Skills Maintenance Programme 1998

St John Ambulance Australia

ST JOHN AMBULANCE AUSTRALIA
NATIONAL CARDIAC ARREST DATA COLLECTION
UTSTEIN STYLE

Division or District Duty .....

Location of Duty ..... Location of Casualty Inside ☐ Outside ☐
Tick appropriate box

Date: Day - Month - Year .....

Weather at time .....

Age of Casualty .....years	Accurate ☐	Guess ☐
Sex of Casualty	Male ☐	Female ☐
Pre-existing cardiac disorder (if known)	Yes ☐	No ☐
Drugs taken (e.g. Anginine)	Yes ☐	No ☐
Smoker	Yes ☐	No ☐
Alcoholic odour	Yes ☐	No ☐

Pre-arrest symptom (e.g. chest pain, pallor)

.....

Witnessed cardiac arrest	Yes ☐	No ☐
Arrest after St John first aider arrived	Yes ☐	No ☐
Arrest after Ambulance arrived	Yes ☐	No ☐
Arrest after medical support arrived	Yes ☐	No ☐

CALL RESPONSE INTERVAL ..... minutes
(Period of time between receipt of call and arrival of St John first aider at casualty)

ASSESSMENT INTERVAL ..... seconds
(Period from arrival of St John first aider till arrest assessed i.e. unresponsive, breathless, pulseless casualty)

TYPE of expired air resuscitation e.g. mouth to mask .....

.....

Time C.P.R. commenced ..... hours and minutes (24 hour clock)

Time IF CIRCULATION restored ..... hours and minutes (24 hour clock)

Time IF BREATHING restored ..... hours and minutes (24 hour clock)

Time AMBULANCE CALLED ..... hours and minutes (24 hour clock)

Time AMBULANCE ARRIVED ..... hours and minutes (24 hour clock)

Time if C.P.R. ABANDONED ..... hours and minutes (24 hour clock)

Time AMBULANCE DEPARTS WITH CASUALTY ..... hours and minutes (24 hour clock]

Defibrillation performed Yes ☐ No ☐

Destination of Casualty (e.g. name of hospital and address if known) .....

.....

Complete as accurately as information available permits

TYPE OF ARREST

1. PRESUMED CARDIAC

(e.g. coronary occlusion; myocardial infarction; cardiac arrhythmia) ..... Yes ☐ No ☐

2. NON-CARDIAC e.g. Sudden Infant Death Syndrome ..... Yes ☐ No ☐

Drug overdose ..... Yes ☐ No ☐

Suicide ..... Yes ☐ No ☐

Drowning ..... Yes ☐ No ☐

Severe bleeding ..... Yes ☐ No ☐

Or presumed cause

.....

If defibrillation used, what was the number of defibrillation shocks? .....

Who performed the defibrillation? .....

Were there any problems with the defibrillator? .....

What was the type of defibrillator used (e.g. brand name) .....

Comments by first aider or duty officer to cover items not covered above or on the previous page

.....

.....

.....

.....

.....

Signature of person completing proforma..... Rank .....

Printed name of person completing proforma .....

Current address ..... Postcode .....

Age: ..... years Sex: Male ☐ Female ☐ Years in St John: .....

Current level of first aid accreditation: Senior ☐ Advanced ☐ Other .....

Add names, addresses and phone numbers of contacts - to assist in following up the casualty:

.....

.....

Please return this form, together with a **copy of the OB12 Casualty Report form** completed for the casualty with the suspected or confirmed cardiac arrest, as soon as possible, to:

Dr J. Fred Leditschke
C/o Assistant Secretary (Operations)
St John Ambulance Australia
P.O. Box 3895, MANUKA, ACT 2603

St John Ambulance Australia
OPERATIONS BRANCH

Skills Maintenance Programme 1998

Name

Signature .....

Division .....

Date received ...../...../.....

St John Ambulance Australia
Canberra Avenue
FORREST ACT 2603

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Contents

Note:
'A.F.A.' refers to *Australian First Aid.* Volumes One and Two, 1989 (or combined volume, 1993)
'A.R.C.' refers to the Australian Resuscitation Council *Policy Statements.*

Introduction to Skills Maintenance Programme 1998

Greetings and salutations!

These have been the opening words of the Skills Maintenance Programme for some years. They may be regarded as the call sign of Dr Fred Leditschke who held the position of Chief Surgeon from 1990 to 1996. During this time, every district will have benefited from his insight, guidance and wisdom and we are all indebted to him. He continues to be involved at national level with the recording of the cardiac resuscitations performed by Operations Branch members and also in the Queensland District. The National Cardiac Arrest Data Collection is developing into a unique data base and members are requested and encouraged to participate as directed in the Skills Maintenance Programme. It gives you a rare opportunity. Take it!

"Greetings" contains a unique feeling of companionship and camaraderie that is generated and fostered by a desire to be useful to our community. In modern society, good intent must be combined with proven and demonstrable ability. So we must have a Skills Maintenance Programme which will establish for our community that we are prepared to support our wish with commitment, endeavour and achievement. To this end, Chief Commissioner's Order 2/96, presenting the Operations Branch Policy for Fitness for Duty, states: "First aid skills and knowledge will be tested annually by the Skills Maintenance Programme".

"Salutations" may be used to convey a hope that good health will be a portion of those with whom we work. Good health is accompanied by enthusiasm, endurance, tolerance and flexibility and these qualities are constantly needed within St John. The requirement that each member be fit enough to perform C.P.R. for ten minutes must be seen as an absolutely minimum standard of fitness. No doubt many of us could be healthier and this itself presents itself as a challenge. Lifestyles can be changed!

We are all being required to change. This is happening in every aspect of our lives; personal, social and professional. At times these changes are hurtful and difficult to accept.

Robert Louis Stevenson said:

> *These are my politics: to change what we can; to better what we can;... and for no word however sounding, and no cause however just and pious, to relax the stricture of these bonds.*

In this manner, we will actively alter things for the better and you will be seeing changes in our organisation; administratively and in both fundamental and advanced aspects of first aid. Let's start change, not wait for it.

Franklin H G Bridgewater
Chief Medical Officer

National Skills Maintenance Programme Training Committee Members and Contributors

Susan Chen R.N.	District Nursing Officer (A.C.T.)
Barbara Davis R.N.	District Officer (Victoria)
Mr Wayne Deakes	Corps Officer (Victoria)
Diana de Silva R.N.	Divisional Officer (Victoria)
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Mr Gavan Keane	Corps Officer (Victoria)
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Jeffrey Williams R.N.	Corps Nursing Officer (W.A.)
Kathryn Zeitz R.N.	District Nursing 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 11.

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 in the Record of Skill Mastery at the end of Module 11.

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 Assistant Secretary (Operations), St John Ambulance Australia, Box 3895, Manuka A.C.T. 2603. They will then be forwarded to the Training Committee.

Resuscitation

Operations Branch members have been trained to provide first aid. The provision of effective C.P.R. at the earliest moment presents members with a unique opportunity of participating in 'the chain of survival' at a most critical stage. Members will commence C.P.R. when it is reasonably indicated.

It is not indicated if the casualty is clearly dead, e.g. there are injuries inconsistent with life or there are features of death (e.g. rigor mortis or body decay) apparent. In circumstances where performance of the procedure would constitute a real danger to the rescuer, it is reasonable to refrain. In the context of multiple casualties, a rational decision on priorities may determine that the casualty, otherwise requiring C.P.R., is not treated. Rarely, when a member is fully and personally aware of a casualty's legally expressed wish not to be resuscitated, that wish may be respected.

Franklin H G Bridgewater
Chief Medical Officer

PRESCRIBED *Australian First Aid.* Vol. 1 and 2, 1989, reprinted annually.
REFERENCES: Australian Resuscitation Council *Policy Statements.*

OBJECTIVE: On completion of the training period, and after practising the practical skills listed below (to a competent level of performance), the St John member will be able to apply them to the section's practical incident.

PRACTICAL SKILLS

1.1 Perform effective resuscitation on an adult.

1.2 Perform effective resuscitation on a child.

1.3 Perform effective resuscitation on an infant.

1.4 Perform effective expired air resuscitation on a casualty with a laryngectomy stoma.

1.5 Assist paramedics/ambulance officers with safe defibrillation.

Practical incident

You are on duty at a junior cricket match. On the sideline are some adults watching their children play. There is a commotion on the sideline and you are called over to help. You find a collapsed elderly male who is unconscious. Examine and manage the casualty. Hand over to the ambulance officer. Try to note the time the call was received, the time of arrival at the casualty, the time taken to assess the casualty, the time C.P.R. is started and the time of any return of respiration and pulse. Complete a Casualty Report form OB12 for the incident and the Utstein-style Cardiopulmonary Resuscitation research form (use a photocopy of the form in the front of this Manual).

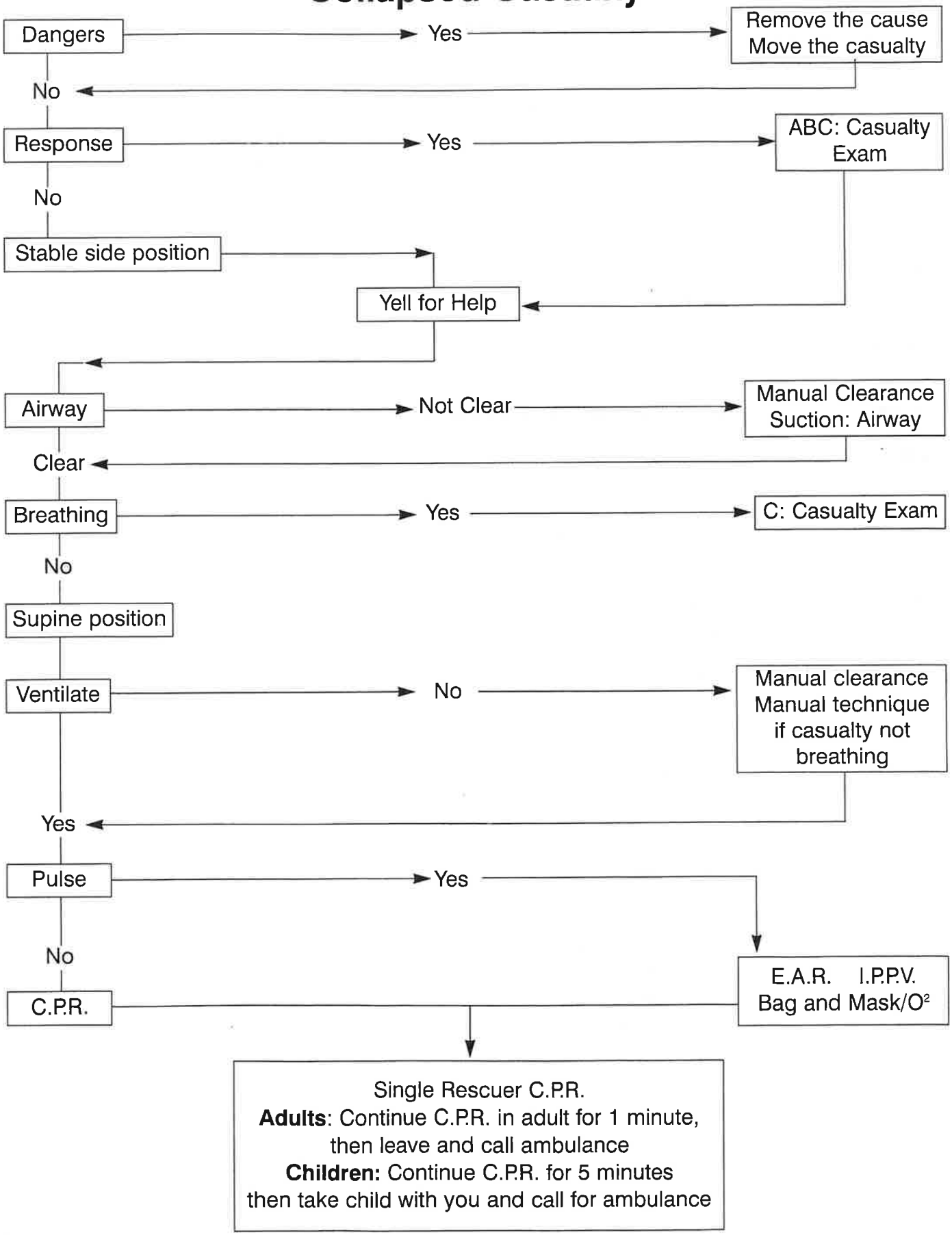
Resuscitation rates

Effective C.P.R. is best achieved when performed with an even rhythmic motion, where the compression and relaxation are equal.

	ADULT 5 initial breaths	**CHILD** 5 initial breaths	**INFANT** 5 initial breaths
E.A.R.	1 breath every 4th second 15 cycles/min.	1 breath every 3rd second 20 cycles/min.	1 breath every 3rd second 20 cycles/min.
COMPRESSION SITE	Lower half of sternum	Lower half of sternum	Lower half of sternum
HOW	2 hands	1 hand	2 fingers
DEPTH	4-5 cms (1½ - 2 inches)	2-5 cms (1inch)	1-5 cms (½ inch)
ONE OPERATOR	15 cardiac compressions to 2 breaths in 15 seconds; 4 cycles/min.	15 cardiac compressions to 2 breaths in 10 seconds; 6 cycles/min.	15 cardiac compressions to 2 breaths in 10 seconds; 6 cycles/min.
TWO OPERATOR	5 cardiac compressions to 1 breath in 5 seconds; 12 cycles/min.	5 cardiac compressions to 1 breath in 3 seconds; 20 cycles/min.	Not recommended
REVIVAL CHECKS	Pulse and breathing 1 minute; then every 2 minutes thereafter	Pulse and breathing 1 minute; then every 2 minutes thereafter	Pulse and breathing 1 minute; then every 2 minutes thereafter

NOTE: C.P.R. rates are under constant review by the A.R.C. The A.R.C is currently considering the International Liaison Committee on Resuscitation (ILCOR) statement. Any policy changes made by the A.R.C. will be sent to each district for distribution to members.

Resuscitation Management Algorithm for the Collapsed Casualty



E.A.R. = expired air resuscitation I.P.P.V. = intermittent positive pressure ventilation. Supine = on back.

1.1 Perform effective resuscitation on an adult

You are on duty at the Royal Agricultural Show; you have been sent to patrol the side show area. While walking around you are called over to a crowd of people. There you find a collapsed elderly lady, who is unconscious. You have your first aid kit, a pocket mask and your hand-held radio. Manage the casualty. Remember you will be required to complete an OB12 and the Utstein-style report.

Checklist		Needs Improvement Date	Proficient
Danger	Nil.		
Response	Shake and shout. Nil response.		
Side position	Roll onto side. Maintain neck alignment.		
Airway	Look, clear, then open; use 2 fingers.		
Breathing	Check breathing for 10 sec. Nil found. Roll onto back. 5 full breaths; good seal. Watch rise and fall of the chest.		
Circulation	Check breathing and pulse for 5 sec. Nil found.		
Commence C.P.R. , 1 person	Correctly measure chest. Lower hand on lower sternumm. Compression 4-5 cms. 15 compressions in 10 sec. 2 breaths and re-measure 5 sec. Rate: 4 cycles in 1 min.		
One minute	Check breathing and pulse for 5 sec. Call for help/ambulance. No pulse/breathing.		
Continue C.P.R.	Correctly measure chest. Lower hand on lower sternum. Compression 4-5 cms. 15 compressions in 10 sec. 2 breaths and re-measure 5 sec. Rate: 8 cycles in 2 min.		
Two minutes	Check breathing for 10 sec. and pulse for 5 sec. No pulse/breathing. Help arrives; a member with oxygen.		

Checklist		Needs Improvement Date	Proficient
Two person C.P.R.	Ratio of 1:5 at 12 cycles per min., use of oxygen with bag valve mask. 2 mins. C.P.R.		
4 minutes	Check breathing and pulse. Nil found. Continue C.P.R.		
Ambulance arrives	Handover.		
General	Complete OB12.		

Verbal assessment

What would your actions be if your casualty started to vomit?

Comments

1.2 *Perform effective resuscitation on a child*

You are on duty at a fete held by the local school. A child, aged 5 years old, is stung by a bee and develops shock. He becomes short of breath and wheezy. By the time you arrive, he has stopped breathing.

Checklist		Needs Improvement Date	Proficient
Danger	Nil.		
Response	Shake and shout. Nil response.		
Side position	Roll onto side. Maintain neck alignment. Send adult bystander to call for help.		

