. However, should the casualty wish to vomit, then the bandage must be quickly removed and the jaw supported. After vomiting, ensure the mouth is clear then replace the bandage.

e  Treat for shock.

12.8 Collarbone Fractures

Signs and Symptoms

a  The classic ‘picture’ of a casualty who has a fractured collarbone is one who is sitting holding on to the elbow of the injured side with the head inclined toward the injured shoulder.

b  Reluctance to move the arm on the injured side.

c  Swelling, deformity and pain over the fracture site.

Treatment

a  Place the arm of the injured side across the casualty’s chest so that the finger tips touch the opposite (unaffected) shoulder.

b  Place padding between the arm and the chest on the injured side.

c  Support the arm in a high arm sling.

d  Secure the affected arm by applying a broad bandage over the sling, tying the knot on the unaffected side.

e  Treat for shock.

f  Codeine 30mg tablet, six-hourly are usually sufficient for this type of injury. The patient should not exceed 300mg over 24 hours. Contact SB for further advice.
12.9 Arm or Hand Fractures

Signs and Symptoms
As for general signs and symptoms of fractures.

Treatment
For a fractured forearm or wrist splint along the palm side of the forearm and wrist. The splint should extend to the knuckles and curl the fingers over the end. Keep fingers uncovered so circulation can be checked. Place in a arm sling under clothing to protect from the elements.

A broken humerus will hang straight. Position the arm as you would for a broken collar bone and suspend the wrist in a sling around the neck.

If, however, the elbow cannot be bent, then:

a. Place the injured limb down the side of the casualty’s body with the palm facing inward and the fingers extended.

b. Place padding between the injured limb and the casualty’s body.

c. Secure the injured limb by applying three broad bandages around the upper arm (above or below the fracture if sited there), the forearm (above or below the fracture if sited there) and the wrist. The bandages are brought across the casualty’s body and tied off on the uninjured side.

d. Treat for shock.

e. 30mg Codeine tablets six-hourly is usually sufficient for the type of fracture unless the elbow is involved. An injury
involving the elbow may require one OxyNorm tablet six-hourly. **Contact SB medic.**

f  Check the fingernail beds for circulation state.

### 12.10 Fractured Ribs and/or Sternum

#### Signs and Symptoms

a  Sharp pain in chest region when deep breathing or coughing.

b  Irregularity of the ribs or breastbone.

c  Coughing up of bright red blood.

#### Treatment

a  Treat any sucking chest wounds by sealing with the palm of the hand, then arrange an airtight seal with a plastic sheet and taping the edges.

b  If bleeding into a lung is suspected then have the casualty lie down with the head and shoulders raised and the body inclined toward the injured side.

c  Support the arm of the injured side in a high arm sling.

d  Treat for shock.

e  **Monitor and record vital signs.**

f  Codeine - one to two 30mg tablets six-hourly. **Contact SB for further advice.**
12.11 Fractured Pelvis

**Signs and Symptoms**

a. Pain and tenderness of varying intensity in the region of the hips and loins, which increases when moving or coughing.

b. Inability to stand, despite the absence of any injury to lower limbs.

c. Characteristically, the casualty may wish to urinate frequently which, if passed, may be blood-stained.

**Treatment**

a. Place the casualty on to their back with the legs straight or, if more comfortable, bent and supported with padding.

b. Apply a pelvic wrap using a sheet/blanket or similar. Provide tension by rolling down the top then tape and tie in place. Otherwise apply two broad bandages around the pelvis, the lower one first, with the top one overlapping by half, with its centre line over the hip joint on the injured side. Tie off on the uninjured side.

c. Pad between the knees and ankles, then apply a figure-of-eight bandage round the ankles and a broad bandage around the knee.

d. If the casualty wants to urinate, advise them against it if possible.

e. Treat for shock.

f. If in great pain give one OxyNorm tablet six-hourly. Contact SB for further advice.
12.12 Fractured Femur

Fractures in this area are very serious as there can be a large blood loss associated with the fracture.

**Signs and Symptoms**

a  Shock
b  Fractured leg will be shorter than the sound leg and will be externally rotated.
c  Severe pain.

**Treatment**

a  Treat any wounds first.
b  Give 10mg OxyNorm tablet six-hourly. Contact SB for further advice.

Place a splint (e.g. walking pole or tent pole) from the groin to beyond the ankle. Pad the hollows between the splint and the body, as well as between the legs. Bandage at the top of the splint, above and below the knee and around the ankle. Do not try and apply traction to the leg.

d  Apply six bandages in the following order:
   i  Figure-of-eight around the feet
      (place padding between legs and ankles for comfort)
   ii Broad bandage above the fracture
   iii Broad bandage below the fracture
   iv Broad bandage across the pelvis
   v  Broad bandage across the knees
   vi Also apply a narrow bandage across the lower leg.
In the absence of bandages, then torn linen, spare clothing or belts will suffice.

Treat for shock.

Monitor and record vitals.

Check the toes for circulation.

Check frequently for frostbite.

Contact Scott base immediately for evacuation.

12.13 Fractured Lower Leg

Signs and Symptoms

Swelling and bruising at the site of the fracture.

Deformity and irregularity.

Often a fracture of the shin bone will be of an open type due to its proximity to the surface.

Shock.

Treatment

Treat any wounds first.

Place padding between the fractured and the sound leg, moving the sound leg if necessary, to the fractured one. If movement of the fractured leg is necessary, then do so with controlled movement.

