006

Skills Maintenance Programme 2000

The Olympic Year

St John Ambulance Australia

Fitness Test

Assessment for all Operations Branch members to be able to wear the uniform - One Person C.P.R. (Adult)

Notes for examiner

1. Members do this test when they are prepared to demonstrate their ability in C.P.R. and fitness.
2. A pocket mask may be used during this exercise.
3. Members may choose to stop at any time during this assessment.
4. Examiners are asked to stop any member who is experiencing undue physical distress during this test.
5. A member may present as many times as necessary to complete this test piece.
6. Members should aim to achieve 60 compressions per minute with a 15:2 cycle.

Demonstration of ability and fitness

Tick box if task is performed.

1. Check for danger ❒
2. Check for response ❒
3. Recovery position ❒
4. Call for help ❒
5. Airway clearance ❒
6. Breathing check (ten seconds) ❒
7. Supine position ❒
8. Two effective breaths ❒
9. Pulse check (ten seconds) ❒
10. Initiation of C.P.R. ❒

Duration of C.P.R. in minutes 1 ❒ 2 ❒ 3 ❒ 4 ❒ 5 ❒ 6 ❒ 7 ❒ 8 ❒ 9 ❒ 10 ❒

Call for ambulance ❒

Pulse and breathing checks ❒ ❒ ❒ ❒ ❒ ❒ ❒ ❒ ❒ ❒

Fitness Test EXAMINER Please tick

The member has satisfactorily performed ten minutes of continuous one-person C.P.R. on a manikin. Yes ❒ No ❒

Please sign and **print** name

Signed: ..... Date ..... / ..... / 2000

Name: ..... Position: .....

St John Ambulance Australia
Canberra Avenue
Forrest ACT 2603

Editor: Barry Price
Production management: Terrence E Jeff
Typesetting: Pelican Graphics Pty Ltd
Printing: Kingsway Printers Pty Ltd

St John Ambulance Australia
OPERATIONS BRANCH

Skills Maintenance Programme 2000

The Olympic Year

Name.....

Signature.....

Division.....

Date received.....

Contents

Note:

'A.F.A.' refers to Australian First Aid. Third edition,1998.

Introduction to Skills Maintenance Programme 2000

To my friends, colleagues and co-workers,

I see that again you gave hundreds of thousands of hours of your time to care for nearly a hundred thousand casualties during 1998. **I know** that you have worked hard to keep up your skills. You continue to look at new ways of serving your community. **I suspect** that there are many more unrecorded hours of effort. Your commitment is unfathomable. **I hope** that a realisation of the fact that you are "the salt of the earth" will further encourage you!

Socrates, it is said, sat resting on the side of one of the roads approaching Athens. A traveller moving towards the city came to him and asked: "What are the people of Athens like?". Socrates countered: "Where are you from?". "Argos", replied the traveller. "And what are the people of Argos like?", asked Socrates. "They are mean-spirited, rude, ungracious and intolerable", replied the traveller. "Well", said Socrates, "that is just as you will find the Athenians", and the stranger moved sadly on his way.

Soon another traveller, moving in the same direction, approached Socrates with the same question. Again Socrates asked him of his origins and was given the same reply. He, also, was from Argos. "And what are the people of Argos like?", asked the philosopher. This traveller described the people of Argos as "kind, generous, wonderful folk, willing to do anything to help at any time". "Well", said Socrates, "that is just as you will find the Athenians".

Strangely, there are a great variety of opinions on the attributes of the Skills Maintenance Programme! Perhaps not as diverse as those expressed about the inhabitants of Argos but nevertheless they reflect clearly the different perspectives that exist. Overall, we must be pleased with SMP but we cannot be complacent about its content, quality, role and efficacy.

The content of SMP is primarily determined by the need for Operations Branch members to effectively cover the material in Senior First Aid in a three year period. Australian First Aid (A.F.A.) is the prime reference and information source and ideally there should be absolute congruency between the teaching of SMP and A.F.A. Some of you will have noted a certain repetitive pattern to the modules and on occasions you may detect inconsistencies!

We are constantly looking at ways of improving SMP. At Priory, in Perth in 1999, the professional officers, with input from Garry Coombes, Kieran Brown and Philip Chan and with Paul Arbon as chairman, spent some time considering the topic. You will probably note the insidious introduction of a different slant to the manner in which modules are presented in the coming year.

As we enter into 2000, with all the excitement and work that comes with it, **I believe** that once again you will demonstrate the qualities that mark the members of Operations Branch as being unique.

Franklin HG Bridgewater.
Chief Professional Officer

National Skills Maintenance Programme Training Committee Members and Contributors

Paul Arbon	National Staff Officer (Nursing)
Stephen Baddeley	Commissioner (N.T.)
Raymond Cook	District Medical Officer (A.C.T.)
Barbara Davis, R.N.	District Officer (Victoria)
Wayne Deakes	Corps Officer (Victoria)
Diana de Silva, R.N.	Divisional Officer (Victoria)
Professor Christine Duffield, PhD	District Nursing Officer (N.S.W.)
Rodney Fawcett	District Medical Officer (Victoria)
Nadine Fisher	Divisional Medical Officer (Victoria)
Stephen Hall	A/Corps Nursing Officer (Victoria)
Heather Hancock, R.N.	Senior Lecturer, University of South Australia
Elizabeth Henley	Senior Lecturer, University of Sydney
Gavan Keane	District Ambulance Officer (Victoria)
Carol Kennedy, R.N.	Senior Education Officer, National Centre for Education and Training on Addiction, Flinders University
Peter Lorimer, R.N.	District Staff Officer (S.A.)
Stephen Miller	National Staff Officer (Ambulance)
Eimear Muir-Cochrane, R.N., PhD	Senior Lecturer, University of South Australia
Margaret Naylor	Assistant District Training Officer (A.C.T.)
Geoffrey Newman-Martin	Commissioner (A.C.T.)
Correne Wassertheil, R.N.	District Officer (Victoria)
Jeffrey Williams	District Nursing Officer (W.A.)
Chris Zeitz FRACP	District Officer (S.A.)

Procedure

A. St John Members

1. All members, on receiving their own copies of the Programme, should sign and date the title page.
2. The Programme is divided into modules, with theory and practical skills components.
3. All the skills must be practised and, when mastery is obtained, be signed by the appropriate person as indicated in the Record of Skill Mastery at the end of Module 13.
4. Members who hold an Advanced Resuscitation Certificate, issued by their State/Territory, must sit the re-examination of that State/Territory every year to retain this qualification.

B. Officers/Training Personnel

1. The term ' training personnel' refers to all St John officers/members with a designated training function. If professional training personnel are unavailable within a division, then the officer-in-charge should communicate the name and qualifications of a nominee to fill the role to the District Medical Officer for consideration. All such requests will receive written advice.
2. All officers and/or Training Branch accredited instructors are responsible and accountable for the modules of the training programme they have signed as being satisfactorily completed.
3. Practical skills items pertaining to the module being undertaken must be signed as satisfactory by one of the designated persons.
4. If, on conclusion of the training module, the member is found to be unsatisfactory, then further training will be given and another date and time for the assessment will be arranged.
5. **On satisfactory completion of the module** by the member, the programme is to be signed and dated on the Record of Skill Mastery at the end of Module 13.

The Programme belongs to all officers and members of St John and its success depends on all working as a team. Your assistance and comments are always appreciated. Comments may be sent, in the first instance, to National Secretary, Volunteers, St John Ambulance Australia, Box 3895, Manuka, A.C.T. 2603. They will then be forwarded to the Training Committee.

Message

Professor Peter Fricker OAM is Professor of Sports Medicine at the University of Canberra and Director, Medical Services, for the Australian Institute of Sport. He is also a member of the St John Ambulance Australia Medical Standards Committee which provides expert advice on first aid protocols.

MESSAGE TO ST JOHN FIRST AIDERS

For the Olympic year of 2000, I extend my best wishes to all those providing first aid services for the Games and to the many other members of Operations Branch who regularly provide volunteer services to the community.

While only a minority of Operations Branch volunteers will be directly involved in first aid assistance to the Olympic Games, both they and all first aiders need to be aware of the latest information concerning drugs in sport. They will then not knowingly assist athletes in a way which might jeopardise their status.

DRUGS IN SPORT

There are a number of drugs which can not be used by athletes. Such drugs produce a positive drug (dope) test. 'Banned' drugs are believed to enhance sporting performance and are therefore potentially of assistance to athletes who wish to cheat.

Most problems with 'positive drug tests' result from inadvertent administration (doping). This means an athlete has taken a drug or medication without knowing it is banned and without the intention to cheat. The most common of these cases of inadvertent administration relate to the use of 'cough and cold' remedies which contain pseudoephedrine (e.g. Sudafed, Sinutabs). Pseudoephedrine is a stimulant which has the potential to enhance performance in sprint or power events.

Athletes are advised not to take any medications until, and unless, it has been determined whether they are banned. The Australian Sports Drug Agency (ASDA) has a hotline (telephone 1800 020 506) which provides advice to athletes (or their coaches, parents, officials, friends, doctors) on 'permitted' medications.

Athletes must be warned that even non-prescription medications (so-called 'over the counter' or OTCs) may be banned. Therefore, checking the acceptability of every drug before taking it is most important.

Commonly used drugs which are permitted include aspirin, paracetamol and codeine.

Drugs which are subject to restrictions and which may return a positive drug test include asthma sprays such as Ventolin – a 'reliever' - and corticosteroid inhalers such as Pulmicort and Becotide - 'preventers'.

Such medications must not be used unless permission to use them in competition has been obtained from the relevant sporting body.

In summary, it is the athlete's responsibility to ensure that he or she does not take a banned drug. Ignorance of the rules is no excuse.

Peter Fricker

Resuscitation

PRESCRIBED REFERENCE: St John Ambulance Australia. *Australian First Aid.* Third edition,1998, reprinted annually, Chapter 2.

OBJECTIVES: On completion of the module, the member will:

1.1 competently and efficiently perform cardiopulmonary resuscitation (C.P.R.) for an adult on a manikin;

1.2 demonstrate an understanding of the resuscitationalgorithm for a collapsed/unconscious casualty.

Sequence of Action

Dangers 1. Ensure safety of first aider, casualty and others.

Response 2. Check the casualty for a response:

Gently shake the casualty's shoulder and ask loudly: "Can you hear me? Open your eyes."

2. (a) A response indicates that the casualty is conscious.

- Do not move the casualty (unless he/she is in further danger), check the casualty's condition (A.B.C. and Casualty Examination), manage other injuries and get help if needed.

- Reassess the casualty's condition regularly.

2. (b) If the casualty appears unconscious:

- **Place in recovery position.**

- Send for help or consider going to get help yourself if you are alone, but only if the casualty is in the recovery position and the airway is clear.

- If the casualty is an infant or a child or if the collapse is likely to have been caused by near-drowning or an injury, commence E.A.R./C.P.R. (if necessary) for one minute before seeking help. Leave the casualty in the recovery position. If the casualty is an infant or child, take the casualty with you if possible.

Airway

- Open the casualty's mouth and clear any foreign objects with your fingers. Dislodged teeth and loose dentures should be removed but well-fitting dentures should be left in place.

- Clear the casualty's airway by tilting the head back gently and slightly down.

- At the same time, with your fingertip(s) under the point of the casualty's chin, lift the chin to open the airway.

- Avoid neck movement if trauma (injury) to the neck is suspected.

Breathing 3. Keeping the airway open, look, listen, and feel for breathing (more than an occasional gasp):

- Look for chest movements.
- Listen at the casualty's mouth for sounds of breathing.
- Feel for air on your cheek.
- Look, listen, and feel for up to10 seconds before deciding that breathing is absent.

3 (a) If the casualty is breathing (other than an occasional gasp):

- Leave the casualty in the recovery position. Assess Circulation and perform casualty examination.

- Check for continued breathing.

3 (b) If the casualty is not breathing:

- Turn the casualty onto his/her back.

- Ensure head tilt and chin lift.

- Start Expired Air Resuscitation (E.A.R.) by giving 2 effective ventilations. (You can give up to 5 breaths to achieve 2 effective breaths).

If you have difficulty achieving an effective breath:
- Re-check the casualty's mouth and remove any obstruction.
- Re-check that there is adequate head tilt and chin lift.
- Make up to 5 attempts in all to achieve 2 effective breaths.

Even if unsuccessful, move on to assessment of circulation.

Circulation 4. Assess the casualty for signs of circulation. This includes:
- looking for any movement, including swallowing or breathing (more than an occasional gasp);
- checking if the carotid pulse is present;
- observing colour of skin on face.

Check for up to 10 seconds before deciding that the pulse is absent.

4 (a) If you are confident that you can detect signs of circulation **within 10 seconds**:

- Continue rescue breathing, at 1 breath every 4 seconds, until the casualty starts breathing on his/her own.

- About every minute, re-check for signs of circulation; **take no more than 10 seconds each time.**

- If the casualty starts to breathe sufficiently on his/her own, place the casualty in the recovery position.

- Check the casualty's condition and be ready to turn the casualty onto his/her back and restart E.A.R. if breathing stops.

4 (b) If there are no signs of circulation or if you are at all unsure:

Start cardiopulmonary resuscitation (C.P.R.):

- Locate the lower half of the sternum (breastbone).

- Find the groove of the neck between the collar bones.

- Find the lower end of the sternum by running a finger along the last rib to the centre of the body.

- Extend the thumb of each hand equal distances to meet in the middle of the sternum.
- Identify the portion of the sternum immediately below this mid-point and place the heel of your hand over the sternum.
- Place the heel of your second hand on top of the first (Refer to A.F.A., 1998, p. 36).
- Interlock the fingers of both hands and raise the fingers to ensure that pressure is not applied over the casualty's ribs.
- Do not apply any pressure over the upper abdomen or bottom tip of the sternum.
- Position yourself vertically above the casualty's chest, and with your arms straight, press down on the sternum to depress it about 5 cm (about 2 inches).
- Release the pressure, then repeat at a rate of 80-100 times a minute (a little less than 2 compressions per second). Compression and release should take an equal amount of time.
- After 15 compressions, tilt the head and lift the chin and give 2 breaths.
- Combine E.A.R. and compression; give 2 effective breaths.
- Return your hands immediately to the correct position on the sternum and give 15 further compressions, continuing compressions and breaths in a ratio of 15:2.
- Check pulse about every minute.

5. Continue resuscitation until:
   - the casualty shows signs of life;
   - qualified help arrives;
   - you become exhausted.

Agonal Respirations

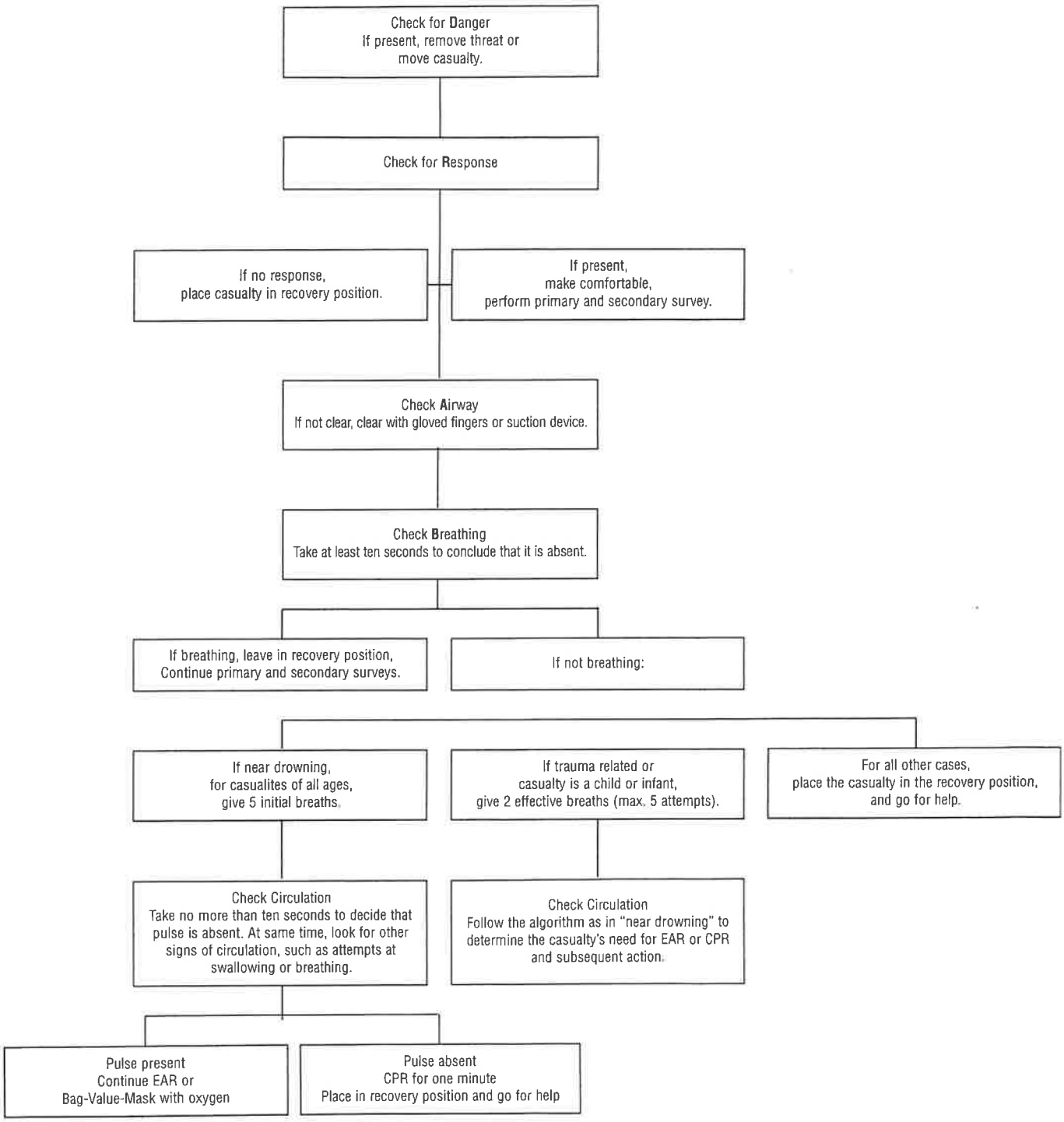
The ILCOR Advisory Statements on Single-Rescuer Adult Basic Life Support use the phrase 'occasional gasp'. This is an accurate, lay description of agonal respirations. These are abnormal, ineffective, uncoordinated respiratory movements occurring for a while after cardiac arrest. 'Agonal respiration' is preferred to the term 'agonal breathing' as the latter may imply some effective breathing activity. Agonal respiration is common in the first minute after arrest and may persist for some minutes. The presence of agonal respiration may mislead an observer and delay the commencement of C.P.R. One should not be surprised, and even might expect, to find that there is no palpable pulse in a casualty with agonal respiration.

Breathing is considered present, by ILCOR, if there is 'more than an occasional gasp'. The corollary arises when considering effectiveness of circulation. An 'occasional gasp' must not be thought to indicate vitality. C.P.R. should be commenced.

Basic Life Support

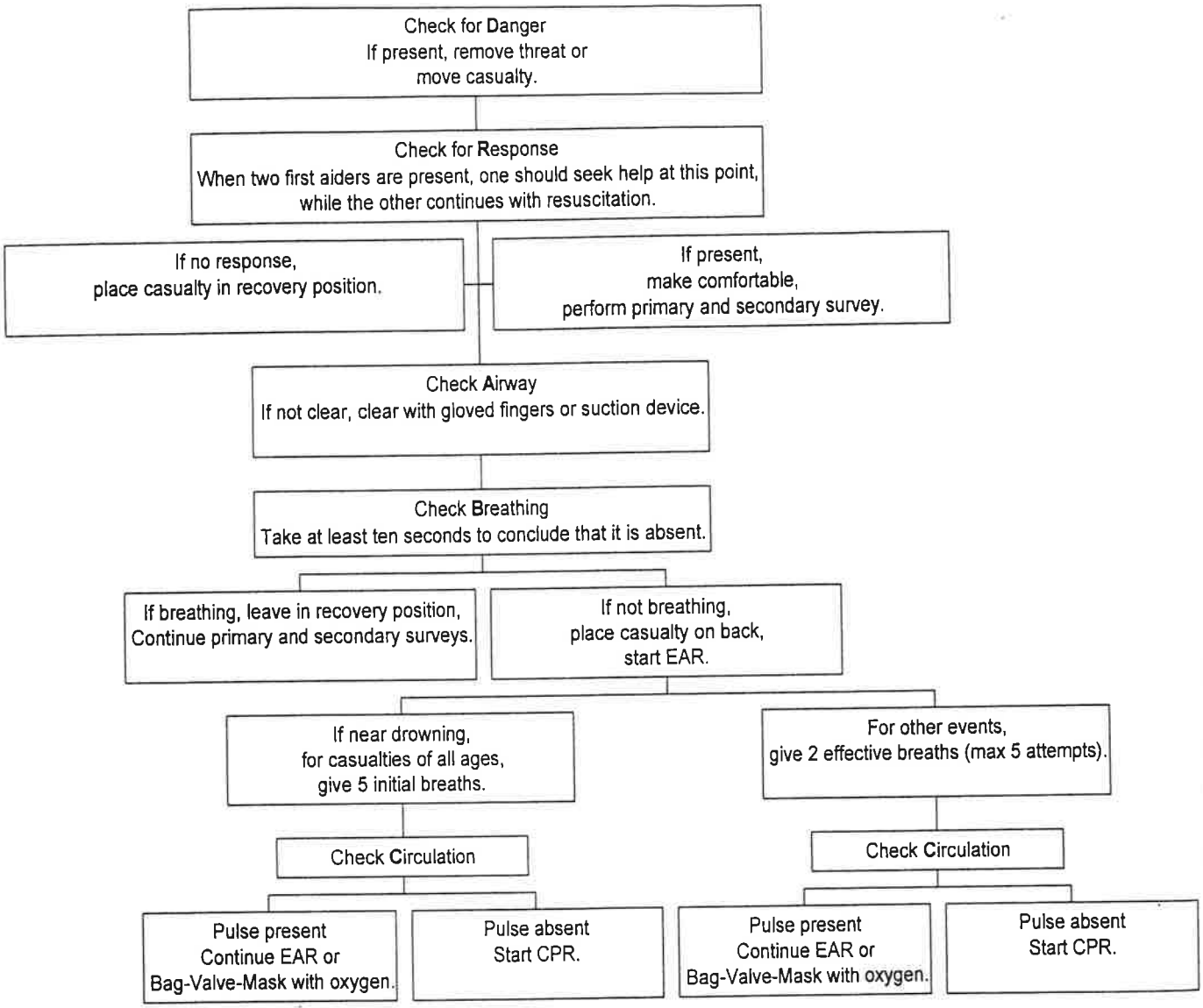
Resuscitation algorithms for a collapsed/unconscious patient

Single operator



* If the casualty is an infant or child, and it is possible, take them with you while you seek help and continue resuscitation.

Two Operators



1.1 *Perform effective resuscitation for an adult*

Resuscitation Assessment

You are called to an unconscious casualty. When you arrive, a member of the public is attempting C.P.R. You have a pocket mask and gloves. Manage the casualty as you normally would.

	Checklist	Needs Improvement Date	Proficient Date
DANGERS	(No) You, others, casualty.		
RESPONSE	(No) - Recovery position. - Send bystander for help; use radio for ambulance.		
AIRWAY	(Vomitus) - Digital clearance/suction, if available and trained to do so.		