Checklist		Needs Improvement Date	Proficient
Airway	Look, clear, then open.		
Breathing	Check breathing for 10 sec. Nil found. Roll onto back. 5 full breaths, good seal. Watch rise and fall of the chest.		
Circulation	Check breathing for 10 sec. and pulse for 5 sec. No breathing pulse present.		
Commence E.A.R.	Ratio: 1 breath every third sec. Pistol grip to jaw. Head tilt. Good seal to lips. Adequate breath to raise chest. 20 cycles.		
One minute	Check breathing and pulse for 5 sec. No pulse/breathing.		
Commence C.P.R.	Correctly measure chest. Lower hand on lower sternum. Compression 2.5 cm. 15 compressions and 2 breaths 10 secs. Rate: 6 cycles in 1 min.		
After one minute	Check breathing for 10 sec.and pulse for 5 sec. No pulse/breathing. Continue C.P.R. 2 mins.		
After 2 minutes	Check breathing for 10 sec. and pulse for 5 sec. No pulse/breathing. Continue C.P.R. 2 mins.		
After 4 minutes	Check breathing and pulse. Nil found. Continue C.P.R.		
Ambulance arrives	Handover.		
General	Complete OB12. Use of Oxy Viva if qualified. Use of pocket mask. Universal precautions.		

Verbal assessment

If the casualty's pulse returned, and there were a respiratory rate of 6 a minute, what would your actions be?

How could you assess whether your C.P.R. is effective?

Comments

1.3 Perform effective resuscitation on an infant

You were invited to a child care centre to give a demonstration on first aid to the carers at the centre. While demonstrating bandaging, you hear a cry for help from the baby's room. You investigate and discover a carer holding a limp infant in her arms.

Checklist		Needs Improvement Date	Proficient
Danger	Nil.		
Response	Shake and shout. Nil response.		
Side position	Roll onto side. Maintain neck alignment. Send adult bystander to call for help.		
Airway	Look, clear, then open.		
Breathing	Check breathing for 10 sec. Nil found. Roll onto back. 5 full breaths, good seal. Watch rise and fall of the chest.		
Circulation	Check breathing for 10 sec. and pulse for 5 sec. No breathing/pulse present.		

Checklist		Needs Improvement Date	Proficient
Commence E.A.R.	Ratio: 1 breath every third sec. Pistol grip to jaw. Head tilt. Good seal to lips. Adequate breath to raise chest. 20 cycles.		
One minute	Check breathing for 10 sec. and pulse for 5 sec. No pulse/breathing.		
Commence C.P.R.	Correctly measure chest. Lower hand on lower sternum. Compression 25 cm. 15 compressions and 2 breaths in 10 secs. Rate: 6 cycles in 1 min.		
After one minute	Check breathing for 10 sec. and pulse for 5 sec. No pulse/breathing. Continue C.P.R. 2 mins.		
After 2 minutes	Check breathing and pulse for 5 sec. No breathing or pulse. Continue C.P.R. 2 mins.		
After 4 minutes	Check breathing for 10 sec. and pulse for 5 sec.. Nil found. Continue C.P.R.		
Ambulance arrives	Handover.		
General	Complete OB12. Use of Oxy Viva if qualified. Use of pocket mask. Universal precautions.		

Verbal assessment

If the casualty's pulse returned, and there were a respiratory rate of 6 a minute, what would your actions be?

How could you assess whether your C.P.R. is effective?

Comments

Expired air resuscitation for a neck breather

Some people in society are unfortunate to have lost their voice box or larynx. This may be due to cancer, trauma, or burns. The removal of the voice box could be a complete laryngectomy, i.e. no voice box left, or partial laryngectomy, where some of the voice box is left. As a result of this surgery, people who have had a total laryngectomy are no longer able to breathe through the nose or mouth. People who have had a partial laryngectomy may be able to partially breathe through the mouth and/or nose, though the movement of air could be restricted.

These people are also known as Neck Breathers or Partial Neck Breathers. A first aider can be alerted to the fact that someone is a neck breather by the following:

- advice from bystanders;

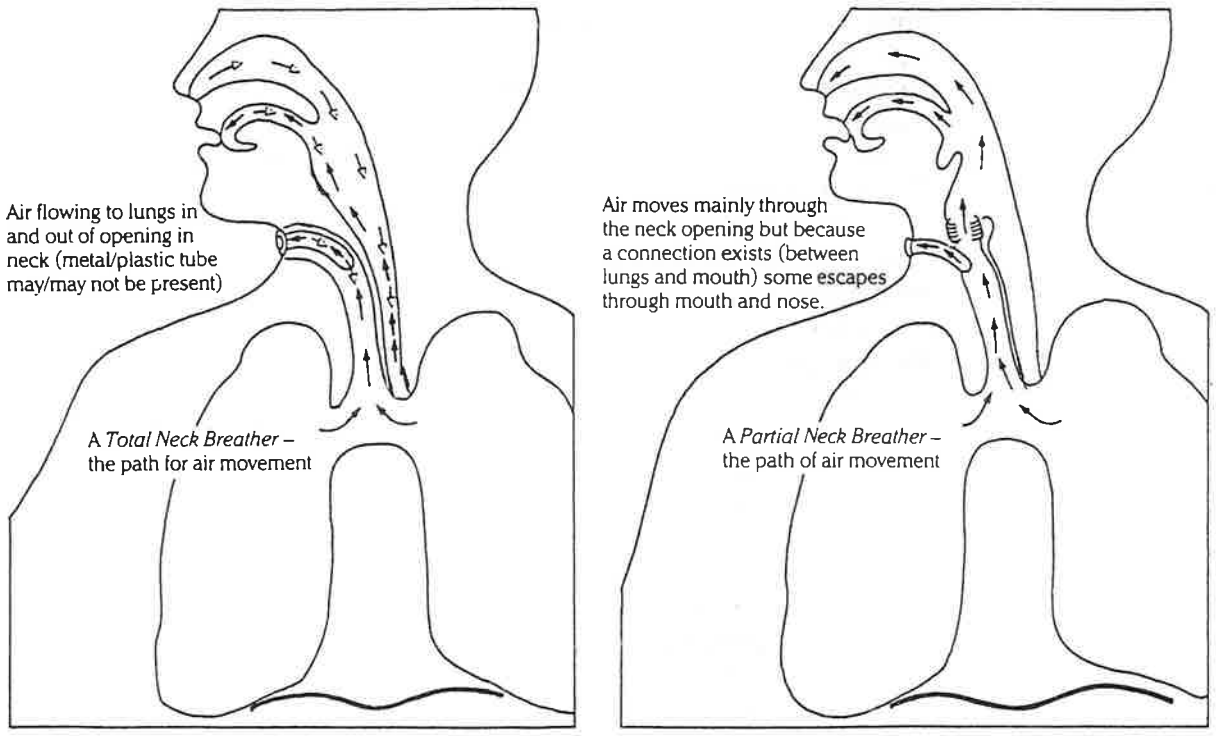
- evidence of a hole in the neck in the location of the Adam's Apple, with or without a tube in it;

- a scarf or similar cloth filter covering the neck.

If the casualty is unconscious, gentle extension of the head after you have placed him/her on the side and cleared the airway may reveal the opening.

Expired air resuscitation is performed using the same guidelines as for a non-neck breathers. However, instead of sealing your mouth against the casualty's mouth, you need to make a seal around the stoma. You may notice that there is difficulty in making the chest rise. This may be due to:

- a poor seal around the stoma;
- the casualty being a partial neck breather; air escapes from the mouth or nose;
- a blocked stoma or tracheostomy tube; this may need clearing in the same manner as for an obstructed airway in a non-neck breather.



If the casualty is a partial neck breather, you may need to seal the nose and mouth in order to perform effective E.A.R. Once you have breathed for the casualty, you will need to release the seal to allow air to escape. Remember these casualties still require adequate head extension.

If you are able to obtain a manikin which is designed to practise mouth to stoma resuscitation, practise your E.A.R. But remember that there are some differences to take note of. These are highlighted in bold text.

1.4 Perform effective expired air resuscitation - mouth to stoma method

Checklist		Needs Improvement Date	Proficient
Danger	Check for danger.		
Response	Shake and shout. No response.		
Side position	Place casualty in a stable side position. Be mindful of potential neck injuries. Call for help/ambulance		
Airway	Clear the airway. Check inside the mouth. Scoop out any debris. **Wipe mucus, vomit from stoma.** Open airway. Head extension with one hand on the forehead, the other under the jaw.		
Breathing	Check for breathing. Look, listen and feel for 10 secs. **Listen and feel for breathing from the stoma.** No breathing. Roll casualty onto back. Head tilt . Support jaw. Place your mouth over the stoma/tube. Seal with your lips.		
	Breathe out firmly to make the chest rise. 5 breaths in10 secs. If you feel air escaping from nose or mouth, casualty may be a partial neck breather. You will need to seal the lips and nose with your hand.		

Checklist		Needs Improvement Date	Proficient
Circulation	Check for pulse and breathing. Pulse present, no breathing.		
Start E.A.R.	1 breath every fourth second, 15 breaths.		
One minute	Recheck breathing and pulse. Pulse present, no breathing. Continue E.A.R. for 2 mins. 30 breaths.		
Two minutes	Recheck breathing and pulse. Pulse and breathing present.		
	Place in stable side position.		
	Recheck breathing and pulse 1 minute, then every 2 minutes.		
	Treat for shock. Ensure help has been called.		
	Complete OB 12.		

To obtain more information or arrange a talk about laryngectomies, contact the Laryngectomy Association in your state. Your State Health Department will be able to provide a contact number or let your fingers do the walking; check the phone book.

Safety in Defibrillation

With the availability of semi-automatic defibrillation at some public first aid duties, the Operations Branch member should be aware of some of the personal safety considerations when working alongside such defibrillators. The energy delivered by S.A.E.D.s (semi-automatic external defibrillators) is dangerous. At all times members should ensure that their personal safety and that of bystanders is maintained.

- At all times follow the instructions of the operator of the S.A.E.D.
- C.P.R. should be continued until instructed to stop by the operator of the S.A.E.D.
- On the order, 'STAND CLEAR', members should ensure that they are not touching the casualty, the casualty's clothing or any other equipment associated with the casualty.
- The Operations Branch member should also be aware of any bystanders who may need to be removed from near the casualty.

See the assessment box at the end of Module 11.

Infection Control

REFERENCES:

Australian First Aid, Vol. 1 and 2, St John Ambulance Australia, reprinted annually.
St John Ambulance Australia: *Infection Control Policy.*
District Policy and Procedures - Infection Control.

OBJECTIVES:

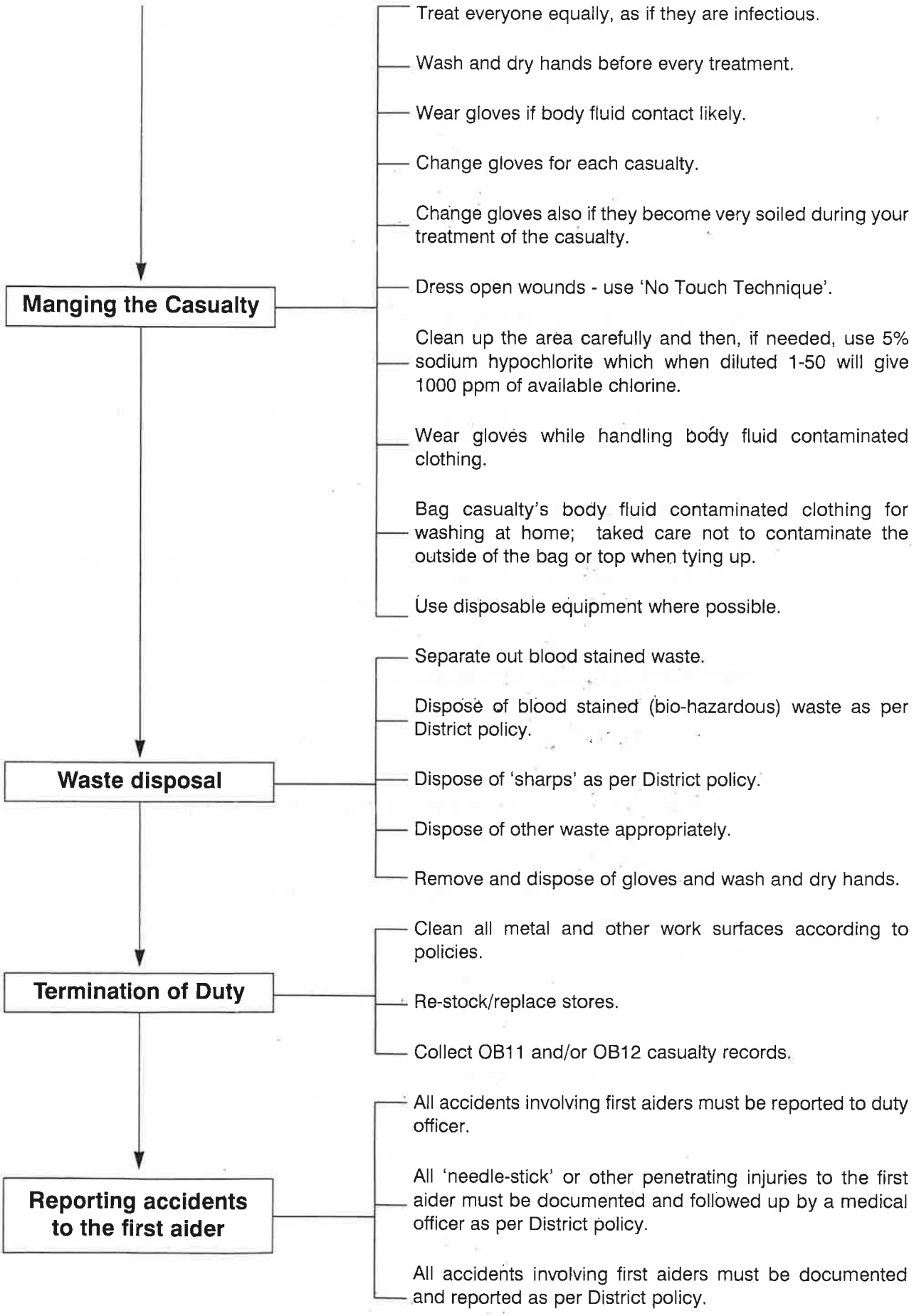
On completion of the training session, students will:

2.1 Be able to list the key areas of infection control.
2.2 Understand the importance of hand washing and hand care.
2.3 Be able to manage a casualty and demonstrate a knowledge of infection control techniques.

Infection control flow chart

Before the duty

- Members are encouraged to receive and maintain adequate vaccination for hepatitis B and tetanus (A.D.T. will cover tetanus and diphtheria).
- Members to cover any existing wounds with occlusive dressing.
- First aiders who have lesions or weeping dermatitis that cannot be adequately covered **must not** be involved in casualty care duties.
- Ensure adequate supplies:
  - gloves, aprons, safety glasses or goggles where possible;
  - water and soap/liquid soap;
  - bleach;
  - first aid supplies;
  - rubbish containers;
  - 'sharps' containers.
- What do we know about duty/location?
  - pattern of injuries?
  - is there water?
  - are there toilets?
  - are there waste disposal facilities for:
    - blood and body fluid contaminated matter?
    - 'sharps'?
    - other waste?
- Set up duty:
  - separate clean/dirty work areas;
  - site away from ablutions (toilet block);
  - adequate shelter and shade for first aiders and casualties.


Manging the Casualty
Treat everyone equally, as if they are infectious.
Wash and dry hands before every treatment.
Wear gloves if body fluid contact likely.
Change gloves for each casualty.
Change gloves also if they become very soiled during your treatment of the casualty.
Dress open wounds - use 'No Touch Technique'.
Clean up the area carefully and then, if needed, use 5% sodium hypochlorite which when diluted 1-50 will give 1000 ppm of available chlorine.
Wear gloves while handling body fluid contaminated clothing.
Bag casualty's body fluid contaminated clothing for washing at home; taked care not to contaminate the outside of the bag or top when tying up.
Use disposable equipment where possible.
Waste disposal
Separate out blood stained waste.
Dispose of blood stained (bio-hazardous) waste as per District policy.
Dispose of 'sharps' as per District policy.
Dispose of other waste appropriately.
Remove and dispose of gloves and wash and dry hands.
Termination of Duty
Clean all metal and other work surfaces according to policies.
Re-stock/replace stores.
Collect OB11 and/or OB12 casualty records.
Reporting accidents to the first aider
All accidents involving first aiders must be reported to duty officer.
All 'needle-stick' or other penetrating injuries to the first aider must be documented and followed up by a medical officer as per District policy.
All accidents involving first aiders must be documented and reported as per District policy.