Apply a figure-of-eight bandage around both feet. This should be followed by:

i A narrow bandage above and below the fracture.

ii A broad bandage around the knees, and

iii A broad bandage around the thighs.

In the absence of bandages then torn linen, spare clothing or belts will suffice.
d Elevate (if possible) the fractured leg along with the sound one, ensuring that there is support below the fracture.

e Treat for shock.

f One to two 30mg tablets of Codeine may be given six-hourly if necessary. Contact SB for further advice.

g Check frequently for frostbite.

12.14 Fractured Kneecap

Signs and Symptoms

a Severe pain around the joint of the knee

b Loss of leg movement around the knee joint.

c Considerable swelling.

Treatment

a Lay the casualty down with the head and shoulders raised and supported.

b Gently raise the injured leg and support beneath with a splint extending from the buttocks to the heel.

c Place padding in the hollows between the knee and ankle joints and the splint.

d Apply a figure-of-eight bandage around the foot and splint. This should be followed by a broad bandage tied above and below the fractured knee cap.

e 10mg OxyNorm tablet six-hourly. Contact SB for further advice.
12.15 Fractured Foot

**Signs and Symptoms**

a. Pain and tenderness at the fracture site.

b. Inability to use the injured part and move adjacent joints.

c. Swelling, deformity and discolouration.

**Treatment**

a. Unless bleeding is suspected (sticky feeling in the boot) the boots should stay on since they act as a good support for the foot.

b. If the boot needs to be removed, or the casualty is wearing Mukluks, place a splint on the sole of the foot and secure with a figure-of-eight bandage.

c. Raise and support the foot.

d. Ensure that the foot stays warm. Under cold conditions an injured person may be unable to generate enough heat to keep the extremities warm.

e. Check frequently for frostbite.

12.16 Dislocations

A dislocation is the displacement of one or more bones at a joint. The joints most frequently dislocated are the shoulders, fingers and thumb.

**Signs and Symptoms**

a. Severe nauseating pain at the joint.

b. Inability to move the joint.

c. Deformity and swelling.
Treatment

a  Fingers. If possible pull straight, at once, while still ‘numb’. After resetting use two strips of 2.5cm adhesive tape, to tape the damaged and adjacent finger/thumb together.

b  Shoulder. Lay the casualty face down on anything clear of the ground so that the injured arm can hang down freely. Keep the casualty warm and it may relocate itself with time (up to half an hour) and relaxation, under its own weight. If so, support the arm in a large arm sling and bandage the sling to the body, underneath clothing. If this treatment is not successful then medical aid should be sought. DO NOT try and relocate the joint. If the dislocation has occurred in another area, then immobilise the joint in the most comfortable position for the casualty and evacuate back to base.

13. Sprain, Strain and Cramp

13.1 Sprain
A sprain is an injury that includes the tearing or wrenching of the ligaments which help keep the joints intact.

13.2 Strain
A strain is the overstretching of a muscle.

Signs and Symptoms
a  Pain at the site of the injury which may radiate outward.
b  Swelling and discolouration.
**Treatment**

**R** Rest - stop activity, make the patient comfortable and set-up shelter if necessary.

**I** Ice - Cool down the affected area with water/snow/ice for approx 15 min. Don't apply directly to the skin.

**C** Compression - Wrap the affected area with an elastic bandage.

**E** Elevation - Keep the effected limb raised to reduce swelling.

Immobilise the joint:

**Fingers:** strap together

**Wrist:** if very swollen then splint. If not, or when the swelling subsides, then bandage from the palm to the elbow, including the thumb, with a 7.5cm bandage. Exercise the fingers, elbow and shoulder regularly.

**Knee:** if very swollen then suspect a more serious injury. With the knee as straight as possible wrap a thick layer of cotton wool around the leg from mid-calf to mid-thigh and then apply a 7.5cm crepe bandage. Add a further layer of cotton wool and crepe to complete the bandaging.

**Ankle:** the foot must be kept at a right angle to the leg. Remove boot then use a 7.5cm crepe bandage, bandaging from the toes to just below the knee, keeping the foot up and covering all the skin. If the ankle is very swollen, especially on both sides, then a more severe injury should be suspected.

Caution: When using crepe bandages, **make sure it is not too tight.** Toes must remain warm and pink and have feeling.
13.3 Cramp

**Hand:** gently but firmly straighten out the fingers and massage the area.

**Thigh:** straighten the affected leg and elevate. Gently press down on the knee whilst massaging the affected muscles.

**Calf:** Straighten the affected leg and gently pull/push the casualty’s foot toward their shin. Massage the affected muscles.

**Foot:** Straighten out the casualty’s toes and get them to stand on the balls of their foot. Massage the foot.

14. Poisoning

Different poisons cause the body to react in various ways. Some poisons attack the bloodstream, others the breathing mechanism and still others, the nervous system.

14.1 General Signs and Symptoms

a. Presence of a container near the casualty.
b. The casualty may be delirious.
c. The casualty may have convulsions or seizure.
d. Complete stoppage or difficulty in breathing.
e. Unconsciousness or deteriorating conscious state may develop.
f The casualty may be suffering from nausea or vomiting.
g The casualty may have diarrhoea.
h There may be burns around the mouth (NB. petroleum products, although corrosive, do not burn the lips).
i A suicide note may be present.