	Checklist	Needs Improvement Date	Proficient Date
	- Insert oropharyngeal airway, if available and if trained.		
BREATHING	(Nil/Agonal gasps) - Roll onto back - 2 effective breaths. - Good seal. - Watch rise/fall of chest.		
CIRCULATION	(Yes)		
COMMENCE E.A.R.	- Rate: 1 breath/4 seconds. - Good seal. - Watch rise/fall of chest.		
REVIVAL CHECK at approx. 1 minute	- Breathing (Nil). - Circulation (Nil).		
COMMENCE 1 PERSON C.P.R. at ratio 15:2.	- Good seal. - Watch rise/fall of chest. - 15 compressions. - Location: lower half of sternum. - Depth: 4-5 cm. - Rate: 4 cycles/minute.		
SECOND MEMBER arrives with pocket mask.	- Member being assessed to ventilate casualty. - Check that ambulance has been called; if not, call.		
COMMENCE 2 PERSON C.P.R.	- Ratio of 5:1 at 12-15 cycles/minute. - Good seal. - Watch rise/fall of chest.		
CASUALTY VOMITS	- Turn casualty on side. - Digital clearance on side. - Return casualty to back - Continue ratio of 5:1.		
AMBULANCE	Hand over.		
RELATIVE ARRIVES	If possible, obtain history and complete OB 12 Casualty Report form.		
GENERAL	- Calls for help at appropriate times. - The ambulance must be called immediately to ensure that early defibrillation and advanced life support can commence without delay. - Use of Standard Precautions.		

Verbal Assessment

What information would you give to the ambulance officer on hand over?

What can you check for to assess whether your C.P.R. is effective?

Explain how you would clean and/or dispose of your equipment and how you would clear the vomit/blood that is on the ground.

Resuscitation Rates

	9 years and older	1-8 years	0-1 year old
INITIAL VENTILATION IN NEAR DROWNINGS	Give five initial breaths in all age groups		
INITIAL VENTILATION IN OTHER EVENTS	2 effective* breaths at 1.5-2 seconds each Maximum of 5 attempts#		
E.A.R.	1 breath every 4 seconds 15 breaths/min.	1 breath every 3 seconds 20 breaths/min.	1 breath every 3 seconds 20 breaths/min.
COMPRESSION SITE	Lower half of sternum		
HOW	2 hands	1 hand	2 fingers
DEPTH	4-5cms	One third of depth of chest	One third of depth of chest
ONE OPERATOR	15 cardiac compressions to 2 breaths in 15 seconds; 4 cycles/min.	5 cardiac compressions to 1 breath in 5 seconds; 12 cycles/min.	5 cardiac compressions to 1 breath in 5 seconds; 12 cycles/min.
TWO OPERATORS in 5 seconds	5 compressions to 1 breath in 5 seconds 12 cycles/min.	5 compressions to 1 breath 12 cycles/min.	Not recommended
REVIVAL CHECKS	Pulse and breathing at end of first minute Then about every minute		

* 'effective' means that the chest is seen to rise and fall.
# If after five ventilations, two 'effective breaths' have not been achieved, the next step in the resuscitation algorithm must be taken.

The Nervous System Neurological Emergencies and Unconsciousness

PRESCRIBED REFERENCES: St John Ambulance Australia. Australian First Aid. Third edition,1998, reprinted annually.
Supplementary Training Material.

OBJECTIVES: At the conclusion of the period of instruction, the member will be able to:

2.1 describe the structures of the nervous system;
2.2 list some common causes of neurological emergencies;
2.3 list the causes of altered consciousness in a casualty;
2.4 describe how to assess the level of consciousness;
2.5 understand the significance of different neurological signs and their relative importance;
2.6 explain the significance of differences in pupillary size and response to light stimulus and record these observations using appropriate symbols;
2.7 demonstrate the systematic examination of an unconscious, breathing casualty;
2.8 describe the first aid management of an unconscious, breathing casualty.

PRACTICAL SKILLS:
- Examination of an unconscious casualty.
- Examination of a casualty's pupils.
- Position a casualty into the recovery position.

Equipment required:
- torch;
- pencil and paper;
- blanket.

ORGANS AND STRUCTURE

The nervous system coordinates most bodily activities.

The **central nervous system** consists of the brain and the spinal cord, which runs down the spinal canal within the vertebral column. It processes information and sends out instructions.

The **peripheral nervous system** connects the central nervous system with other parts of the body.

There are three kinds of **peripheral nerves**:

- **Motor nerves** control muscles. If a nerve is damaged, varying degrees of paralysis will be present in the limbs and body.
- **Sensory nerves** collect information from the outside world, e.g. hearing, sight, pain, touch. Damage causes such results as blindness, deafness and numbness.
- **Autonomic nerves** run the automatic body functions, e.g. heart beat, digestion, skin temperature. Damage results in altered function and impaired body control, e.g. loss of bladder control, heart beat disturbance and problems with temperature regulation.

Peripheral nerves can be damaged by:
- direct trauma, e.g. cut by knife, crush injury;
- lack of oxygen, e.g. application of a tourniquet;
- poisons, e.g. alcohol, drugs.

CAUSES OF ALTERED CONSCIOUSNESS

Casualties are unconscious when they do not respond to stimuli (e.g. touch, hearing, pain, sight). More frequently first aiders encounter casualties with altered levels of consciousness.

There are many causes of altered consciousness. The common or important problems include:

- Direct injury or illness affecting the brain, e.g. head injury, stroke, seizures, infections such as meningitis.

- Lack of oxygen to the brain, e.g. irregular or ineffective heart beat or even cardiac arrest, stroke, advanced shock, hypoxia due to severe respiratory problems (e.g., asthma/allergic responses), blocked airway, smoke inhalation.

- Poisons and toxic products in the blood, e.g. overdose of alcohol or other drugs, industrial or domestic chemicals/poisons or severe infections.

- Metabolic problems, e.g. hypoglycaemia, major organ failure, such as liver or kidney failure.

- Environmental exposure, e.g. hypothermia, heat stroke.

- Severe mental illnesses may rarely be associated with a simulated decrease in the level of consciousness.

A simple method of remembering causes of altered consciousness is 'AEIOUTIPS':

- **A**noxia or Alcohol;
- **E**pilepsy;
- **I**nsulin overdose or underdose;
- **O**verdose;
- **U**raemia;
- **T**rauma;
- **I**nfection;
- **P**sychiatric emergencies;
- **S**troke or spinal.

Severe permanent brain damage can occur as a result of any of these conditions. In some situations, the altered state of consciousness is temporary.

Good first aid assessment and management of a casualty with an altered conscious state can make all the difference. Not only may life be saved but also the casualty's subsequent quality of life can be preserved.

ASSESSING THE LEVEL OF CONSCIOUSNESS

The casualty's level of consciousness indicates the amount of impairment to the brain. This is determined by assessing how the person reacts to a variety of stimuli.

A person who is fully conscious is alert, oriented in time and place and responsive to appropriate commands and requests. Of course, someone who is asleep will not answer - but as soon as they are awake, they can.

A casualty with an altered state of consciousness must be transported rapidly to hospital. Until medical aid or transport arrives, the level of consciousness should be assessed every 15 minutes, preferably by the same first aider each time, and be carefully and accurately recorded on the OB12 form.

Whenever level of consciousness is tested, the time and result must be recorded. If a fully conscious casualty becomes less alert and less responsive, medical aid must be summoned urgently.

Any casualty who has lost consciousness - even if he/she appears quite well - should be transported to hospital for assessment and observation.

GENERAL FIRST AID MANAGEMENT OF UNCONSCIOUS, BREATHING CASUALTY

Unconsciousness is very serious. It indicates a significant brain injury which may be temporary or permanent and that the casualty is at risk of further injury.

The first aid management of an unconscious casualty is the same no matter what the cause of the unconsciousness:

- **Protect the casualty from danger**, e.g. oncoming traffic.
- **Ensure a clear airway**. This is best achieved with the casualty on his/her side. Lack of oxygen will cause further damage to injured brain cells and prevent those, which can recover from doing so.
- **Administer oxygen**, if available at 8L/min. via an oxygen therapy mask.
- **Control haemorrhage**.
- **Complete a secondary assessment**.
- **Splint the cervical spine**; regard any unconscious trauma victim as having a cervical/spinal injury until proved otherwise.
- **Treat any other injuries**, e.g. splint fractures, cover wounds. Remember that the casualty may have spinal injuries.
- **Transfer to hospital**, with an adequate record of all observations you have made.

The simplest way to remember and record a casualty's level of consciousness is to use the **AVPU system**.

- **'A'** indicates that the casualty is Alert.
- **'V'** indicates that while the casualty is not alert, there is a definite response to a Voice command.
- **'P'** indicates that there is a definite response to a Painful stimulus.
- **'U'** indicates that the casualty is Unresponsive to all stimuli.

Another way is to use the Glasgow Coma Scale, scoring the best response in each of the categories. You should also record exactly what happened to the casualty and when.

Glasgow Coma Scale

The **Glasgow Coma Scale** is the standard measurement tool to assess the level of consciousness in casualties with head injuries in a hospital and pre-hospital environment.

This is a standardised checklist, where 'points' are given at each examination.

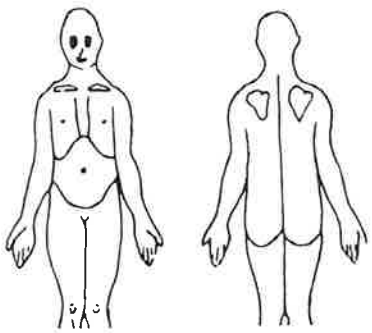
	Score
Eye Opening	
- Spontaneous: eyes open spontaneously as someone approaches.	4
- To voice: the casualty is asked to open his/her eyes.	3
- To pain: the eyes open when a painful stimulus is applied.	2
- None: the eyes do not open to painful stimuli.	1

	Score
Verbal Response	
- Orientated: casualty is orientated to time, place and person, e.g. knows own name.	5
- Confused: casualty is disorientated to time, place or person.	4
- Inappropriate: speech is clear but makes no sense.	3
- Incomprehensible sounds: moans, or makes garbled sounds the examiner cannot understand.	2
- None: the casualty makes no sounds.	1
Motor Response	
- Obeys: obeys simple commands e.g. 'Squeeze my hand".	6
- Localises: moves hands to painful area or tries to push the examiner away when the examiner applies a painful stimulus to the casualty.	5
- Withdrawal: pulls part of the body away from painful stimuli.	4
- Flexion: flexes the body inappropriately to pain to form an abnormal flexion posture (see Fig. 2.2)	3
- Extension: body becomes rigid in an extended position to form an abnormal extension position (see Fig. 2.3) in response to a painful stimulus.	2
- None: no movement or response to a painful stimulus.	1

Casualty Assessment

Breathing 1	Skin 2	Pulse 3	Conscious 4	Other Signs & Symptoms
1. Normal	1. Normal	1. Normal	1. Alert	
2. Deep	2. Pale	2. Slow	2. Responds to	
3. Shallow	3. Flushed	3. Rapid	voice	
4. Absent	4. Moist/clammy	4. Strong	3. Responds to	
5. Wheeze	5. Dry	5. Weak	pain	
6. Gasping	6. Sweaty	6. Can't be felt	4. Unresponsive	
7. Rapid	7. Cool/Cold	7. Regular		**Overall Assessment:**
8. Slow	8. Warm/Hot	8. Irregular		

Time	Pulse	Resp.	Temp.	Glasgow Coma Scale E V M TOTAL	Pupils' size R L	Pupils' reaction R L	Other Observations



A - Abrasion
Bl - Bleeding
Bu - Burns
C - Contusion
D - Deformity
F - ? Fracture
L - Laceration
P - Pain

Location 5	RICE 6	Slings 7	D
1. Head	1. Rest	1. Collar & Cuff	1.
2. Facial	2. Ice	2. St John	2.
3. Chest	Time on:	3. Triangular	3.
4. Abdomen	3. Compression	4. Comp. bandage	4.
5. Limb	4. Elevation	Time applied:	5.
6. Spinal	5. All of above		
7. Multiple	**Posture** 9	**Oxygen** 10	R
8. Back	1. Legs up	1. Mask	1.

Fig. 2.1 Recording Conscious State on OB12 Form

Fig. 2.2 Abnormal flexion position - arms brought up towards the body indicating severe brain damage

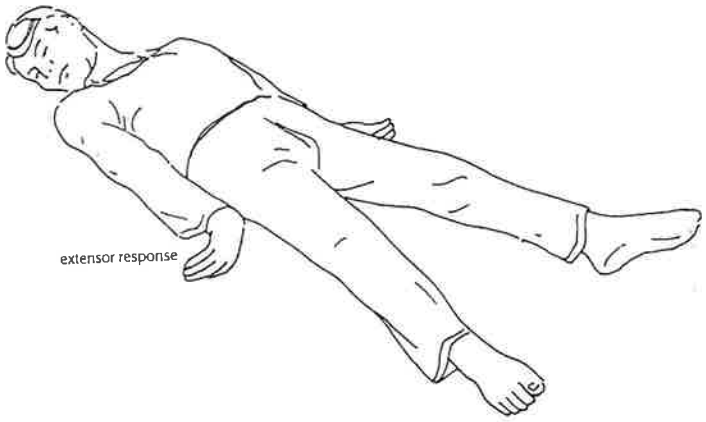


Fig. 2.3 Abnormal extension position - arms angled away from the body indicating very severe brain damage

ASSESSING THE REACTION OF THE PUPILS

The pupil is the black area at the centre of the coloured part (iris) of each eye. The pupils decrease in size (contract) when a light is shone into the eyes. They become larger (dilate) in a darker environment.

It is important to remember that a change in an altered level of consciousness is usually an earlier sign of a significant intracerebral problem than a change in pupillary responses and that some casualties may normally have different sized pupils.

These reactions are controlled by the oculomotor nerves, which run from the brain to the back of the eye. Any damage to, or pressure on, these nerves will affect the pupillary size and reaction to light. Changes to pupil size and the ways it reacts to light do not reflect actual brain damage but indicate a rise in pressure inside the skull.

When pressure rises, the pupils become large and do not constrict when light is shone into them. With lesser rises in pressure, the pupils may react slowly to light.

If there is an injury to one side of the brain only, then only one pupil will react slowly to light, while the other may react normally.

In a casualty with decreased level of consciousness:
- in head injuries, pupil changes are a late sign; they are always preceded by significant changes in level of consciousness.
- if one or both pupils are enlarged, and do not react to light, the casualty is dangerously ill and needs very urgent hospital care;

Any casualty who is unconscious, or who has lost consciousness but now recovered, must have the level of consciousness and pupil reaction assessed. It is essential to write down your observations every time you assess the conscious level and check the pupils.

The pupils are tested by shining a light (pen torch) into the eyes.

Dilated Pupils

Cause:
- fright;
- drugs (e.g. atropine or certain eye drops);
- brain swelling as a result of head injury or something else such as brain haemorrhage, causing a general rise in pressure inside the skull;
- the casualty has an altered conscious state.

Constricted Pupils

Cause:

- narcotic overdose (e.g. heroin, morphine);
- excessive alcohol;
- stroke or nervous system disorder;
- bright lights or use of some eyedrops used in the treatment of glaucoma.

Unequal Pupils may be normal (10-15% of the population have unequal pupils; a difference of greater than 1mm is abnormal)

Cause:

- head injury;
- stroke;
- eye surgery on one side (e.g. cataracts);
- direct trauma (sharp or blunt) to the eye;
- eye medications;
- artificial (glass) eye.

2.1 Examine an unconscious but breathing casualty

Checklist	Needs Improvement Date	Proficient Date
Danger present in area? Yes/No		
Response to shake and shout - 'Are you all right?'		
(No response)		
Turn casualty on the side. A.F.A., 1998, pp. 31 and 39. Consider cervical spine injury; keep spine in neutral position		
Check and clear **A**irway.		
Check for **B**reathing.		
Check for **C**irculation.		
Make sure that the casualty is lying securely on his/her side, with the face slightly downwards, and that he/she cannot roll out of position, i.e. recovery position or alternative recovery position.		
Check for and manage any major external haemorrhage.		
Continue your examination with the casualty on the side.		
Send for medical aid (but do not leave casualty alone).		
Check: - pulse; - respiration; - skin colour.		
Check level of consciousness (eyes, motor response, verbal response) and document on OB12 form.		

Checklist	Needs Improvement Date	Proficient Date
Check pupil response and size.		
Exclude other injuries: look, feel and move all areas of the body in turn, checking for wounds, fractures, etc.		
Treat any injury.		
Check casualty for medication and Medic Alert bracelet.		
Ask any bystanders about what happened. Record all observations.		
Re-check pulse, respiration, level of consciousness, and pupils at least every 15 minutes and record.		

2.2 Position a casualty into the recovery position

Checklist	Needs Improvement Date	Proficient Date
Kneel near casualty's hips. Place casualty's far arm out straight from shoulder.		
Fold near arm across chest.		
Flex near leg at knee till thigh at right angle to body.		
Support the casualty's shoulder, neck and head with one hand. Grasp the near knee with the other hand.		
Rotate casualty away from you, using the knee as a lever.		
Draw upper leg towards casualty's head so knee is flexed at right angles.		
Place nearer arm across farther arm at level of elbow.		
Tilt head and support jaw.		
Turn face slightly downwards.		
Check airway, breathing and circulation.		

2.3 Position a casualty into the alternative recovery position

Checklist	Needs Improvement Date	Proficient Date
Kneel beside casualty.		
Place the casualty's nearer arm, palm up, under the buttocks.		
Cross farther leg over nearer leg.		
Place farther arm across the chest.		
Support casualty's head and neck with one hand.		
Grasp the casualty's farther hip with your other hand.		
Roll casualty towards you until resting against your knees and with head resting on the ground.		
Support casualty in this position until airway and breathing have been checked.		
Place casualty's hand under the cheek.		
Bend upper leg at a right angle to the body.		
Remove farther arm from under the body to ensure a stable position.		

MENTAL STATE EXAMINATION

A Mental State Examination is a tool which may be used by a health care professional to measure a person's mental functioning.

This tool is composed of a number of tests. Some of the tests are:
- a simple mathematics test;
- knowing the day, date, month and season;
- drawing a clock face;
- folding paper;
- spelling a word backwards.

This area may be discussed further with your divisional health care professional.

TOPICS FOR DISCUSSION

1. How could you modify the Glasgow Coma Scale to assess the level of consciousness in:
- a deaf casualty?
- a baby or infant?
- a very elderly person, who is already confused, e.g. a person who never knows what day it is or where he or she is?
- someone who does not speak English?
- someone affected by alcohol?

Ask your Divisional/Corps Medical Officer to explain what a 'Mental State Examination' is.

2. You are on duty and are called to assist an unconscious casualty. There is a young man lying on the ground, face down, with a graze to his temple. His friends say that he has been drinking all day and has tripped over and now will not get up. How do you tell if he is unconscious from a head injury or from alcohol?

3. How can head injuries be prevented? How many bike riders in your family always wear helmets?

4. In an unconscious casualty with fluid leaking from an ear, what injury would you suspect?

5. You have been called to a young boy who has fallen off his pony. He was wearing a riding helmet. The casualty is unconscious and the pony has trodden on the boy's helmet and his head. Would your management of this casualty differ from any other unconscious casualty? Would you remove his helmet?

Assessment of the Conscious Casualty

PRESCRIBED REFERENCE: St John Ambulance Australia. Australian First Aid. Third edition,1998, reprinted annually, Chapters 1 and 5.

AIM: To prepare the member to make a systematic assessment of a sick or injured, conscious casualty in order to determine the appropriate first aid management required.

OBJECTIVES: At the conclusion of the period of instruction, the adult member will be able to systematically state and demonstrate in a conscious casualty:

3.1 a primary examination method to identify life-threatening conditions;

3.2 secondary examination procedure to identify non life-threatening conditions;

3.3 the priorities of emergency care.

Introduction

Assessment of the conscious casualty is mainly a practical skill but to be of value it must be done systematically. The examination of any casualty involves :

1. observation and D.R.A.B.C.; look for life-threatening conditions;
2. history of this event;
3. look again, to check for all injuries and medical problems;
4. further history (can be taken while performing 3. the secondary check).

1. D.R.A.B.C.

A. DANGER - the first stage of assessment is OBSERVATION of the casualty and the immediate environment.

Consider:

(a) The Weather

- Is it very hot or very cold?
- Could the temperature cause complications for the casualty?
- Could the casualty have hypothermia, dehydration or heat-stroke as a complication of his/her illness or injury?
- Is it dusty or windy? Asthma is more likely in such conditions.

(b) The crowd

- What is the profile of the crowd?
- Are they young or old and what activity is occurring?
- Are there mainly excited young people in the crowd?
- For example, is there a lot of alcohol or other drug use evident?
- Is it a meeting of the Diabetic Society or another group?
- Are there a lot of elderly people who may have pre-existing illnesses present?

(c) Resources available

Your treatment of a conscious casualty may be affected by:

- the qualifications of the first aiders present;
- radio communications available;
- distance from medical aid.

Then OBSERVE the casualty as you approach or as he/she walks into your first aid post.

- Is the casualty in pain?
- Is the casualty limping, unsteady on the feet, crying or panicky?
- Is the casualty pale, flushed, puffing or sweaty ?
- Are there other clues?
  - a bandage already applied?
  - an obvious injury?
  - the chain saw still going?
- Is there a bystander, friend or relative present? Ask them not to leave until you've questioned them.

DANGER: If the casualty or the first-aider is in danger from the environment:

- Remove the danger or remove the casualty.
- If you can't do either, wait for expert help.

B. D.R.A.B.C. - the Systematic Primary Assessment

The purpose of the systematic Primary Examination is to detect **life-threatening conditions** so they can be treated at once.

The St John D.R.A.B.C. Action Plan is the ideal method of doing this:

RESPONSE:

- Is the casualty conscious or unconscious?

(This module is concerned with conscious casualties only. For the unconscious casualty, refer to *A.F.A.*, Chapter 1)

- Is the response normal or not?
- Is speech slurred, mumbled, whispered or hoarse?
- A stroke victim may only respond by squeezing your hand.

AIRWAY.

- Is the casualty breathing noisily ?
- Check the casualty's mouth and ask him/her to remove items such as chewing gum that may cause problems later. Look for dislodged teeth, deformity and bleeding.
- A casualty who is bleeding in the mouth, or unable to swallow, may need to sit forward to keep the airway clear or may prefer to lie on the side to allow drainage.

BREATHING:

A conscious casualty will be breathing. Assess chest movement and respiratory rate. Check the nature of breathing:

- Is it laboured - with obvious effort?
- Is it very fast?
- Does the casualty need oxygen straight away, while you complete the rest of your examination?

CIRCULATION: Control obvious bleeding. Check the pulse for rate, rhythm and strength.

RE-CHECK pulse rate, respiratory rate and level of consciousness.

2. HISTORY OF THIS EVENT

Taking a History. History gathering occurs from the very first time you hear of an injury or an accident, from talking to the bystanders and casualty initially, to closer questioning of the casualty once the D.R.A.B.C. has been completed.

Introduce yourself; ask the casualty's name and use it.
Ask "What's the problem?" and listen to the answer.

(a) **Injury:** Treat obvious severe injuries as you talk; control bleeding, get a cold pack ready for the burn etc.
- How did it happen?
- When did it happen?
- What part/s of your body was/were injured?
- Does it hurt anywhere else?
- Did you lose consciousness?

If there was any injury to the face or head or if they fell, ask any witness what happened.

(b) **Illness**
- What symptoms do you have?
- Are you in pain?
- How did it start?
- Where?
- How severe?
- Is it constant or does it come and go?
- Is it dull or sharp?
- Does the pain spread anywhere else (called 'radiation') or is it just in the one spot?
- Do you have any other symptoms, e.g.:
  - cough?
  - vomiting, nausea or diarrhoea?
  - shortness of breath?
- Has this happened before?

3. SYSTEMATIC SECONDARY ASSESSMENT

The secondary examination should reveal the extent of injuries the casualty has suffered. While carrying out - or after - the secondary examination, a GENERAL HISTORY should be obtained.

If you are able to take a good history, you will rarely be surprised by what you find on carrying out a systematic secondary examination.

For both injury and illness:
- Do you have any other medical problems, e.g.:
  - diabetes?
  - epilepsy?
  - heart conditions?
  - bleeding disorder?

  Are you taking any medications?

Why do we need to ask about medication?
- Some medications can make the pulse faster or slower.
- Some medications, e.g. aspirin, warfarin, make the blood thinner and cause increased bleeding and bruising.
- You can find whether the casualty has any allergies.