If you receive a needle stick or other penetrating injury:

- Make the wound bleed.
- Clean the wound thoroughly, under running water if possible, and dress it.
- Report the incident to your Duty Officer and document details.
- Try to obtain the name and address of the casualty involved.
- Take the needle and related material in a rigid walled container, e.g. a lunch box, to the nearest major Emergency Department and ask for a medical assessment and documentation.
- Report incident as per your District policy.

Hygiene standards for health care (first aid) establishments.

High hygiene standards should apply for all staff involved in the provision of first aid. Work areas and equipment must be cleaned as per the manufacturer's guideline (unless otherwise instructed), stored correctly and checked regularly. Uniforms should be clean, hair should be tied back and nails kept short and clean. Only plain rings should be worn.

Hand washing and hand care

Hand washing is generally considered to be the most important measure in preventing the spread of infection. Hands should be washed and thoroughly dried before significant contact with any casualty and after activities likely to cause contamination.

Significant casualty contact may include:

- physical examination of a casualty;
- D.R.A.B.C. action plan.

Activities which can cause contamination may include:

- handling equipment/instruments soiled with blood or other body substance (not always visible);
- direct contact with body secretions or excretions;
- going to the toilet.

Hand washing is employed to physically rub off micro-organisms and dirt, oil, grease, dust and other substances which encourage the growth of micro-organisms. A neutral pH soap (with no added substances which may cause irritation) should be used for routine hand washing. If liquid soap is dispensed from reusable containers, these must be cleaned when empty and dried prior to refilling with fresh soap. Scrub brushes should not be used routinely as their use may result in abrasion of the skin. They may also be a source of infection.

It is preferable to use running water, which dilutes to a greater extent the number of micro-organisms, and warm water, for hand comfort. The water does not need to be hot; hot water used for this short length of time does not kill the micro-organisms.

For routine hand washing:

- remove watch;
- wet hands thoroughly;
- lather with soap;
- vigorously rub hands together and past wrists for 20 seconds;
- rinse under running water;
- pat (to minimise chapping of hands);
- dry hands thoroughly with disposable hand towel.

The total hand wash should take 30 seconds, to remove approximately 80 per cent of the micro-organisms.

In field situations, where hand washing facilities are limited or not available, it is advisable to use a towellette containing detergent to cleanse hands before using any chlorhexidine antimicrobial hand washes. Single-use sachets of alcoholic chlorhexidine may be useful in field situations. Alcohol and chlorhexidine are not good cleaning agents and are not as effective in the presence of physical dirt.

Repeated hand washing and wearing of gloves may cause irritation or sensitivity, leading to dermatitis or allergic reactions. Therefore 'hand care' is very important, as skin that is intact is a natural defence against infection. To minimise this risk, suitable hand creams should be used regularly.

Hand care creams sold in Australia which claim a therapeutic use are generally registered on the Australian Register of Therapeutic Goods (ARTG) and must display either the 'Aust L' or 'Aust R' numbers on the label. Registered 'Aust R' products are assessed for safety, quality and efficiency. Listed 'Aust L' products are reviewed for safety and quality. Labels should be checked to determine the products' suitability, as some hand creams are not compatible with the use of chlorhexidine. Aqueous based hand creams should be used before wearing gloves. Oil based preparations should be avoided as these may cause latex gloves to deteriorate.

Gloves are used as an adjunct to and not instead of hand washing.

Diseases which may be transmitted during first aid treatment from first aider to casualty, casualty to first aider or from one casualty to another

Bacterial infections

Bacteria are microscopic living organisms which can survive and multiply outside the body. They are spread by contact with contaminated people, objects, fluids and cells, inhalation, ingestion or penetration through the skin or mucous membrane. Impetigo (school sores) and bacterial conjunctivitis ('sticky eye') are common examples of bacterial infections. Antibiotics can be used to treat bacterial infections.

Viral infections

Viruses are complex molecules that cannot multiply outside a living cell. Sneezing, contact with blood and other body fluids such as vomitus or faeces are common modes of transfer of viruses. The common cold and influenza are viral infections. Viral infections cannot be treated by antibiotics.

- **Hepatitis**

  Hepatitis is inflammation of the liver: It may be due to an infection, chemical poisoning or as part of a generalised disease of the body. The most common cause is a virus. There are at least 8 sub-types of Hepatitis: A, B, C, D, E, F, G and H. The last five are currently not well understood.

  - **Hepatitis A** is spread by the 'faecal-oral' route; in other words, contact must occur between the bowel (or its faecal contents) containing the virus of the person who develops the disease and the mouth. Hence the need for handwashing after going to the toilet.

  - **Hepatitis B and C** are spread from the infected person by the blood-to blood contact, e.g. compound fractures, intravenous drug use, or body fluid routes. Patients who have recovered from an acute attack of these diseases may become carriers of the viruses. In this situation, patients can carry active virus in their bodies but show no signs of illness. Carriers are infectious to other people. In the long term (as long as 20 years), hepatitis may lead to cancer of the liver.

- **HIV**

  The Human Immunodeficiency Virus attacks the body's immune defence system. The method of transmission is the same as for Hepatitis B and C described above. After a variable period, the patient with HIV develops an acquired immuno deficiency syndrome (AIDS) characterised by recurrent infections and development of tumours. The infections or tumours can be fatal.

Immunisation

At present, vaccines are available for Hepatitis A, Hepatitis B, measles, German measles (rubella), influenza (flu) and mumps viruses. The Hepatitis A and B virus vaccines are not 100 per cent successful. Advice regarding immunisation should be sought from a St John medical officer or your general practitioner. Vaccinations for haemophilus influenzae bacteria (H.I.B.), whooping cough, tetanus, diphtheria, polio, meningitis and pneumococcal pneumonia are also available. Operations Branch members should ensure that they are immunised against tetanus and Hepatitis B.

Prevention

All transmissible diseases can be restricted in their spread by the adoption of the basic hygiene techniques and the use of precautions against contact with blood and body fluids.

2.1 Management of a casualty at a public duty

Scenario

You are one of the first aiders on duty at your local fair or show. A male youth (Caucasian) accompanied by his father presents at the first aid post complaining of nausea. He tells you that he has only had two rides (the Whizzer and the Roller Coaster) and is feeling terrible. You notice that the whites of his eyes and his skin look slightly yellow, or is it just his suntan? Ten minutes after presenting he vomits once; 30 minutes later he states he is feeling fine now, and is on his way home.

- What is your assessment?
- What is your treatment?
- Write up the OB12 including your advice to the casualty and his father.

Checklist	Needs Improvement Date	Proficient
D.R.A.B.C.		
Ask casualty's name and use it.		
Reassure casualty.		
Wash hands, put on gloves, explain why to the casualty.		
Prepare sick bag.		
History		
Observations:		
- skin colour, texture, puncture marks;		
- temperature;		
- pulse;		
- respiration;		
- eyes;		
- colour of sclera (whites of eyes);		
- documentation.		
Managing the casualty and waste disposal:		
Change gloves.		
Wash hands in between changes.		
Clean up spills.		
Dispose of sick bag; where/how?		
Bag clothing contaminated with body fluids.		
Remove gloves.		
Wash hands.		
Write up report.		

Latex allergy

REFERENCE: KOLAWOLE H.: *Bulletin of Australian & New Zealand College of Anaesthetists,* March 1997, pp. 26-29.

Latex allergy is an urticarial or hive-like reaction to natural rubber latex. Natural rubber latex is a concentrated milky fluid collected from the rubber tree *Hevea braziliensis*. It is made stronger and more durable by adding various chemicals. This process was first described by Charles Goodyear in 1839. There are many articles that contain natural rubber latex including gloves, medical equipment, elastic, condoms, balloons, adhesives, tyres and foam.

Latex allergy has been increasing in incidence around the world with the growing need for protective measures by the medical and dental professions and other health care workers because of such diseases as HIV and Hepatitis B and C. Almost all gloves worn in these situations are manufactured from natural rubber latex. St John members use these gloves and may therefore be at increased risk.

Overseas studies show the incidence of latex allergy is up to 10% in doctors and dentists and 1% in the general population. It is not a serious problem in Australia yet but the incidence is likely to rise. This type of allergy may happen after the second contact or may take many years to develop.

Mechanism

Latex allergy is a type I, or immediate type, allergy. It occurs within seconds or minutes of exposure to latex. The common types of allergens associated with type I allergy are medications (such as penicillin), bee stings, foods (such as shellfish, peanuts, egg white or milk) and, more recently, latex. The allergen involved in latex allergy is a protein in the natural rubber latex rather than the additives used in its preparation. If latex comes in contact with the skin of a sensitive person, there is a transitory and localised urticaria (hives). If the mucosa is touched, then urticaria, swelling and anaphylaxis can occur. The latex allergen can combine with the powder in the gloves and become airborne when the gloves are removed. The allergen can then be inhaled and cause respiratory changes. Generalised signs of anaphylaxis occur when the latex allergen is inhaled or ingested.

Signs of latex allergy

Local skin reactions may include itchiness and hives.

If there is a generalised reaction, early symptoms and signs may include light-headedness, paraesthesias, sweating, flushing, itch and palpitations. Later, palpitations, hives (urticaria), swelling of the face, mouth and tongue, swelling of airway linings (causing lump in throat, hoarseness and stridor) and bronchoconstriction (causing wheezing and tightness in chest) may occur. Anaphylactic shock and death may follow.

Rubber allergy

Rubber allergy, in contrast to latex allergy, refers to an allergy to the additives used in the production of rubber from natural latex.

Mechanism

This is called type IV, or delayed type, hypersensitivity and is manifest as a hand dermatitis if wearing rubber gloves. This has been recognised for many years and most often occurs in people wearing gloves for hand protection, although it can be seen on skin areas which contact rubber. It is more common if there is pre-existing dermatitis. The allergens are predominantly anti-oxidants and stabilisers. Again, this may present after only little contact or may take many years to present.

Signs of rubber allergy

If a person has this type of allergy, direct contact with rubber will cause a dermatitis at the site of contact. There are no systemic symptoms.

Precautions to be taken with a first aider if a latex or rubber allergy develops

Latex allergy

A latex allergy should be confirmed by either a dermatologist or an allergist. If proven to have a latex allergy, a first aider would need to be provided with non-latex gloves, avoid touching rubber or elastic products such as tourniquets and blood pressure cuffs without hand protection and avoid being close to powdered latex gloves when they are removed.

Rubber allergy

A first aider who becomes allergic to rubber and develops a dermatitis would need to confirm this by seeing a dermatologist. It will be necessary to avoid direct contact with rubber products. Non-rubber gloves would be needed for duties.

Management of affected casualty, first aider or member of the public

Known latex allergy

Prevent contact of any latex items with casualty's skin or mucous membranes. If gloves are required, they should be of a non-latex type.

Anaphylactic shock

Refer to Module 6, Shock, in this Manual.

Implications

The use of powderless latex gloves may diminish the rate at which latex sensitisation occurs.

An alternative to the latex type of glove, e.g. nitrile gloves, should be available for routine use by any member known to have a latex allergy and by members when dealing with a casualty known to have a latex allergy.

See the assessment box at the end of Module 11.

Casualty Assessment

PRESCRIBED REFERENCES: *Skills Maintenance Programme 1993,* Module 3.
Skills Maintenance Programme 1995, Module 7.

OBJECTIVE: To make the member more aware of casualty observations through a systematic approach.

Casualty Assessment

Observe scene on approach for:
- signs of history;
- signs of danger;
- signs of potential casualties/problems.

******GLOVES ****** to be worn at **all** times.

Primary survey

DANGERS
- Check and remove any dangers:
  - to yourself;
  - to the community;
  - to the casualty or casualties.
- If not able to remove the danger, remove the casualty (if possible).

DEPARTURES
- Locate primary and secondary exits.
- Ensure a safe exit at all times.

RESPONSE
- Shout and shake.

RAPPORT
- If response to 'shout and shake', introduce yourself.
- Develop some communication between yourself and the casualty.
- Commence taking the history.

ROLL
- If unresponsive to 'shout and shake' and/or airway compromised then:
  - roll casualty into the Lateral (Stable Side) Position.

AIRWAY
- Check for any actual or potential obstructions.
- Clear away any actual or potential obstructions, using finger sweeps/suction.
- Open airway, return head and neck to neutral position.
- Protect (constant vigilance) and insert oropharyngeal airway if tolerated (and if trained in this procedure).

BREATHING

- Check for ten (10) seconds by:
  - Look, for the rise and fall of the chest wall.
  - Listen, for the sounds of respiration by placing ear close to casualty's mouth.
  - Feel, for the movement of air out of the mouth with your cheek.

BAG (VENTILATE)

- If not breathing, then roll onto back and five (5) ventilations with :
  - bag/mask;
  - mouth - mask, or
  - mouth - mouth.

CIRCULATION

- Check for five (5) seconds by:
  - feeling for a carotid (neck) pulse.
- If no pulse, then commence C.P.R.

BLEEDING

- Perform head to toe examination of the casualty (as much as possible with hands directly on the skin).
- Check for the signs of external bleeding.
- Check under all body surfaces, including back.
- Treat any significant haemorrhage.

SPINAL

- Consider actual or potential spinal injury.
- Assess the type of accident and consider whether it is likely to have caused a spinal injury.
- **Commence treatment for actual or potential spinal injury.**

PAUSE AND REFLECT

- Stop and rest.
- Review the above information and consider.

ASSISTANCE

- is further assistance and/or equipment required for:
  - casualty care?
  - specialist casualty care?
  - transportation and/or extraction?
- Does the casualty require hospital or further medical treatment:
  - ambulance?
  - private care?
  - taxi/public transport?

RAPPORT

- Take the time to maintain and develop a rapport with the casualty.
- Use this as an information gathering exercise for incident history.
- Develop some confidence and trust between casualty and yourself.

Vital signs survey

PULSE

- Rate, i.e. number of beats per minute;
- Strength, i.e. strong, weak, bounding;
- Rhythm, i.e. regular, irregular, regularly irregular.

RESPIRATIONS

- Rate, i.e. number of breaths per minute;
- Rhythm, i.e. regular, irregular;
- Depth, i.e. deep, shallow.

PUPILS

- Size, in millimetres, i.e. 1mm;
- Reaction to light.

CONSCIOUS STATE

- Glasgow Coma Scale (GCS) used to test:
    - best eye opening response;
    - best verbal response;
    - best motor (physical movement) response.

SKIN

- Colour, i.e. pink, flushed (red), pale, blue (cyanosed), yellow (jaundiced);
- Temperature to touch, i.e. cold, cool, warm, hot;
- Texture, i.e. clammy, sweaty, dry, moist;
- Capillary refill; on squeezing and releasing the finger nail, it should return to normal within 2 seconds, recorded as <2,>2, or nil.

History

WHO?

- Number of people involved.
- Name/s of casualty or casualties.
- Casualty's age, and date of birth (DOB).
- Casualty's sex (gender).

HOW?

- How did the casualties come to be casualties (What happened?)
- How did the specific injuries or problems occur?

WHAT?

- What has caused the person to present for care?
- What appear to be the presenting problems?
- What does the casualty (or casualties) complain of?

WHERE?

- Where are the people who are involved?
- Where is each of the problems to be addressed (point to the part)?

WHEN?

- When did the event occur?
- When did the symptoms or signs first appear?
- When did the symptoms or signs change?

MEDICAL HISTORY

- Has anything like this been experienced before?
- If yes, what and when, what treatment was initiated to relieve it?
- Does the casualty have any other medical conditions/allergies?
- When was the last time the casualty saw his/her doctor and for what reason?

MEDICATIONS

- Are any medications taken? If 'yes', which medications (names)?
- Were all the prescribed medications taken today?
- Have any of the medications been changed by the doctor recently?
- Have any new/fresh bottles or packets of medication been opened recently?

FAMILY HISTORY

- Have any of the family had similar signs or symptoms previously?

Secondary survey

Secondary survey for further injury, abnormality, or illness.

EXAMINATION

- Head to toe examination of the patient checking for:
    - swelling;
    - deformity;
    - pain or discomfort;
    - further blood or body fluids;
    - wounds, injuries, or skin breaks.

CHECK

- Fluids from:
    - ears;
    - eyes;
    - nose;
    - mouth.
- Odour on the breath:
    - alcohol;
    - sweet;
    - bitter.
- Rigid pelvis.
- Springy rib cage.
- if no spinal injury is suspected, joints should move through normal range.