14.2 Treatment

a If conscious, ask the casualty what they have taken.

b If conscious and the poison is known to be non-corrosive, then induce vomiting by placing your finger down the back of the casualty’s throat. If the poison is of a corrosive type then do not induce vomiting; instead, have them drink copious quantities of milk or water. If unconscious and breathing normally, then place the casualty in the recovery position. If not breathing, then perform EAR/CPR providing the poison is non-corrosive. Be careful not to contaminate yourself with any of the poison when carrying out EAR/CPR.

c Monitor vitals constantly.

14.3 Carbon Monoxide Poisoning

Carbon monoxide can be produced by burning anything containing carbon, including the burning of all fuels whether by open flame, gas cookers or engines. Carbon monoxide poisons by attaching itself to the haemoglobin in the blood. When a certain amount of haemoglobin has changed, then the remainder cannot carry sufficient amounts of oxygen to the rest of the body. Oxygen starvation of the brain will cause damage which, even if the patient is revived, will remain permanent. Since the carbon monoxide combines with the haemoglobin about 200 times quicker than oxygen, carbon monoxide easily displaces any inhaled oxygen. Furthermore the toxicity of carbon monoxide increases with altitude.
Signs and Symptoms

Often there are none. However, the following may occur:

a. Slight headache, shortness of breath, panting, confusion, nausea, chest pains, dimming of vision, feeling of exhilaration or lassitude, dizziness, excessive yawning and ringing in the ears.

b. The patient’s skin colour becomes pink to cherry red. NB. The red and yellow polar tents will make it difficult to notice any skin colour change.

c. Unconsciousness and death is often rapid.

Treatment

If carbon monoxide poisoning is suspected:

a. Remove the casualty to fresh air or, at least, to an uncontaminated tent. Don’t get trapped yourself - use a damp handkerchief as a mask.

b. Keep the casualty quiet and resting for at least eight hours. Early exertion may cause them to have a cardiac arrest.

c. If available, give 100% oxygen. If breathing stops, commence CPR.

Prevention

Be sure at all times of adequate ventilation in all buildings, shelters and vehicles. Thoroughly ventilate tents, etc, before bedding down each night, and after the primus has been turned off. If a burning candle in the tent goes out, this may indicate a lack of oxygen. There could be a dangerous concentration of carbon monoxide in the tent. NB. See also section 7.4 of the Field Manual.
15. Eye Injuries

15.1 Foreign Body in the Eye

Loose material and noxious fluids should be washed out with water (preferably warm) at once.

Any remaining fragments may be looked for by having the casualty look right, left, up and down, so that every part of the eye can be examined.

If any further material remains, then attempt to again flush the material out of the eye by using warm water or saline. If this is unsuccessful or there is no water available, then attempt to lift the material off the eye with the corner of a clean handkerchief or a wisp of cotton wool. Do not use any instruments.

If the foreign body still cannot be removed or is embedded in the eye, then cover both eyes using eye pads or sterile dressings and evacuate for medical attention. DO NOT apply any ointments.

If successful in removing the foreign object then the eye may still feel irritated due to the scratches on the eye caused by the object. In such cases, rinse the eye with water or saline solution three times daily and cover the eyes for 12 hours. Seek medical attention from Scott Base.

15.2 Lacerated Eyes

Eyeballs may be lacerated by a number of objects including ice crystals, particularly whilst wearing glasses. A laceration of the eyeball may result in partial or complete loss of vision, painful bloodshot eyes, or deflation of the eyeball due to the leaking of fluid from the eye.
Treatment

a If there is no discharge associated with the laceration and there is no foreign matter remaining on the eyeball, clean the eye with saline solution or water. Cover both eyes. Contact Scott Base for further medical advice. If there is a discharge, or foreign material remains embedded in the eye, then call Scott Base immediately for medical advice and evacuation back to base.

b Pain may be relieved with Panadol tablets four-hourly as required.

15.3 Tent Eye
Tent eye occurs in conditions of low humidity, which causes the tear film to become dry and therefore makes the corneas susceptible to damage from primus stove fumes in the tent. This condition can be treated by applying chlorsig ointment to the eye before going to sleep and/or at the time it occurs.

15.4 Snow Blindness
This condition is caused by the ultraviolet (UV) light burning the eyes. Danger of snowblindness is greatest **not on a clear day** but on a dull, cloudy day when crystalline snow mist (whiteout) is present. There is no warning that damage has been done, until the symptoms begin to appear two to twelve hours after exposure.

**Signs and Symptoms**

a Intense pain in the affected eyes.

b The casualty feels as if there is grit in the eyes.

c The affected eye will be red, watering and sensitive to light.
**Treatment**
A single episode of snowblindness whilst being treated may last anything up to five days.

a Rest the eyes for at least 24 hours. That means closing them and covering them with a non-fluffy pad.

b If the temperature is above freezing, then you may place a cold compress over the affected eyes to relieve pain, otherwise give two tablets of Panadol four-hourly as required.

c Chlorsig ointment may be placed on the eye three-hourly.

**Prevention**
This condition must be avoided as it is a crippling injury which may seriously delay a party. Wear dark glasses or goggles with the appropriate lenses (not yellow) at all times when in the field, especially on overcast days.