The examination may be a limited examination or a full examination.

(a) Limited examination

If the casualty has had a minor accident and only one part of the body is injured, it is reasonable to only examine **that part**, e.g.:
- steam burn to the arm;
- sprained wrist;
- grazes on the knee.

(b) Full examination -

If the casualty has had:
- loss of consciousness;
- a major injury, e.g. an obvious fracture;
- minor injuries to several body areas, e.g. grazes to forehead, both knees and hands;
- a heavy fall, e.g. fall from a tree or fall from a fast-moving bike;
- severe pain, e.g. chest pain;

he/she needs a full examination, including head and neck, chest, spine, abdomen and limbs.

During the systematic examination, the first aider can check D.R.A.B.C. again, including pulse and respiration and the results of any life-saving treatment. The level of consciousness should also be re-assessed.

4. PRIORITIES OF EMERGENCY CARE FOR A CONSCIOUS CASUALTY

The priorities of care for a conscious casualty are as outlined in the D.R.A.B.C. Action Plan:
- remove dangers;
- clear airway;
- check breathing;
- control haemorrhage;
- head injury observations;
- assessment of chest pain.

The next priority is to treat the injuries or conditions that concern the casualty the most. This will usually be the most painful condition, or the injury that has prompted him/her to seek first aid treatment.

REMEMBER THE RULE – ASSESS, MANAGE, REASSESS, APPROPRIATE DISPOSAL.

Refer to *A.F.A.* , Ch. 1 and 5.

3.1 Assess a conscious casualty

Checklist	Needs Improvement Date	Proficient Date
D DANGERS On approaching casualty, observe the scene for dangers: - to yourself; - to others; - to the casualty.		
R RESPONSE - responds; - clues for possible injuries.		
Speak to the casualty: - "Lie/stay still – don't move"; - "I'm a first aider and I can help you"; - "My name is .....; - "What is your name?"		

Checklist	Needs Improvement Date	Proficient Date
A AIRWAY Check if it is clear.		
B BREATHING - Yes - Check for chest movement. - Ask the casualty what happened – "Tell me what happened."		
C CIRCULATION - Check for haemorrhage. - Explain to the casualty that you are going to make an examination. - Place gloves on. - Treat any severe bleeding immediately.		
ASSESSMENT - Ask where the pain is – "Where are you hurt?" - Investigate these painful areas. - Ask the casualty to explain to you in detail what he/she remembers about the incident. "Tell me exactly what happened". - This may lead you to further possible injuries. If the casualty has only a vague recollection, suspect a period of loss of consciousness (L.O.C.). - Check the casualty for injuries consistent with the story. - Ask a bystander who saw the accident to tell you exactly what happened. Compare the casualty's story with the bystander's story. - Ask the casualty for previous medical history. (This may provide further clues to the casualty's condition or may influence later treatment.) - Check the remaining areas of the body systematically for function, unusual appearance or feel which may indicate further injury. - Treat injuries according to order of severity. Reassure the casualty. - Record your observations of the casualty and the situation on the Casualty Report form (OB12). - Arrange for the casualty's disposal (medical aid, home or back to work, as appropriate).		

This assessment should be done on a duty.

Childbirth

PRESCRIBED REFERENCE: St John Ambulance Australia. Australian First Aid. Third edition, 1998, reprinted annually, Chapter 22.

OBJECTIVES: On the completion of this module, the member:

4.1: will be able to state the preparations to be made for the delivery of a baby;

4.2: will be able to state what infection control strategies will be used to ensure a safe environment for the mother, baby and first aider:

4.3: will be able to demonstrate how to assist the mother during and after the birth;

4.4: will be able to demonstrate how to care for the baby after birth, including airway management and C.P.R.

PRACTICAL SKILL: Infant resuscitation.

CHILDBIRTH PREPARATION

Childbirth is a natural process and the majority of babies are delivered without any complications. It is impossible to predict which mother or baby will need assistance and it is desirable to **refer the expectant mother immediately to hospital by ambulance** rather than making elaborate preparations for an unexpected childbirth. This is particularly relevant where an early childbirth may result in a premature baby.

INFECTION CONTROL

To ensure a safe delivery for mother and baby, the principles of Infection Control Guidelines (1) must be adhered to in the birthing process as they relate to:
- environment;
- mother and baby;
- first aider.

The **environment** should be clean, warm and sheltered with ample facilities and resources for hand washing and the safe disposal of waste products.

Both the **mother and baby** are at considerable risk of infection. The **first aider** is at risk of contamination from blood and or body fluid and has a responsibility to adopt Infection Control Guidelines that incorporate:
- hand washing;
- non-sterile gloves;
- face protection and plastic apron;
- disposal of waste.

Hand washing

After the removal of rings and watches, hands should be washed with an emphasis to areas between the fingers and fingertips. Hands should be lathered and vigorously rubbed together for at least fifteen seconds using a neutral pH soap or skin cleanser and rinsed using a moderate stream of water. Hands are then dried thoroughly using a paper towel or a disposable cloth. Hands should be washed prior to and following the removal of non-sterile gloves.

Non-sterile gloves are worn when the first aider is in contact with the mother or baby and where there is a likelihood of contact with blood, mucous membranes, body fluids and non-intact skin.

Face protection that includes protective eyewear and masks is worn to protect the first aider from contamination with blood or body fluids splash or spray during or following the delivery of the baby.

A **plastic apron** should be worn during the delivery process to protect the first aider, clothing and skin from potential contamination.

Disposal of waste

Standard Precautions should be used when handling waste. Blood stained linen should be placed in plastic bags before disposal into a laundry bag. Blood stained dressings can be disposed of as general waste and alternatively blood soaked dressings should be placed in yellow plastic bags and disposed of through services offered by local hospitals.

Sharps must be disposed of into Standards Australia approved puncture resistant containers.

PREPARATION FOR BIRTH

Childbirth, although an exciting time, is also an emotional and a personal event for both parents. The first aider will need to demonstrate a sense of calmness and reassurance in preparing for an imminent birth as well as ensure privacy to the expectant mother.

The first aider should anticipate and have the necessary resources available to assist in the delivery of the baby. These items are referred to as the **First Aider's Childbirth Kit** and include:
- 1 large plastic sheet;
- 2 clean cotton sheets;
- 3 sterile or clean cord ties (e.g. string, linen tape) each about 8 cm long;
- 3 bunny rugs;
- towels;
- large plastic bags for soiled linen;
- large plastic bag for the afterbirth;
- sterile scissors;
- non-sterile gloves;
- gauze swabs or a clean soft cloth;
- sanitary pads/sterile dressings/disposable nappies.

The expectant mother will adopt the most comfortable position for the delivery of the baby that may include lying down, squatting or other alternative position. The first aider has a responsibility to find a clean environment that is private and meets the needs of the expectant mother.

THE BIRTH

The **process of labour** incorporates three stages.

FIRST STAGE - Onset of Labour Signs

During the first stage of labour, the mother will have increasingly strong contractions that are regular in nature and accompanied by abdominal tightening, discomfort, backache and/or pain. The mother may describe these contractions as similar to period pains but with greater intensity. They occur rhythmically every 2-3 minutes and last for approximately 45-60 seconds.

The first stage of labour may last up to 24 hours in a woman having her first child. It may be as short as one hour for a woman who has given birth before.

The sac or 'waters' surrounding the baby may have broken resulting in a rush and/or constant trickle of fluid from the vagina. The first aider should note and inform medical aid of the colour and consistency of this fluid. During progression of the first stage of labour a bloody mucus loss (show) may also be evident from the vagina.

Management
- Assist the woman into the most comfortable position. She may want to walk around, lie down, lie on her side or kneel on all fours. Let her do what makes her feel comfortable.
- Call '000' for an ambulance.
- Encourage support by the partner and/or family.
- Give reassurance.
- Offer frequent sips of fluid.
- Record observations and type of vaginal loss on an OB 12 Casualty Report form.

SECOND STAGE - The Birth

This stage of labour is defined as commencing when the cervix or neck of the womb is fully dilated and ends when the baby is born.

During the second stage of labour the woman will experience an increase in the frequency and intensity of the contractions. She may experience an urge to 'bear down' and this should be avoided through asking the woman to 'pant' during each contraction to prevent possible tearing of the cervix. Depending on the position of the baby and the status of the cervix, the woman may continue to 'push' voluntarily or involuntarily.

If birth is imminent the first aider will be able to observe an increase in the flow of mucus and blood from the vagina, a desire on part of the woman to use her bowels and the opening of the birth canal. **Do not allow the woman to go to the toilet.** When the birth canal is gaping the presenting part, usually the top of the baby's head, can be viewed by the first aider. This is known as 'crowning' of the baby's head.

Potential problems

Mother
- Infection.
- Peri-anal tear.
- Blood loss.

Baby
- Infection from cutting of the umbilical cord.
- Heat loss.
- Lack of oxygen.
- Blood loss from cord.
- Intracranial haemorrhage.

Preparations

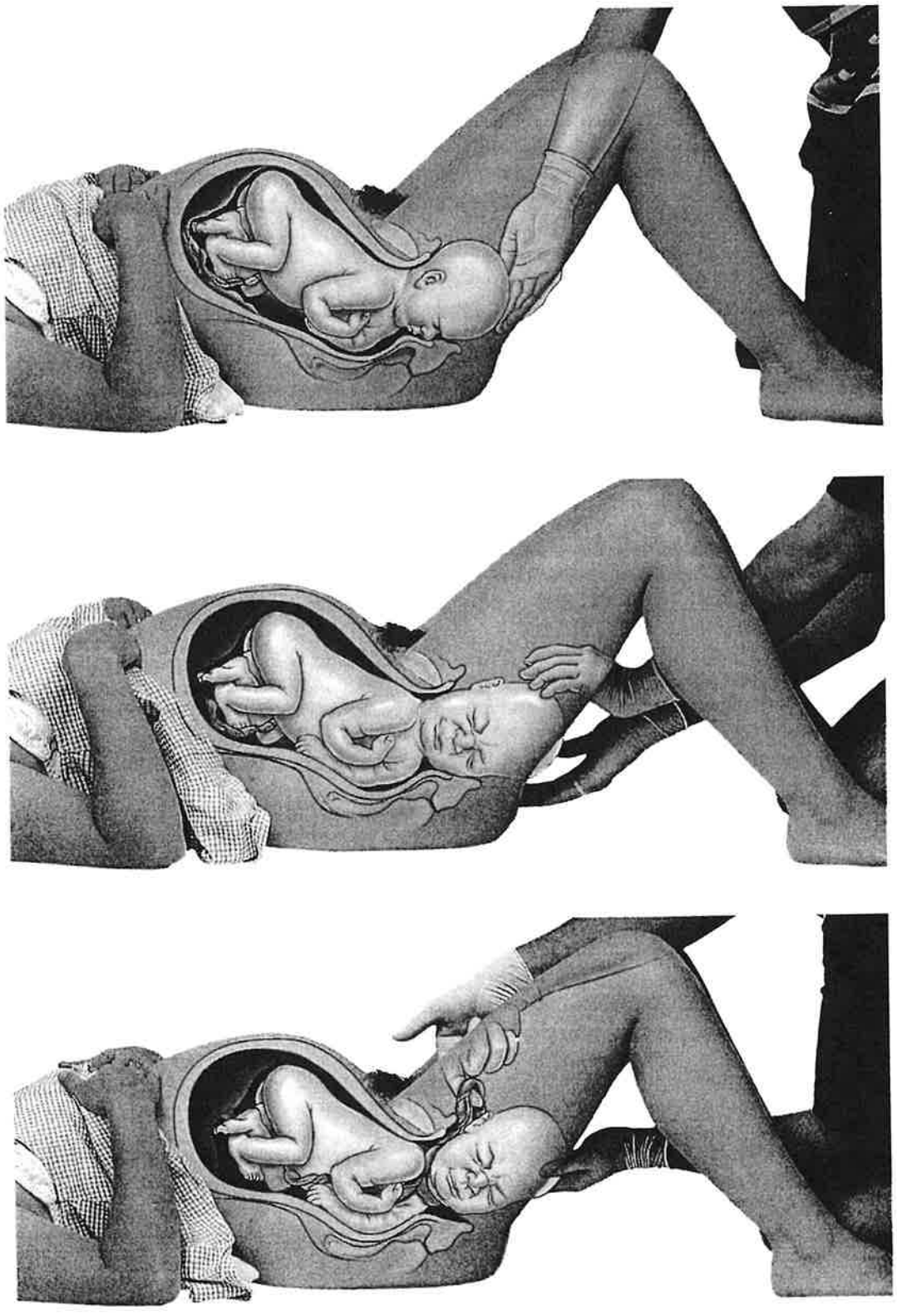
First Aider
- Adopt Infection Control Guidelines to prevent contamination from blood and body fluids.
- Prepare two warmed blankets, towels or nappies for the baby.
- Ensure resources for the delivery of the baby are readily available and accessible.
- Ensure adequate lighting.

Expectant mother
- Inform and explain to the mother all first aid interventions.
- If time permits, wash the area from the entrance to the vagina to the anus using soap and water. Use a clean swab each time and wash from the vaginal opening towards the anus.
- Ask the mother to adopt the most comfortable position.
- Place a drape or sheet over the lower part of the mother.
- Maintain privacy.
- Encourage relaxation between contractions through the use of learned breathing strategies.

Management of Second Stage - Normal Delivery

Delivery of the head

- Place a pad over the anal area.
- As the head emerges, ask the mother to pant, not to push, so that the head is born slowly and gently; pushing is a reflex action and may be difficult to control.
- Control the baby's head with firm but gentle pressure to prevent it from delivering too quickly. The head will usually appear with the face towards the mother's anus and then rotate to one side.
- Check for the umbilical cord around the baby's neck. If the cord is around the baby's neck, attempt to bring it over the baby's head. **Do not pull the cord**. If you are unable to clear the cord in this manner, it may be necessary to cut the umbilical cord.



Figs. 4.1 –4.3

Childbirth

Procedure:

- The woman continues to 'pant' or continues to take short sharp breaths. She is requested not to 'push'.
- Identify a single strand of the umbilical cord.
- Place two clamps or ties on a single strand of the umbilical cord.
- Cut the umbilical cord between the two ties, using sterile scissors.

- Support the head of the baby and clear the baby's mouth and nose by wrapping one or two fingers in sterile gauze to remove mucus.
- Await next contraction for delivery of the shoulders.

Delivery of the shoulder

- Position your hands on either side of the baby's head.
- Guide the head slowly downwards as the mother pushes.
- Watch for the delivery of the upper shoulder.
- Guide the head upwards for delivery of the lower shoulder.

Delivery of the body

- Hold the baby under the armpits and slowly lift it upwards and onto the mother's abdomen.
- Document the time the baby was born on an OB12 Casualty Report form.

Management of Second Stage - Complications

Delivery with buttocks or foot presenting first (breech birth)

A breech birth can be life threatening for the baby as the head may get stuck in the birth canal after the body has been delivered. The baby may die from lack of oxygen as the result of compression of the umbilical cord between the head and the walls of the vagina. **The woman should be urgently transported by ambulance to hospital.**

- Place the mother in a position, e.g. at the very edge of the bed, that allows the baby to be delivered downwards.
- Let the mother push the baby out herself. Gently guide the baby so that the back remains uppermost.
- After delivery of the legs and bottom, wrap a warm cloth around the baby.
- After delivery of the shoulders, allow the baby to hang downwards with gentle support.
- When the nape of the neck is visible, lift the baby's body upward by the ankles, while supporting the body.
- Allow the head to deliver slowly.

If a hand appears first, do not interfere; seek medical aid urgently.

Delivery with umbilical cord presenting first

If the umbilical cord presents first and is compressed by the head, death can occur within minutes as a result of lack of oxygen to the baby.

Cord prolapse is a medical emergency and the mother should be urgently transported to hospital.

- Place the mother on her left side with her head down and buttocks upwards.
- Administer oxygen to the mother by mask at 8-15 litres per minute.
- Attempt to slip the cord gently behind the head to keep the pressure off the cord.
- Inform the mother of the seriousness of the situation.

IMMEDIATE CARE OF THE BABY

- The baby will be slippery and requires careful handling.
- The umbilical cord should be left intact.
- Dry baby quickly and thoroughly with a fresh clean towel.
- Place baby on mother's abdomen to provide warmth. Alternatively, the baby can be placed on the mother's breast to stimulate delivery of the afterbirth, to control bleeding and breastfeeding.
- Ensure that the baby is kept warm through the use of towels and blankets. All areas of the baby should be covered to prevent heat loss.
- Maintain vigilance through observation of the baby.

Airway

Supporting the baby's head, neck and shoulders with one hand and feet with the other, place the baby's head low to drain secretions from its nose and mouth. Alternatively, the baby can be placed on the mother's abdomen to drain secretions.

It may be necessary for the first aider to wrap one or two fingers in sterile gauze to remove mucus from the baby's mouth. Use suction if available to suck visible mucus from the baby's mouth and nose.

Breathing

The baby will normally start breathing and crying within a minute of birth and its colour will change from a bluish to a healthy pink within two minutes. Hands and feet may remain blue for several hours. If the baby does not breathe immediately, attempt to stimulate it by gently rubbing or slapping the soles of its feet. **Do not hold the baby upside down by its heels and slap it on the back or the buttocks to make it cry.**

If there are no signs of breathing after 1 minute, commence E.A.R.

Procedure:
- Place your mouth over the baby's mouth and nose together, ensuring an adequate seal. An infant bag and mask could be used with oxygen by the first aider if competency in the use of this equipment has been attained.
- Blow gently (puff), just enough to see a rise in the baby's chest.
- Rate for E.A.R. or bag and mask resuscitation is 1 breath (puff) every 3 seconds or 20 breaths per minute.
- Refer to Resuscitation Algorithm and Resuscitation Rates, Module 1.

In most cases ventilation, **not chest compressions**, is the primary intervention that is required by the baby in these circumstances.

Circulation

The pulse is difficult to assess in the newborn and may be detected by lightly holding the base of the umbilical cord between the thumb and index finger. Alternatively, an apex heartbeat may be felt by placing two fingers over the left nipple.

Refer to Resuscitation Algorithm and Resuscitation Rates, Module 1.

Persons untrained in neonatal resuscitation should not attempt chest compressions on a newborn.

THIRD STAGE - The Afterbirth

The placenta or afterbirth is expelled by uterine contractions ten or more minutes approximately following the birth of the baby.

Management
- Place the mother in the most comfortable position.
- Encourage uterine contractions through placing the baby on the breast. Do not pull on the umbilical cord.
- If the afterbirth is not delivered and contractions cease, cover the opening of the birth canal with a sterile pad.
- After the afterbirth has been delivered, it should be placed into a plastic bag and transported to hospital with the mother for medical inspection.
- If blood loss from the vagina is considered to be excessive after five minutes, massage the woman's abdomen above the uterus until it becomes firm. The uterus can be felt as a hard lump at the level of the navel.

Care of the Umbilical Cord

If there is some delay in transporting the mother and baby to hospital, the umbilical cord can be tied. Sterile or clean ties are positioned around the umbilical cord in three places, 10cms, 15cms and 20cms **from the baby's umbilicus**. The ties should be secured in a manner to prevent bleeding after the cord is cut.

The umbilical cord is cut only in exceptional circumstances which include:
- complications in the second stage of labour;
- resuscitation of the baby is required;
- mother requiring additional care;
- cord is too short;
- isolation from medical aid.

The first aider should cut the umbilical cord between the second and third tie away from the baby. The stump of the cord should be covered with a sterile dressing and observed for bleeding.

Care of the Mother

Following the birth of the baby and the delivery of the afterbirth, the woman will experience both elation and exhaustion. The first aider has a responsibility to ensure that:
- the mother is kept warm, dry and comfortable;
- observations of pulse, respirations and vaginal loss are recorded on an OB12 Casualty Report form;
- the birth canal area is cleaned using clean towels and gauze pads;
- the woman is offered oral fluids provided the afterbirth has been delivered;
- both the mother and baby are promptly transported by ambulance to hospital.

In summary, childbirth is a natural experience necessitating minimal intervention on part of the first aider to ensure a safe delivery for mother and baby.

4.1 Perform effective resuscitation for an infant

Practical incident

You are called to an unconscious infant. When you arrive the mother is attempting C.P.R. You have non-sterile gloves. Manage the casualty as you would normally.

	Checklist	**Needs Improvement Date**	**Proficient Date**
DANGERS	(No) You, others, infant.		
RESPONSE	(No). - Place infant onto side in head down position. - Ensure the infant is kept warm. - Send bystander for help; use radio for ambulance.		
AIRWAY	(Vomitus). - Digital clearance/suction, if available and competence has been attained. - Wipe nose clear of mucus.		
BREATHING	(Nil/Agonal gasps). - Roll infant onto back. - Neutral head position. - Place your widely open mouth over the infant's mouth and nose. - 2 effective breaths. - Watch rise/fall of chest.		
CIRCULATION	(Yes).		

Checklist		Needs Improvement Date	Proficient Date
COMMENCE E.A.R.	- Rate: 1 puff every 3 seconds. - Good seal. - Watch rise/fall of chest.		
REVIVAL CHECK at approx. 1 minute.	- Breathing (Nil). - Circulation (Nil).		
COMMENCE 1 PERSON C.P.R. at ratio 5:1.	- Good seal. - Watch rise/fall of chest. - 5 compressions. - Lower half of sternum. - Depth 1/3 of depth of chest. - Rate: 12 cycles/minute.		
SECOND MEMBER arrives	- Check that the ambulance has been called; if not, call. - Ensure the infant is kept warm. - Provide support to the mother.		
CASUALTY VOMITS	- Turn infant onto side. - Digital clearance of mouth/suction, if available and competence has been attained. - Wipe nose clear of mucus. - Return infant onto back. - Continue ratio of 5:1.		
AMBULANCE	- Hand over.		
MOTHER	- If possible, obtain history and complete OB 12 Casualty Report form.		
GENERAL	- Calls for help at appropriate times. - The ambulance must be called immediately to ensure early intervention of advanced life support skills. - Use of Standard Precautions.		

VERBAL ASSESSMENT

1. What information would you give to the ambulance officer on hand over?
2. What can you check for to assess whether your C.P.R. is effective on an infant?
3. Explain what support you would provide to the mother?

SUGGESTED ACTIVITIES

1. Ask if your division can go on a tour of the maternity unit of your local hospital.
2. Borrow a Childbirth Education video from the hospital.

REFERENCES

1. St John Ambulance Australia. Infection Control Guidelines. 1996.
2. Nichols FH, Zwelling. Maternal-Newborn Nursing, Theory and Practice. WB Saunders Company, 1997.

Soft Tissue Injuries and Dislocations

PRESCRIBED REFERENCE: St John Ambulance Australia. Australian First Aid. Third edition,1998, reprinted annually, Chapters 5 and 6.

OBJECTIVES:

5.1 To be able to describe the common soft tissue injuries of the limbs and joints.

5.2 To be able to treat common sprains and strains of the limbs.

This module does not cover skin injuries.

INTRODUCTION

Soft tissue injuries of the limbs are among the most commonly encountered by the first aider. These may range from simple bruises to major open wounds and ligament tears around the joints. Some injuries are more obvious than others. A shallow laceration with some bleeding may draw attention away from a less obvious, but more sinister, 'crush injury' where the skin is intact and no visible bruising is evident. A careful history of the injury and examination of the casualty is therefore most important. Be aware that in a high energy injury, such as a motor cycle accident, where severe, sometimes spectacular (and possibly life threatening) limb injuries are seen, the most common causes of death are:

- closed head injury ;
- chest injury.

Remember that the often robust limbs are attached to a more vulnerable head and torso.

ANATOMY

The four soft tissue structures of the limbs are:

1. The Skin

The skin, the largest organ in the body, consists of two layers, the epidermis on top and the dermis underneath. Open injuries and crush injuries of the limbs will have associated skin injury. For assessment and management of burns and other skin injuries, see *A.F.A.* (1998) pp. 209-219.