IDENTIFICATION

- Medic Alerts.
- SOS bracelet or pendant.
- Notes or cards regarding medical complaints.
- Personal identification; where possible wait for police.
- Take note of all medications on or with the casualty or casualties.

MECHANISM OF INJURY

- Examine the mechanism of the injuries in line with:
    - potential for spinal injury;
    - time critical guidelines (see Appendix at end of Glossary).

PATTERN OF INJURY

- Examine the pattern of the injuries in line with:
    - time critical guidelines.

VITAL SIGNS SURVEY

- Repeat the Vital Signs Survey noting:
    - any changes since the initial observations;
    - whether these changes are improvement or deterioration.

Specific assessments

Specific casualty assessments will include:

- Pain assessment - DOLOR
- Respiratory status assessment - PASSRESPS
- Conscious state assessment - Glasgow Coma Scale (GCS)
- Fracture assessment - PILSDUCT

Pain assessment - D.O.L.O.R.

D - Describe the pain and its intensity.

- Describe the type of pain, i.e. burning, stabbing, crushing, twisting, aching, etc.
- Rate the pain on a linear scale from one (1) to ten (10), where 1 = no pain.

O - Onset of the pain and associated symptoms.

- What was occurring just prior to the onset of pain and/or associated symptoms?
- What was occurring at the time of onset of pain and/or associated symptoms?
- When did the pain and/or the associated symptoms commence?

L - Location of the pain.

- The exact location of the pain as described above.
- The history of anywhere else that the pain may have been recently.
- Point with one finger to indicate the site of the pain.
- Does the pain spread or radiate anywhere?

O - Other signs and symptoms

The other signs and symptoms that may indicate a level of pain or discomfort; i.e. sweating, nausea, pallor, clammy, cool, agitation, distress, anxiety.

R - Relieving factors

Does anything relieve the pain or make the pain more tolerable for the casualty; i.e. position of the body, rest, medication, oxygen, dark room?

Fracture assessment - P.I.L.S.D.U.C.T.

P - Pain; at the site or on movement.

I - Immobility, of the affected part.

L - Loss of function; the normal function of the part is no longer possible.

S - Swelling; also include bruising.

D - Deformity, includes the shortening of limbs.

U - Unnatural movement; the part moves in an unnatural fashion.

C - Crepitus; the grating of fractured bone ends (very painful).

T - Tenderness.

Respiratory status assessment - P.A.S.S.R.E.S.P.S.

P - Position of the patient; i.e. lying, sitting, upright, supported on arms.

A - Appearance of the patient, i.e. distressed, anxious, fighting to breathe, exhausted.

S - Speech pattern and ability, i.e. normal, quiet, short sentences, broken, slowed, nil.

S - Sounds of breath i.e. quiet, inspiratory wheeze, expiratory wheeze, crackles, stridor, noisy.

R - Respiratory rate and rhythm.

E - Respiratory effort, i.e. use of accessory muscles, tracheal tugging, retractive intercostal muscles, volume of air being moved in and out of the lungs.

S - Skin:

- colour, i.e. pink, flushed (red), pale, cyanosed (blue), jaundiced (yellow);
- temperature, i.e.cold, cool, warm, hot;
- texture, i.e. sweaty, clammy, moist, dry.

P - Pulse

S - Conscious state:

- either alert, confused, drowsy, unconscious;
- or; Glasgow Coma Scale (GCS) - eye opening, verbal, and motor responses.

Glasgow coma scale

Refer to Module 5, The Nervous System, Head Injuries and Unconsciousness, in this Manual.

Notes to be used for filling out the OB12

Practical skills needed:

- the ability to take radial and carotid pulses;
- the ability to check pupillary responses;
- the ability to count respirations.

Casualty assessment is a process you use every time you meet and treat a casualty. How thorough and systematically you employ that process determines how effective your treatment of the casualty will be.

To help you become more familiar with a systematic approach, this module should be used in conjunction with the A4 casualty report forms (OB12). It will focus on assessment and leave treatment plans for other modules.

Casualty assessment is a continual process employed while the casualty is in your care. Casualty assessment is made after taking an adequate history, observing the physical signs, noting the symptoms, using verbal and non-verbal cues, and combining this information with your knowledge of first aid to arrive at a prioritised problem list and treatment plan.

Casualty report form

History

This section provides vital clues to the mechanism of injury and past or current medical history. It is reasonable to expect that not all casualties will need an in-depth head to toe assessment. Accurate history taking allows you to narrow or widen your areas of assessment. It is important to write down all medications that the casualty is taking. Listing the name of the medication, dosage and how often it is taken can provide vital clues to other medical personnel who may treat this casualty.

Casualty assessment

A rapid primary assessment consists of D.R.A.B.C. If breathing and circulation are fine, then a secondary assessment should be conducted in a head to toe fashion.

Head:

- Check neurological assessment via the Glasgow Coma Scale outlined on the back of the OB12 pad; remember, when observing infants or children, parents will provide the best clue as to whether or not observations are normal for that child.
- Check the skull and facial bones for fractures, cuts, bruising.
- Is the mouth free of potential obstructions to the airway, food, loose teeth or a swollen tongue?
- Look for drainage from the ears, nose and mouth; write down the colour and amount.
- Check eyes for bleeding, pain, contact lenses.
- Note the colour of the lips and mucous membranes.
- Look for any old tracheotomy scar or tracheotomy.

The observation of the chest area logically brings us to respiratory assessment.

Breathing

Look at the listed characteristics and define them:

- *Unremarkable:* means easy, effortless respirations at the correct rate for age.
- *Shallow:* means that the casualty is taking in less than the normal amount of air in each breath.
- *Wheeze:* is a raspy or whistling sound that results from the constriction or obstruction of the throat, pharnyx, trachea or bronchi. It is commonly associated with asthma or other respiratory problems.
- *Gasping:* short, sharp intakes of breath.
- *Rapid:* refers to rates above the normal for age; remember rates change with exercise and anxiety.
- *Slow:* refers to rates below average for age.

Other signs and symptoms to observe for include cough, dizziness, frothy or blood stained sputum, shortness of breath, blue lips (cyanosis). Children usually suffer respiratory collapse before cardiac arrest whereas adults may often present with cardiac failure that leads to respiratory arrest.

Skin

- *Unremarkable:* in Caucasians this means the skin is pink, warm and dry. Dark skinned individuals should have pink membranes inside their mouth and inner eye lids.
- *Pale*: absence or decrease in normal skin colour, best looked at inside of lower eyelid.
- *Flushed:* pinkish or reddish hue caused by vasodilative effects of fever or sunburn. Carbon monoxide poisoning presents with a cherry colour to the face.
- *Moist/clammy:* 'moist' is a fine presence of perspiration over a usually dry area. 'Clammy' is an uncomfortable level of moisture usually associated with the word 'cool'.
- *Dry:* normally the skin should be dry to the touch. This term can also be used to indicate dehydration. The signs of dehydration include parched lips and tongue, inability to create tears, tenting of skin over sternum.
- *Sweaty*: excessive perspiration.
- *Cool/Cold:* when checking this box, compare extremities to other parts of the body.
- *Warm/Hot:* indicate what part of the body this corresponds to, central or specific. Other signs and symptoms of the skin to look for : rashes, cuts, bruises, itching, numbness, tingling and yellowing of the skin or white parts of the eye.

Abdomen

Normally the abdomen should be soft and non-tender. Fat and flabby is not the same thing as distended. Potentially fatal injuries from blunt abdominal trauma are often hidden by more obvious wounds. A kidney injury is characterised by bruising in the lower back area, between the last rib and hip bone. A ruptured spleen is characterised by referred pain to the left shoulder and shock.

Pulse

There are many sites on the body in which to take the pulse. The most commonly used are the radial artery, the carotid artery, and, in young children and infants the brachial artery. The assessment of the pulse consists of looking at the rate, rhythm and quality.

- *Rate:* Rate is influenced by many factors: age, exercise, temperature and anxiety. The heart rate increases ten beats per minute for every degree above normal body temperature. A change in rate will occur before a change in blood pressure.

- *Rhythm:* Rhythm is usually characterised as either regular or irregular. Regular beats can be felt coming at the same time intervals. Irregular rhythms detected in the peripheral pulses usually indicate missed beats. However, in young people the pulse may speed up during inspiration and slow down during expiration and is considered a normal finding.

- *Quality:* This is usually described either as weak or strong. It is a highly subjective area of assessment. The first aider must be consistent in scoring the quality so that changes can be noted.

The **most important** thing to remember is that one set of observations in a potentially serious or serious injury is not enough. How things change over time is crucial. Serial recording of observations allows you to refine your treatment plan and judge the effectiveness of the treatment. You should be writing down the casualty's vital signs as frequently as determined by the casualty's condition.

Other signs and symptoms

A sign is any objective, observable physical measurement that can be seen. Certain signs are frequently associated with given conditions.

A symptom is a sensation the casualty feels and indication of discomfort from normal disease perceived by the casualty. Examples of symptoms may include pain, shortness of breath, numbness, itching.

Oxygen Therapy

Advanced Resuscitation Skills and Equipment

OBJECTIVES:

4.1 On the completion of this module, the Operations Branch member will be able to apply oxygen therapy and use appropriate resuscitation equipment.

4.2 At the successful completion of this module, the member will be able to:

- demonstrate the safety procedures necessary while handling medical gases;
- recognise the need for and effectively administer medical oxygen;
- competently administer medical oxygen to a spontaneously breathing patient using:
  - nasal cannula;
  - adult face mask (Hudson Mask);
  - child face mask;
  - high concentration face mask;
- recognise situations requiring the use of a suction apparatus;
- effectively use suction apparatus in situations where it is indicated;
- efficiently insert an oropharyngeal airway;
- effectively use equipment for assisted resuscitation:
  - oxygen powered resuscitation (in accordance with district guidelines);
  - self inflating bag and mask;
  - soft bag and mask.

PRACTICAL SKILLS

4.1 Application of an oxygen therapy mask.
4.2 Insertion of an oropharyngeal airway.
4.3 Use of suction equipment.
4.4 Use of an oxygen powered resuscitator.
4.5 Use of soft bag resuscitators.

What is medical oxygen?

Oxygen is a colourless, odourless gas normally present in the atmosphere. It makes up some 21% of atmospheric air.

Pure (100%) medical oxygen is produced by various processes and stored in steel or aluminium cylinders under high pressure. These cylinders are ascribed a letter in accordance with their capacity, e.g.'C' size = 480 litres, 'D' size - 1500 litres.

Flow from an oxygen cylinder is controlled by a regulator which reduces the high pressure into a safe range. A flow meter controls the flow in litres per minute (lpm). The regulator attaches to a cylinder so that only oxygen cylinders can be attached to oxygen regulators. All cylinders are colour coded according to their contents. In Australia, the oxygen cylinder is always a black cylinder with a white band around the collar.

Safe handling

There are certain safe handling procedures to be followed when this equipment is being utilised including:

- Combustible materials such as oil or grease **must not** be permitted to come in contact with the cylinder or the cylinder regulator, fittings, valves or hoses.

- Smoking is prohibited in any area where oxygen is stored or used. Oxygen, though not explosive, can feed a fire.

- Highly combustible material should not be stored with oxygen.

- Only approved regulators and flow meters are to be fitted to a medical oxygen cylinder.

- All valves must be **closed** when the cylinder is not in use, even if the cylinder is empty. N.B. All pressure from the regulator is to be bled from the system.

- Cylinders are to be stored in accordance with local and State regulations.

- A cylinder must be secured to prevent unnecessary impact should it topple over. During transit, the cylinder should be kept in its designed restraint or strapped onto the stretcher with the casualty.

- Always remain to the side of the cylinder. Never leave any part of your body over the cylinder or any other part of the equipment. Loose fitting parts have been known to rupture with enough force to cause severe injury.

- Cylinders should not be totally emptied. Positive pressure is to be left in the cylinders. As a rule of thumb, when showing a quarter full, cylinders should be changed for a full cylinder.

Changing cylinders

With these precautions in mind, in preparing a new cylinder for use:

- Place the cylinder securely in an upright position and assume a position to the side of the cylinder.

- Remove the plastic seal and 'crack' the cylinder with the key wheel or tool supplied. (This means you slowly open and then close a cylinder to blow off any accumulated debris). The 'cracking' should be preceded by a warning to those in the near vicinity about what you intend to do; once you have performed this, you will understand why.

- Ensure the valve opening is pointed away from all persons.

- Inspect the regulator and the valve stem to be certain that it is the right type for the cylinder and that it has an intact 'O' ring washer. Ensure a flow meter is attached to the regulator.

- Apply the regulator valve and tighten securely (finger tight only).

- Open the main cylinder valve fully and then back about one-half a turn.

The need for oxygen therapy

The average person is able to adequately exist on the amount of oxygen available in atmospheric air, that is 21%. However, when a person is placed in the position where there is an injury or illness which normally results in less oxygen supply than that demanded by the body, oxygen therapy must be initiated.

Oxygen should be administered to a casualty in the following situations:

- cardiac and respiratory arrest;
- shortness of breath;
- dyspnoea or respiratory distress;
- chest pain;
- shock;
- unconsciousness (from any cause);
- near drowning;
- pulmonary oedema;
- toxic inhalations;
- acute asthma attack;
- cerebro-vascular accident and head injuries;
- seizures;
- fractures;
- severe bleeding;
- time critical casualties (see Appendix at end of Glossary).

SPECIAL NOTE: Oxygen may depress further the respiratory integrity in casualties with Chronic Obstructive Airways Disease (C.O.A.D.). Such a disease is not, however, a contraindication for oxygen therapy but the casualty must be closely observed.

Oxygen administration

To administer oxygen to a casualty:

- Open cylinder as described above.
- Select the desired flow rate by adjusting the flow meter.
- Introduce the oxygen via mask or cannula to the casualty.

SPECIAL NOTE: Never assume that what you are doing is obvious to the casualty. Always tell the casualty what you are going to do and why.

To cease oxygen administration:

- Remove the mask or cannula from the casualty.
- Shut off the flow on the flow meter until the flow rate is zero.
- Shut off the main cylinder valve with the key wheel.
- Bleed the system when finished.

FLOW DURATION (APPROX)

'C' SIZE CYLINDER

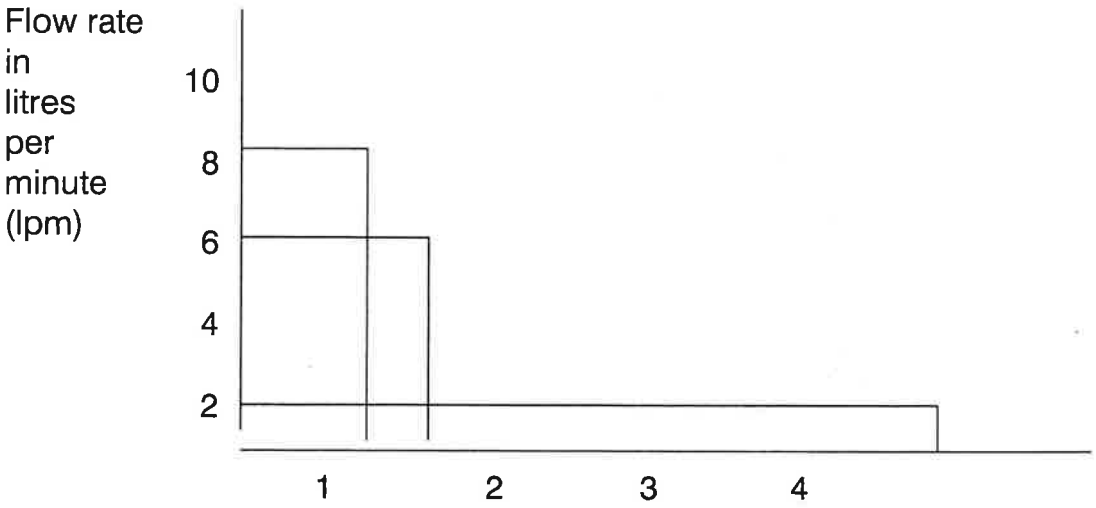


Fig. 1 Duration of oxygen flow in hours

'D' SIZE CYLINDER

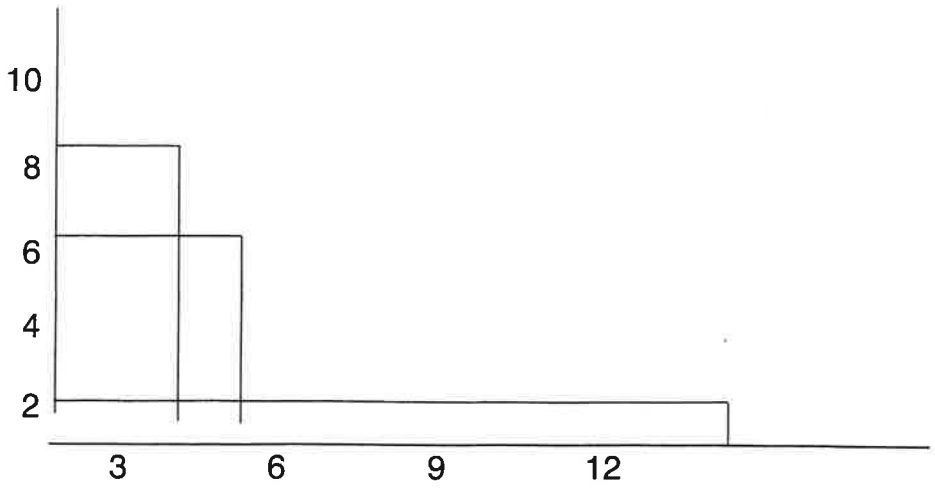


Fig. 2 Duration of oxygen flow in hours

Daily duties

At the commencement of a duty, the member should always ensure that there is sufficient oxygen in the cylinders.