---

**16. Skin Injuries**

**16.1 Sunburn**
Direct exposure to the Antarctic sun, especially when it is very windy or the body is wet with sweat, can result in serious sunburning. Because the air is cleaner and thinner, there is greater ultraviolet penetration, so that sunburn can occur even on overcast days. If sunburn occurs:

a Apply aloe vera gel, and

b give two Panadol four-hourly as necessary to relieve pain
Prevention
The best method for ensuring that your event is not going to be inconvenienced with sunburnt casualties, is to prevent the condition from occurring. This can be done by applying chapstick to the lips and sunburn prevention cream to other areas of exposed skin. Both of these preventative items should be bought by the individual prior to arrival in Antarctica. Bulk sunscreen dispensers are at the Scott Base First-Aid Room and backdoors.

16.2 Boils
Do not treat this type of infection lightly, especially around the facial area. Apply a hot wet compress (not so hot that it burns the patient) three times daily until the boil either drains of its own accord or bursts. Apply an Antibiotic ointment and a sterile dressing.

If it bursts, dispose of the dressing, do not re-use for any other purpose. Discharge from a boil is highly infectious and can lead to the setting up of other boils, when contact with infectious material is made.

Once a boil is open, clean the area thoroughly with a soap solution and normal saline and dress with padding twice daily. If the boil is particularly large, or signs of infection are present (see section 6.10) then give the casualty one Synermox tablet three times daily. If the casualty is allergic to penicillin, then give one Erythromycin tablet six hourly. Contact Scott Base to inform them of the situation.

16.3 Blisters
Blisters are thin pockets on the skin surface which have been caused by friction or heat. Blisters are filled with a fluid called serum. During healing a new skin forms under the serum, the serum eventually being reabsorbed, whilst the outer skin peels off. Never
break a blister, since this would cause an increase in the likelihood of infection. Unless a blister breaks open prematurely, no treatment is required. However, if it does break then additional protection in the form of a bandaid will be required.

16.4 Blood Blister under the Nail
This really hurts, as pressure builds up under the nail. If the pain increases and there is obvious blood beneath the nail which is not escaping, it may be released without pressure by using the heated end of a sewing kit needle. To do this, heat the end over a flame until it is red hot, then gently apply the hot end to the centre of the nail, allowing the hot end to burn into the nail (see diagram). Once through the nail (and no further) blood will spurt out with instant relief. Clean and dress.

16.5 Chafing
This is sometimes a problem on the inside of the upper leg. Wear well-washed, well-rinsed soft underpants or pyjama trousers or long-johns under woollen trousers or salopettes. Wash and dry the affected area thoroughly.

16.6 Cracked Skin
Rub in handcream.
17. Windchill

As air temperature falls below that of the body, heat will be lost by:

- Radiation
- Conduction (if lying on ice or snow or in water), and/or
- Convection (if moving air is able to take heat away from the body)

The faster the air moves, the more heat it can drag away. This is windchill. The cooling effects of air can be seen by referring to a windchill chart as shown on section page 75.

17.1 Useful Conversion Factors

To convert Centigrade to Fahrenheit: multiply by 9, divide by 5 and add 32. To convert Fahrenheit to Centigrade: subtract 32, multiply by 5 and divide by 9.

17.2 Summary

a. Keep your gloves or hat with you at all times.
b. Don’t get exhausted.
c. Use lip and nose protection.
d. Be properly equipped and prepared.

If you think that you or your companions may be suffering from hypothermia - stop, rest and warm up.

If you have a case of frostbite - don’t thaw it until you are sheltered and sure that the part won’t become refrozen.
# 17.2 Windchill Chart

<table>
<thead>
<tr>
<th>Wind Speed (Knots)</th>
<th>Air Temperature (°C)</th>
<th>Wind Chill Tempertaure (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>-3</td>
<td>-75  -82  -90  -97</td>
</tr>
<tr>
<td>45</td>
<td>-3</td>
<td>-74  -81  -88  -96</td>
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<tr>
<td>40</td>
<td>-3</td>
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</tr>
<tr>
<td>35</td>
<td>-9</td>
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<tr>
<td>30</td>
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<td>-70  -77  -84  -91</td>
</tr>
<tr>
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<td>10</td>
<td>-5</td>
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</tr>
<tr>
<td>5</td>
<td>-3</td>
<td>-57  -62  -68  -74</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>-50  -55  -60</td>
</tr>
</tbody>
</table>

Condition 3 - Visibility >300m/Wind <45 knots/Wind Chill > -60°C
Consider: Frost Bite in > 30 min

Condition 2 - Visibility <300m/Wind 45-50 knots/Wind Chill -60 to -73°C
Consider: Frost bite in 5 - 30 minutes

Condition 1 - Visibility < 30m/Wind > 50 Knots/Wind Chill < -73°C
Consider: Frost bite in < 5 minutes
18. Medical Ailments

18.1 Headaches
Has there been any head injury? If so, refer to section 12.6. Could there be carbon monoxide poisoning? (see section 14.3).

If neither of these two apply, then it might be sinusitis, the common cold, eye strain, work stress, lack of sleep or food, snowblindness (see section 15.4), tension in the neck muscles, dehydration or migraine.

Treatment
a. Attend to any underlying conditions first.

b. Providing there are no head injuries, two Panadol tablets (depending on the severity of the pain) can be taken four-hourly as required. Drink some water to rehydrate.

c. Have the casualty lie down and rest. If the headache persists or if it is accompanied by a feeling of nausea, vomiting, fever, stiff neck, disturbed vision, head injury, loss of consciousness, radio Scott Base for further medical advice.