2. The Muscle Tendon Unit (Fig. 5.1)

3. The Ligaments

The ligaments are joint stabilisers. They have very little stretch but are very strong.
They may be:

- outside the joint (extracapsular);
- part of the lining of the joint (capsular);
- within the joint (intracapsular).

In children the ligaments around the joints are usually stronger than the softer, growing bone. A force which may cause a ruptured ligament in an adult is more likely to cause a fracture in a child.

4. Nerves and Blood Vessels

The nerves and blood vessels of all limbs are vulnerable to injury in any musculo-skeletal trauma. No assessment of limb injury is complete without the assessment of:
- sensation (can the casualty feel touch?);
- power (can the casualty move the injured area?);
- blood supply (colour, pulse, capillary return and warmth);
of the limb **below** the injury.

Certain fractures are very likely to cause nerve and blood vessel damage, e.g. fractures around the elbow.

The muscle tendon unit always crosses one or more joints.

The contraction of the muscle belly produces movement of these joints.

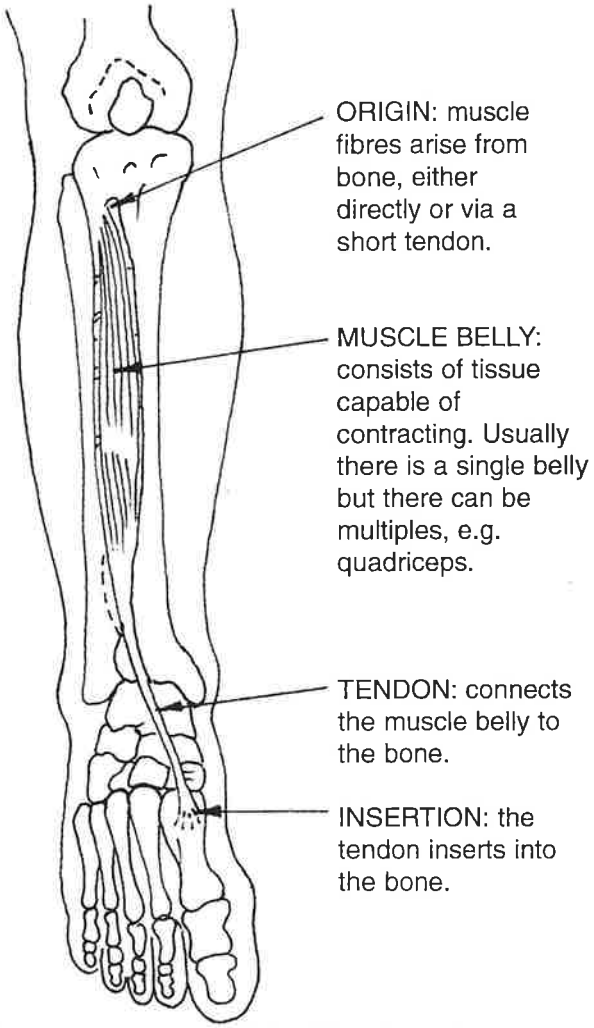


Fig.5.1 The Muscle Tendon Unit
(See also *A.F.A.*, (1998) p. 127)

Capillary return: Press firmly on a fingernail or toenail of the injured limb. The area you press on will go pale, as you have pushed the blood out of the capillaries in the area. Release the pressure. If the blood supply to the area is good, the colour will return to normal within three seconds. If it doesn't, the blood supply is very poor and the casualty needs urgent medical aid.

MECHANISMS OF INJURY

1. Open Injury

(a) **Abrasions and lacerations** result from shearing and cutting forces and cause damage to the skin and structures just under the skin - superficial blood vessels and nerves and sometimes muscle.

(b) **Penetrating/puncture wounds** are caused by sharp objects that puncture the skin and underlying tissues to a variable depth. Little or no external bleeding may occur but the internal bleeding may be severe. Penetrating wounds are frequently multiple and careful head-to-toe examination must be performed to identify all wounds. The first aider must guard against focusing on a single penetrating wound and missing possible multiple injuries. Penetrating injury may cause tendon injury and examination of the movement of all joints distal to the injury is essential. Thus if the casualty has cut the palm of the hand with broken glass, the first aider must check the movement and feeling of each finger.

2. Closed Injuries

(a) **Contusions (bruises)** are common and cause bleeding beneath the intact skin. These rarely extend below the skin but muscular bleeding (e.g. a corked thigh) may occur in high energy incidents. This kind of bleeding where there is a collection of blood is called a **haematoma**. See *A.F.A* . (1998) p. 121.

(b) **Crush injury** results when part of the body is caught between two compressive forces. These injuries can be very severe in both the short and long term but often show few signs on the surface. See *A.F.A* . (1998) pp. 119-121.

(c) **Muscle tears** occur when sudden forceful contractions of muscles cause damage to muscle fibres at the origin or in the muscle belly. The tendon may even rupture. The 'ham-string' injury in sprinters results when the muscle fibres are pulled away from their pelvic origin. Rupture of the Achilles tendon at the ankle results from sudden forceful contraction of the powerful calf muscle.

(d) **Sprains and dislocations.** Dislocations and other joint injuries occur when a joint is forced past its normal range of movement. It may be a direct force, such as falling, or an indirect force such as twisting. Any force, from any direction, if strong enough, may tear apart the muscles, tendons and ligaments around a joint. This will result in subluxation (partial dislocation) or full dislocation of the joint. Fracture-dislocations may also occur. See *A.F.A* . (1998) pp.135-136.

(e) **Overuse injuries.** Muscles, tendons and ligaments become swollen and tender if they are used too much for a single action without a break. An example is developing wrist pain after working on a computer keyboard for eight hours without a break.

ASSESSMENT OF INJURIES

LOOK at the casualty as a whole - D.R.A.B.C.
- Is the casualty in obvious pain?
- Is the casualty limping or favoring one limb?
- Is the casualty bleeding?

At the affected area:
- Is there an abrasion or a bruise?
- Is there any swelling?
- Does the area look deformed or irregular?

FEEL Examine the casualty as a whole:
- Check A.B.C.
- Check pulse rate.
- Check for injuries apart from the obvious one.

Examine the injured area:
- Is it tender?
- Is it hot?

Examine the rest of the limb:
- Check circulation.
- Check feeling to the area below the injury.

MOVE Passive movement - move the affected limb yourself.
- Very gently move all the joints of the injured limb, starting at the fingers or toes.
- See if the joints can move through their normal range of movement without pain or resistance, e.g. the knee can only bend or straighten, but the shoulder can move in entire circles.

IF THE CASUALTY COMPLAINS OF PAIN – **STOP**

Active movement – ask the casualty to move the injured limb.

- Make sure that he/she can move the joint above and the joint below the injured area.
- Sometimes what seems to be a knee problem will actually be a hip problem.

Refer to Module 3, Examination of the Conscious Casualty.

COMMON SOFT TISSUE LIMB INJURIES

1. Shoulder Injuries

The shoulder is a very mobile joint. Tendon and ligament tears are very common.

Dislocation of the acromio-clavicular joint is a very common sporting injury. A shoulder charge or a falling onto the side ruptures the supporting ligaments. The acromio-clavicular joint is a small joint between the outer end of the collar-bone (clavicle) and the top of shoulder-blade (scapula). The casualty presents with the injured arm being cradled by the uninjured. On examination there is a gap under the end of the collar bone. First aid treatment is a firm St John sling or large arm sling to support the weight of the arm. The casualty needs medical assessment.

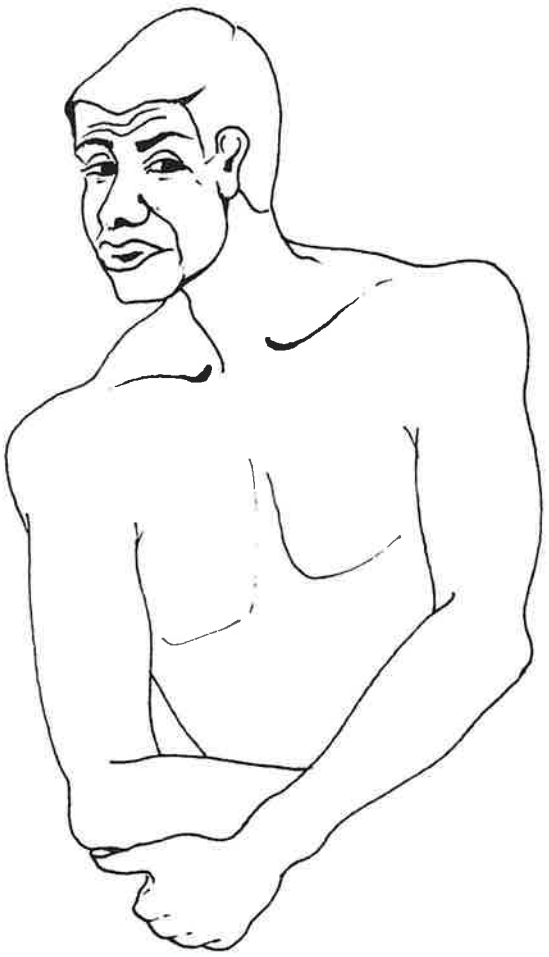


Fig. 5.2 Dislocation of the Shoulder

Dislocation of the shoulder joint is another common sporting and occupational injury caused by forceful rotation of the arm when held away from the body. The casualty presents in a lot of pain with the injured arm held away from the body. The important nerves in the armpit can be damaged, so you should check carefully that the casualty has full feeling down the rest of the arm.

First aid treatment is a large sling and urgent transport by ambulance to medical aid. If the ambulance is delayed, there is one position of great comfort for someone with a dislocated shoulder. Lay the casualty face down on a bed, with the injured arm dangling straight down over at the edge of the bed. Do not attempt to 'put the shoulder back in' even if the casualty asks you to do so.

2. Elbow Injuries

Isolated ligament injuries of the elbow are rare; most severe injuries are associated with a fracture. The symptoms of an elbow injury are pain, deformity and loss of motion. Elbow fractures and dislocations cause nerve and blood vessel damage. Carefully examine the circulation and sensation of the forearm and hand.

'Pulled elbow' is a common but minor injury in young children. It commonly occurs when a reluctant child is pulled along by an exasperated parent. The parent often hears a 'pop' and the child holds the arm stiffly and complains of pain. The worried and guilt-ridden parent takes the child to an Emergency Department and the elbow usually pops back into position in the waiting room or while the x-ray is taken.

All severe elbow injuries need medical assessment. First aid treatment is to put the arm in a sling, if possible, and R.I.C.E.

3. Wrist and Hand Injuries

Most soft tissue injuries to the wrist and hand are lacerations which may involve damage to the nerves, tendons or blood vessels. If the casualty cannot bend or straighten one or more fingers, this may indicate tendon damage. Do not persist in making the casualty try to move the finger as this may make the tear in the tendon worse.

4. Hip Injuries

The only severe soft tissue injury of the hip is dislocation. The hip is a very stable and strong joint and it requires major force to dislocate it, e.g. very high speed car accident, motor bike accident, falls form a height of over two metres. Often there are other major injuries, such as pelvic fractures or ruptured spleen. The casualty will lie with the hip flexed (with the knee bent) and internally rotated (the foot will be facing inwards). The only first aid treatment is to splint the injured leg to the uninjured, if possible, and arrange for urgent transfer to hospital.

Less severe injuries around the hip and groin are usually muscle or tendon injuries. The hamstring muscle is a strong muscle at the back of the thigh, and it arises from the ischial tuberosity – this is the hard bit, under the buttocks, that we actually sit on. The symptom of a hamstring strain is pain at the back of the hip when the casualty bends over. The treatment is R.I.C.E.

When examining a casualty with pain in the hip, you should always examine the lower back and the knee as well. In the lower limb, pain can often be referred from one joint to another.

5. Knee Injuries

The most common joint injury in sport is knee injury. Contact sports and pivoting sports, e.g. netball, Australian Rules football, tennis, basketball, are prone to cause serious knee injury. These injuries present with pain, a sensation of instability, swelling and a loss of motion. The casualty cannot stand on that leg. The knee joint has strong ligaments outside the joint and complex ligaments and cartilages inside the joints. These cartilages are called the menisci and if they tear they can make the knee lock. The casualty can neither bend nor straighten the knee. Once again, if the casualty complains of knee pain, examine the hip and ankle as well. First aid treatment is R.I.C.E.; if the casualty cannot put weight on the leg, transport to medical assessment is needed.

6. Ankle and Foot Injury

'Sprained' ankles are common. A sprain is an injury in which ligaments are stretched or partially ruptured. These are frequently very painful; the ankle rapidly becomes swollen and the casualty cannot weight bear. It is often impossible to tell a fracture from a sprain without an x-ray. The first aid treatment is the same for both: R.I.C.E., splinting and appropriate medical referral. See *A.F.A.* (1998) p.410.

R.I.C.E.

The first aid treatment for all soft tissue injuries starts with R.I.C.E. The basic injury with all soft tissue injuries is tearing of the small blood vessels at the site of injury. Blood enters the tissues where it is not supposed to be and this causes more pain and swelling . Treatment is aimed at preventing further injury and promoting healing.

Rest: Rest the casualty. Sit the casualty down, recommend that he/she stays off the field for the rest of the match. Rest the injured area, elevate the limb, use a splint or a sling.

Ice: Apply an ice pack to the injured area. Ice does two things:
- it numbs the area and provides some direct pain relief;
- it helps to close up the bleeding blood vessels and prevent further bleeding.

Compression: Apply a firm bandage to the injured area or joint. Check circulation to the limb below the bandaged area to make sure the bandage is not too tight.

Elevation: Maintain elevation of the injured limb, using a sling or advising the casualty to rest when he/she gets home.

See *A.F.A.* (1998) p.122.

5.1 Examine the arm of a conscious casualty

Checklist	Needs Improvement Date	Proficient Date
Ask the casualty for the history of the incident and any symptoms of injury to the arm: - pain or discomfort; - loss of movement; - numbness or loss of feeling.		
Explain what you are going to do.		
Remove only as much of the casualty's clothing as is necessary to make a complete examination of the injured area. Make sure that the casualty does not get cold or embarrassed.		
Ask the casualty to move all the joints of the affected arm, starting at the fingers and moving up.		
Examine the arm, starting from the fingers and looking for: - bleeding; - swelling; - deformity; - painful or abnormal joint movements; - tenderness; - wounds or other marks of injury; - areas of numbness or loss of feeling.		
Check circulation by: - feeling for a pulse; - looking for a quick return of normal colour after you press a fingernail.		

Poisons and Poisoning

PRESCRIBED REFERENCES:

St John Ambulance Australia. Australian First Aid. Third edition, 1998, reprinted annually, Chapter 13.
St John Ambulance Australia. The Science of First Aid. 1996, Chapter 22.
St John Ambulance Australia. The Rationale of First Aid. 1994, Chapter 8.

OBJECTIVES:

Following completion of this module, the member will be able to:

6.1 understand the definition of a poisonous substance;
6.2 recognise the signs and symptoms of poisoning;
6.3 recognise the various routes of poisoning;
6.4 provide appropriate management to the victim of acute poisoning;
6.5 complete the practical incidents.

Definition: A poisonous substance is one which may cause harm to the body. A substance may be safe taken by one route, but harmful if administered by another.

Characteristics

Poisons may enter the body via:
- inhalation (fumes, powders);
- ingestion (i.e. swallowed substances);
- injection (into veins, muscles or other tissue);
- absorption, via the skin or mucous membranes of eyes, mouth, rectum or vagina.

Poisons occur in any physical state:
- as a gas (e.g. cyanide);
- as a liquid (e.g. glyphosphate - weedkiller);
- as a solid (e.g. strychnine).

Poisons may be long or short acting, depending upon the time the poison takes to be absorbed into the body and the time it takes for the poison to be metabolised (broken down) and excreted from the body. Poisons are generally metabolised by the liver and excreted by the kidneys, the skin or the lungs.

Depending upon the route of entry, the following signs or symptoms may occur:
- nausea and/or vomiting;
- difficulty in breathing;
- blurred vision;
- odour on the breath;
- abdominal pain;
- drowsiness;
- tightness in the chest;
- lightheadedness and euphoria;
- headache;
- burning pains from mouth to stomach;
- ringing in the ears;
- burns or redness to mouth or nose;
- unconsciousness.

General Management of the Poisoning Victim:

Note: It may be necessary to wear protective clothing (e.g. gloves, aprons) when dealing with some poisons. The nature of the protective clothing will depend on the characteristics of the poison involved.

1. If the casualty is unconscious:
   - follow D.R.A.B.C.;
   - place in recovery position;
   - call '000' for an ambulance urgently (the fire brigade will be notified to attend if smoke or gas is involved);
   - call fire brigade if atmosphere contaminated with smoke or gas;
   - take a history;
   - collect medication/packaging to send with casualty;
   - monitor A.B.C. and vital signs;
   - phone Poisons Information Centre (13 11 26);
   - manage according to instructions from the Poisons Information Centre;
   - enter details on OB12 form.

2. If the casualty is conscious:
   - D.R.A.B.C.;
   - call '000' for an ambulance urgently;
   - history (determine the type of poison and the route of poisoning);
   - collect medication/packaging to accompany casualty;
   - monitor vital signs;
   - phone Poison Information Centre (13 11 26);
   - manage according to the type of substance;
   - enter details on OB12 form.

POISONS INFORMATION CENTRES

Poisons Information Centres are located in each State and Territory. The telephone in each State and Territory for information concerning poisons is:

13 11 26

Always ring this number for advice when administering first aid. Where someone is known to have been exposed to a particular product, and the product package is located, have the package with the label with you when you ring 13 11 26. The Poisons Information Centre may advise you to follow the first aid instructions on the label, or to take some other action. Regardless of what is on the label, DO NOT induce vomiting and DO NOT give anything by mouth, unless directly instructed to do so by the Poisons Information Centre.

Specific Management

(a) For **ALL ingested poisons including a corrosive, petroleum based, medicinal or unknown substance:**
   - DO NOT induce vomiting;
   - wash face and mouth with water;
   - give nothing by mouth.

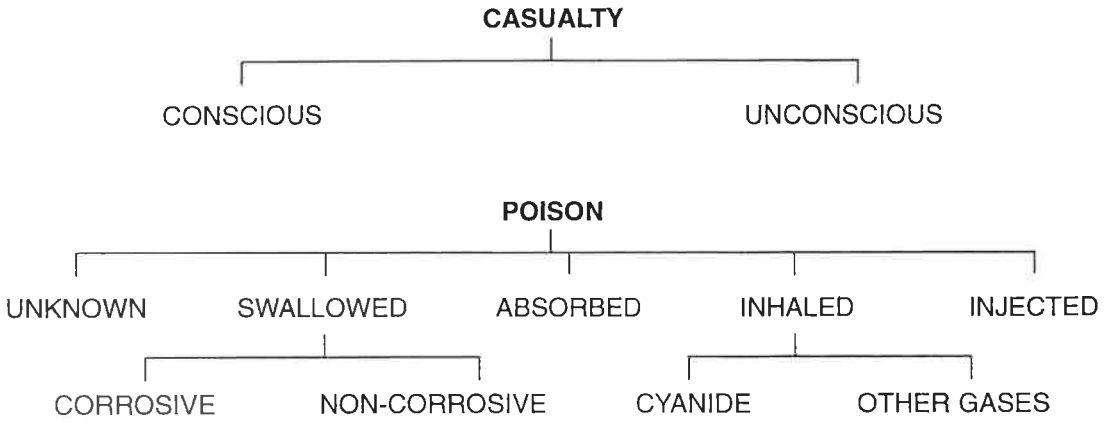
(b) For an inhaled substance:
   - check for danger;
   - remove the casualty to fresh air;
   - loosen tight clothing;
   - assist breathing if casualty has difficulty;
   - apply oxygen where indicated if qualified to use;
   - **Caution:** In the case of cyanide poisoning, it is recommended that, if required, casualty's breathing is assisted with a bag-valve-mask device, due to the risk of the rescuer inhaling cyanide fumes from the casualty's expired air;
   - seek medical aid.

   Refer to St John Ambulance Australia Infection Control Guidelines regarding the cleaning of bag-valve-mask devices.

(c) For an **absorbed substance:**

- avoid contamination of the first aider;
- wear appropriate gloves and other protective clothing;
- assist the casualty in removal of contaminated clothing down the body;
- place clothing in a separate plastic bag and identify as contaminated;
- assist the casualty if necessary with showering.

POISONING: SUBSTANCES AND ROUTES
(SUMMARY)



Practical Incidents

6.1 Manage ingestion of a petroleum based substance

Scenario: You are on duty at a Little Athletics event. A parent is brought to the first aid post, having swallowed petrol while siphoning it from his car a few minutes ago. He is coughing and complaining of feeling sick.

Checklist	Needs Improvement Date	Proficient Date
Assessment D.R.A.B.C. Check airway for swelling - No; Check breathing for: - noisy breathing - No; - respiratory rate - 30; Check pulse - 100; Check skin colour and temperature - normal.		
History When did incident occur? How much petrol was swallowed?		
Prevent further damage Encourage him to spit out all petrol from his mouth and rinse mouth. Wash petrol off casualty's face and hands. Reassure him by allowing him to sit and lie down quietly. Call for ambulance. Continually assess casualty and encourage him to take deep slow breaths until medical aid is available. Complete OB12 form.		

6.2 Manage ingestion of a swallowed medicinal substance

Your friend rings and tells you he has just found his four year old son on the lounge room floor unconscious. There is an empty tablet bottle beside him. He does not know how many tablets were in the bottle. He asks you what to do.

Checklist	Needs Improvement Date	Proficient Date
Dangers Is his son in any danger, e.g. near any open flames, gas, broken glass etc.? **Response** Shake him; shout his name. No response. **Airway** Roll him onto his side. Check if the airway is clear. Look in his mouth for any tablets; if present, retrieve and save them. **Breathing** Look, listen and feel for breathing. - Yes. **Circulation** Is there a pulse just below angle of the jaw? -Yes. Is there any blood? - No. Then, keep him on his side - recovery position. If he vomits, collect a sample to accompany him to the hospital. Ring '000' for an ambulance urgently. Follow the advice given by the ambulance operator and then ring me back. **Your friend rings back:** The ambulance will be 10 minutes. **Advise** Check that he is still breathing and has a pulse. Keep your son in sight at all times, in case he vomits. If he vomits, collect a sample to accompany him. Collect the empty tablet bottle for the ambulance officers to take to hospital. Remember that the ambulance service may need to call your friend back to check on the location of the incident and so you should not tie up the telephone line for any longer than absolutely necessary.		

Bites and Stings

REFERENCES:

St John Ambulance Australia. Australian First Aid. Third edition, 1998, reprinted annually, Chapter 14.
Howarth M H, Southee AE, Whyte I M. Lymphatic flow rates and first-aid in simulated peripheral snake or spider envenomation. Medical Journal Of Australia 1994; 161:695-700.
Williamson J A, Fenner P J, Bennett J W, Rifkin J F. Venomous Poisonous Marine Animals. 1996.
St John Ambulance Australia. The Rationale of First Aid. 1994.

OBJECTIVES:

Following completion of this module, the member will be able to:

7.1 recognise the differences between bites and stings;
7.2 recognise that bites or stings may compromise other body functions, e.g. heart rate or respiration, or may may cause an allergic reaction;
7.3 understand the principles of management for bites and stings;
7.4 complete the Practical Incident.

Definitions

A **bite** usually penetrates the skin and is primarily caused by a tearing, ripping or holding with the teeth or mouth parts of an insect or animal. It may, on occasions, be associated with the injection of venom, as in a snake bite.

A **sting** is an injury caused by an insect, or other animal, pricking, striking, or chemically stimulating the skin or a mucous membrane. This injury is not inflicted by the teeth or mouth but by a specialised part of the insect or animal, as in a 'sting' or part of a tentacle. It is often accompanied by the injection of, or exposure to, a venom.