In determining how long a cylinder should last, divide its litre capacity by the desired flow rate, for example;

$$\frac{\text{1500 Lt ('D' size)}}{\text{8 lpm}} = \text{180 minutes (approx.)}$$

Appropriate times are drastically shorter if oxygen powered suction is used.

Types of masks and cannula for administering oxygen therapy

Nasal cannula are made of plastic tubing and have two plastic tips (prongs) that are inserted into the nostrils. They will deliver an oxygen concentration of 25-40% with a 1-3 flow rate. Nasal prongs can cause soreness around the nostrils with extended use.

Simple face masks can deliver up to 60% oxygen, depending on the oxygen flow rate. Exhaled air is vented through holes in each side of the mask. At low oxygen flow rates, the casualty may draw in room air through the side holes, thus diluting the oxygen concentration received. Generally, a flow rate between 6-8 lpm will ensure adequate oxygen delivery. Flow rates of less than 6 lpm should be delivered by oxygen mask.

In general, plastic face masks are preferable in the pre-hospital environment because higher oxygen concentrations can be delivered. Some casualties, however, tolerate the masks poorly and complain of feeling suffocated. For such casualties the nasal cannula can be used. Whichever device is used, it is important for the member to explain to the casualty what it is and why it is being used. The member should explain that the mask may feel confining, but provides better quality oxygen than breathing without it. Such an explanation may help the casualty tolerate the mask with less anxiety.

4.1 Change/assemble/test 'C' size oxygen equipment

Checklist	Needs Improvement Date	Proficient
Remove gauges from used cylinder: - Ensure cylinder is turned off and pressure bled from gauge. - Unscrew securing bolt on gauge yolk (turn anti-clockwise). - Remove gauges and place carefully in a secure position.		

Checklist	Needs Improvement Date	Proficient
Identify and prepare a cylinder: - Identify cylinder as a Medical Oxygen Cylinder, i.e. black with white shoulders. - Remove plastic neck seal. - Blow out cylinder holes by briefly opening and closing main cylinder valve (cracking the cylinder).		
Apply gauges to new cylinder neck: - Apply gauges to cylinder. - Locate pins to correspond with appropriate holes in cylinder neck (depending on cylinder size). - Secure gauges by tightening securing bolt on gauge yolk (clockwise direction). Finger tight.		
Checking content and flow: - Open cylinder valve slowly and check for leaking oxygen. - Confirm cylinder volume from contents gauge. - Turn flow meter knob through range of oxygen flow settings to confirm flow meter is serviceable.		
Restoring cylinder after use: - Close main cylinder valve. - Bleed oxygen from flow meter. - Close flow control knob. - Restore cylinder to correct position. - (Do not leave pressure in gauges).		

NOTE: All oxygen safety procedures to be observed at all times.

4.2 Administer oxygen with standard face mask

Checklist	Needs Improvement Date	Proficient
Prepare casualty: - Explain the procedure. - Place casualty in position of comfort. - Reassure the casualty.		

Checklist	Needs Improvement Date	Proficient
Prepare equipment: - Select appropriate size oxygen mask. - Connect mask to tubing. - Connect tubing to oxygen nipple. - Position unit near to casualty.		
Adjust oxygen: - Open main cylinder supply valve. - Adjust flow meter control until gauge registers appropriate flow (no less than 6 lpm).		
Apply face mask to face of casualty: - Reassure casualty. - Apply mask to cover casualty's mouth and nose. - Pass elastic strap over head and position above the ears. - Tension strap until firm and mask is snug to casualty's face. - Shape metal strip on mask to ensure snug fit to shape of nose.		
Monitor casualty: - Ensure casualty is comfortable and tolerating therapy.		

NOTE: All oxygen safety procedures must be observed at all times.

4.3 Administer oxygen with nasal cannula

Checklist	Needs Improvement Date	Proficient
Prepare casualty: - Explain the procedure. - Place casualty in position of comfort. - Reassure casualty.		
Prepare equipment: - Remove cannula from package. - Secure cannula tubing to oxygen source. - Turn oxygen on and set at appropriate flow rate. - Extend elastic strap.		

Checklist	Needs Improvement Date	Proficient
Apply cannula: - Hold cannula and extend elastic strap. - Place elastic strap over casualty's head above ears. - Insert nasal prongs gently into nostrils. - Adjust elastic strap to support cannula in position but not too tight.		
Check: - No more than 3 L/min. - Ensure comfort.		

Suction

When to use

When the mouth or throat is filled with blood, vomitus, or other material, the use of a suction device allows rapid and efficient removal of that material. Suctioning not only removes waste from the airway but air as well. It is preferable to pre-oxygenate the casualty before suctioning, thereby providing the casualty with an oxygen reserve. This is not always possible and is dependent on circumstances.

Suctioning

Suctioning of the mouth and throat is most easily performed with a Yankeur Sucker. **Do not** use a rigid catheter in a moving vehicle, or on a conscious or semi-conscious casualty.

The catheter should be used with direct vision, not introduced blindly into the casualty's mouth and throat. Between suctioning attempts, the catheter should be cleared in sterile water or saline and the casualty should be oxygenated.

Technique for suctioning

1. **Pre-oxygenate** the casualty prior to every suctioning attempt.
2. **Check your equipment** before you insert a suction catheter.
3. Use gloves, goggles and other safety equipment where available.
4. Select your catheter. **Do not** use a rigid catheter in a moving vehicle.
5. Keep the suction **off** as you are inserting the suction catheter.
6. Suction **only** as catheter is being withdrawn.
7. After suctioning, flush the catheter with sterile water or saline.
8. Do not interrupt artificial ventilation for more than 15 seconds for a suctioning attempt.

4.4 Use of Yankauer Sucker

Checklist	Needs Improvement Date	Proficient
Prepare Yankauer Sucker: - Remove from wrapping; - Connect the Yankauer Sucker to the end of suction tubing.		
Turn suction source on: - Portable unit; - Vehicle suction unit.		
Open casualty's mouth: - Use index finger and thumb of one hand (pistol grip).		
Insert Yankauer Sucker: - Insert Yankauer Sucker into casualty's mouth moving suction around to remove any fluid. Be aware of loose teeth or dentures. - Tip of sucker must remain visible at all times; - Place finger over hole of sucker; - Withdraw Yankauer Sucker slowly while taking finger off hole in sucker; - Suction for no longer than 15 seconds;		
Maintain suction line: - Flush line at regular intervals with water to keep suction catheter clear; - Ensure that suction collection line jar does not fill beyond 2/3 full.		

4.5 Use of an oropharyngeal 'Y' suction catheter

Checklist	Needs Improvement Date	Proficient
Prepare 'Y' suction catheter: - Select appropriately sized catheter; - Remove from wrapping; - Connect the suction catheter to end of suction tubing.		
Turn suction source on: - Portable unit; - Vehicle unit.		
Use gloves, goggles and other safety equipment where available. Open casualty's mouth: - Use index finger and thumb of one hand; - Pistol grip.		
Insert catheter: - Insert catheter into casualty's mouth (tip of catheter must remain visible at all times). - Piece not to be occluded during insertion.		
Aspirate: - Aspirate by blocking 'Y' piece of the catheter with thumb of one hand; - NOTE: Aspirate for 15 seconds only, as prolonged aspiration may lead to hypoxia.		
Maintain: - Flush line at regular intervals with water to keep the sucker clear; - Ensure that aspiration jar does not fill beyond 2/3 full.		

Medical oxygen and suctioning - study guide

1. List six safety factors to be observed in the handling of medical oxygen cylinders.

2. List the common components of an oxygen unit.

3. State the required safety precautions necessary in suctioning a casualty.

4. List the types of oxygen therapy devices available and state the oxygen concentration available through the use of each type.

Type	0^2 Concentration

5. List eight situations which would indicate oxygen therapy.

1.	5.
2.	6.
3.	7.
4.	8.

6. When checking your equipment, you notice that the 'C' size oxygen bottle is showing 3/4 full. What is the maximum time this bottle will last if your next casualty requires oxygen therapy via face mask at 8 lpm?

7. We change the oxygen bottles on the vehicle when they are indicating what level?

8. The rigid plastic suction catheter is called a..... What special precautions should you take when using this device?

See the assessment box at the end of Module 11.

The Nervous System, Head Injuries and Unconsciousness

PRESCRIBED REFERENCES: *Australian First Aid,* Vol. 1, 1989, reprinted annually.
Supplementary Training Material.

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

5.1 Describe the structures of the nervous system.
5.2 List the causes of altered consciousness in a casualty.
5.3 Describe the method of assessing the level of consciousness of a sick or injured person.
5.4 Explain the significance of differences in pupillary size and response to light stimulus and record these observations using appropriate symbols.
5.5 Demonstrate the systematic examination of an unconscious, breathing casualty.
5.6 Describe the first aid management of an unconscious, breathing casualty.

PRACTICAL SKILLS:
5.1 Examination of an unconscious casualty.
5.2 Examination of a casualty's pupils.
5.3 Positioning a casualty into the stable side position.

Stores required:
- torch
- pencil and paper
- blanket

Organs and structure

The nervous system coordinates all body activities.

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

The **peripheral nervous system** receives information from and sends instructions to the rest of the body.

There are three kinds of peripheral nerves:

- **Motor nerves** move 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 problem with temperature regulation.

Peripheral nerves can be damaged by:

- direct trauma, e.g. cut by knife, crush injury;
- lack of oxygen, e.g. tourniquet;
- poisons, e.g. alcohol, drugs.

Causes of altered consciousness

The following list is by no means complete. The common or important problems the first aider may encounter include:

1. Direct injury or illness affecting the brain, e.g. head injury, stroke, seizures or such infections as meningitis.
2. Lack of oxygen to the brain, e.g. cardiac arrest, irregular or ineffective heart beat, advanced shock, severe respiratory problems, blocked airway or smoke inhalation.
3. Poisons and toxic products in the blood, e.g. overdose of alcohol or other drugs, industrial or domestic chemicals/poisons or severe infections.
4. Metabolic problems, e.g. diabetes or major organ failure, such as liver or kidney failure.
5. Environmental exposure, e.g. hypothermia or heat stroke.
6. Severe mental illness may rarely be associated with simulated unconsciousness.

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

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 the casualty may be spared from severe brain damage and lifelong disability.

Assessing the level of consciousness

The casualty's level of consciousness indicates the amount of damage to the brain.

A person who is fully conscious is alert, oriented in time and place and responsive to appropriate commands and requests. Of course, those who are 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 5-7 minutes, preferably by the same first aider each time, and be carefully and accurately recorded on the OB12.

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.

There are four levels of consciousness:

Alert:	Casualty is cooperative and answers questions sensibly, e.g. 'Where are you?' 'I'm at the school fete'.
Voice response:	Casualty is confused and disoriented but responds to verbal command, e.g. 'Open your eyes'.
Pain response:	Casualty responds to pain by groaning or moving limbs. Check by squeezing base of a finger nail with a pen, very firmly for up to 2 seconds. Check both hands.
Unresponsive:	Casualty does not respond to voice or pain.

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 or constrict) when a light is shone into the eyes. They become larger (dilate) in a darker environment.

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 patient with decreased 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.**
- **In head injuries, pupil changes are a late sign; they are always preceded by significant changes in level of consciousness.**

Any casualty who is unconscious, or who has lost consciousness but now recovered, must have the pupil reactions tested. It is essential to write down your observations every time you check the pupils.

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

1. Dilated pupils

Cause: - fright; drugs (e.g. atropine or certain eye drops); or 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.

2. Constricted pupils

Cause: - narcotic overdose (e.g. heroin, morphine); excessive alcohol; stroke or nervous system disorder; or bright lights.

3. Unequal pupils

Cause:
- may be normal (10-15% of the population have unequal pupils; a difference of greater than 1 mm is abnormal);
- head injury;
- stroke;
- eye surgery on one side (e.g. cataracts);
- direct trauma (sharp or blunt) to the eye;
- eye medications;
- artificial (glass) eye.

Examination of unconscious but breathing casualty

Refer to Skills Sheet 5.1

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**.
- **Splint the cervical spine**; regard any unconscious trauma victim as having a cervical injury until proved otherwise.
- **Treatment of 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.

Using the Glasgow Coma Score, score the best response in each of the categories.

Extra material

The Glasgow Coma Scale is the standard hospital measurement tool to assess casualties with head injuries. It may be used in the pre-hospital environment.

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

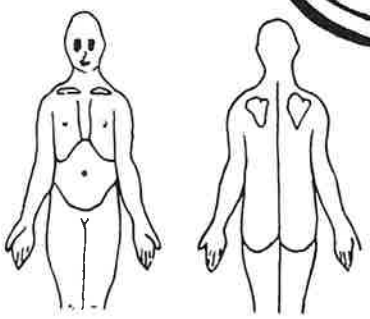
		Score
1.	**Eye opening**	
	- Spontaneous: eyes open spontaneously as someone approaches.	4
	- To voice: the casualty is asked to open his/her eyes.	3
	- To pain: the eyes open when a painful stimulus is applied.	2
	- None: the eyes do not open to painful stimuli.	1
2.	**Verbal response**	
	- Orientated: casualty is orientated to time, place and person (i.e. 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
3.	**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. 3). 3
- Extension: body becomes rigid in an extended position to form an abnormal extension position (see Fig. 4) 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. Unremarkable	1. Unremarkable	1. Unremarkable	1. Alert	
	2. Pale	2. Slow	2. Confused	
2. Shallow	3. Flushed	3. Rapid	3. Drowsy	
3. Absent	4. Moist/clammy	4. Strong	4. Unconscious	
4. Wheeze	5. Dry	5. Weak		
5. Gasping	6. Sweaty	6. Impalpable		
6. Rapid	7. Cool/Cold	7. Regular		**Overall Assessment:**
7. Slow	8. Warm/Hot	8. Irregular		

Time	Pulse	Resp.	Temp.	Conscious State	Pupil Size R / L	Pupils' reaction R / L	Other Observations



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

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

Fig. 1 Recording Conscious State on OB12 form

You must write in what you are measuring at the top of each column.
E = Eye opening; V = Verbal response;
M = Motor response; T = Total score.

Conscious State			
E	V	M	T
2	3	5	10
2	4	5	11
3	4	5	12

Fig. 2 Section of OB12 form

Fig. 3 Abnormal flexion position - arms brought up towards the body indicates severe brain damage.

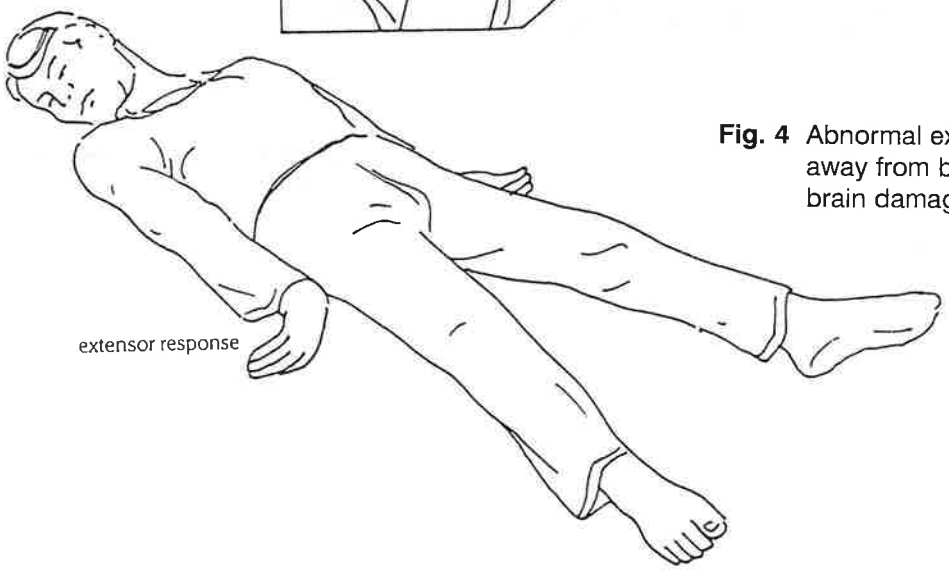


Fig. 4 Abnormal extension position - arms angled away from body, indicating very severe brain damage.