18.2 Earache
This is often the result of an infection in or near the ear. The most common and serious cause is an infection of the middle ear.

Treatment
i. Two Panadol tablets four-hourly as required.

ii. One Synemox tablet three times daily. If allergic to penicillin one Erythromycin tablet six hourly. Contact SB for further advice.
iii A warmed cloth held to the ear might also provide relief from pain. If the earache is accompanied by a discharge, impaired hearing and/or balance, then seek further medical advice from Scott Base.

18.3 Toothache
Refer to Guide to Dental Health Care (section 9).

18.4 Mouth Ulcers
Hot saltwater gargles may be used. However, do not swallow.

18.5 Sore Throat
Have a look at it. If it is very red and/or there are yellow spots on the tonsils (back of the throat). Contact SB for further advice.

If the throat is neither very red or displaying spots then have the patient suck on Strepsil throat lozenges as required to soothe the throat. This is made more effective if the patient is instructed to gargle the saliva produced by the sucking of the lozenge.

18.6 Bronchitis

Signs and Symptoms
a Mild fever, with malaise, headache and loss of appetite.
b Initial dry cough leading to a productive cough with sputum.
c Soreness, pain beneath the sternum.
d There may be a wheeze, especially after laughing.

Treatment
a Rest the patient and give Panadol, two tablets four to six-hourly.
b  Have the patient inhale steam.

c  If they are coughing up yellow or green phlegm. Contact SB for further advice.

18.7 Stomach Ache
There may be many causes of abdominal pains, including indigestion, colic, menstrual cramps, constipation and food poisoning. Generally, abdominal pains are not considered serious if they last less than half an hour and there are no other symptoms such as headaches, vomiting or nausea.

a  Indigestion
The stomach may feel uncomfortable and there may be a sour, burning reflux rising in the back of the throat. Food usually makes it better or, sometimes worse.

Treatment
Chew on two Titralac tablets after meals and at night.

b  Vomiting
Try to discover the cause.

Treatment

i  This should only be administered if the patient is suffering from dehydration. Seek medical direction from Scott Base before proceeding. Place one Buccastem tablet high up between the top lip and the gum and allow to dissolve slowly. Do not swallow or chew the tablet. The dosage for Buccastem 3 mg tablets is one tablet per 12 hours.

ii  Take fluids.
c **Diarrhoea**

Try and let it run its course. If the patient is suffering from dehydration then proceed with medication. Give four Imodium tablets initially, then two tablets six-hourly for the first day. Thereafter, give one tablet six-hourly until diarrhoea stops. Give clear fluids only for the first 24 hours.

d **Constipation**

A decrease in the amount of bowel motion is common in Antarctica. However, if one does become constipated, treat by:

i Getting the patient to drink copious quantities of fluid (3600 ml/daily) but not alcohol as this will dehydrate even further.

ii Add roughage to the diet.

iii Senokot tablets, two daily (as a last resort only).

18.8 **Appendicitis**

**Signs and symptoms**

a Appendicitis usually starts as an abdominal pain. Cramps felt in the region of the navel are followed by a steady pain found a third of the way along an imaginary line ‘drawn’ from the navel to the top of the right hip (see diagram).

b Nausea and vomiting.

c Raised temperature (fever).

d Pain when pressing on abdomen.
Non-operative treatment

a  Put patient in a sleeping bag.

b  Advise Scott Base Immediately

c  Give only sips of water, if thirsty. Do not give any food.

d  Give one Erythromycin tablet six hourly.

19. Guide to Dental Health

19.1 Oral Hygiene

Mouth care can be inconvenient in the field but it is just as important to maintain as personal hygiene. Failure to maintain good oral hygiene may result in increased tooth decay (especially around the edges of fillings) and gingivitis.

Ideally, teeth must be brushed after every meal, at least with snow if no water is available. Use tooth picks or waxed dental floss to clean gaps between the teeth which are hard to clean with the brush.

19.2 Toothache

The most common causes of toothache are:

a  Lost fillings.

b  Dying nerve in tooth.

c  Acute abscess.

d  Chronic abscess (gum boil).

e  Maxillary sinusitis.
a Lost Fillings
This is the most common problem. Fillings usually loosen or fall out because of decay around or beneath them. The resulting hole may be very sensitive to hot and cold as well as bothersome whilst eating. Providing there is no pus discharging from the cavity, the cavity should be temporarily filled with Cavit W.

b Dying Nerve in Tooth
This problem is usually resultant from a previous severe blow to the tooth or an untreated cavity where decay has caused infection in the nerve. Occasionally there may be no pain involved at all. When pain is felt it may consist of either a dull ache for several days which gets worse when you lie down, or as a very acute pain lasting several hours. Gradually, the pain will subside to no pain at all.

Treatment consists of administering two tablets of Panadol four-hourly. The affected tooth will eventually have to be extracted therefore, on return to Base, report it to the Dental Officer at McMurdo.

c Acute Abscess
This is always the result of the death of a nerve in the tooth. It is characterised by a throbbing pain which may or may not be constant.

There may be facial swelling opposite the tooth. The tooth is very tender to pressure or percussion and may feel elongated or extruded slightly out of its socket.

There is a feeling of heat in the area and the person may feel nauseous and hot. Advise Scott Base as the patient should receive professional treatment as soon as possible. Until professional attention can be given, give the patient:

i One Synermox tablet three times daily or one Erythromycin tablet six hourly.
ii Two tablets of Panadol four-hourly as required for pain;

iii Apply cold packs lightly to the face over the tooth, and

iv A soft diet and as much water as possible.