Prevention of both bites and stings may be achieved, to a degree, by following common sense principles:
- Wear insect repellant cream, lotion or spray.
- Wear long-sleeved shirts or tops and long pants or stockings.
- When bushwalking, wear sturdy boots and thick socks. Check inside before donning.
- When gardening, wear gloves. Check inside before donning.
- Do not irritate insects or animals.
- If confronted by a dangerous animal, make no sudden movements; calmly and slowly move away.
- Never drink directly from open soft drink cans; use a drinking straw or pour into a glass.

Specific Precautions

Snake bites:

Use a torch when moving around outside at night in areas inhabited by snakes, especially in the warmer seasons. In the scrub, keep hands away from hollow logs and thick grass; avoid jumping over logs or rocks without checking. Keep buildings free of vermin such as mice and rats. Do NOT hike or bushwalk in shorts — wear long trousers, as well as strong boots, as this can reduce the chance of an effective bite. Travel in groups. Beware of log piles, loose bark or rubble, and long grass especially near creeks. NEVER attempt to pick up, catch, kill or annoy snakes. Do not attack a snake, even if you have been bitten. Do not try to walk or run for help if you have been bitten.

Spider bites:

Use gloves, long-sleeved upper garments and long trousers when gardening. When camping out, shake out sleeping bags, clothing, boots and equipment before using. Do not handle spiders. Carefully shake spiders from items, or whisk them off with an object; do not attempt to brush them off with the hand. Avoid placing hands or fingers into places likely to be inhabited by spiders.

Tick bites:

Use insect repellant. If in tick-infested areas, make sure to check daily for infestation.

Bee stings:

Do not deliberately interfere with swarming bees.

Wasp stings:

Do not interfere with wasps or attempt to remove nests — call in a pest control operator. Do not drink directly from cans in outside areas. Do not leave food, drink or sweet items uncovered outside.

Platypus stings:

Never attempt to pick up a platypus, even if it seems to be in trouble! The severe pain of a sting from the spurs of a male platypus can last for months.

Box jellyfish stings:

Do not dive headfirst into water, or run into water, in known box jellyfish areas. Wear a stinger suit and gloves when swimming in areas known to be prone to box jellyfish infestation. Swim only in special stinger enclosures. Always take plenty of household vinegar when swimming in box jellyfish zones. Avoid swimming during seasons when box jellyfish are known to be prevalent. Beware of cloudy days at the end of the hot ('Wet') season.

General Management:

- Follow D.R.A.B.C. If the bite or sting has occurred around the neck, swelling may occur, compromising the casualty's airway. Be aware that swelling may occur internally or externally and may be difficult to see on the outside, particularly in persons with a short, large neck. Send for an ambulance urgently.

- Obtain an accurate history:
  - What time was the casualty bitten or stung?
  - Is the casualty able to describe the insect or animal which caused the bite or sting?
  - Does the casualty have any known allergies to animal or insect bites or stings?

- Apply treatment according to the type of bite or sting.

- Where necessary, transfer the casualty to hospital, by ambulance, as soon as possible. Always seek medical advice if there is any doubt regarding the casualty being bitten or stung. In cases of severe envenomation or severe reaction to a sting, always get the casualty transported to a major hospital by ambulance as soon as possible. In cases of snake bite or funnel-web spider bite or redback spider bite, it is always advisable to get the casualty to hospital for medical assessment even if there is no apparent envenomation.

- Some casualties may have known allergic reactions to stings. They may take antihistamines (which act slowly) or, if there is a potentially life threatening reaction, may carry an 'Epipen', a pen-like injection device which contains adrenaline, to alleviate the symptoms of the reaction.

- Complete an OB12 Casualty Report form.

Pressure Immobilisation Bandaging

Pressure immobilisation bandaging may be life saving in cases involving rapid acting venoms. Even if there are already signs of envenomation, pressure immobilisation bandaging may be of value. It is not recommended for slow-acting venoms, particularly those which cause marked local pain.

Prepare pressure immobilisation bandaging appropriate for:
- snake bite;
- funnel-web spider bite;
- blue-ringed octopus bite;
- box jellyfish sting;
- cone shell sting.

Pressure immobilisation bandaging may be appropriate for:
- Casualties known to be highly allergic to bee, ant or wasp venoms.

Pressure immobilisation bandaging is not appropriate for:
- red-back, white-tailed or recluse spider bite;
- bee, wasp or ant stings;
- tick bite;
- bluebottle or Pacific man-of-war stings;
- stone-fish or stingray sting.

Technique
As in *A.F.A.* (1998) p.233.

Management of Bites:

- Rest and reassure the casualty.
- Clean the skin at the site of the bite (except in suspected snake bite).
- Apply a cold compress.
- Cover the wound with a sterile or clean non-stick dressing.
- Seek medical aid.

Snake Bites:

- Do not clean the wound; residual venom on the skin may later assist with identification of the snake.
- Apply a sterile non-stick dressing to the puncture site.
- Apply a pressure immobilisation bandage to the limb. The aim is to reduce the return of venom to the heart by restricting lymphatic flow and yet it should not impair peripheral circulation. The bandage should remain in place until the casualty is hospitalised.
- Seek medical aid.

Spider Bites:

- If a redback spider bite, apply an ice pack and seek medical help at a hospital.
- If a funnelweb spider or spider suspected to be a funnelweb, apply pressure immobilisation bandage to the bitten area, immobilise the limb and immediately seek urgent medical help at a hospital.

Management of Stings:

- Rest and reassure the casualty.
- Remove any sting with a sideways, scraping action.
- Wash the affected area.
- Apply a cold compress to the area.
- Apply a sterile, non-stick dressing to the area.
- Seek medical aid.

Box Jellyfish Stings

- Retrieve the casualty - do not treat in the water.
- Restrain casualty or anyone else from rubbing the area.
- The casualty may be violent and irrational.
- Immediately FLOOD the stung area with household vinegar.
- Apply pressure immobilisation bandage over area treated with vinegar, flooding bandage with vinegar at the same time. Do NOT apply bandage over an untreated area. Immobilise limb with splints.
- Send someone for emergency help (ambulance) immediately.
- Do NOT leave the victim, even if conscious.

7.1 Manage a snake bite

Practical incident

A 17-year old female bush walker becomes ill while walking and is being carried out of the bush by her friends. No one saw anything bite her, nor did she feel anything bite her, but she is starting to develop some worrying symptoms. They have not applied any first aid but are worried about her condition. They walk out of the bush and see your St John group providing first aid support for another activity in the area. They seek your help. It is a very hot day and they think she may have heat stroke. The casualty is not always able to answer properly at this stage and you have to get a history partly from the casualty and partly from her companions. You assess the casualty and decide that it may have been a snake bite rather than heat stroke.

Stores: Clean handkerchief, crepe bandages, splint.

Checklist	Needs Improvement Date	Proficient Date
Approach - Sit or lie the girl down. **Symptoms** Ask the casualty/her companions: Does she feel sick (have nausea)? "Yes, she started feeling sick about half an hour ago". Was she sick? (vomiting)? "Yes, she threw up soon after she felt sick". Was she confused? "Yes, she has seemed to be confused for the last half hour". Did she faint (lose consciousness)? "Yes, she fainted once or twice, and we had to carry her". **Signs:** Examine casualty, especially lower limbs. You discover a two minor looking scratches close together on her left ankle above her boot, but under her sock (she was wearing shorts). There are no other apparent injuries. The casualty complains that she has abdominal pain, that she has difficulty swallowing, and that she is seeing double. She seems to be increasingly confused.		

Checklist	Needs Improvement Date	Proficient Date
Examine: - pulse — fast - respirations — 30 - temperature — normal - skin colour — pale - skin temperature — clammy - eyes — eyelids drooping, casualty unable to open them properly **Treatment:** Begin treatment as soon as possible. Keep casualty lying down until ambulance arrives. Apply a sterile non-stick dressing to the suspected puncture site. Apply 15 cm crepe bandage or other improvised bandage as a pressure immobilisation bandage from the toes upwards as far as one can reach. Apply firmly as for a sprained ankle. Immobilise the limb. Check circulation in foot. Keep the casualty and the limb at rest. Do not remove splint or bandage once applied unless there is a reason for doing so. Immediately arrange for urgent ambulance transport to a major hospital facility.		

Environmental Exposure to Heat and Cold

REFERENCES: St John Ambulance Australia. Australian First Aid. Third edition, 1998, reprinted annually, Chapter 11.
St John Ambulance Australia, The Rationale of First Aid. 1994.

OBJECTIVES: After completing this module, the member will be able to:

8.1 explain the effects of excess heat and cold on the human body;
8.2 recognise the signs and symptoms of heat and cold injuries;
8.3 take appropriate action to manage casualties suffering from heat and cold injuries.

BACKGROUND

The human body functions within a very narrow temperature range. In an adult, the normal body temperature is approximately 37°C. This temperature is just right for the body's electrical activity and the chemical reactions required for metabolism and energy production. Heat is produced at the rate of about 300 kilojoules an hour by the normal body metabolism at rest, so in order to sustain a core temperature of 37°C, the body sheds heat at this rate, mainly through the skin. As well as being the main vehicle for disposing of excess heat, the skin and the layer of fat beneath it act as insulators to prevent too much heat loss, and to give some protection against extreme air temperatures.

Injury due to excess heat or cold is often called 'overexposure'. Immobility, whether outdoors after an accident or in an elderly person after a fall at home, may lead to hypothermia, even when the air temperature is such that a healthy young adult would feel no effects. A baby with a common cold or an unfit entrant in a triathlon may suffer from hyperthermia even in a cool environment.

HEAT-INDUCED CONDITION

When its temperature rises, the body reacts by dilating the blood vessels in the skin so that more of the blood passes through the thin capillaries near the surface allowing the body to cool down. Sweat glands excrete sweat onto the skin, where its evaporation helps to cool the skin. Evaporation of water uses up heat. This heat comes from the surroundings, so that the layer of air over the skin (as well as the skin itself) is cooled in the process. Moving air, either a breeze or a fan, speeds up the process as the air rushes over the skin. The faster the air is moving, the quicker the sweat can evaporate, and therefore the faster the body cools. If the air is very dry, as it usually is in inland Australia, it can take up a lot of water, so evaporation is very fast and the person can tolerate higher environmental temperatures. When the air is humid, as in coastal areas, the air is already carrying a lot of moisture, so evaporation is more difficult. People can experience more discomfort at 25°C in Cairns (which has a hot and humid climate) than at 35°C in Bourke (which is even hotter, but very dry).

Hyperthermia ('hyper' means excess, and 'therm' is heat) is the condition caused by a too-high body temperature.

It should not be supposed that hyperthermia only occurs when the weather is hot. Even when the air temperature is low, the body can become overheated through exertion if the heat produced by exercise cannot be eliminated. This can occur, for example, at a ski resort, where skiers may rug up against the cold and cover themselves with waterproof outer clothing. As they exercise, heat is produced and trapped against the skin by the clothing. The body increases sweat production, but to no avail because the sweat cannot evaporate. The result is hyperthermia, and by the time the casualty becomes thirsty, dehydration may be quite advanced. For this reason, skiers are usually advised to wear layers of clothing which can be removed as they become hot while exercising, then put back on when they are resting.

Fluid Balance

Heavy sweating uses up a lot of water and variable amounts of body salts. The body also continually loses water to the atmosphere through breathing due to the air passing over the moist membranes of the respiratory system. This leaves less fluid available for the fluid component of the blood, so that total blood volume decreases. When blood volume is reduced, the pituitary gland in the brain produces hormones which signal the kidneys to absorb more water from their fluid collecting system. Urine therefore collects in the bladder more slowly, and because it contains less water, it contains a higher concentration of waste products which gives it a darker yellow colour. This is a warning sign that the body is dehydrated. To compensate, the person in a hot environment needs to take in more fluid than normal. Around 6 to 8 litres a day may be needed to keep the average adult body properly hydrated in hot areas, compared with about half that amount in a more temperate climate. When performing heavy physical work in a hot climate, up to 15 litres a day may be required to maintain fluid balance. Body salts are also depleted because they are dissolved in the water which is expelled as sweat. A proper balance of these salts (electrolytes) is required for the normal electrical activity of the body. If fluid is replaced but body salts are not, the concentration remains too low and impairs normal functioning. Athletes replace salts and fluids by drinking sports drinks.

Dehydration

When fluid intake does not balance fluid output, blood volume is reduced, and the body's cells which are normally plump and round begin to sag. Skin which is pinched up takes several seconds to resume its normal position.

Dehydration is a consequence of losing more fluid than is being taken into the body. A hot environment is only one factor in this disruption of fluid balance. Respiration, which is technically the whole process of using oxygen to convert sugars to energy, generates heat. This heat is essential to keep the body at the best operating temperature, but if too much is generated it must be dispersed or the body will overheat. Vigorous working of muscles requires a great deal of energy, so that an athlete performing a hard workout, or perhaps just someone chopping wood for the barbecue, will feel hot very quickly and begin to sweat. In a person who is not accustomed to the level of exercise being performed, or who is overweight and unfit, the effects are multiplied. Experienced athletes who are working their bodies only to their normal training level and in a familiar climate, will not usually overheat significantly. But the body of someone who goes from Thredbo to the Gold Coast for a holiday after a sedentary year in the office, then plays a sport such as squash, may be unable to cope with the excess heat generated by the unusual exertion in a hotter, more humid climate.

The casualty may present with:

Heat-induced swelling.

When the body is overheated, the hands and feet swell. Shoes which are normally comfortable begin to pinch the feet, and rings become uncomfortably tight.

Management:
- rest in a cool place with legs raised;
- remove tight shoes and rings;
- gently exercise the affected parts.

To remove a ring from a swollen finger, a little soap or hand lotion rubbed into the skin is usually effective. Wrestling the ring off can bruise the finger and cause further swelling.

Heat Cramps.

These are painful muscle spasms, most commonly in the legs and abdomen, and are caused by loss of fluid and salts.

Management:
- rest in a cool place;
- gently stretch the cramped muscles;
- replace fluid and salts (water or sports drinks if available).

Heat Exhaustion.

This is a mild form of shock, caused by dehydration, most commonly triggered by overexertion in a hot environment. The casualty may show all or some of:
- feeling hot, exhausted and weak;
- persistent headache;
- thirst and nausea;
- giddiness and faintness;
- fatigue;
- rapid breathing and shortness of breath;
- rapid, weak pulse;
- pale, cool, clammy skin.

Management:
- rest in a cool place;
- loosen tight clothing and remove excess clothing;
- sponge with cold water;
- fan the casualty;
- give cool fluids;
- if the casualty does not recover quickly, or if vomiting occurs, seek medical aid.

Heatstroke.

This is a potentially fatal condition in which body fluid levels are so low that sweating stops. The temperature control mechanisms fail and vital organs, such as the brain, kidneys and heart, are at risk of damage. Signs and symptoms include:
- body temperature > 40°C;
- flushed, dry skin;
- headache, nausea and/or vomiting;
- dizziness and visual disturbances;
- irritability and mental confusion
- initially a rapid, pounding pulse, which gradually weakens;
- altered mental state which may progress to seizures .

Management:
- D.R.A.B.C.;
- call '000' for an ambulance;
- rest in a cool place;
- remove almost all clothing, loosen anything tight;
- apply cold packs or ice to neck, groin and armpits;
- cover body with a wet sheet, fan to circulate air (stop cooling when body cold to touch);
- if the casualty is fully conscious, give fluids (sip drinks to avoid vomiting);
- record pulse, breathing rate and temperature every 10-15 minutes while waiting for the ambulance and complete Casualty Report form OB12.

Comments on Management

The management of heat exhaustion and heat stroke is similar, so it does not greatly matter if first aiders are unable to tell whether the casualty is suffering from severe heat exhaustion or the onset of heat stroke. St John teaches that for heat exhaustion, sponging down will cool the casualty sufficiently, but for heat stroke, application of ice to pulse points is also advised. This escalation in efforts reflects the danger of heat stroke: the core temperature is rising out of control.

Drinking cool fluids has a double effect:
- the body is rehydrated;
- the intake of cool liquid may help to lower the overall temperature.

This treatment is supplemented by dampening the skin and fanning to increase the cooling effect of evaporation. Icy cold showers or baths defeat the purpose to some extent. The reflex reaction to cold on the skin is to constrict the surface capillaries, which inhibits the cooling effect of having the blood dispersed in small vessels. Too rapid chilling of the skin may also cause a 'too cold now' message to be sent to the brain, so that the casualty begins to shiver and thus generates more heat at the core, where the vital organs are still too hot.

A core temperature which is rising is not reversed instantly when the skin is cooled. The casualty should rest in a cool place for at least half an hour, drink lots of fluids, and not resume activity until the urine is clear or a pale straw colour.

COLD-INDUCED CONDITION

Cold injury is not as much a danger in Australia as heat injury, but is nevertheless a risk. Even in the hot deserts of central Australia, the temperature at night often drops below zero, and the south eastern parts of the continent contain areas where there are cold winters. High in the mountains, even in summer, cold winds can strip the heat from a bush walker, and the weather can change in minutes from warm to cold. Wind lowers the effective temperature considerably. In temperate climates, elderly people, small children and those affected by alcohol can become hypothermic even in mild weather, and anyone who is immobilised by injury or illness needs to be protected against the risk of hypothermia.

Systemic Injury (Hypothermia)

Hypothermia ('hypo' means insufficient and 'therm' means heat) is the condition caused by a too-low body temperature (below 35°C). Common causes of hypothermia include immersion in water, immobility after an injury or due to illness, or inadequate protection from cold weather. Cold injury may be systemic or local.

The body's first reaction to a signal from the nerves that the environment is cold is to constrict the surface blood vessels so that less blood is near the surface and exposed to the cooling effect of the air, while a larger volume is at the core protecting vital organs from becoming chilled. The hairs stand up on end - so-called 'goose bumps' - in order to trap air as an extra insulating layer. The body may then reverse this process, so that the blood vessels are dilated and the skin may become flushed. The casualty may feel too hot and remove clothing. This cycle of vasoconstriction followed by vasodilation may recur several times, so that it will not always be apparent that a person is becoming hypothermic.

If the core temperature continues to drop, the large muscles first tense up, then start to quiver, in an effort to generate more heat. This is the familiar sensation of shivering, which becomes visible when the body temperature is below 35°C, the point at which clinical hypothermia is defined to be present. Shivering can increase heat production by up to 500%. At a body temperature of around 35°C, the metabolic rate is higher also - between three and six times the normal rate - and the combination of shivering with an increased metabolic rate uses up stored energy very quickly, so that the casualty becomes excessively fatigued. Eventually, shivering stops as the supply of glycogen (the stored form of glucose) runs out. The benefits of shivering are limited to a maximum of perhaps two or three hours, while the body still has plenty of energy and oxygen available to the muscles. After this time, as supplies dwindle and heat production becomes less effective, the disadvantage of greater vasodilation (and thus reduced heat retention) caused by the muscles' activity becomes significant.

As the core temperature drops still lower, the body systems also slow; the blood and fluids become more viscous (thick and slow moving), and their electrical conductivity is reduced. Breathing and heart beat slow down, the senses are less alert, the casualty will be uncoordinated and will have an altered mental state. The effect is that the casualty may be the last to realise that hypothermia is progressing to a life threatening level. Once the core temperature drops below about 30°C, the casualty may no longer be able to maintain consciousness. A core temperature of 25°C is regarded as the limit for sustaining life.

Casualty Presentation

Early warning signs include:
- feeling cold;
- shivering;
- clumsiness;
- slurred speech;
- apathy, irrational behaviour.

As hypothermia progresses:
- shivering usually stops;
- pulse may be difficult to find;
- heart rate may slow;
- level of consciousness is reduced.

By the time the core temperature has reached 30°C:
- the casualty may lose consciousness;
- heart rhythm may become irregular;
- if not treated, the heart will stop.

Management
- Follow D.R.A.B.C.;
- shelter in a warm dry place;
- handle casualty as gently as possible;
- avoid excess activity or movement;
- maintain casualty in a horizontal position;
- provide warmth and dry clothing;
- if casualty is fully conscious, replace lost energy with warm drinks and food (but not alcohol);
- if casualty is not fully conscious, keep horizontal and minimise movement;
- avoid using concentrated heat sources, such as radiant heaters or fires, to warm the casualty;
- direct body-to-body contact is fairly ineffective and may be counter productive;
- hot water bottles and heat packs may be applied to the casualty's neck, armpits and groin but caution must be taken to avoid burns;
- place casualty between blankets, in a sleeping bag or wrap in a space blanket and cover the head to maintain body heat;
- administer oxygen if it is available and you are trained in its use;
- seek medical aid urgently if hypothermia is severe;
- remain with the casualty until medical aid arrives.

One potential advantage in being a hypothermic casualty is that because the body systems slow down as they cool, less oxygen is needed to maintain life. This means that in an environment where there is little or no oxygen, the casualty may survive longer than the usual three or four minutes before brain damage occurs. For this reason, resuscitation of someone who has fallen into very cold water is a must, even if the person has been submerged for half an hour or more. There have been remarkable cases of revival of cold casualties who were apparently dead, some with little or no brain injury in spite of long periods without breathing.

Operations Branch members will most commonly encounter someone who is only mildly hypothermic. In any cold environment, it is most important to be constantly alert for the early warning signs. A good rest, warmth and food may solve the problem. It is vital to be sure that the casualty has fully recovered before resuming any activity. The first aider should not assume all is well as soon as the casualty's skin resumes its warm pink character. Half an hour is the minimum recovery time; if activity is resumed too soon, there is a high risk of relapse into hypothermia.

Local Injury (Frost Bite)

The body's extremities are vulnerable to local injury, even when its core remains warm. Frostbite, whether superficial or deep, is a serious injury. Even in Australia, frostbite may occur if a person is exposed to very cold temperatures, for example if trapped in a blizzard while cross country skiing or camping in the high country. It is also possible for the skin to freeze to cold metal - lifting an ice tray from the freezer with bare hands is a common example.
In superficial frostbite, the full thickness of the skin has frozen, but not the underlying tissues. The skin feels hard, but will slide easily over the underlying tissues. If the skin has stuck to a cold object, pouring warm water over it will release it, and there is not likely to be any significant injury. If the injury occurred due to a cold environment, the casualty needs to find shelter and warm the affected parts. Fingers and toes are the most common extremities which are subject to local cold injury, but the ear tips and nose are also vulnerable.

Deep frostbite is a much more serious injury. In this case, the skin cannot be moved over the underlying tissues because they have also frozen. Permanent damage may result.

Casualty Presentation
- white, waxy areas of skin on extremities;
- as frostbite progresses, white areas turn grey or blue;
- area may be painful at first, then go numb;
- skin feels cold and hard;
- if superficial injury, skin will slide over underlying tissue;
- if deep injury, whole area feels cold and hard.

Management: Refer to *A.F.A.* (1998) Ch. 11.

Superficial Frost Bite:
- D.R.A.B.C.;
- remove casualty to a warm, dry place;
- re-warm the frost bitten part with body heat (e.g. place frost bitten fingers in arm pits; warm hands over frost bitten ears).

Deep Frost Bite:
- D.R.A.B.C.;
- remove casualty to a warm, dry place;
- prevent further heat loss;
- rest casualty;
- handle frozen tissue gently;
- do not rub limbs or frozen areas;
- get medical aid urgently.

If medical aid will be delayed:
- keep the casualty warm;
- remove clothing from affected areas;
- immerse frozen areas in warm (38-40°C) water;
- remove jewellery from affected areas;
- keep adding warm water to maintain a constant temperature;
- keep part in water until it is pink or does not improve any more;
- keep part elevated and warm;
- do not break any blisters.

Note: The thawing process will be extremely painful.

SUGGESTED ASSESSMENT

Heat Injury

Most members will encounter heat injuries in the course of normal public duties. Recognition and management of heat injury should therefore be assessed during an actual incident whenever possible. Otherwise, scenario-based assessment is recommended.
When designing scenarios for assessment, training staff may wish to incorporate some of the following points:
- heat injury may resemble alcohol overdose or diabetic hypoglycaemia;
- heat injury may occur without a high level of physical activity;
- the casualty's history will be important in determining the cause of symptoms and the seriousness of the injury;
- overheating may trigger an acute asthma episode, particularly in children;
- casualties will rarely present with all the textbook signs and symptoms;
- heat injury may occur in a cold environment.