Topics for discussion

1. How could you assess the level of consciousness in:
   (a) a non-English speaking casualty?
   (b) a baby?
   (c) a person who has been 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. His friends say that he 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?

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

5. You have been called to a young girl who has fallen off a horse. She is wearing a riding helment. The casualty is unconscious and the horse has trodden on the girl's helmet and subsequently her head. Would your management of this casualty differ from any other unconscious casualty? Would you remove the girl's helmet?

6. Do you have cervical collars in your first aid vehicle? Demonstrate how you would effectively apply a collar on an unconscious casualty with a short squat neck.

5.1 Examine an unconscious casualty

Checklist	**Needs Improvement Date**	**Proficient**
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.,* Vol. 1, pp. 31 and 53. 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. stable side position.		

Checklist	Needs Improvement Date	Proficient
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.		
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 5-7 minutes and record.		

5.2 *Examine casualty's pupils*

Checklist	Needs Improvement Date	Proficient
Explain what you are going to do.		
Shade the casualty's forehead with one hand, and open one of his/her eyes.		
Note the size of the pupil. Holding the torch about 15 cms (6") above the face, let the light sweep across the eye, from the outer corner of the eye into the pupil. Observe the reaction.		
Note: You may need to repeat this several times to be certain of the response. If the pupil reaction seems abnormal, ask someone else to check it with you.		
Do the same for the other eye.		
Write down your observations, using a diagram to show the actual size of each pupil.		

Time	Pupil Size (R)	Pupil Size (L)	Reaction to Light (R)	Reaction to Light (L)
1100	●	●		
1115	● >	●	slow	

Fig. 5 Example of pupil reaction chart

5.3 *Position a casualty into the stable side position*

Checklist	Needs Improvement Date	Proficient
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.		

5.4 Position a casualty into the other stable side position

(For a casualty lying on the back)

Checklist	Needs Improvement Date	Proficient
Kneel beside the casualty. Place the casualty's nearer arm, palm up, under the buttocks.		
Cross the farther leg over the near leg.		
Cross the casualty's farther arm across the chest, so that his/her hand rests on the nearer shoulder.		
Support the casualty's head and neck with your hand that is nearer the head. Grasp the farther hip with your other hand.		
Rotate the casualty towards you until he/she is lying on his/her side. Support the weight of the casualty in this position by resting him/her against your knees.		
Gently lower the head by allowing the casualty to roll slightly towards you, until the nearer elbow rests on the ground and supports the casualty.		
Remove the farther arm from under the body, starting at the shoulder.		
Tilt the head back to ensure an open airway.		
Place the hand of the casualty's upper arm palm downwards on the ground, with the fingers under the chin.		
Draw the upper leg up at a right angle to the body, allowing the bulk of the casualty's weight to be supported.		
Ensure the casualty's mouth is open. Re-check airway, breathing and circulation.		

See the assessment box at the end of Module 11.

Shock

REFERENCES:

Australian First Aid, Vol. 1, St John Ambulance Australia, reprinted annually, Chapter 5.

Rationale of First Aid, St John Ambulance Australia, 1994, Chapter 2.

The Science of First Aid, St John Ambulance Australia, 1996, Chapter 23.

OBJECTIVES:

6.1 To be able to discuss the main types of shock and their causes.

6.2 To be able to demonstrate the general management of shock.

6.3 To be able to discuss the management of the different types of shock.

Definition

Shock is defined as inadequate blood flow through the body organs. The onset of shock can be slow but, in anaphylactic reactions, can develop rapidly and, if not corrected early, can lead to irreversible damage and subsequent death.

Causes and effects

It is important that the body receive an uninterrupted supply of oxygen to its organs and tissues. Without oxygen, body cells slowly deteriorate to a point where, despite aggressive management, a full recovery is not possible. Particular organs such as the brain and heart are very sensitive to lack of oxygen and therefore will die earlier than other organs such as the liver and intestines.

Shock results from the loss of effective circulating blood volume (due to either decreased blood volume or by dilation or widening of the blood vessels) or inadequate pumping by the heart. This results in a decrease in available oxygen to the body organs and tissues.

If we think of the circulatory system as a closed system with no breaks or gaps, the body regulates this system on a continual basis according to the needs and demands that are present. If a hole occurs somewhere in the system, the body attempts to cope with this problem by contracting blood vessels and moving blood around from non-vital to vital organs. The body can only cope for a certain time before the system will fail. Shock is a progressive condition that, if not treated early, can rapidly progress to become fatal.

The body has compensatory mechanisms that try to counteract the effects of shock. These are automatic reflexes and include:

- decreased circulation to the skin causing a pale appearance and a decrease in the skin's temperature.
- increasing the pulse rate;
- increased respiratory rate;

The priority then in the management of shock is to treat or remove the cause.

A number of factors can increase the likelihood of shock developing. These include:

- age: very young and very old casualties;
- pre-existing medical conditions of the casualty;
- pain which can make a shock worse;
- extremes in temperatures;
- delays in treatment of serious injuries.

Signs and symptoms of shock

Signs and symptoms of shock depend on:

- the severity of the injury or cause of shock;
- the degree of fluid loss or dilation of blood vessels;
- effectiveness of the management which has been given.

Initial symptoms and signs are:

- pale face, fingernails and lips;
- cold, clammy skin;
- usually a weak, rapid pulse;
- rapid breathing;
- faintness or dizziness;
- nausea.

If the shock progresses and becomes severe, symptoms and signs will include:

- restlessness;
- thirst;
- extremities become bluish in colour;
- confusion and drowsiness;
- rapid breathing;
- extremely weak, rapid pulse.

Types of shock

There are different types of shock, related to the cause or origin of the shock state.

Hypovolemic shock (low blood volume)

As a result of loss of body fluid from:

- bleeding (internal or external);
- loss of fluid direct from the cells and tissues as in burns or from excessive sweating as seen in heat exhaustion;
- loss of fluid from the gastrointestinal system as in severe vomiting and diarrhoea;
- loss of body fluid from the kidneys as seen in uncontrolled diabetes where excessive glucose in the blood causes a large quantity of dilute urine to be excreted.

Neurogenic shock

Dilation of the blood vessels occurs and therefore the circulating blood volume is not adequate to fill the blood vessels. Also the heart slows so that its pumping is inadequate. This results from failure of the nerves to control the diameter of the blood vessels. Gravity then takes over and causes pooling of blood vessels in the lower parts of the body.

Examples of this are head injuries and spinal injuries which can cause a failure of the body to maintain the diameter of the blood vessels. This is due to the nerve pathways being damaged.

NOTE: Fainting is not shock. See the notes at the end of this module.

Cardiogenic shock (cardiac related)

Cardiogenic shock occurs where there is failure of the heart to pump blood around the body. Cardiogenic shock is serious because failure of the pump means that oxygen is not being circulated to the other body organs.

Causes of cardiogenic shock include:

- heart attack or myocardial infarction where a portion of the heart muscle has been damaged and the pumping ability of the heart is affected;
- abnormalities of the heart rate such as bradycardia (slow heart) where the heart is not able to pump enough blood to meet the body's demand or tachycardia (fast heart) where the heart is not able to fill properly due to increased rate;
- heart failure or congestive cardiac failure where the heart, due to age or disease, loses its ability to effectively pump;
- infections of the heart muscle;
- lack of oxygen to the heart as a result of trauma or states of asphyxia;
- poisons or certain drugs can cause the heart to fail resulting in cardiogenic shock;
- trauma to the heart muscle.

Anaphylactic shock (allergic shock)

This is a condition where the body suffers an overwhelming reaction to an allergen. An allergen is any substance that causes an allergic reaction.

Anaphylactic shock can be set off by any allergen. The casualty might never have had an allergic reaction before. Common allergens include:

- antibiotics;
- food (especially seafood and nuts);
- insect stings.

An allergen can enter the body via any route. Most commonly, allergic reactions occur following ingestion, as in food or medication, or through topical exposure such as contact with a chemical.

In most cases, allergies manifest themselves rapidly as painful itchy red rashes or a runny nose and itchy throat. In some cases the allergic reaction can become life threatening with severe symptoms resulting.

The allergic reaction is a result of the release from the body cells of a chemical called histamine. Histamine causes the red and itchy rash and in large amounts will result in swelling of the tissue, particularly the soft tissues of the upper airway. Increase in mucus production will also occur particularly in the tissue of the respiratory tract. Histamine will also cause dilation of blood vessels, resulting in local redness and swelling.

The swelling of the lining of the upper airways will cause respiratory distress and even total airway obstruction (refer to Module 8 in *Skills Maintenance Programme 1996,* pp. 56-57). A true asthma attack may also develop.

In these situations, urgent medical aid is required. In some cases, particularly where the allergen is known, casualties may carry medication to counteract the effects of the allergen, e.g. adrenaline injection or inhaler.

Septic shock

In some severe infections, the bacteria or virus will enter the circulation, along with products of the tissue breakdown at the site of the infection. This causes the smaller blood vessels to dilate resulting in a falling blood pressure, subsequent decrease in return of blood to the heart and a resulting decrease in blood being pumped around the body. The release of these poisonous products may also cause the heart to fail. This is called septic shock (also septicaemia or blood poisoning) A variation of septic shock is toxic shock. In this situation, the bacteria causing the infection produces poisonous toxins, resulting in shock.

Treatment of shock

General assessment and management principles

Follow the principles of casualty assessment and management:

- 1. Primary Assessment
    - **D**anger
    - **R**esponse
    - **A**irway - clear and open
    - **B**reathing - check and maintain
    - **C**irculation
    - Control major bleeding

- 2. Secondary Assessment
    - Vital signs
    - 'AMPLE' history
        - **A**llergies
        - **M**edication
        - **P**resenting Complaint
        - **L**ength/duration of problem
        - **E**vents leading up to the problem
    - Head to toe examination

- 3. Manage
    - Manage shock
    - Make plan of action
    - Treat other injuries in order of priority
    - Arrange for appropriate disposal of casualty

REMEMBER THE RULE
ASSESS * MANAGE * REASSESS * APPROPRIATE DISPOSAL

General principles in the management of shock:

1. Remove dangers.
2. Place casualty in stable side position if unconscious.
3. Clear airway.
4. Start C.P.R./E.A.R. if necessary.
5. Control any bleeding.
6. Administer high flow oxygen therapy via a face mask (8-10 litres/minute).
7. Seek medical aid urgently.
8. Reassure casualty.
9. Raise the casualty's legs above the level of the heart if possible. The stable side position is preferable if the casualty is vomiting. Semi-sitting is best if the casualty has respiratory distress.
10. Monitor and record vital signs regularly, including blood pressure if possible.
11. Loosen any tight clothing.
12. Immobilise any fractures.
13. Dress any wounds or burns.
14. Maintain body warmth but do not overheat;
15. Do not give anything to eat or drink; if the casualty complains of dry lips and mouth, moisten the lips with a wet cloth.

Specific management of the different types of shock

Whilst it may be difficult for the first aider to differentiate between the different types of shock, particularly hypovolemic and septic shock where there is no blood loss, there are some specific forms of treatment for the other types of shock.

- Cardiogenic shock

- Sit casualty up into position of comfort, usually to assist breathing.
- Administer high flow oxygen therapy via a face mask.
- If the casualty is on any anti-anginal medication, e.g. anginine, and is experiencing chest pain, assist the casualty with the administration of the medication.
- If authorised and equipment is available, commence cardiac monitoring using a semi-automatic or shock-advisory defibrillator. Follow district protocols.
- Seek urgent medical aid.

- Anaphylactic shock

- Sit casualty up into position of comfort, usually to assist breathing.
- Administer high flow oxygen therapy via a face mask.
- If the casualty has any anti-allergy injection medication, assist with the administration. These types of medication include:
  - > asthma sprays or puffers;
  - > adrenaline puffer specifically for allergy;
  - > tablets, e.g. anti-histamines;
  - > adrenaline injection, e.g. Epipen.
- If authorised, follow district protocols and administer a bronchodilator such as salbutamol (Ventolin) via a nebuliser to help combat the bronchospasm.
- Seek medical aid urgently. Ambulance Services carry injectable medication that can help relieve the effects of the allergic reaction rapidly.

Exercises

Stage the following scenarios. Assess and manage the situation. Document the management on the OB12.

- A twenty five year old man has fallen from a ladder sustaining a closed fracture of the shaft of the femur. There is gross swelling of the right thigh with shortening of the right leg. He is pale, distressed, complaining of severe pain in the right thigh, which is worse on movement.

- A seventy five year old man presents to the first aid room at a football match in your district. He is complaining of severe central chest pain which radiates to his left arm and up into the left side of his face. He is very short of breath, his skin is pale and clammy.

- A sixteen year old girl presents to the first aid room at an athletics carnival after being stung by a bee on the right arm approximately 3 minutes before. On arrival she is already very short of breath with a severe expiratory wheeze. Her friend tells you she is allergic to bees and normally carries an adrenaline pen. She has brought her pen with her.

Fainting

A faint is a sudden loss of consciousness. It is caused by a temporary enlargement of the blood vessels with blood pooling in the lower limbs. It can occur in many situations including:

- standing for prolonged periods especially on hot days;
- pain;
- the sight of blood or the sight of needles;
- low blood pressure in pregnancy;
- medication;
- serious medical conditions;
- emotional upset.

Symptoms

There are often warning signs before the casualty collapses. These symptoms are:

- light headedness;
- nausea;
- anxiety;
- sweating.

Signs:

- loss of consciousness which lasts for 1-2 minutes only once the casualty is lying flat;
- low blood pressure;
- the casualty may have a fit.

Treatment

Lie the casualty on the side if unconscious. Lie the casualty flat, with legs elevated, if conscious. If the casualty is pregnant, lie her on her left side.

A faint may become more serious if the casualty is jammed in an upright position or is injured while falling.

Burn and Scald Injuries

PRESCRIBED REFERENCES:

Australian First Aid, St John Ambulance Australia, reprinted annually.
The Science of First Aid, St John Ambulance Australia, 1996, Chapter 13, Burns and Scalds, pages 117-124.
Supplementary reading outlined in this module.

OBJECTIVES:

7.1 At the completion of the training module the member will be able to recognise:
- the common causes of burn injury;
- the appropriate first aid measures to be instituted; and
- the factors influencing the severity of the resultant burn injury to the casualty.

7.2 The member will also have an idea of basic strategies to prevent burn injuries occurring.

PRACTICAL SKILLS:

7.1 Give examples of the main causes of burn injuries.

7.2 Using diagrams, describe how the surface area burned is assessed using the rule of nines with modifications for age.

7.3 Describe how the depth of burn is assessed using the terminology: superficial, partial and full thickness burn injury.

7.4 Describe the recognition of inhalational (airway) injury.

7.5 Describe the first aid treatment for a minor burn injury and a major burn injury.

7.6 Be aware of the complications which may arise from burn injury in the acute phase and in the long term.

Introduction

Burn injuries are not only costly to the community in financial terms but very distressing to the casualty in the pain that they cause, in the treatment which is required and in the long-term complications which may arise.

Prevention is the most effective and the least expensive treatment and measures should be adopted in our daily lives to reduce the risk of burn injury occurring. We may educate people to the risk of burn injury from scalding by hot water, but unless we make efforts to turn the hot water system down to 50° Celsius, there is always the risk of the small infant or the elderly person accidentally scalding themselves severely. The reduction in open fires and the change to ski-pyjamas rather than free-flowing nighties has reduced the number of children and adults severely burned when their clothing ignites. Legislation outlawing the sale of fireworks and legislation requiring suitable guards over radiators are measures which have helped reduce the frequency and severity of burn injuries as has compulsory hardwiring of smoke detectors and installation of electrical circuit breakers. Tragically in Australia, bush fires, when extensive, account for a number of deaths and highlight the need for all people to be aware of survival procedures in such situations.