**Dangers**

Professional treatment should be obtained as soon as possible because:

i The germs causing the infection may not respond to penicillin/Erythromycin at all. Thus, the infection may spread and cause widespread tissue destruction.

ii Back-pressure through the lymphatic system draining this area may cause spreading of the infection to the brain, and cause death. This is why cold packs must be applied lightly.

**Chronic Abscess**

A chronic abscess is a centre of low grade, localised infection at the root end of a tooth with a dead nerve. This may follow immediately after nerve death or may follow in sequence after an acute abscess subsides. A chronic abscess has a drainage way for the pus it produces. This may be:

i Out through an open cavity in the dead tooth, and thus into the mouth, or

ii Out through the side of the jaw and into the mouth

A gum boil is the spot on the gum where pus drains into the mouth from a chronic abscess. It is a small white-headed pustule or pimple which alternately swells up, breaks and drains.
A chronic abscess may cause no distress for long periods of time, but it is capable of flaring up into an acute abscess at any time. It should receive professional treatment promptly. The gum boil itself is not dangerous and there is no treatment but extraction of the tooth.

**Maxillary Sinusitis**

A sinus is a hollow space in the bone. There are a number of sinuses involved in the bone structure of the face. The upper jaw has a large sinus on either side of it called the maxillary sinuses. The nerves going to the upper teeth from the brain run along the floor of these sinuses, then dip through the sinus floor into the roots of the upper teeth. Maxillary sinusitis is an inflammation of the membranes lining the sinus, and usually accompanies a head cold.

Because the dental nerves are right in the midst of this area of inflammation, a condition may result which feels exactly like a toothache in one or all of the upper teeth, one side or both. Treatment is to get over the cold.

**19.3 Cold Sensitivity**

The response of pain in the teeth to extremes of heat and cold is normal. Normal teeth in good condition should not cause pain in any cold environment unless nasal passages are plugged and mouth breathing is necessary. Even then most people will have no trouble because the lips usually protect the teeth from cold air and wind blast even when the mouth is open.

If pain is encountered, some form of protection should be given to the teeth. This may be done most simply by wearing a scarf over the lower face. Individualised latex mouthguards are also useful. An improvised protection can be made from a piece of cardboard, plastic or leather, cut in this shape.
This is inserted between the front teeth and lips and protects the front teeth from cold air and wind blasts. The slit in the centre makes it possible to talk and breathe in a fairly normal manner.

19.4 Traumatic Injuries

a Simple fracture not involving nerve tissue
A moderate chip or fracture may cause only a little or no discomfort. If so, forget about it. If there is enough sensitivity to bother the patient, however, the broken place should be protected from the air and saliva with a Cavit W dressing. The easiest way to get a dressing to stay in place is as follows.

Cut a piece of gauze or light fabric about 2.5cm square. Place an amount of Cavit W on the gauze or fabric. Dry the broken tooth and the adjacent teeth and gums well. Fold the Cavit W dressing over the tooth and mould into place. Hold until set.

If, with time, the temporary dressing loosens, remove and reapply another dressing.

b Compound fracture involving the nerve tissue
This can be more painful and difficult to treat than a simple fracture. The nerve, if exposed, will soon die no matter what you do. Immediate concern in these cases is the relief of pain.
Give two Panadol every four hours. Sometimes a carefully placed Cavit W dressing will control pain, but take care not to cause undue pressure on the exposed nerve.

**c Loss of Tooth**

If the tooth has fractured off above the gum line so that only a portion of the root remains, do not attempt to apply any sort of dressing but allow a blood clot to form over the stump.

If the tooth has been knocked out of its socket entirely, the tooth can be replaced into the socket for storage until further dental treatment can be obtained. If difficulty is experienced in replacing the tooth, the tooth should be stored in a saline solution and brought by the patient to a dental facility as soon as possible.

**19.5 Gingivitis**

**a Simple Gingivitis (Bleeding Gums)**

**Symptoms**

i Gums may bleed when brushed and when eating.

ii May be some pain.

**Cause:** Accumulation of food debris and soft material at the gum line of the teeth.
Treatment
i Better brushing and oral hygiene.
ii Hot saline gargle. *Do not swallow.*

**b Vincents Gingivitis (Trench Mouth)**

**Symptoms**
i Constant pain and tenderness
ii Swollen gums, usually with crater-like ulcerations.
iii Foul taste and odour.
iv May be nauseous.

**Cause:** untreated simple gingivitis.

**Treatment**
i Teeth and gums should be cleaned as well as possible with a brush and/or cotton swabs or pieces of gauze.

ii Mouth should be washed with a cup of hot saline water every hour. *Do not swallow.*

iii If pain is severe, give one Synermox tablet three times daily and Panadol, two tablets four hourly as required.
20. Medications