Cold Injury

Many members will encounter systemic cold injury while attending public duties during winter. Recognition and management of mild hypothermia should therefore be assessed during an actual incident whenever possible. More serious systemic injury and local injuries are unlikely to be encountered. For these, scenario-based assessment is recommended. Designers of scenarios may wish to include some of the following features:
- prevention of hypothermia by use of appropriate clothing in a cold environment;
- precautions against hypothermia developing in an injured person;
- distinguishing hypothermia from ordinary fatigue;
- hypothermia may resemble drug or alcohol overdose;
- hypothermic casualties should always be insulated from the ground;
- in serious cases, the heart may beat very slowly, so pulse should be checked for up to a minute if difficult to find;
- if the casualty is not fully alert, he/she should be kept horizontal;
- unnecessary movement should be avoided, and if essential must be very gentle;
- severe local injury may resemble a burn; blisters should not be broken;
- body heat should be used to thaw superficial frostbite.

Medical Emergencies

PRESCRIBED REFERENCE: St John Ambulance Australia. Australian First Aid. Third edition, 1998, reprinted annually, Chapter 10.

OBJECTIVES: At the end of the instruction period, the member will be able to:

- **9.1** describe the relationship between oxygen and a conscious state;
- **9.2** describe the causes of neurological emergencies;
- **9.3** perform an examination of the casualty with neurological dysfunction;
- **9.4** understand the mechanisms involved in epilepsy;
- **9.5** understand the mechanisms involved in a cerebral vascular accident;
- **9.6** manage the casualty suffering a cerebral vascular accident;
- **9.7** understand the differences between Type I and Type II diabetes;
- **9.8** differentiate between hypoglycaemia and hyperglycaemia;
- **9.9** manage the diabetic casualty suffering from hypoglycaemia or hyperglycaemia.

NEUROLOGICAL EMERGENCIES

Normal consciousness can be defined as a state of full awareness of oneself and one's environment. It is an awareness of one's own mental function, that is, the ability to reason, remember, deduce and respond appropriately with speech and movement, and an awareness of one's environment, that is, the ability to perceive and analyse incoming stimuli.

By knowing about the above relationships, we can assess the functioning of the total brain or localised areas of it. Disorders of the brain may be reflected in disturbance of mental function. By far the most common of these is that of altered conscious state.

Terms often used to describe an altered conscious state are:

- Sleep: A state of physical and mental inactivity from which the casualty can be easily aroused.

- Confusion: A state of disturbed thinking and judgement. The casualty is often unaware of the environment and will not respond appropriately to commands.

- Delirium: A state of confusion with excitement and inappropriate hyperactivity.

- Stupor: A state of marked decrease in awareness of the environment.

- Coma: The casualty appears unaware, being totally unresponsive and unreceptive with no reflex activity, e.g. no gag or pupil reaction, to one of awareness with limited response.

Because they are unresponsive to outside influences, unconscious casualties are incapable of protecting their airways, with the risk of further injury and aspiration.

Oxygen and the Brain

An important point to remember is that the brain is a very active organ and demands a constant supply of oxygen and nutrients, especially glucose, to maintain function. An adequate circulatory system is needed to deliver the nutrients to the brain. Unlike most other organs, the brain is not capable of storing nutrients and is also incapable of functioning without oxygen.

The absence of both nutrients and oxygen will result in rapid deterioration. In the absence of oxygen, loss of consciousness will occur within 30 seconds and permanent brain damage after about 4 minutes.

Causes of Neurological Dysfunction:

- Toxic substances: Among the more common causes are drugs such as alcohol, anti-depressants, minor and major tranquillisers, analgesics, home and industrial gases, petrol, glues, and extremes of temperature, e.g. heat stroke.

- Trauma: Head trauma may be associated with skull or spinal fractures or with sudden violent head movements causing brain injury but with no obvious external injury.

- Cerebrovascular accident (C.V.A.): A blood clot or fragment of fat depriving part of the brain of oxygen or a haemorrhage into the brain tissue can cause a C.V.A.

- Metabolic: The most important causes to recognise are hypoglycaemia and hyperglycaemia. Others include renal, liver and thyroid diseases.

- Respiratory: Essentially any respiratory illness that results in hypoxia.

- Circulatory: Hypotension and any shocked state, severe hypertension, pre-eclampsia and cardiac arrest.

- Epilepsy: A condition in which there is a sudden large amount of brain activity resulting in a tonic, then clonic phase of involuntary movements, followed by a post-ictal phase with depressed consciousness.

- Infection: Infection of the brain tissue (encephalitis) or meninges (meningitis).

Clinical Examination

When assessing a casualty with a possible neurological disorder it is, as always, best to begin with the history. Look also for other features that may be consistent with the above causes. Note that the casualty's conscious state may limit the amount of history available. Since the nervous system is hidden within the bony structures, it is examined by an assessment of neurological function.

The examination should include the head and spine, looking for obvious signs of fractures and tissue injury.

With intra-cranial or intra-cerebral bleeding and any brain swelling, compression of the brain and brainstem may result, causing brain ischaemia and irreversible damage. This can be suspected clinically by a deteriorating conscious state, irregular respiration, hypertension, bradycardia and fixed non-reactive pupils.

Assessment of Neurological Status

The Glasgow Coma Scale provides a standard tool for assessing neurological status and is described in Module 2, The Nervous System and Neurological Emergencies.

Treatment

Since the brain is highly dependent on a steady and adequate supply of oxygen, it is most important to maintain a clear airway and provide supplemental oxygen therapy These ensure an adequate delivery of oxygen to the brain in the presence of an adequate circulation.

Similarly, management of the unconscious casualty is important. In the absence of protective reflexes, the casualty is unable to protect and maintain the airway or respond to danger. The casualty is best managed in the recovery position and away from any danger.

The casualty with disturbed consciousness is one of the most difficult to manage and should be observed carefully. Deterioration can be rapid for a number of reasons, e.g. if airway obstruction occurs; hence constant re-assessment is vital. Any casualty with a disturbed conscious state, no matter how mildly affected, should be transported promptly to medical care and observed closely.

Epilepsy

Epilepsy is a neurological disorder in which there is involuntary, uncoordinated, widespread brain activity.

Causes:
The cause of epilepsy is variable. It includes febrile convulsions (especially in childhood), brain tumours, infections and injuries, metabolic disturbances (hypoglycaemia, electrolyte disturbances), various drugs and hypoxia. In some cases, no cause can be found.

Signs and symptoms:
Classically an epileptic seizure presents four stages. The transition from one stage to another and the duration of the stages are variable. Not all stages may be observed.

The four stages can be:
- Aura: A sensory experience which may be quite unique to the casualty. It may be an unusual taste, smell or even visual perception. The duration can range from seconds to minutes.

- Tonic: This stage consists of widespread muscular spasm of all muscles including the diaphragm. The muscular spasms are involuntary and very strong.

- Clonic: This follows the tonic stage and consists of involuntary muscular movements. These muscular movements can be strong enough to fracture fragile bones, dislocate joints and cause severe soft tissue injury.

  The duration of the tonic and clonic stages can vary from minutes through to many hours, as may occur in status epilepticus.

- Post-ictal: Begins at the end of all involuntary muscular movement. The casualty is completely relaxed and often deeply unconscious. When consciousness is regained, the casualty may complain of extreme lethargy and muscle pain and may be confused.

Management:
Management of the casualty involves principally the care of the unconscious person and prevention of further injury. During the tonic and clonic stages, there should be no forced attempts to restrain the casualty's movements. Ensure that the casualty is free of danger and further injury.

Immediately after the convulsion has ended, clear and maintain an adequate airway and ensure adequate breathing and circulation are present. Supplemental oxygen should be provided and the unconscious casualty placed in the recovery position. A secondary survey for injuries sustained as a result of the convulsion should be undertaken.

Convulsions which are frequent and recurrent, or continuous (status epilepticus), constitute a medical emergency and require urgent transport to medical care.

Cerebrovascular Accident (C.V.A.)

A thrombotic C.V.A. is a gradual obstruction of a cerebral artery usually associated with atherosclerosis. This may lead to eventual blockage with potentially irreversible injury (i.e. a stroke), or incomplete blockage with resultant potentially reversible injury (i.e. a transient ischaemic attack, T.I.A.).

A second form of C.V.A. is caused by haemorrhage into or around brain tissue (intracerebral or subarachnoid haemorrhage).

An embolus, usually in the form of a fragment from a plaque in the carotid artery, may occlude a cerebral artery also causing a C.V.A.

Signs and symptoms:
- weakness or paralysis down one side of the body;
- feeling of numbness in face arm or leg;
- difficulty speaking or understanding;
- unexplained dizziness;
- disturbed vision;
- loss of balance;
- confusion.

Management:
- Sit casualty in a semi-recumbent position if conscious.
- Monitor airway.
- Loosen any tight clothing.
- Give oxygen via mask.
- Monitor vital signs including blood pressure and conscious state.

A C.V.A. is a life-threatening emergency.

DIABETIC EMERGENCIES

When we eat, the food we take in, particularly energy food like carbohydrates, is reduced to glucose. This glucose is stored in cells for energy production. The brain cannot store glucose and therefore requires a constant supply of glucose and oxygen.

Insulin, a hormone secreted by the pancreas, regulates the amount of glucose in the blood stream. The pancreas produces a continuous supply of insulin, but after a large meal, the rise in blood sugar level causes more insulin to be secreted.

Insulin works by allowing glucose to enter the cell. It acts as a gatekeeper, allowing glucose into the cell and preventing it from leaving the cell.

The condition called 'diabetes' involves a problem with the availability of insulin.

Type 1 Diabetes is where the person does not produce enough insulin and is dependent upon daily insulin injections. This type of diabetes usually starts in young people.

Type 2 Diabetes generally occurs in older people. In this condition, the pancreas is not producing enough insulin or the insulin is not as strong as it should be. The treatment for this condition is modification of the diet, and in some cases tablets, to help stimulate the pancreas or assist in the movement of insulin across the cells. These casualties may also require an insulin injection.

Hyperglycaemia

This refers to excess sugar in the blood stream. It is a gradual condition that usually develops over a period of days. The casualty presents with a variety of symptoms associated with high blood sugar. Lack of insulin causes metabolism of fats, which produce products used for metabolism similar to acetone. High blood sugar causes large amounts of water to be excreted by the kidneys and as a result dehydration may occur. Dehydration is often found in the newly diagnosed diabetic or a diabetic person whose condition is not well controlled or managed.

Signs and symptoms:
- excessive thirst;
- frequent need to urinate;
- hot, dry skin;
- rapid pulse;
- possibly a smell of acetone on the breath;
- drowsiness;
- unconsciousness.

Management:
- Keep casualty comfortable.
- Monitor vital signs closely.
- If authorised and equipment available, check blood sugar level.
- Administer oxygen.
- Maintain an accurate fluid balance chart - record all input and output.
- Seek medical aid.
- If conscious state deteriorating, place in recovery position.

Hypoglycaemia

If a person's blood sugar level is low, the casualty will become unwell very quickly. This is because of the brain's need for a constant and appropriate supply of glucose.

Causes of decreased blood sugar are:
- too much insulin;
- too little food intake;
- increased exercise combined with too much insulin or too little food.

If this condition is not treated, the casualty will lose consciousness quickly and can die.

Signs and symptoms:
- dizziness;
- weakness, trembling or shaking;
- hunger;
- paleness;
- sweating;
- rapid pulse;
- confusion and/or aggression;
- unconsciousness.

Management:
The aim is to correct the low sugar level quickly.
- Rest casualty.
- Provide reassurance.
- If the casualty is conscious and able to follow instructions, give a sugary drink, i.e. a cup of milky tea with three to four heaped sugars in it, can of soft drink (not diet), or cordial with extra sugar in it.
- Monitor vital signs closely.
- If authorised and equipment available, check blood sugar level.
- The casualty may give his/her own injection.
- Follow the drink and/or injection up with some complex carbohydrates such as a sandwich or biscuits to give the casualty a more prolonged energy source.
- Advise the casualty to seek medical aid.
- The casualty should not drive home or remain unaccompanied until he/she has eaten a proper meal and re-checked the blood sugar level.

It is important to note that all diabetics who suffer from an episode of hypoglycaemia should not leave your care unaccompanied.

If the casualty is unconscious or is unable to follow instructions:
- Place the casualty in the recovery position.
- Administer oxygen.
- Monitor vital signs closely.
- If authorised and equipment available, check blood sugar level.
- Call an ambulance urgently.

Triage

PRESCRIBED REFERENCE: St John Ambulance Australia. Australian First Aid. Third edition,1998, reprinted annually, Chapter 16.

OBJECTIVES: Following completion of this module, the member will be able to:
10.1 demonstrate an understanding of what triage is;
10.2 recognise situations where triage should be used;
10.3 complete the practical incidents.

INTRODUCTION

All casualties in multi-trauma scenarios are required to be categorised according to the severity of their injuries/illnesses. The process of categorising casualties is referred to as 'triage' (from the French wool traders in the 1700s, meaning 'to sort or select'; it was then applied to the coffee bean industry in the 1800s).

Baron Larrey, Napoleon's surgeon, is the first person recorded as using the term 'triage' in a medical sense. Its primary goal was quickly to identify and prioritise those wounded on the battlefield. It was the military which first addressed the problems of moving multiple casualties with few field resources in limited time so the greatest number survived.

Triage today works on similar principles. We look at the **degree of threat** to life or limb due to the injury or illness where there are many casualties and where one casualty has more than one presenting complaint. **Triage is the classification of casualties for the purpose of management and evacuation according to the degree of urgency**. In making this classification, consider:
- the need for resuscitation;
- the need for emergency surgery;
- the uselessness of advanced care if the injuries are extensive.

Triage is what you do when you have more than one first aid task to do.

The St John action plan (D.R.A.B.C.) is one way that we utilise triage and this is used wherever we have one or more casualties.

- **D**angers: Assess the scene for dangers and remove them if at all possible. It may be more appropriate to move the casualty from the danger. Call for assistance. '000' will connect you with the ambulance service and, if necessary, the police and fire brigade. You may decide that additional St John personnel are also required.

- **R**esponse: Quickly assess which casualties are unconscious using the 'shout and shake' approach. All casualties who don't respond must be placed in a recovery position and checked frequently to detect deterioration in their condition. These casualties must be treated first.

- **A**irway: Ensure all unconscious casualties, and those likely to become unconscious, have a clear and open airway.

- **B**reathing: Next, treat the casualty who has difficulty breathing.

- **C**irculation: Casualties who have circulation problems (e.g. bleeding) are the next to be treated.

AIM

To ensure that the most good is done for the largest number of people where there is a large number of casualties.

Circumstances when triage should be used:
- when any casualty approaches for treatment of any injury or illness;
- when the casualty has more than one injury;
- when there are multiple casualties in a first aid post;
- when there are multiple casualties in a field setting;
- where circumstances change the work environment while you are treating casualties, e.g. when the electric power in the first aid post is lost.

Triage in the field and triage in the first aid post are performed with the same aim but may be carried out in different ways.

FUNDAMENTAL PRINCIPLES OF TRIAGE

An extension of the D.R.A.B.C. action plan is required when we are dealing with multiple casualties, particularly when the number of casualties is greater than the number of people treating.

Safety: Safety of all personnel is paramount and the area should be made safe as quickly and as efficiently as possible. This also includes standard precautions to be used with blood and body fluids.

Rapid assessment of each casualty: This requires the knowledge and skill to make quick, balanced judgements and so should be done by the most experienced first aider present. This person will then allocate the management of the casualty to an appropriate first aider. The person doing the initial assessment should not be involved with treating casualties.

Speed, with thoroughness: It is essential that all activities are undertaken with as much speed as possible so that minimum time is spent in the field. However, all procedures should be completed as thoroughly as possible and the casualty made as stable as possible prior to transporting or referring to the next triage area.

Saving a life takes precedence over saving a limb: Management of immediate life threatening conditions, e.g. blocked airway, profuse bleeding, will always have priority over painful fractures.

OBJECTIVES OF A TRIAGE SYSTEM:

A good triage system will:
- provide immediate care in life-threatening situations (D.R.A.B.C.);
- streamline the care of casualties by a brief and accurate initial assessment;
- make sure that casualties with urgent conditions are treated first;
- reduce the severity of some conditions by early management;
- reduce delays in treatment by early diagnosis.

A good triage system has other benefits. It will:
- act as a screening centre for people requiring information only;
- improve casualty rapport, as the casualty will be seen by a member immediately on entering the post;
- improve communication with friends and relatives waiting for/with casualties;
- allow accurate tracing of casualties;
- improve communication with police and ambulance services;
- relieve congestion and confusion by improving traffic flow;
- provide supervised learning opportunities for personnel;
- promote more effective use of staff and equipment within the given resources.

TRIAGE IN THE FIRST AID POST

Always meet the casualty as he/she enters the post.

Should the number of casualties be greater than the number of members, one member will be required to triage casualties as they arrive. This is usually the most experienced member.

Ask the casualty why he/she is there.

Assess the condition of each and decide how urgent his/her condition is.

Allocate management of the casualty to an appropriately trained member.

If it is necessary for some casualties to wait for treatment, don't forget to explain briefly why there will be a delay. This will make it easier for casualties to understand the delay and (hopefully!!) accept it.

Casualty records should be started immediately.

SINGLE CASUALTY TRIAGE

This is the most commonly used triage by St John members. The initial determining feature is consciousness or unconsciousness. The St John Action Plan (D.R.A.B.C.) will tell you what injuries to manage first.

TRIAGE IN THE FIELD WITH MULTIPLE CASUALTIES

Analyse the scene on approach.

Priorities:

The most urgent injuries are given priority care. In mass casualty situations, a colour coded tag may be attached to each casualty after initial triage to indicate priority of management and transport. (Check with your State which system is used).

A rapid assessment of all casualties must be made before becoming involved with the treatment of any particular casualty.

Group 1: Priority Cases - Life threatening conditions, or those that can cause permanent, serious impairment if not corrected immediately, must receive priority in treatment and transportation, e.g. severe respiratory distress, shock, extensive (greater than 50%) burns, dropping Glasgow Coma Scale.

Group 2: Urgent Cases - Conditions that should be treated at a hospital within a few hours to prevent a threat to life or a permanent impairment developing are considered to be URGENT, e.g. chest wounds, abdominal wounds, open long bone fractures, Glasgow Coma Scale below 12, crush syndrome, spine trauma with neurologic signs, 20-50% burns, eye wounds, hypothermia, electric shock and all resuscitated casualties.

Group 3: Non-Urgent Conditions - Non-urgent conditions are those that may be able to wait for treatment while more urgent cases are treated. These conditions do not usually constitute a threat to life or limb, e.g. long bone closed fractures, short open bone fractures, wounds of soft tissue and scalp without haemorrhage, head injuries with Glasgow Coma Scale less than 12, 10-20% burns, shoulder and ankle dislocation without loss of colour, warmth or sensation, joint wounds.

Group 4: Walking Wounded - Those for whom hospitalisation can be delayed and may be transported sitting, e.g. closed limb injuries, small wounds, head injury with improving Glasgow Coma Scale, bruising, less than 10% burns. Uninjured casualties with psychological disturbances are also included here.

Basic management should include at least a **primary** and **secondary** assessment.

WHEN IN DOUBT ABOUT THE URGENCY CATEGORY, CLASSIFY THE CASUALTY IN THE MORE URGENT OF THE CATEGORIES CONSIDERED.

Where there is a mass casualty, multiple trauma situation, medical personnel are required at the site to effectively triage the casualties. If not already in attendance, their assistance should be sought immediately and then triage/treatment of casualties should be commenced by St John personnel.

To assess the severity of a casualty you must consider - abnormal vital signs, obvious injuries, mechanism of injury, pre-existing disease. However, you will also need to take into consideration time/distance to hospital care.

DEAD CASUALTIES

Casualties who are clinically dead or probably going to die before reaching hospital - e.g. those who have been decapitated, have massive head or torso injuries, have been cut in half or have been incinerated – are the last to

be evacuated. They should be managed with dignity and, if possible, protected from the environmnent. The triage officer must not jeopardise those with a possibility of survival by using ambulance and hospital resources for the untreatable because of fear of making an error.

The **Coroner** will be required to investigate all deaths at the scene so as little as possible should be disturbed.

COMMUNICATION

Any mass casualty situation will run as smoothly as its communication system allows. This system should be set up as soon as an incident occurs and needs to be constantly assessed and adjusted to the changing conditions.

For St John personnel there needs to be constant and regular communication with:
- St John Ambulance Headquarters via radio situation reports (if radio communication has been established);
- triage officer regarding casualty condition, management and evacuation;
- ambulance officers at the scene;
- medical officers at the scene;
- casualties, friends and relatives regarding casualty movements.

PRACTICAL INCIDENTS

Scenario 10.1

You have been called to render first aid assistance at a local house fire. You are the only trained first aider among the bystanders, of which there are several.

As you approach, there is a woman exiting the burning building with a child in her arms. There is a second child sitting on the pavement outside the yard of the burning house.

Casualties are:

1. Female, 28 years
   Blisters to palms of both hands;
   Smoke inhalation;
   Severe anxiety for her children.

2. Male, 4 years
   Partial thickness burns to left thigh, approx. the size of his hand.

3. Male, 8 months
   Partial thickness burns to left ankle and foot;
   Small area of full thickness burn on left ankle.

4. Fireman, Male, 43 years
   Smoke inhalation;
   Blisters on face.

Which of these people will you treat first?
What will you do with the others while you are involved with this treatment?
Who should be transported to hospital?
What problems may develop with these people while in your care?

Scenario 10.2

You have just arrived at the first aid room of a large public duty. You are there to relieve a member of your division who has been on duty for the last six hours. She has just finished telling you that the duty has been very quiet, only nine casualties, when there is a sudden commotion at the entrance. Within the next five minutes you have in the first aid room casualties as follows:

Casualty

1. Male, 22 years
   Complaining of headache.

2. Male, 26 years
   Complaining of chest pain, mid-axillary, left side.

3. Female, 6 years
   Bleeding nose.

4. Male, 14 years
   Pain in right forearm, arm tender and swollen.
   Graze on right knee.

5. Male, 52 years
   Discomfort in left arm.

Who requires immediate management?
What order would you treat the others in?
Who requires transporting and what means of transport will they require?

Scenario 10.3

You are on duty with a new divisional member who has just completed her first aid course, a senior cadet and a junior cadet at the local speedway. There is an accident when one of the cars careens through a barricade into several spectators. All casualties are brought to the first aid room.

Casualty

1. Male, 51 years
   Open fracture left tibia and fibula.

2. Male, 34 years
   Unconscious, breathing laboured;
   Closed fracture to right cheekbone.

3. Male, 29 years (driver)
   Dislocated right shoulder;
   No feeling in right fingers.

4. Male, 43 years
   Cervical spine damage.

Who would you suggest look after each casualty and why?

Administration of Medications

AIMS:

11.1 To understand the methods of administration of medications by the first aider.

11.2 To safely manage a casualty who requires medication/s.

OBJECTIVES:

11.1 To define a medication.

11.2 To define a prescribed medication.

11.3 To describe the safety precautions that must be taken when handling and administering medications.

11.4 To discuss when and how medications should be administered.

11.5 To describe and demonstrate the administration of topical, oral and inhaled medications.

11.6 To discuss the effect on the body of medications commonly administered to casualties by first aiders.

MEDICATIONS AND MEDICATION ACTION

Medications are chemical substances that modify body functions when introduced into the body. A medication is a substance used to:

- promote healing: e.g. antibiotics, such as penicillin, assist the body to fight infection;

- relieve symptoms: e.g. analgesics, such as pethidine, reduce the amount of pain experienced by the body;

- prevent further illness: e.g. antihypertensives, such as propranolol, maintain a lower blood pressure in the body.

Medications produce harmful as well as beneficial effects and decisions about when and how to use them always involve the balancing of risks.