Members should take the opportunity to visit the Kid Safe House in the major capital cities to learn of simple preventive measures which can be instituted in the home to reduce the possibility of sustaining a burn injury. Passive measures like radiator guards which automatically protect us are more effective measures than active measures which require us to think and expend energy to avoid an injury producing accident.

First aid general principles

In all burn injuries it is essential to remove the casualty from the source of injury and to prevent ongoing damage. It may be necessary to treat the casualty whilst evaluating the extent of the injury and eliciting the history as to the cause of the burn. At all times, the first aider must remember the 'D' of D.R.A.B.C. to reduce the risk of becoming another casualty.

Many burn injured will require replacement of the tissue fluids lost and treatment in hospital for their burn wounds. Many burn injuries are fortunately minor and can be treated by the casualty or on an outpatient basis by local medical officers. In electrical injury, be it low voltage or high voltage and where there is a risk of airway damage from smoke inhalation and the dangers of asphyxia, the A.B.C. of first aid must be rapidly instituted. Application of appropriate first aid measures may mean the difference between a minor and a major burn injury.

Types of scalds

Injuries from hot liquids should be cooled for up to 20 minutes, preferably under running water. Clothing must be removed to ensure no heat is trapped in the woollen garments or, in the case of infants, in the nappy. Constricting items such as rings, watches or bracelets should be removed and carefully stored for the casualty. Boots should also be removed.

The burn injury should be covered with a clean towel or sheet. In cooling the burn injury, we need to be aware of the danger of hypothermia from excess cooling. If the casualty shivers and goes blue, cease cooling. Cooling the tissues removes the heat causing the damage and also relieves pain. After the burn has been cooled, the casualty should be kept warm and comfortable and small quantities of fluid may be given by mouth. Because of the pain often associated with scald injuries, the casualty will require reassurance.

Flame

The flames on the casualty must be extinguished as rapidly as possible using the

Stop-Drop-Roll

method to smother the flames. The casualty can be doused with cold water, if available; dousing can be continued for up to 20 minutes, whilst at the same time clothing is removed. Clothing which adheres to the skin should be cut around and left in place. The burn injury is then covered with a clean towel or sheet, the casualty kept warm and comfortable and pain relief and fluid may be given. Flame burns require early transfer to a medical centre or hospital.

Chemical

First aiders need to be aware of the danger to themselves by contamination from the chemical and if possible should wear gloves in handling the casualty and his/her clothing. The severity of the injury will be in proportion to the concentration of the chemical and the duration of exposure.

The principle of flush, flush, flush with water as soon as possible and maintain it for up to 10-15 minutes is vital. In the case of chemicals splashed into the eye, significant spasm of the eyelids will occur and it may require the assistance of a bystander to lie the casualty on the side and pour water from the medial or inner angle of the eye across the globe of the eye to remove all of the chemical material. This should be continued for up to 20 or 30 minutes at the scene of the accident to ensure complete removal of the chemical.

Because of the great variety of chemicals available in our community, contact with a Poisons Information Centre may assist in determining the most appropriate and subsequent first aid care.

Specific chemicals

Hydrofluoric acid, as used for glass etching, will require the application of calcium gluconate gel to the injury and this may be available in the workplace where the acid is being used.

Phosphorus. The skin should be kept wet and covered with water-soaked bandages to prevent contact with the air during the transport of the casualty to hospital.

Bitumen. It is important to cool the bitumen and no attempt should be made to pull the bitumen from the skin.

Ingested acids and alkalis. The material should be wiped from the mouth and lips but no fluids should be given by mouth in efforts to dilute the acid or alkalis prior to the casualty being transported as rapidly as possible to a care centre.

Delays should not occur in seeking specific antidotes for chemical injuries in preference to copious irrigation of the chemical burn injured part.

Electrical

The severity will depend on the current and the resistance of the tissues. Dry, clean hands have a high resistance to the common 240 domestic power source, whilst dirty, wet hands will provide a low resistance to the flow of the current. In the domestic 240 volt electrical injury, the power should be switched off or disconnected by pulling out the plug, with particular care that the first aider does not become the next victim. Cardiopulmonary resuscitation may need to be rapidly instituted prior to seeking the entry and exit wounds and treating the burn injury or any associated fractures or head injury sustained, e.g. by a fall from a ladder.

High voltage injuries with greater than 10,000 volts provide a major danger to the first aider who should not approach the casualty until the power has been switched off. High voltage may arc across a considerable distance. Dangers not only arise from cardiac standstill but the arc may ignite the clothing, leading to flame burns. The damage to the tissues is often far greater than at first appearance. After separation of the casualty from the discontinued power source, cardiopulmonary resuscitation may be required whilst cold water or compresses are applied to the burn injured part. Early transfer of the casualty to hospital will be required.

Contact burns

These are usually small in area and result from contact with hot metals, e.g. on the barbeque, walking through coals or industrial injuries with molten material entering the boots or shoes. The principle of cooling the burn injury for up to 20 minutes with cold water and covering the part with a clean towel or sheet or low adherent dressing should be applied.

Friction

These burns occur when the skin is sheered from the underlying tissues as in runover accidents or parts being caught in a moving belt. The injury is often more extensive than first appears. The part should be covered to prevent further contamination by bacteria from the environment and from the first aider's hands and transfer for definitive care arranged. Beware of other injuries to the body, i.e. fracture or head injury.

Radiation

Sunburn is an example of radiation injury and can best be treated by cooling and the application of cold compresses. Radiation is also used in the treatment of cancers (malignancies) when damage to the skin may occur. Fortunately, nuclear injuries are unlikely to be seen and will usually cause such devastation as to disable all hospital facilities. The effects of radiation damage from nuclear blast and fallout will hopefully not be an injury any of us are required to treat.

Assessment of burn casualty

1. **Surface area burn**

   A major burn involves more than 5% in an infant and a child; 10% from 5-14 years; and greater than 10% in an adult.

   The rule of nines is a very useful method of assessing the severity of a burn. In the infant, the head represents 18% of the body surface and each lower limb only 13%. In the common scenario where the child pulls the dangling cord upsetting fluid over the head and upper torso, a major burn requiring hospitalisation is often sustained. With increasing age, the percentage of the head is decreased and the amount allowed for legs, increased. 1% per year of life is taken off the estimation for the head and added to the legs, so that by the age of 12, the head represents 9% and each leg 18%. In calculating the surface area burned, redness or erythema without blistering is not included in the calculation. Only areas red and blistered or showing deeper injury should be included in the calculation.

   Alternatively, for the estimation of the percentage body surface burned, use the casualty's palm and extended fingers which approximate 1 per cent of his/her body surface.

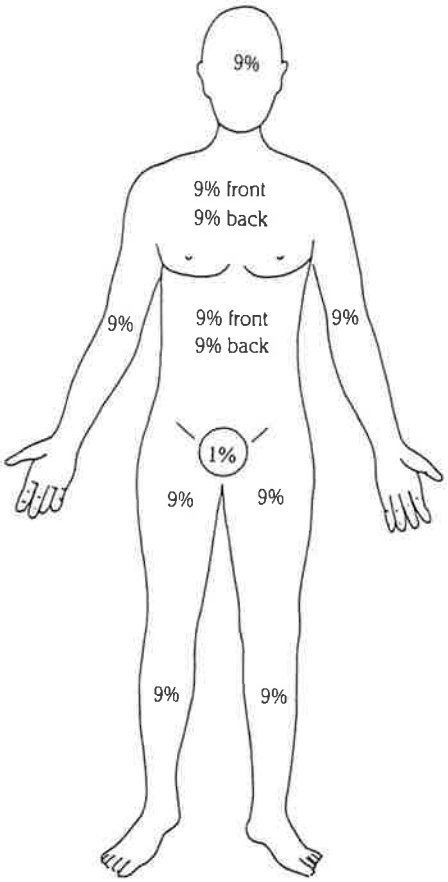


Fig. 1 Rule of Nines (adult)

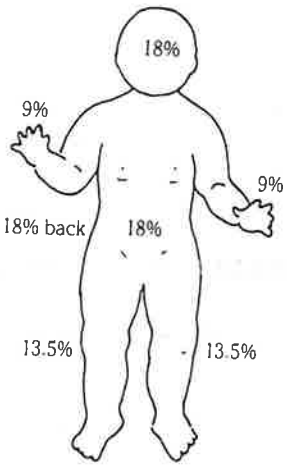


Fig. 2 Rule of Nines (infants and younger children)

2. Depth

The skin consists of an upper layer or epidermis which varies in thickness from several millimetres on the sole of the foot to a fraction of a millimetre in the eyelid. The thick epidermis or keratin layer will protect the sole of the foot or the palm of the hand from burn injury whilst the top of the foot or the back of the hand may sustain a deep burn in the same injury and require skin grafting to promote healing of the burn wound and also to reduce scarring. The epidermis is constantly being replaced as new cells form and the old are shed or washed off.

Beneath the epidermis lies the dermis in which are the hair follicles, sebaceous glands, sweat glands, nerve endings and a dense network of fine blood vessels. Beneath the dermis lies the fat muscle and bone. The terms, 'first', 'second' and 'third degree', are no longer in common usage.

An epidermal burn or sunburn will heal in a few days and a superficial partial-thickness burn will heal in 10-14 days. Any burn injury which does not heal in 14-18 days will leave scarring and is best treated by removal of the dead tissue and the application of skin grafts. In the full thickness burn, all the tissues capable of re-surfacing the damaged area have been killed by the severity of the burn injury. These burn injuries will require a variety of techniques to re-surface the damaged area.

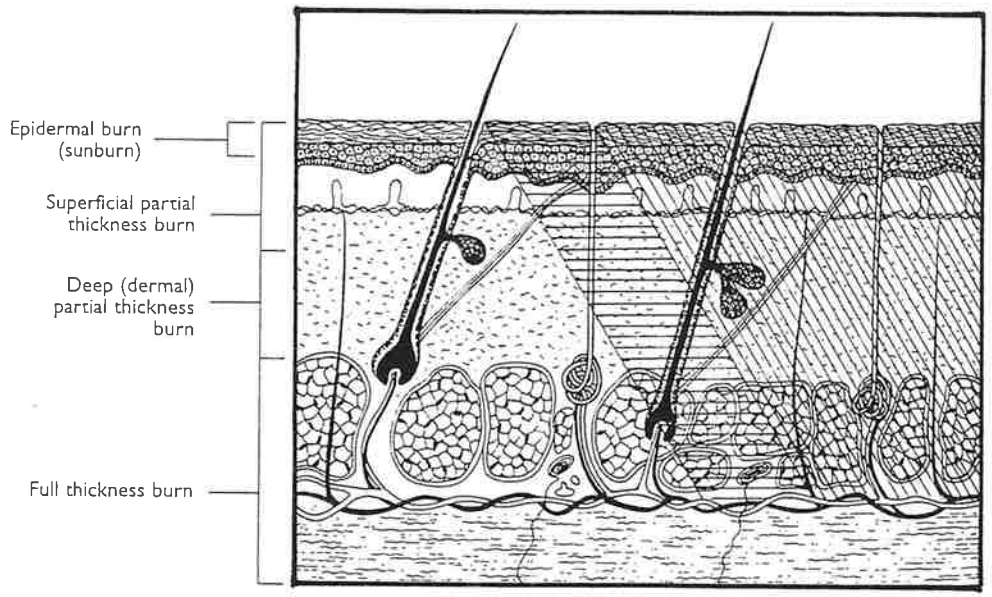


Fig. 3 Types of burns

An epidermal burn is pink and painful from irritation of the nerve endings. Superficial partial thickness burns are pink, blistered and painful. Deep partial thickness burns may be dark red, purple or blotchy white. When the capillaries are damaged, red cells leak into the tissues producing the blotchy red or purple appearance. The deeper the burn the less the pain due to the nerve endings being killed. A full thickness burn is dead white and parchment in appearance or, if the skin has been further burned from flame, it may appear charred and thickened. Full thickness burns are pain free. Burned skin ceases to act as a barrier to the entry of bacteria and impairs the heat regulation and fluid balance capability of the casualty.

3. Site

Burns to the hands will limit the casualties' ability to feed themselves and perform their own toileting. Burn injuries to the dorsum or top of the hand should always be referred for medical assessment and treatment to help ensure early return of function. Burns to the feet will limit the mobility of the casualty. If the perineum and genitalia are involved, difficulties with toileting may necessitate hospitalisation.

4. Respiratory burns

Every casualty rescued from burning in a confined space such as a house or car fire, must be assumed to be suffering from an inhalation or respiratory injury and transported as soon as possible to a definitive burn care facility. Inhalational injury may be suspected because of the burnt nasal hairs or eyebrows and the smell of singed hair, which is quite distinctive. The casualty may have a hoarse voice, noisy breathing or be coughing up particles of carbon. **Beware the restless casualty** for restlessness is often a major sign of cerebral hypoxia or inadequate oxygenation of the brain. All casualties with suspected inhalational injury should, if possible, receive oxygen therapy at 8 litres/min.

Carbon monoxide poisoning is often found in people who have been trapped in a confined space and they may be confused, dizzy, complaining of headache or nausea and have a deceptively cherry-red appearance. Carbon monoxide binds to the haemoglobin or oxygen-carrying portion of the blood 200 times more actively than oxygen. The administration of oxygen in high concentration to the casualty will help remove the carbon monoxide from the blood.

5. Associated injuries

The first aider must be aware that, in sustaining the burn injury, the casualty may have fallen and sustained a fracture or a head injury which may result in blood loss. In the event of a casualty with a head injury or a confused casualty, the Glasgow Coma Scale should be documented at regular intervals. Acute alcoholism, drug ingestion or even diabetic coma may be precipitating factors in the burn injury and should not be forgotten by the first aider in the treatment of the more obvious burn injury.

6. Associated illness

The casualty may well be suffering from respiratory or cardiac disorders which may influence the management of their burn injury both at the scene of injury and later in hospital. After initial assessment and treatment of the burn injury, a history of pre-existing diseases should be sought and documented on the OB12 form.

7. S.C.A.N.

In children and the elderly, one should be aware that the burn injury may have been inflicted on the casualty. Cigarette and hot metal burns, particularly to the buttocks and a history which is inconsistent with the burn appearance, should make the first aider suspicious of abuse. Evidence of bruising of different colours on the body may be present from other injuries inflicted. The first aider should not confront the parent or care-giver but mention their concerns to their duty officer or directly to the casualty's medical practitioner if possible.

8. Social

Elderly persons sustaining burn injury may require that the first aider assist with the casualty being transferred to a facility where care can be administered because of the inadequacy of the home environment.

Treatment

1. Maintenance of the airway at all times is a prime requirement as is the institution of the D.R.A.B.C. management plan.

2. Minor burns. Because of the pain, lots of reassurance will be required from the first aider. Pain relief may be given in the form of paracetamol. Blisters should be left intact but loose skin may be snipped away. No oily substances such as butter or lard should be applied to the burn wound.

   The burn wound should be covered with a clean non-stick dressing. Fortunately most minor burns will heal in 10-14 days. If the burn is full thickness or involves the hands, the feet or the face, medical care must be sought.

3. Major burns.

The skin is normally an effective barrier to bacteria. It also controls our temperature and regulates part of our water and electrolyte balance as is manifest by sweating. A burn injury breeches the ability of the skin to prevent bacteria entering the body and also destroys the mechanism to control our water balance and our body's heat regulation mechanism. The bigger the burn damaged area, the more difficult it is to maintain the temperature and the greater the fluid losses into the damaged tissue, either visible as blisters or as fluid poured into the deeper tissues.

The first aider must avoid contaminating the burn surface by not touching the burn wound with bare hands and avoid droplet infection by not coughing over the wound. Urgent fluid replacement will be required in hospital to prevent and treat the 'Burn Shock'. In the meantime casualties should be allowed small amounts of oral fluid if they request it, water or cordial but not milk or solid food. In major burns it is vital that the casualty not be excessively cooled, causing hypothermia. This may arise if the casualty with a major burn is covered with wet dressings which are left in place during transport in an air-conditioned ambulance to an air conditioned hospital. Cool the burn for up to 20 minutes minutes and then remove the cold compresses and cover the burn wound with a clean, dry dressing.

Remember the 3 B's and the 3 C's.

Burning out

Breathing casualty

Body injuries

Cool the burn wound

Cover the burn wound

Carry the casualty to definitive care

Be aware:

- Inhalational (respiratory) injury is a major cause of morbidity (complications) and mortality (death) in the burn injured person.
- Tissue fluid loss causes 'Burn Shock'.
- Bacteria may invade the wound and cause infection.
- Pain is greatest in superficial burns.
- A burn wound not healed in 14 to 18 days will leave scarring. Burn wounds needing skin grafting will require the wearing of splints and the application of anti-burn scar compression garments. Scars take up to 2 years to mature.