20.1 Medication Chart

RESTRICTED DRUGS

<table>
<thead>
<tr>
<th>Contents</th>
<th>Unit</th>
<th>Qty</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>OxyNorm 10mg</td>
<td>tablets</td>
<td>5</td>
<td>Strong pain relief</td>
</tr>
<tr>
<td>Codeine Phosphate 30mg</td>
<td>tablets</td>
<td>10</td>
<td>Moderate pain relief</td>
</tr>
<tr>
<td>Valium 5mg</td>
<td>tablets</td>
<td>5</td>
<td>Sedative(no alcohol)</td>
</tr>
<tr>
<td>Synermox 625 mg</td>
<td>tablets</td>
<td>50</td>
<td>Antibiotic</td>
</tr>
<tr>
<td>Erythromycin 250mg</td>
<td>tablets</td>
<td>30</td>
<td>Antibiotic</td>
</tr>
<tr>
<td>Imodium/Nodia 2mg</td>
<td>tablets</td>
<td>30</td>
<td>Anti Diarrhoea</td>
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<tr>
<td>Senokot 7.5mg</td>
<td>tablets</td>
<td>12</td>
<td>Laxative</td>
</tr>
<tr>
<td>Buccastem 3mg</td>
<td>tablets</td>
<td>6</td>
<td>Nausea / Migraine</td>
</tr>
<tr>
<td>Cavit W 7g</td>
<td>tablets</td>
<td>1</td>
<td>Temp. Tooth Filling</td>
</tr>
<tr>
<td>Chlorsig 4g</td>
<td>tablets</td>
<td>1</td>
<td>Eye Ointment</td>
</tr>
</tbody>
</table>

Note: Check with Scott Base before administering any restricted drugs. Always check for any known allergies prior to administering any drugs.

Issue of Restricted Drugs

A Drug Kit is issued by the SB medic to the designated event first aider. The drug kit is the responsibility of the designated event first aider.

Before any drug is administered in the field SB must be contacted to seek doctors approval. Any drug used in the field must be recorded in the Accident Notebook provided in the field first aid kit. The patient’s name, the drug and dose, date and time of administration and the person administering the drug must be noted.
20.2 Allergic Reactions

Virtually anything swallowed or injected can cause a severe allergic reaction called **anaphylactic shock**, with:

Don't leave the patient as they may collapse at any point needing CPR.

a. Swelling on the face and body
b. Difficulty in breathing
c. Wheezing
d. Blueness around the lips and earlobes
e. Pain in the chest and abdomen
f. Collapse

**Always ask if there is any known allergy to the drug before administering it. If there is don't administer.**

It should be noted that such bad reactions are rare. If a person is nervous and then faints, or over-breathes after taking the drug, **do not rush in with the next treatment. Wait a minute and watch.**

**Treatment**

If the patient is having difficulty breathing EAR (expired air resuscitation) may need to be commenced. **At all times alert Scott Base immediately.**
21. Scott Base Wall Mounted First Aid Kit

Cabinets are located in all the major areas of Scott Base.

<table>
<thead>
<tr>
<th>Contents</th>
<th>Qty</th>
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<tr>
<td>Susaid</td>
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</tr>
<tr>
<td>Gloves (pairs)</td>
<td>2</td>
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<tr>
<td>Triangular bandage</td>
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</tr>
<tr>
<td>Safety pins</td>
<td>3</td>
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<tr>
<td>Crepe bandage 7.5cm x 2.25m</td>
<td>1</td>
</tr>
<tr>
<td>Wound dressing #14</td>
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<tr>
<td>Gauze swabs (non-sterile)</td>
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<tr>
<td>Gauze swabs (sterile)</td>
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</tr>
<tr>
<td>Telfa pads (large)</td>
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</tr>
<tr>
<td>Telfa pads (small)</td>
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<tr>
<td>W.O.W. bandage 5cm x 5m</td>
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<tr>
<td>Band Aids</td>
<td>Assorted</td>
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<tr>
<td>Tape 2.5cm x 5m</td>
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<tr>
<td>Combine dressing</td>
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<tr>
<td>Scissors</td>
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</tr>
<tr>
<td>ANT NZ First Aid Manual</td>
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<tr>
<td>Eye Wash</td>
<td>1 bottle</td>
</tr>
<tr>
<td>Irrigation Solution</td>
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<tr>
<td>Panadol</td>
<td>10 tablets</td>
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# 22. Field Medical Kits