VARIABILITY IN RESPONSE

The response to a given dose of a medication is likely to vary when it is given to different people or to the same person on a different occasion. Many factors are known to contribute to this variability:
- age;
- genetics;
- absorption;
- disease states;
- medication interactions;
- medication tolerance.

ADVERSE EFFECTS

No medication is wholly non-toxic nor completely safe. Adverse affects can range from minor reactions to serious or even fatal effects.

DISTRIBUTION

The bloodstream carries medications from the site of absorption to the target site and also the sites of metabolism or excretion of the medication, such as the liver, kidneys and occasionally the lungs. Many medications are bound to proteins and this reduces the overall potency of a medication and provides a reservoir to maintain the level of the active medication in the blood. The effects of the medication are reduced, but prolonged by binding. To pass from the bloodstream to the target site, medication molecules must cross the wall of blood capillaries. This occurs rapidly in most regions of the body, except the brain and spinal cord as they are relatively impermeable. In general, only medications that are highly fat-soluble enter the brain in any great concentration.

METABOLISM

Medication effects are temporary because body processes exist that detoxify and eliminate foreign chemicals such as medications. The kidney has the important role of regulating the internal environment of the body by eliminating unnecessary or potentially harmful substances. The kidney's filtering system processes water-soluble substances. Many biologically active medications are fat-soluble and must be converted to water-soluble compounds before the kidney can eliminate them.

One of the main functions of the liver is to detoxify and convert (metabolise) chemicals and medications so they can be more easily eliminated by the kidney. Other tissues may play a role in metabolism, but the liver alters the majority of medications. Within the liver, medications are split apart or have substances attached to them to produce a water-soluble chemical. This process determines the life span of a medication. The main site of medication metabolism is the liver, but other tissue, including skin, lung, blood and intestinal wall may contribute. The gut wall is an important site of medication metabolism during the process of absorption.

Normal function of the liver and kidneys is necessary to adequately remove medications from the body. When these organs are diseased, medication metabolism and elimination are less efficient. Normal ageing also causes both liver and kidneys to work less efficiently, resulting in slower medication metabolism and excretion.

The rate of metabolism of a medication in any individual is usually determined genetically, but can be altered by environmental factors. The rate of metabolism of any medication varies widely between individuals. A ten-fold variation in the rate of medication metabolism is not unusual.

EXCRETION

The main route of medication excretion is the kidney and urinary system. However, gaseous agents are excreted by the lungs. Small quantities of medications may pass into the sweat, saliva and human milk.

There are relatively few medications that are excreted unchanged by the kidney. Most tend to be metabolised and their metabolites are excreted in the urine. The renal clearance of some medications is affected by the pH of the urine.

Cells in the liver may excrete medications into the bile and then into the gut (biliary system). They are occasionally excreted unchanged, but more often in union with another metabolite. Biliary excretion may serve as an alternative to renal excretion in patients whose kidney function is impaired.

TIME COURSE OF MEDICATION ACTION

The concentration of the medication in the blood plasma determines the course of action of most medications. If a medication is given orally, three phases can be distinguished:
- absorption - leading to a peak in plasma concentration;
- redistribution - when plasma concentration falls rapidly as the medication is taken up by various tissues;
- elimination - slower phase of decline as the medication is metabolised or excreted.

MECHANISM OF ALLERGIC RESPONSE

Allergic or hypersensitivity reactions are due to an immunological response of the organism to a foreign substance called an antigen. Normally antigens are large molecules.

Medication molecules are usually small molecules. In joining with a larger molecule such as protein, a medication molecule may act as an antigen. Antigens stimulate the production of antibodies (specific to the antigen), leading to an antigen-antibody reaction. This may protect the organism from further invasive action by the antigen and can cause noxious effects such as an allergic reaction, damaging the tissues in which the antigen-antibody reaction takes place.

Allergic reactions are divided into four basic categories, depending on the type of antigen-antibody reaction:

- Anaphylactic reaction: This reaction appears within minutes of the administration of the medication and may be evidenced by laryngeal oedema, acute asthma and hypotension. This reaction can also occur hours after oral administration of a medication.

- Cytotoxic reaction: Cytotoxic reactions (breaking up) are characterised by haemolysis (disruption) of red blood cells. Examples of such are:
  - blood transfusion incompatibility;
  - any haemolytic disease of the newborn.

- Immune complex reactions: These reactions are rare but involve serum sickness, collagen diseases and rheumatoid arthritis.

- Delayed hypersensitivity reactions: These are the most frequent of all reactions. They are not mediated by circulating antibodies, but by special white blood cells (lymphocytes). These reactions include contact dermatitis, graft rejection, auto-immune diseases, damage to the kidneys and tuberculosis.

HOW CAN WE DEFINE A PRESCRIBED MEDICATION?

Prescribed medications are those specifically ordered by a medical practitioner. They must be administered according to the directions stated in the prescription.

- Written	- valid prescriptions must be in written form and signed by the medical practitioner ordering the medication.
- Person's name	- when a medication has been prepared specifically for a particular person, that person's name must appear on the container or package.
- Medication name	- the name of the medication must appear clearly in the written order and on the medication container or package.
- Dosage	- the appropriate dosage of the medication must appear in the written order and again on the container or package.
- Directions for use	- specific directions for use must be stated, including how much, how often, how long, etc; also, any specific limitations and/or precautions for that medication use.
- Dispensing date	- the date the medication was prepared must appear on the container or package.
- Expiry date	- the date when the medication is considered expired must appear on the container or package. A medication cannot be considered safe for use if its expiry date has passed.
- Storage instructions	- any specific instructions regarding storage of the Preparation must appear on the container or package.

SCHEDULES

Schedules, referred to in poisons and drug regulations, are particularly relevant to medication likely to be used in the first aid situation. Schedules define how a medication is stored, prescribed and made available for use. These schedules vary from State to State and may be accessed via your pharmacist or health care practitioner.

It should be noted that the poisons and drug regulations are very specific about control, access, storage and supply of all poisons and drugs. The regulations specify the method of record keeping, as well as which persons are authorised to access and control the substances and the records. Severe penalties (including imprisonment) can be imposed upon persons who are in breach of these regulations.

SAFETY ASPECTS WHEN ADMINISTERING MEDICATIONS

- Check labels for storage instructions.
- Keep out of reach of children.
- Check the expiry date.
- If the label is unclear or if you do not understand it, check with a pharmacist or other authorised person.

- Once a medication is removed from its container, do not return it.
- Dispose of old or unused medications carefully. They may need to be returned to a pharmacy for safe disposal.
- Handle and administer medication utilising a 'non-touch' technique.
- Take particular care to administer all medication in accordance with the directions given by a medical practitioner.

Also be sure to follow the directions provided by the manufacturer on or in the packaging. From time to time, standing orders may be written or issued regarding the administration of particular medications to casualties with specific conditions or displaying specific signs and symptoms. These standing orders will be authorised and signed by a medical practitioner, usually the District Medical Officer, and will be circulated in writing. It is important then to follow the guidelines laid down, in any such standing order. **St John first aiders may assist a person, when requested by him/her, to take his/her medication (self medicate), provided the person is judged competent to make this request. In all other cases, medication shall only be given where a standing order endorsed by the District Medical Officer authorises the administration and where all other conditions listed below, including consent, have been met.**

First check if the casualty has any allergies.

Only ever administer medication according to the '**5 rights**':
- the **right** medication;
- to the **right** person (or casualty);
- in the **right** dose/s;
- at the **right** time;
- via the **right** route (or manner).

When a medication has been administered to a casualty, it is important to observe for any effect of the drug upon the casualty. Therefore, it is vital to know and understand what are the effects, and also side-effects, of medications you are involved in administering. The effects and/or side-effects should be noted carefully in the casualty report form.

Be aware of, and follow the legal requirements in regard to the storage, recording and documentation associated with the care and administration of medications.

There are some general considerations when and how medications should be administered that the first aider must be aware of:

- Need: Medication should be administered if there exists a clear need for the casualty to receive the drug. This need should be assessed based upon the presenting complaint together with the reported symptoms and observed signs.

- Benefit: Medication should be administered if it is believed there will be a real benefit for the casualty by taking the drug. This real benefit should be considered in light of the casualty's condition and the known effect/s of the proposed medication/s.

- Safe: Medication should be administered when it is safe to do so, given that the appropriate situation exists in regard to the parameters of prescription and administration. These have been discussed already at length.

- Assessment: Medication should be administered when the following points have been considered, and it still appears safe to do so:
    - Does the casualty have any known allergies?
    - Is the casualty taking other medications that might interact with the proposed medication?
    - Has the casualty been drinking alcohol?
    - When was the last time the casualty had medication for this particular problem?
    - Is the casualty required to drive or operate machinery, etc., and if so will the proposed medication interfere with his/her ability to do so?
    - Is the casualty legally competent to give consent to take the proposed medication? This applies especially to children!
    - Is the casualty co-operative and alert enough to be able to receive instructions and take the medication as required?

If a first aider is unsure about the safety of administering a medication after answering the above questions, then the advice of an appropriately qualified person should be sought, e.g. doctor, registered nurse.

How should medications be administered to a casualty? Consider the following points:

- Is the environment suitable for the administration of the particular proposed medication? e.g. privacy.

- Is all the necessary equipment readily available? e.g. oxygen source for nebuliser.

- Will the casualty be able to tolerate the form of the proposed medication? e.g. liquid versus tablet.

11.1 Administer a topical medication

Performance: Safely administer the correct dose of a specific topical medication to a casualty.

Checklist	Needs Improvement Date	Proficient Date
Ask if the casualty has any allergies. Explain procedure to casualty. Assemble equipment. Wash hands. Don gloves. Cleanse body area (if necessary). Select correct medication. Apply medication correctly. Cover area, if required. Clean up. Document administration.		

11.2 Administer an oral medication

Performance: Safely administer the correct dose of a specific oral medication to a casualty.

Checklist	Needs Improvement Date	Proficient Date
Ask if the casualty has any allergies. Explain procedure to casualty. Assemble equipment. Wash hands. Select correct medication. Dispense correct dose. Give to casualty. Clean up. Document administration.		

11.3 Administer an inhaled medication

Performance: Safely administer the correct dose of a specific inhaled medication to a casualty.

Checklist	Needs Improvement Date	Proficient Date
Ask if the casualty has any allergies. Explain procedure to casualty. Assemble equipment. Wash hands. Position casualty. Measure peak flow volume (if necessary). Select correct medication. Ensure casualty administers multidose inhaler correctly (using spacer if available). Clean up. Document administration.		

MODULE 12

Psychological Distress

PRESCRIBED REFERENCE: St John Ambulance Australia. Australian First Aid. Third edition,1998, reprinted annually, Chapter 23.

INTRODUCTION

Skills Maintenance Programme 1999 addressed emotional responses to disaster and major trauma and provided first aid guidelines for the management of traumatic stress. This module will consider the management of psychological distress in a more general way and builds on the content of the 1999 module.

Health is defined by the World Health Organisation as the total physical and mental wellbeing of an individual not just the absence of disease or infirmity. Therefore, when first aiders deal with casualties, they should not only consider the physical needs of casualties but also their mental and emotional needs.

When one considers the development of the art of first aid, it is steeped in the annals of trauma management in support of military activity. It was initially driven by those who were more surgically minded, especially orthopaedically. It should therefore, come as no surprise that for many years the physical aspects of the casualty, especially in relation to trauma have been the major area of focus in the practice of first aid. Over the last few decades, with ageing populations and reduction in general trauma, there has been an increasing focus on the more general medical needs of casualties in the practice of first aid. However, it has only been in the last decade that the mental and emotional welfare of a casualty has come under significant consideration.

At any one time, no less than ten percent of the general population have sufficient symptoms to warrant a diagnosis of mental illness. While this does not mean that all of these people require psychiatric treatment it does indicate that people involved in health care should be aware of the prevalence of mental health problems in the community and acquire sufficient skills to offer appropriate support. The role of the person offering support to people who are psychologically distressed is to provide emotional and physical safety. Being with the person is an important part of this care. Gentle communication with the person is very important to let the person know that someone will help him/her.

The casualty could be emotionally disturbed due to a number of factors or a combination of any of these factors including:
- underlying mental health or state of mind;
- the effect of drugs or alcohol;
- reactions following an accident or trauma that has recently been sustained;
- or a reaction associated with an underlying adverse medical event.

Good communication is essential when dealing with a distressed person. Communicate with the person orally through gentle conversation and words of encouragement and communicate non-verbally by being attentive, being aware of body space, offering intermittent eye contact and adopting a relaxed pose. It is advisable for one person to sit quietly with an emotionally distressed person rather than a number of people being involved. In this way, distractions are reduced and a quiet atmosphere can encourage conversation between patient and health personnel. Remember that the basic philosophy of first aid remains valid in these situations and early assessment of the patient, including D.R.A.B.C. and taking vital signs, is important.

ASSESSMENT OF EMOTIONAL STATE

This checklist can be used to gather information about the person's overall condition and will be very useful for other health professionals providing treatment. Wherever possible, take the person's vital signs if the person allows you to do so. If family members are present, involve them and inquire about previous treatments the person may have had.

General Awareness and Orientation (time/place/person)
- Note facial expression: gestures, tics;
- Assess level of consciousness;
- Ask for name, address, telephone number, date, time of day.

Appearance
- Observe physical characteristics: obvious disabilities, scars;
- Observe dress and hygiene.

Behaviour
- Observe level of activity: lethargy, agitation, disorganisation;
- Note speech: rate, volume and tone of voice;
- Observe non-verbal communication: posture, eye contact, use of gesture.

Mood
- Assess mood: sad, happy, tearful, angry, frustrated, irritable, suspicious.

Thinking and Perception
- Observe thinking and perception: clear, confused, incoherent, strange ideas;
- Is the patient experiencing hallucinations? (hearing and/or seeing things that are not there in reality).

Memory
- Check memory: recollection of events that occurred in the last few days;
- Consider long term recollection, e.g. childhood experiences.

History
- Ascertain recent medical history and ask about medications;
- Check for recent trauma and consumption of drugs including alcohol.

THE ANXIOUS PERSON

Anxiety is a universal emotion that cannot be observed directly but must be inferred from behaviour. Common physical symptoms of anxiety include tremor, sweating, dry mouth, dilated pupils, tachycardia (rapid pulse rate) and tightness in the chest. Psychological symptoms include tension, apprehension, fear, poor concentration, headaches, dizziness and irritability.

Strategies
- Take a deep breath and remain calm. An anxious person will feel even more anxious if he/she senses that you are anxious.
- Respect the person's need for greater than normal personal space. Do not force him/her to make eye contact.
- Find a quiet place with few distractions.
- Sit quietly with the person, be attentive and listen actively if he/she is talking to you.
- Gently ask the person to tell you what is happening for him/her. Accept the explanation.
- If the person is hyperventilating, encourage him/her to breathe with you in deep slow breaths.

THE DEPRESSED PERSON

Most people experience sadness at some point in their particularly after the loss of a loved one. Like anxiety, depression affects both body and mind. Physical manifestations include fatigue, loss of appetite, constipation, disturbance of sleep and a slowing of movement. Psychological effects include sickness, irritability, poor concentration, feelings of worthlessness, abnormal guilt, helplessness and a loss of enjoyment in normal activities.

Strategies
- Sit quietly with the person and encourage him/her to talk .
- Accept the person's explanations and acknowledge his/her feelings.
- Don't jolly the person along or tell him/her 'things aren't all that bad'.

THE SUICIDAL PERSON

Suicide is the second highest cause of all deaths for people aged 15-25 in Australia. It is important to take all suicidal expressions seriously and to seek appropriate help immediately. A person who is suicidal may not

necessarily look depressed or sad and may deny suicidal thoughts but this ought not be taken as evidence that he/she does not harbour such ideas.

Strategies
- Remain with the person and present a confident relaxed appearance.
- Gently inquire as to what has been happening for him/her.
- Statements such as 'Things must have been getting on top of you...' may be enough for the person to talk to you.
- Be respectful, genuine and accept what the person says.
- If you think the person has taken an overdose or is at immediate risk to himself/herself, call an ambulance.

THE WITHDRAWN PERSON

Withdrawal is a behaviour where a person retreats from contact with other people. The person may appear aloof, detached or indifferent to the surroundings, sit in a hunched position with head down, refuse to engage in conversation or speak in monosyllables. Withdrawal is often observed in a person who is out of touch with reality. People who are having problems with thinking (due to mental illness or physical trauma) may become withdrawn. They may have problems putting their thoughts together and this is manifest in a vagueness in conversation. Or they may stop talking in mid sentence as if their thoughts have been interrupted. Some people experience delusions, that is, they have a fixed false belief about someone or something. For example, they may believe that other people can hear their thoughts. Another reason for people to be withdrawn is if they are hallucinating. These experiences can be very distressing.

Strategies
- Approach the person quietly and let him/her know who you are and that you can help him/her.
- Remain with the person and gently encourage him/her to talk to you.
- If the person is non-communicative, sit quietly with him/her.
- Listen attentively and accept what the person says, no matter how bizarre it may sound to you.
- Never attempt to argue with deluded people or try to convince them that their delusions are false.
- If you feel the person is a danger to himself/herself or other people, call an ambulance.

THE SUSPICIOUS OR PARANOID PERSON

Sometimes people with a mental illness are convinced that others are acting against them in an unfriendly way. They may be suspicious of the motives of others and avoid the company of other people. Their behaviour may look to others to be disorganised or bizarre but is a result of their disordered thinking.

Strategies
- If you feel the person is a danger to himself/herself or other people, do not approach him/her but call an ambulance.
- Approach the person calmly but with confidence. If possible, sit near him/her.
- Let the person know who you are and that you want to help.
- Listen carefully to what the person has to say and accept it.
- Enquire as to what is bothering the person.
- Do not attempt to change the way the person thinks/feels.

THE OVERACTIVE PERSON

Overactivity may be due to a physical or mental illness. Physically, overactive people may be unable to sit still, even to eat or drink. They may speak very quickly and it may be difficult to follow the gist of what is being said. They may be extremely cheerful and confident but this may alternate with irritability or tearfulness. They may behave in ways that are normally not acceptable to other people and place their own safety at risk.

Strategies
- If you feel the person is a danger to himself/herself or other people, call an ambulance.
- Take a deep breath and adopt a calm relaxed posture before you approach the person.
- Stay close to the person and let him/her know who you are.
- Monitor the content of the person's conversation and behaviour.
- Be careful not to provoke the person. Do not challenge what he/she says.

THE CONFUSED PERSON

Confusion may be the result of a range of physical and psychological conditions. Confused people usually convey this from their behaviour. They may look bewildered and be slow to understand what is happening around them. Their behaviour may be disorganised. They may show periods of lucidity and then lapse into confusion.

Strategies

- Let the person know who you are and if possible take him/her to a quiet, well-lit place.
- Encourage the person to talk to you about what has been happening for him/her.
- Reassure the person that you will help him/her.
- As soon as possible, take the person's vital signs.
- Call an ambulance and hand over any information you have gathered about the person.

REFERRAL PROCESS

If possible, ask the person if and where he/she has received treatment in the past. If family members are present, recruit their assistance to gather more information about the casualty and to provide comfort. People with mental health problems are likely to be cared for by GP's or a community mental health centre, rather than a psychiatric hospital. Contact the relevant agencies or your local ambulance service for assistance.

Note: If a person with a psychological disorder is aggressive or potentially violent and it is assessed that he/she and/or the first aider may be at risk of harm, the police should be called to assist in the management of the patient. It is not the role of the first aider to restrain patients nor to prevent them from leaving a first aid facility. Such restraint could be unlawful.

MODULE 13

Alcohol and Other Drugs

REFERENCE: St John Ambulance Australia. Australian First Aid. Third edition, 1998, reprinted annually, Chapter 24.

OBJECTIVES: After completing this module, the member will be able to:

13.1 explain the effects of intoxication;

13.2 recognise some of the signs and symptoms of alcohol and other drug related problems/issues;

13.3 take appropriate action to manage casualties suffering from alcohol and other drug related problems/issues.

INTRODUCTION

The following information expands on the contents of Chapter 24 of Australian First Aid (1998). The module discusses the effects of alcohol and other drugs and focuses specifically on the more common drug-associated problems that may be encountered in the first aid situation. Other important aspects of this area, such as the effects of withdrawal, have not been considered because it is less likely that they will be encountered by the St John first aider.

Information about referral services has not been included and members are encouraged to seek information about services available in their State/Territory. When in doubt, referral to an Ambulance Service is appropriate.

DRUG DEFINITIONS

A drug can be defined as any substance which, when taken into the body, alters its function physically and psychologically. For example, psychoactive drugs are those which affect mood, thinking, behaviour and physiological functioning.

DRUG CLASSIFICATIONS

Depressant drugs slow down the activity of the central nervous system and include:
- alcohol;
- heroin;
- marijuana;
- solvents;
- aerosols and other inhalants;
- GHB (gamma-hydroxy-butyrate), also known as 'Fantasy';
- prescribed sedatives such as those used for anxiety and sleep disorders.

Stimulant drugs speed up the central nervous system and include:
- caffeine;
- nicotine;
- amphetamines ('Speed');
- MDMA ('Ecstasy');
- PMA (paramethoxyamphetamine);
- cocaine.

Hallucinogenic drugs alter perception and mood and include:
- Magic Mushrooms (psilocybin);
- Datura (Angel's Trumpet);
- LSD (lysergic acid diethylamide);
- 'Ecstasy';
- PMA;
- marijuana.

INTOXICATION

Definition: Intoxication occurs when the quantity of substance taken exceeds the person's tolerance, resulting in physical and/or behavioural abnormalities or, simply expressed in another way, it occurs when people take more of a substance than their body can tolerate.

Principles: Intoxication can affect behaviour and cognition; for example, reaction times, coordination and judgement may be impaired resulting in risk taking by individuals. Consequently, accidents and injury can occur while people are under the influence of alcohol and/or other drugs. It is therefore important to always ascertain if alcohol and/or other drugs have been used when assessing and treating almost any form of casualty but particularly those associated with trauma.

The effects of intoxication are unpredictable, and may vary from person to person, drug to drug and dosage. The person may be agitated, excitable, sedated or even unconscious. **While drug use may have contributed to a particular event and/or outcome it is important to be aware that even though people may appear intoxicated, and even smell of alcohol, they may have other medical complications, which are causing them to behave in an intoxicated manner, such as stroke, diabetes, and head injury.**

Intoxication complicates assessment and management of casualties; it can mimic or hide serious injury and illness. It is potentially a threat to life. Alcohol intoxication, in particular, can depress responses to pain. Urgent medical attention can reduce the risk of complication and death.

Symptoms and signs

People who are intoxicated may display:
- confusion;
- altered response;
- altered behaviour;
- signs of physical injury;
- misjudgment of their surroundings;
- aggression;
- loss of inhibition;
- a short attention span;
- frustration;
- an inability to understand new information.

Be aware that people who appear intoxicated may not be intoxicated. Symptoms imitating intoxication may be due to a wide range of conditions such as:
- head injury;
- concussion;
- stroke;
- shock;
- oxygen insufficiency;
- diabetes;
- severe infection;
- tumour;
- cerebral palsy.

The following symptoms and signs need careful consideration when dealing with a casualty:
- visible signs of injury – particularly to the head;
- deteriorating consciousness;
- breathing difficulties;
- abnormal vital signs;
- orientation;
- severe headache;
- seizures;
- changing mental state;
- irritability;
- pupil size/changes;
- unexpected/prolonged drowsiness;
- known medical conditions;
- recent known ingestion of alcohol and/or drugs including prescribed medication.

Management

It is safest to assume, in the first place, that the casualty is not intoxicated but rather suffering from some particular medical disorder.

D.R.A.B.C.
Following this well established protocol is appropriate.

Danger:
- Consider the risks to both yourself and the casualty.
- "Is there a life threat present?"
- Remember the need for Standard Precautions.
- The emotional status of the casualty may itself represent a hazard.
- See later under 'Drug psychosis'.

Response:
- Assess the casualty's level of consciousness.
- Look at their pupils for size and reactivity.