*(INCLUDING HÄGGLUNDS AND PB)*

## DESCRIPTION OF CONTENTS

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<tr>
<th>Contents</th>
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<th>Qty</th>
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<tr>
<td><strong>BANDAGES, DRESSINGS &amp; SPLINTS</strong></td>
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<td>Mefix Dressing</td>
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<td>Paranet Dressings</td>
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<td>Telfa Pads large</td>
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<td>Combine Dressings</td>
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<td>Gauze Swabs (sterile)</td>
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<tr>
<td>Gauze Swabs (non-sterile)</td>
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<td>Crepe bandage 7.5cm x 2.25m</td>
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<tr>
<td>Crepe bandage 5cm x 2.25m</td>
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<td>Heavy Crepe bandage 7.5cm x 2.25m</td>
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<td>Gauze Bandage (W.O.W) 5cm x 5m</td>
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<tr>
<td>Coban self-adherent wrap</td>
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<tr>
<td>Triangle Bandages/Safety Pins</td>
<td></td>
<td>6</td>
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<tr>
<td>Tape</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Eye Pad/Grit Removing Rounds</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Contents</td>
<td>Unit</td>
<td>Qty</td>
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<tr>
<td>Eye washer</td>
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<tr>
<td>Eye Shades</td>
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<tr>
<td>Stainless Steel Bowl (10cm)</td>
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<tr>
<td>Sam Splint</td>
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<td>Stiff Neck Collar</td>
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<tr>
<td>Betadine Antiseptic liquid</td>
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<tr>
<td>Alcohol swabs</td>
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<tr>
<td><strong>OINTMENTS</strong></td>
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<tr>
<td>Antibiotic ointment</td>
<td>tube</td>
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<tr>
<td>Soov cream</td>
<td>tube</td>
<td>1</td>
</tr>
<tr>
<td>Daktarin cream</td>
<td>tube</td>
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<tr>
<td><strong>ACCESSORIES</strong></td>
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</tr>
<tr>
<td>Gloves (non sterile) pr</td>
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<tr>
<td>Gloves (sterile) pr</td>
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<tr>
<td>O.P. Airway tubes (3 sizes)</td>
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<tr>
<td>Susaid</td>
<td>1</td>
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<tr>
<td>Thermometers (normal and subnormal)</td>
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<tr>
<td>Scissors</td>
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<tr>
<td>AntNZ First Aid Manual</td>
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<tr>
<td>Treatment Notebook/ Pencil</td>
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<td>Biohazard bag</td>
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<td>Sun block</td>
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<tr>
<td>Lip Balm</td>
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<tr>
<td>Aloe vera Gel</td>
<td>tube</td>
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<tr>
<td>Hand warmers</td>
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<td></td>
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<tr>
<td>Contents</td>
<td>Unit</td>
<td>Qty</td>
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<tr>
<td>Telfast</td>
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<td>Aspirin</td>
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<tr>
<td>Nurofen or ibuprofen</td>
<td>tablets</td>
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<tr>
<td>Coldrex</td>
<td>tablets</td>
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<tr>
<td>Panadol</td>
<td>tablets</td>
<td>20</td>
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<tr>
<td>Titralac</td>
<td>tablets</td>
<td>20</td>
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<tr>
<td>Gastrolyte/Enerlyte</td>
<td>sachets</td>
<td>10</td>
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<tr>
<td>Strepsils</td>
<td>lozenges</td>
<td>16</td>
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<tr>
<td>Lemsip</td>
<td>sachets</td>
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23. Personal First Aid Kits

Personal First Aid Kits are made up in advance and are issued to each person going into the field.

Whenever travelling in the field, always carry the small kit in the pack or anorak pocket. These kits must be returned to the Field Support Team upon return from the field.

**Personal First Aid Kit**

<table>
<thead>
<tr>
<th>Contents</th>
<th>Qty</th>
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<tbody>
<tr>
<td>Susaid</td>
<td>1</td>
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<tr>
<td>Gloves</td>
<td>1pr</td>
</tr>
<tr>
<td>Triangular Bandage/safety pins</td>
<td>1</td>
</tr>
<tr>
<td>Crepe Bandage 7.5cm</td>
<td>1</td>
</tr>
<tr>
<td>Wound dressing #15</td>
<td>1</td>
</tr>
<tr>
<td>Gauze swabs</td>
<td>2</td>
</tr>
<tr>
<td>Telfa Pads (large)</td>
<td>2</td>
</tr>
<tr>
<td>Telfa Pads (Small)</td>
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<tr>
<td>Steri Strips</td>
<td>2</td>
</tr>
<tr>
<td>Band Aids</td>
<td>6</td>
</tr>
<tr>
<td>Dressing Strip (mefix)</td>
<td>1</td>
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<tr>
<td>Scissors</td>
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<tr>
<td>Tape</td>
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<tr>
<td>Panadol</td>
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# 24. Survival Bag First Aid Kit

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<th>Contents</th>
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<tbody>
<tr>
<td>Wound dressing – large #15</td>
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<td>Crepe bandage 7.5cm x 2.5cm</td>
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<tr>
<td>Tape 2.5cm x 2.5m</td>
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<tr>
<td>Telfa Pads (large)</td>
<td>2</td>
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<tr>
<td>Telfa Pads (small)</td>
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</tr>
<tr>
<td>Panadol</td>
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<tr>
<td>Triangular bandage</td>
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<tr>
<td>Safety pins</td>
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<tr>
<td>Bactroban ointment</td>
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<tr>
<td>Gauze swabs</td>
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<td>Steristrips</td>
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<tr>
<td>Paraffin gauze dressing</td>
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<tr>
<td>'Susaid'</td>
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<tr>
<td>Gloves (pr)</td>
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<td>Band Aids</td>
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# 25. Scott Base Vehicle First Aid Kits

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<tr>
<td>Antarctica New Zealand First Aid Manual</td>
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<tr>
<td>Gloves (pr)</td>
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<tr>
<td>‘Susaid’</td>
<td>1</td>
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<tr>
<td>Sam splint</td>
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<tr>
<td>Band Aids (assorted)</td>
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<tr>
<td>Gauze swabs</td>
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<tr>
<td>Steristrip</td>
<td>3</td>
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<tr>
<td>Paranet</td>
<td>2</td>
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<tr>
<td>Telfa pads (Large)</td>
<td>2</td>
</tr>
<tr>
<td>Telfa pads (Small)</td>
<td>2</td>
</tr>
<tr>
<td>Wound dressings #14</td>
<td>2</td>
</tr>
<tr>
<td>Wound dressings #15</td>
<td>2</td>
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<tr>
<td>Crepe bandage 5cm x 2.5m</td>
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</tr>
<tr>
<td>WOW bandages 5cm x 5m</td>
<td>2</td>
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<tr>
<td>Triangular bandages</td>
<td>2</td>
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<tr>
<td>(Hand warmers in winter)</td>
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