Airway:
- Changes in conscious level may affect the casualty's ability to protect the airway. This may require placement in the recovery position, at the same time protecting the neck.

Breathing:
- Inadequate respirations may require assistance.
- Oxygen may be necessary.

Circulation:
- Check pulse, skin circulation and look for signs of haemorrhage.

The elements of Airway, Breathing and Circulation make up a primary survey.

Assistance
As soon as it is suspected that help will be required, send for an ambulance.

Secondary Survey
- History:
  Assess if alcohol and/or drugs have been taken – what, when, how much, frequency of use, time of last dose, route of administration.
- Examination:
  Check for signs of injury from head to toe – bleeding, bruising, wounds etc.
  Look for signs of dehydration.
- Exclude other medical conditions.

Observation and handover
Continue to monitor and document the casualty's physical and mental state until help arrives.

DRUG EFFECTS

Effects vary from person to person. Immediate drug effects are influenced by:
- the nature of the drug ;
- the strength of the drug;
- the purity of the drug;
- the amount taken (duration, frequency, route of administration, use of other drugs);
- individual characteristics (age, sex, weight, tolerance, past experience, expectations of effect, mood and activities of the user);
- the circumstances in which the drug is taken (the environment, presence of other people).

DRUG INTERACTIONS

It is quite common for individuals to take drugs in combination, either intentionally or unintentionally. For example people sometimes combine alcohol, tobacco and caffeine over a meal. These drugs will interact with each othe causing responses that may or may not be recognised by the user due to their tolerance levels and th environment. Sometimes drugs taken in combination can have quite significant impacts on the individual particularly in the case of depressant drugs such as alcohol and heroin. It is common for heroin and ecstas overdoses to also involve the presence of alcohol.

The effect of the drug may be intensified if taken in combination with another different drug, e.g. alcohol and anti histamine.

Two or more different drugs taken together can cause an effect which is greater than the combined effect of th original drugs, i.e. 1+1 = 3, e.g. alcohol and heroin.

Two different drugs can combine in such a way that the second drug lessens the effect of the first, e.g. Narcan anc heroin.

SPECIFIC EFFECTS OF DEPRESSANTS

Alcohol

The effects of alcohol vary from person to person, depending on the person's experience with alcohol, level of tolerance, mood, individual characteristics, general health and also whether alcohol has been combined with other drugs. Ingestion of small amounts of alcohol can cause:
- relaxation;
- slowed reflexes;
- loss of inhibition;
- reduced concentration.

Continued alcohol intake can cause:
- increased confidence;
- changes in coordination;
- slurred speech;
- intensified moods;
- confusion;
- blurred vision;
- poor muscle control;
- nausea;
- vomiting;
- loss of consciousness;
- death.

Binge drinking is usually defined as drinking heavily over a short period of time or drinking continuously over a number of days or weeks. Binge drinking is harmful as it results in acute intoxication, which can lead people to take risks and put themselves in dangerous situations, and may result in accident and injury to themselves and others.

Heroin

Heroin is an opiate drug. Other opiate drugs include opium, codeine, pethidine, methadone, and morphine. All of these drugs depress the central nervous system. Combining heroin and alcohol greatly increases the effect.

Heroin may be injected, inhaled or smoked. Like alcohol, the effect varies from person to person, depending on the route of administration, amount used, tolerance etc. Heroin causes feelings of well-being and a rush of intense pleasure (euphoria).

Immediate effects:
- pain relief;
- very small pupils (pinpoint);
- slowed breathing;
- slowed pulse and blood pressure;
- drowsiness;
- nausea and vomiting;
- coma and death.

GHB

Gammmahydroxybutyrate is an anaesthetic drug, which has traditionally been prescribed as a pre-medication prior to surgery. More recently, it has been associated with a few patrons of dance parties who take the drug orally for its euphoric and sedative effects. Effects of a low dose include:
- euphoria;
- relaxation;
- enhanced sense of touch;
- decreased inhibitions;
- drowsiness;
- dizziness.

Higher doses of GHB can induce more intense effects including:
- intense drowsiness;
- muscle spasms;
- impaired speech and movement;
- vomiting;
- disorientation;
- seizures;
- respiratory failure.

Inhalants

Common household products which produce fumes that may be inhaled to produce intoxication effects include:
- aerosol spray cans;
- butane gas from lighters;
- glue;
- felt-tipped pens;
- cleaning fluids;
- correction fluid;
- paint thinner;
- petrol.

The product is inhaled through the nose or mouth. While the spray may be inhaled directly from the container, it is usually sprayed into a plastic bag or soaked onto a cloth before being inhaled. Most inhalants have a depressant effect, which slows down the activity of the brain and central nervous system. The effects of inhalants vary from person to person, depending upon factors such as the amount inhaled, tolerance and mood. Small amounts can quickly affect the user. Effects include:
- decreased inhibition;
- excitement;
- disorientation;
- reduced coordination;
- unpleasant breath;
- drowsiness;
- sneezing and coughing;
- risk-taking behaviour;
- seizures due to low oxygen levels;
- death.

Marijuana

Marijuana is the most commonly used form of cannabis and has a depressant effect on the central nervous system. In large doses marijuana can act as a hallucinogen. It is usually smoked but can be added to cakes or biscuits and eaten. Effects vary from person to person but may include:
- relaxation;
- giggling;
- reduced inhibitions;
- increased appetite;
- altered perception of colour, sound, time and space;
- altered thinking – may be enhanced or inhibited;
- confusion;
- hallucinations;
- paranoia;
- psychosis.

SPECIFIC EFFECTS OF STIMULANTS

The most commonly used psychostimulants are amphetamines and cocaine. As amphetamines tend to be considerably cheaper and have a much longer effect than cocaine, they are used far more commonly in Australia than cocaine. Both drugs stimulate the central nervous system. Ecstasy can have both a stimulant and hallucinogenic effect on the nervous system. As with all drugs, psychostimulant effects vary from person to person.

Amphetamines

Amphetamines speed up the action of the central nervous system. Most amphetamines are produced in backyard laboratories. As these amphetamines are crudely made and often mixed with other substances, the effects of the drug can be quite unpredictable. Amphetamines come in various forms, including tablets, capsules, crystals or liquid. They can be smoked, swallowed, inhaled or dissolved in water and injected.

The effect varies from person to person depending on amount used, route of administration, tolerance and mood. Typical effects include:
- increased pulse;
- increased breathing;
- increased blood pressure;
- enlarged pupils;
- dry mouth;
- sweating;
- increased energy;
- increased confidence;
- increased alertness;
- restlessness;
- excitability;
- insomnia;
- irritability;
- aggression;
- anxiety.

Very high doses can cause:
- paleness;
- headache;
- dizziness;
- blurred vision;
- tremors;
- irregular pulse;
- abdominal cramps;
- impaired coordination;
- strokes;
- heart failure;
- seizures;
- paranoia;
- death.

Ecstasy

Ecstasy has properties that imitate both an amphetamine and a hallucinogen. It is usually swallowed in the form of a tablet. Effects include:
- feeling close to other people;
- increased confidence;
- loss of appetite;
- nausea;
- rapid pulse;
- jaw clenching;
- grinding of the teeth;
- dry mouth and throat;
- insomnia;
- hot and cold flushes;
- sweaty palms;
- poor concentration;
- anxiety.

Severe effects of Ecstasy are usually associated with a malfunction in the body's normal temperature control and water balance. Consequently if users are in a hot, crowded environment with little ventilation and access to cool water, they may experience:
- high body temperatures;
- high heart rate;
- sweating;
- excessive thirst;
- urinary retention;
- cardiac arrhythmia;
- high blood pressure;
- hallucinations;
- seizures;
- vomiting;
- convulsions;
- grinding of teeth.

Ecstasy is regarded as being extremely dangerous to individuals with a known or family history of heart, blood pressure, breathing and kidney problems.

SPECIFIC EFFECTS OF HALLUCINOGENS

Hallucinogens are drugs which act on the central nervous system in a way that alters how the user thinks, behaves and perceives his/her surroundings. The immediate effects will vary from person to person, depending on dose, tolerance, mood, and personal differences. As there is some variation in effect, different hallucinogenic drugs will be discussed individually.

LSD

LSD is a synthetic drug, which is usually taken orally. It is usually soaked into tiny sheets of blotting paper, which are ingested.

Typical features of intoxication can include:
- dilated pupils;
- rapid heart rate;
- increased senses;
- relaxation;
- panic;
- nausea;
- confusion;
- paranoia;
- disorientation.

PMA

PMA comes in tablet form and is often mistaken for Ecstasy. It is a highly dangerous drug which can cause death. Adverse effects of PMA include:
- hallucinations;
- restlessness;
- agitation;
- muscle contractions and rigidity;
- rapid heart rate;
- increased blood pressure;
- nausea and vomiting;
- sweating and fever;
- convulsions;
- coma;
- death.

Magic Mushrooms

Magic mushrooms are commonly found in Australia, usually in the cooler months. They can be eaten fresh, brewed into a tea or cooked. Effects vary from person to person. Small doses may cause relaxation and mood changes. Higher doses often cause:
- abdominal pain;
- nausea and vomiting;
- shivering;
- numbness of mouth;
- dizziness.

DRUG INDUCED PSYCHOSIS

Some drugs, in particular amphetamines, cocaine and other stimulants, can produce a psychosis. While this can occur with small doses, it is more common with longer usage.

General Management

If confronted with a person who is experiencing drug induced psychosis, proceed with caution. The drug user may be extremely frightened by the experience and may react violently to being approached.

Do the following:
- Tell the person who you are.
- Move and speak in a calm, confident manner.
- Provide safety for the person physically and emotionally.
- Provide safety for yourself and others.
- Offer reassurance.
- Contact the emergency Mental Health Services if necessary for assistance.
- Stay with the person until medical assistance arrives.
- Arrange transport to hospital.

PRINCIPLES IN MANAGEMENT

The established principles of casualty care must still be observed.

Infection Control

The pre-hospital setting, with its association with alcohol and other drugs, is a particularly hazardous one. Therefore, follow St John Ambulance Australia Infection Control Guidelines (1996) and adopt Standard Precautions.
- Assume that sharps and associated drugs/materials are contaminated.
- Place injecting equipment in sharps containers.
- Wear disposable gloves.
- Minimise handling.
- Avoid skin contact.

D.R.A.B.C.
- Maintain a safe environment for the casualty and others.
- Act professionally and quietly move the casualty to safety if necessary.
- Be calm, reassuring, non-judgmental and sympathetic throughout.

Assistance
- Seek aid urgently as soon as you suspect the need.

Secondary survey
- Seek information for an accurate history.
- Examine carefully top to toe and treat as necessary.

Observation and handover
- Keep and send to the hospital drugs or containers for identification.
- Attempt to keep a sample of any vomit to send to the hospital.

RECORD OF SKILL MASTERY - 2000

Tick the box for 'Satisfactory', 'Fail' or 'Re-test'. Please write the examiner's family name in block letters. One of the following is to be entered under 'Position' below: MO = Medical Officer, NO = Nursing Officer, AO = Ambulance Officer, ADT = Divisional Trainer approved by District Medical Officer and TBAI = Training Branch Accredited Instructor.

Skill	Satis.	Fail	Re-test	Date	Examiner's name / Examiner's Signature / Position
1.1	❒	❒	❒		Examiner's name ..... Examiner's Signature Position .....
2.1 2.2 2.3	❒ ❒ ❒	❒ ❒ ❒	❒ ❒ ❒		Examiner's name ..... Examiner's Signature Position .....
3.1	❒	❒	❒		Examiner's name ..... Examiner's Signature Position .....
4.1	❒	❒	❒		Examiner's name ..... Examiner's Signature Position .....
5.1	❒	❒	❒		Examiner's name ..... Examiner's Signature Position .....
6.1 6.2	❒ ❒	❒ ❒	❒ ❒		Examiner's name ..... Examiner's Signature Position .....
7.1	❒	❒	❒		Examiner's name ..... Examiner's Signature Position .....
10.1 10.2 10.3	❒ ❒ ❒	❒ ❒ ❒	❒ ❒ ❒		Examiner's name ..... Examiner's Signature Position .....
11.1 11.2 11.3	❒ ❒ ❒	❒ ❒ ❒	❒ ❒ ❒		Examiner's name ..... Examiner's Signature Position .....

Glossary

acetone smell on breath:	smells like nail polish remover.
agonal:	relating to a phenomenon such as cessation of breathing.
antigen:	a foreign substance which causes the body to produce antibodies.
apathy:	lack of interest or feeling, indifference.
aspiration:	the act of drawing into the lungs.
bradycardia	slowing of the heart rate to less than 50 beats per minute.
brain ischaemia:	inadequate flow of blood to the brain.
cardiac arrhythmia:	deviation from normal heart rhythm.
cerebral palsy:	a non-progressive disorder of movement resulting from damage to the brain before, during, or immediately after birth. It is often complicated by other neurological and mental problems.
core temperature:	the temperature of the heart, brain, lungs and liver.
corrosive:	capable of destroying tissue by eating away a surface.
C.V.A.:	cerebral vascular accident – occurs when an artery taking blood to the brain becomes blocked or bursts.
detoxify:	remove the poison from.
envenomation:	poisoning which results from injection of a venom from bites, stings or penetrating wounds inflicted by reptiles, insects and marine creatures.
euphoria:	a feeling of well being.
glaucoma:	condition caused by increased pressure of fluid within the eyeball.
hypertension:	high blood pressure.
hypoglycaemia:	a deficiency of glucose in the blood stream.
hypotension:	abnormally low blood pressure.
hypoxia:	a deficiency of oxygen in the tissues.
intracerebral:	within the brain.
laryngeal oedema:	swelling in or around the larynx.
meningitis:	inflammation of the membranes covering the brain and spinal cord.
metabolism:	the sum of all the chemical and physical changes that take place within the body and enable its continued growth and functioning.
molecule:	the smallest fundamental unit of a chemical compound that can take part in a chemical reaction.

paranoia:	a mental disorder characterised by delusions organised into a system, without hallucinations or other marked symptoms of mental illness.
pre-eclampsia:	a condition of pregnancy characterised by high blood pressure and other symptoms associated with eclampsia.
post-ictal phase:	after attack.
psychosis:	a severe mental derangement especially when resulting in delusions and loss of contact with external reality; one of a group of mental disorders that feature loss of contact with reality.
rehydrate:	absorb water again after dehydration.
seizures:	violent muscular contractions with loss of consciousness (sometimes called fits or convulsions).
systemic:	relating to or affecting the body as a whole.
tic:	a habitual spasmodic contraction of the muscles especially of the face.
vasoconstriction:	a decrease in the diameter of blood vessels, especially arteries.
vasodilation:	an increase in the diameter of blood vessels, especially arteries.

National Adult Syllabus (Operations Branch)

INTRODUCTION

This Syllabus includes the knowledge and skills required to deliver first aid to the general public by the adult uniformed member of the Operations Branch. It incorporates material required for a St John Senior First Aid Certificate, or equivalent certificate approved by the State or Territory Training Branch, and for the Advanced First Aid Certificate. The third component of the syllabus, identified by an asterisk(*), contains items of knowledge and skill required by members pursuing higher certificates and courses over and beyond those required to be classified as efficient for the year.

It is anticipated that the member, joining with a Senior First Aid Certificate, will achieve an Advanced First Aid Certificate in the subsequent six months by attending an Operations Branch or a Training Branch Advanced First Aid course. Alternatively over a three year period, satisfactory completion of the Skills Maintenance Programme will enable the member to be eligible for the issue or re-issue of the Advanced First Aid Certificate. In order to meet annual efficiency requirements according to General Regulations, the Skills Maintenance Programme, drawn from this Syllabus, is required to be completed by the member and signed by an approved examiner.

The Syllabus has been approved by the Director of Training. The following is a summary of the more detailed Syllabus.

SECTION 1: Induction

Orientation to the Operations Branch of St John Ambulance Australia including:
- organisational structure;
- responsibilities of an adult first aider under General Regulations;
- emergency management and ethics;
- interaction with:
    - emergency sevices;
    - statutory authorities;
    - general public;
    - specialist groups;
- triage.

Safety management:
- risk identification and assessment;
- risk control: action at accident scene;
- legal obligations including St John Ambulance Australia Indemnity Policy;
- duty of care.

SECTION 2: Revision of Adult Cardio-Pulmonary Resuscitation

Anatomy and physiology of the respiratory system:
- mouth-to-mouth ventilation of the lungs;
- mouth-to-mask ventilation of the lungs;
- the management of respiratory distress/arrest.

Anatomy and physiology of the circulatory system:
- the management of cardiac arrest;
- cardio-pulmonary resuscitation.

SECTION 3: Resuscitation for special circumstances

- resuscitation of an infant and child;
- resuscitation and care of a casualty with a laryngectomy stoma.

Oxygen Therapy
- soft bag-mask-mouth resuscitation;
- semi-automatic defibrillators.

SECTION 4: Applied Anatomy and Physiology of the Human Body Systems

SECTION 5: Systematic Examination of a Conscious Casualty

SECTION 6: Systematic Examination of the Unconscious Casualty
- causes of altered consciousness;
- assessment of the unconscious casualty;
- management of the unconscious casualty.

SECTION 7: Wounds
- causes and classification;
- external haemorrhage control;
- recognition and management of internal haemorrhage;
- care of the minor wound;
- care of the major wound;
- management of the amputated part.

SECTION 8: Casualty Transport Techniques
- principles of kinetic lifting;
- lifting and stretcher-loading techniques including the use of:
    - Jordon Frame;
    - Furley stretcher;
    - Scoop.

SECTION 9: Skeletal Injuries
- fractures: types, symptoms, signs and general management.
- specific fractures: jaw, skull, upper limbs, lower limbs, pelvis.
- spinal injuries: cervical, thoracic, lumbar, sacral, coccygeal - symptoms, signs and management;
- rib fractures and chest trauma - symptoms, signs and management;
- the use of prepared and improvised splints;
- dislocations - symptoms, signs and general management.

SECTION 10: Special Injuries
- sprains and strains, symptoms, signs and management;
- sporting injuries: ethical considerations and advice to the injured athlete;
- inter-relationship of the first aider with health and sporting professionals;
- eye injuries;
- dental injuries;
- open and closed head injuries;
- use of cold compresses and ice packs (R.I.C.E.);
- bandaging techniques.

SECTION 11: Burns and Exposure to Extremes of Heat and Cold
- causes of burns, assessment of severity and management principles;
- eye burns - recognition and management;
- heat exhaustion and heat stroke management;
- cold injury: hypothermia, frostbite.

SECTION 12: Medical Emergencies

- Symptoms, signs and management of medical emergencies including:
  - heart conditions: angina; myocardial infarction; cardiac failure;
  - lung conditions including asthma;
  - diabetic emergencies both hyperglycaemia and hypoglycaemia;
  - acute allergic conditions - including bee and wasp stings;
  - cerebro-vascular accident; epilepsy;
  - infant convulsions;
  - emotional overbreathing (hyperventilation);
  - poisons: from inhaled, ingested, injected and absorbed materials;
  - venomous bites including marine creatures; snakes, spiders.

SECTION 13: Introduction to First Aid Units/Casualty Rooms

- Establishment of first aid units/casualty rooms;
  equipment; personal first aid kit; casualty rooms; first aid units/posts.
- Infection and communicable diseases including mechanisms of spread, recognition, consequences and prevention principles.
- Dressing technique principles.
- Administration of medicines.
- Casualty documentation.
- Casualty transfer.

SECTION 14: Patient Care and Comfort

- Role of rest and sleep.
- Lifting and moving a casualty: bedside lifts.
- Nutritional needs of a sick person.
- Skin care; pressure areas; use of bedpan and urinal;
- Psychological support of the sick and injured person.

SECTION 15: Emergency Childbirth

- Normal pregnancy and management of the three stages of labour.

SECTION 16: Aspects of Preventive First Aid

- In the home environment;
- At a sporting fixture;
- In the recreational environment;
- In the workplace or school;
- On roads and at public places of high risk;
- Immunisation.

SECTION 17: Drugs and Alcohol

SECTION 18: Psychologically Disturbed Casualties

- Neurosis, psychosis and depressive states;
- Grief and loss;
- The violent person;
- Sexual harassment;
- Support for the emotionally distressed first aider;
- Post-traumatic stress disorder.

DECLARATION OF CONTINUED FITNESS FOR PUBLIC FIRST AID DUTIES

The following Policy on Fitness for Duty was issued as part of Chief Commissioner's Order 2/96 of 7 February 1996:

1. *First aid skills and knowledge will be tested annually by the Skills Maintenance Programme.*
2. *As a test of physical fitness, members will be required annually to satisfactorily perform 10 minutes of cardiopulmonary resuscitation on a manikin, as part of their skills assessment. Members unable to pass this screening test must be referred to the Divisional or Corps Medical Officer or medical officer nominated by the District Medical Officer for counselling before retesting after an appropriate interval.*
3. *Members must sign an annual Declaration of Fitness, incorporated in the Skills Maintenance Programme, which states that there has been no change in their medical fitness to perform public first aid duties. If there has been a change, the member is to return the Statement to the Divisional Medical Officer in a sealed envelope marked "Medical in Confidence"; or , if there is no Divisional or Corps Medical Officer, directly to the District Medical Officer. The statement should briefly outline the reasons, medical or surgical, for the change and whether the condition is likely to be temporary or permanent.*
4. *If a medical examination is needed, both the member and the St John Medical Officer are governed by the General Fitness Standards for Membership. The medical officer may place the member on restricted duties for a specific period. Fitness will be reassessed at the end of that time.*
5. *A member deemed unfit has the right of appeal to the District Medical Officer or to a medical officer nominated by the Commissioner.*

The Superintendent/Officer-in-charge is to send the bottom section of this page to the District Medical Officer at Headquarters. If not able to declare continued fitness, the member is to make a separate statement outlining the reasons, medical or surgical, for the change and whether the condition is likely to be temporary or permanent and send it to the appropriate Medical Officer in a sealed envelope marked "Medical in Confidence".

Cut here

DECLARATION OF CONTINUED FITNESS FOR PUBLIC FIRST AID DUTIES

I declare that there has been no change in the last year in my medical fitness to perform public first aid duties.

Signed..... / / 2000

The member has satisfactorily demonstrated his/her fitness.

Signed..... / / 2000

Superintendent/Officer-in-charge

OR

There has been a change in the last year in my medical fitness to perform public first aid duties which I will report in confidence to the Divisional, Corps or District Medical Officer.

Signed..... / / 2000

Printed name and address.....

.....

CONFIRMATION OF COMPLETION OF SKILLS MAINTENANCE PROGRAMME, 2000

Name (please print).....
Family name

Division..... Date joined St John ...../...../.....

Signed.....Date...../...../ 2000
Member to sign when Programme completed

The above member has completed the programme to my satisfaction:

.....Date...../...../ 2000
Person responsible for training, print name and address and sign

.....Date...../...../ 2000
Divisional, Corps or District Medical Officer responsible for training, print name and address and sign

To be completed if the member needs a Training Branch First Aid Certificate issued.

The above member has satisfied the standards required by the Training Branch for Advanced Certificate (incorporating the former Medallion Certificate) accreditation or re-accreditation.

.....Date...../...../ 2000
Training Branch Accredited Instructor, print name and address and sign

The above copy is to be retained by the member

The Superintendent/Officer-in-charge is to send only the bottom section of this page to the District Medical Officer. **A record of receipt will be held at District Headquarters.**

Cut Here

ADVICE OF COMPLETION OF SKILLS MAINTENANCE PROGRAMME, 2000

This is to advise that

Name (please print).....
Family name

of..... Division who joined St John ...../...../.....

has completed the Skills Maintenance Programme for 2000. The confirmation of this fact in the member's manual has been duly and fully completed.

Name (please print).....
Person responsible for training, print name and sign

Position.....

Signed.....Date...../...../ 2000

To be completed if the member needs a Training Branch First Aid Certificate issued

The above member has satisfied the standards required by the Training Branch for Advanced Certificate accreditation or re-accreditation.

.....Date...../...../ 2000
Training Branch Accredited Instructor, print name and brief address and sign