7.1 Manage the treatment of a casualty with burns

INCIDENT

Whilst attending a party, you hear a cry for help. On investigation you find a person's clothing ablaze. Treat the casualty accordingly.

Equipment Required:

- C.P.R. Manikin or similar doll;
- 1 blanket;
- 1 sheet;
- quantity of water in containers.

Checklist	Needs Improvement Date	Proficient
Check for dangers. Wear protective gloves, if possible. Remove casualty from heat/heat from casualty. Place casualty on ground. Extinguish fire on casualty using blankets to smother flames. Remove blanket after flame extinguished. If no blanket, roll casualty from side to side to extinguish flames. Douse or immerse casualty in water, if available. **B**urning stopped.		
Breathing maintained. Response. Open airway and clear.		
Check breathing - look, listen, feel.		
Check pulse - feel carotid.		
Give E.A.R. or C.P.R.: Oxygen as needed if available in all suspected respiratory and inhalation injuries.		
Haemorrhage check. **B**ody examined.		
Level of consciousness - use Glasgow Coma Scale.		
Fractures: examine for injuries and manage.		
Estimate depth of burn, partial/full-thickness and estimate surface area.		

Checklist	Needs Improvement Date	Proficient
Treatment of Burn Change gloves. **C**ool. Apply cool running water to burnt area. Remove burnt clothing. Cut around clothing that has adhered to skin. Do not over-cool casualty. Remove constricting rings and watches.		
Cover. Apply sterile non-stick or clean dressing to area.		
Carry. Obtain medical aid urgently.		
Note: Burn deaths are usually due to the inhalation of smoke and fumes and carbon monoxide poisoning. **DO NOT:** - Do not delay medical aid; - Do not break blisters; - Do not use cream, ointments etc.; - Do not over-cool or over-heat; - Do not overlook other injuries, which may be more life threatening.		
Dispose of used swabs, gloves and equipment according to Infection Control Guidelines.		
Fill out OB12.		

See the assessment box at the end of Module 11.

Wound Care

PRESCRIBED REFERENCE: *Australian First Aid,* St John Ambulance Australia, reprinted annually.

OBJECTIVES: On completion of this module the member will be able to:

8.1 describe the principles of wound management;

8.2 demonstrate the care of a wound using an aseptic technique with the equipment provided in a divisional first aid kit;

8.3 demonstrate the care of a wound using a sterile dressing pack.

PRACTICAL SKILLS

8.1 Manage a casualty with a wound, using the equipment provided in a divisional first aid kit.

8.2 Manage a casualty with a wound, using a sterile dressing pack.

Introduction

Wound care has traditionally received little attention within Operations Branch training in contrast to the large percentage of treatments we undertake in a year that involve the care of a wound. So what type of wounds are we talking about? Any wounds - simple blisters on the heels from new shoes, abrasions, penetrating wounds, to large gaping abdominal wounds. The principles of management are the same. Review copies of your casualty reports you have completed in the last year. How many relate to wound care? Is it more surprising than you thought? Is there room for improvement in this skill that takes up a considerable amount of our practice?

Quiz

Answer the following questions with a 'yes' or 'no' answer:

Do you like to use Betadine?	Yes/No
Savlon is a better wound cleanser than normal saline?	Yes/No
A sterile combine dressing is suitable to use on any type of wound?	Yes/No

If you answered 'Yes' to any of these questions, your wound care practice needs updating. If you answered 'No' to all, congratulations.

Wounds result from trauma to the skin's surface. Caring for wounds is simple if you apply some basic principles which will be described in this module. Wound assessment is paramount in the management of wounds, both initially and to direct subsequent management. **All wounds need to be properly assessed, including an accurate documented description of the wound.** Cleaning of wounds, dressing choice and subsequent management will also be discussed.

Principles of wound care

Before embarking on any wound care activity, consider the following principles of wound care:

- Basic first aid principles come first, including the controlling of severe haemorrhage. Refer to *A.F.A.*

- Casualty requirements in a dressing, include:
    - the right size dressing for the wound;
    - the ease of management for the casualty; a person living on a remote property does not want to have to have the dressing changed every day in a hospital setting.

- Comfort and security of the dressing. A construction worker does not need the dressing covering his abraded elbow impeding his work or falling down all the time.

- The dressing facilitates healing. Current research indicates that, for optimal healing to occur, the wound needs to be kept moist (not wet) and warm. The dressing needs to remove excess exudate and minimise trauma to the healing wound and surrounding tissue when removed.

- The wound needs to be protected by the dressing to prevent further damage and minimise the risk of further contamination and infection.

- Wound care needs to effectively make use of the situation and equipment available.

Hand protection

Hand washing, hand care and the use of gloves are integral parts of all first aid activities, in particular, with wound care, to prevent cross infection and contamination. Hands should be washed before being used to inspect a wound and prior to undertaking a dressing. Hands should be washed with a neutral pH soap and running water. Wet your hands, lather with soap and vigorously rub together for a minimum of 15 seconds, ensuring all surfaces on the back and front of the hands and wrists have been washed. Rinse under a moderate stream of water. Thoroughly dry your hands with paper towel, using a patting rather than rubbing motion to minimise chapping. Hands should then be washed after the dressing is complete. In the field, where running water is not available, an alcohol-chlorhexidine product may be utilised.

Gloves are used as an adjunct to hand washing where contamination of hands with blood or body fluids is anticipated. Gloves should be changed and hands washed:

- between casualties and after glove removal;
- where contamination has occurred; or
- where the glove is torn or punctured.

Healthy intact skin will resist the invasion of infectious agents, even when exposed to blood or body fluids. Moisturising creams should be used regularly to prevent dryness and cracking. Prior to commencing a duty, broken skin should be covered with a water resistant occlusive dressing. e.g. transparent film.

Assessment

All wounds need to be properly assessed, including an accurate documented description of the wound. When assessing a wound, consider the following:

- the **type of trauma:** What caused the wound: stab, gunshot, amputation, bites, burns, or fractures?

- the **site or location** of the wound;

- the **size,** including an estimation of the maximum width and maximum length; consider using a diagram on your Casualty Report;

- the **depth:**
  - Is it superficial, i.e. only involving the epidermis?
  - Is it deep, i.e. can muscle be seen?

- the **exudate:**
  - Is there any discharge from the wound?
  - What type? blood, pus, serous?
  - How much? low, moderate, high?

- **pain:**
  - Does the patient have any pain?
  - Where?
  - When, i.e. on movement?

- **odour:** A strong odour may indicate the presence of infection.

- **colour** of the wound: It may be described as black, yellow, green, red, pink or a combination.

- **surrounding skin:** What is the condition of the skin surrounding the wound, i.e. dry, flaky, red, swollen, bruised?

- the **casualty's medical history** including if he/she is diabetic, has any allergies or is on any medications?

After considering all these aspects, it is now time to decide what action is to be taken.

Cleaning of wounds

All wounds need to be cleaned thoroughly. Traditionally, our choice of solution has been based largely on which antiseptics we should use? **Normal saline is now considered the wound cleaning solution of choice.** Many varied antiseptics are available but are **neither required nor recommended** for Operations Branch activities.

Antiseptics have been discouraged for a number of reasons, including the fact that some are toxic to healthy tissue. In many instances, they are no more effective than normal saline, a simpler and cheaper solution, and often they have stained the wound making subsequent assessment difficult. Where normal saline is not available, sterile water may be used. If nothing else is available, tap water is an alternative. The aim of using any solution is to clean the wound. An alternative to swabbing a wound with gauze is to irrigate the wound with the cleaning solution; the 30 ml. normal saline plastic bottles are ideal for this. Remember that the wound itself is considered cleaner than the surrounding skin, and the idea is to clean the wound without introducing local skin flora or other contaminants. Healing is more rapid with a clean wound.

Kidney dishes and non-sterile dressing forceps **do not** have a role in the care of wounds. They are as clean as the inside of the first aid kit they have been stored in and cannot be effectively cleaned between patients. Cotton wool should not be used to clean or dress a wound. The fibres from the wool become embedded in the wound and impede the healing process. Use gauze swabs or irrigate the wound with a slow steady stream of normal saline solution.

Wound dressings

All wound dressings should be sterile.

In choosing the dressing for the cleaned wound, consider the following:

- size and position of the wound;
- comfort of the casualty;
- non-adherence of dressing to wound surface;
- facilitation of healing;
- minimising trauma;
- minimising the risk of infection and protecting the wound.

Indications for referral

Which wounds need further attention?

- any facial or finger injuries;
- those that continue to bleed after pressure has been applied for 15 minutes;
- burns (see Module 7 in this Manual);
- those with embedded foreign objects;
- those requiring suturing;
- any injury causing:
    - loss of function;
    - increasing or uncontrolled pain;
- those of casualties with pre-existing medical conditions:
    - diabetes;
    - clotting disorders;
    - immune deficiencies.

Give nothing by mouth if you suspect casualty may need:

- sutures;
- anaesthetic.

Ongoing wound care information

It is important for any casualties receiving wound care to understand the signs of wound infection and what action to take should they appear. Signs of infection include redness, tenderness, swelling and/or increasing pain or throbbing of the wound, red track going up the limb, swollen lymph glands and generally feeling unwell.

Instruct the casualty to keep the dressing dry. A casualty with a wound requiring follow up treatment should be referred to a local doctor or emergency department. Minor wounds should be reassessed after 24 hours and re-dressed if necessary.

Check if the casualty needs a tetanus booster or hepatitis B injection and give appropriate advice and referral.

Special wounds

Management of internal bleeding and other special wounds is described in *A.F.A.* Where there are **protruding abdominal organs,** cover with a wet, sterile, non-stick dressing. Wounds as a result of **high velocity impact** are becoming more frequent. It is important to manage the casualty's signs and symptoms along with the wound itself. The amount of internal damage may not be evident on superficial examination of the wound.

In the first aid setting, Operations Branch personnel may be asked to **re-dress a pre-existing wound.** This should only be undertaken where the original dressing will compromise wound healing, i.e. it has become contaminated (wet), is restricting circulation, is too loose or the presence of infection is suspected.

8.1 Manage a casualty with a wound using contents of a first aid kit.

Checklist	Needs Improvement Date	Proficient
Undertake Basic Life Support, including immediate control of severe bleeding as per *A.F.A.,* Vol. 1, pp. 61-63.		
Casualty care		
Ensure privacy if possible. Reassure casualty. Sit casualty down (lie down if pale or feeling unwell). Explain what you are going to do. Take a history of injury.		
Wound examination		
Wash hands and put on gloves. Look at wound. Note: - type; - size; - position. Check for foreign objects in wound. Position injured limb comfortably, e.g. support arm or leg. Remove jewellery from limb if necessary and store in safe place. Protect casualty's clothes.		
Equipment		
All work surfaces should be cleaned with isopropyl alcohol or methylated spirit at the beginning and end of each duty and between each casualty. Collect equipment needed: - gauze swabs; - cleaning solution; - dressing; - sticking plaster; - bandage, etc. - scissors; - rubbish disposal receptacle, e.g. yellow bag.		

Checklist	Needs Improvement Date	Proficient
Procedure Wash hands and wear gloves. Remove covering dressing (if appropriate). Use a non-touch technique. Use the inside of the gauze pack as a sterile field. Pour cleansing solution directly onto the gauze. Pick up each swab by the outer edge, i.e. pick up the four corners. The surface of the gauze swab or dressing which comes in contact with a wound must not be touched. Clean wound using: - normal saline; - water (sterile if available); or - rinse under tap. Clean wound thoroughly. Swab from centre out. Use each swab for one wipe, then discard. Methodically clean entire surface of wound from centre out. Clean surrounding skin surface. Dry with gauze. Apply suitable dressing that extends at least 2.5 cm beyond the wound edges. Apply padding if wound is likely to weep. Fix dressing securely in position (check for casualty allergies) with: - adhesive tape; - bandage. Immobilise limb if necessary. Check circulation. Check casualty's comfort. Remove gloves and wash hands. **Discharge** Fill out correct Operations Branch forms, e.g. OB12. Provide ongoing advice. Correctly dispose of used swabs, equipment and gloves.		

8.2 *Manage a casualty with a wound using a sterile dressing pack*

Checklist	Needs Improvement Date	Proficient
Undertake Basic Life Support including immediate control of bleeding as per *A.F.A.*		
Casualty care		
Ensure privacy if possible. Reassure casualty. Sit casualty down (lie down if pale or feeling unwell). Explain what you are going to do. Take a history of injury.		
Wound examination		
Wash hands and put on gloves. Look at wound. Note: - type; - size; - position. Check for foreign objects in wound. Position injured limb comfortably, e.g. support arm or leg. Remove jewellery from limb if necessary and store in safe place. Protect casualty's clothes.		
Equipment		
All work surfaces should be cleaned with isopropyl alcohol or methlated spirit at the beginning and end of each duty and between each casualty. Collect equipment needed: - sterile dressing pack; - adhesive tape; - bandage, etc.; - scissors; - slings etc.; - cleaning solution; - dressing; - rubbish disposal receptacle, e.g. yellow bag.		

Checklist	Needs Improvement Date	Proficient
Procedure Wash hands. Use a non-touch technique. Open outer pack of sterile dressing pack; discard. Open inner pack by pulling on corners of the plastic sheet. Use the top pair of forceps to arrange items. Use the same pair of forceps to remove the existing dressing and dispose of both. Pour cleansing solution, i.e. normal saline or water (sterile if available) either directly onto gauze or into pot. Add sterile dressing. Wash hands and put on gloves. If a disposable towel is in pack, this can be used to provide a sterile field adjacent to the wound. Using the second pair of forceps, pick up a swab and moisten; transfer to third forceps. Clean wound with swab for one wipe, then discard. Methodically clean entire surface of wound from centre out. Clean surrounding skin surface. Dry with gauze. Apply suitable dressing that extends at least 2.5 cm beyond the wound edges. Apply padding if wound is likely to weep. Fix dressing in position (check for casualty allergies) with: - tape; or - bandage. Immobilise limb if necessary. Check casualty's comfort. Remove gloves and wash hands. **Discharge** Fill out correct Operations Branch forms, e.g. OB12. Provide ongoing advice Correctly dispose of used swabs, equipment and gloves.		

See assessment box at end of Module 11.

Bandaging

OBJECTIVE: On completion of the module the member will be able to apply a roller bandage.

PRACTICAL SKILLS:
9.1 Apply a simple spiral bandage.
9.2 Apply a figure of eight bandage.

Introduction

Roller bandages are made from many **types of materials**. Select the type that is suitable for the injury you are treating, e.g.:

- conforming gauze: light weight and stretch;
- light weight crepe: gives some pressure;
- elastic: gives firm pressure.

Roller bandages may be used to:

- keep dressings in position;
- keep splints in position;
- provide support;
- control haemorrhage;
- restrict movement;
- correct deformity;
- prevent or reduce swelling.

Size of bandages:

- fingers: 2.5 cms;
- head: 5 cms;
- arms: 5 to 7.5 cms;
- legs: 7.5 to 10 cms;
- trunk: 10 to 15 cms.

Rules of bandaging:

- Sit patient down.
- Select correct type of bandage.
- Select correct width.
- Stand in front of casualty.
- Support limb in required position, e.g. elbow may be bent.
- Hold head of bandage uppermost.
- Secure bandage with a fixing turn.
- Bandage from within outwards and from below above, over the front of the limb.
- Cover two thirds of each proceeding turn.
- Continue bandaging till you have covered the required area.
- Finish off with a fixing turn.
- End on outside of limb and secure with a pin or tape;
  (pad where any two skin surfaces touch).

Points to be observed:

- Check circulation below the bandage.
- Check for:
  - absent pulse;
  - swelling;
  - colour change - blueness or pallor of skin;
  - coolness;
  - pain;
  - numbness;
  - pins and needles.

If any of these signs and symptoms occur, loosen the bandage.

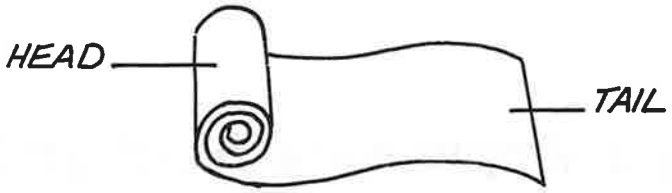


Fig. 1. Parts of bandage

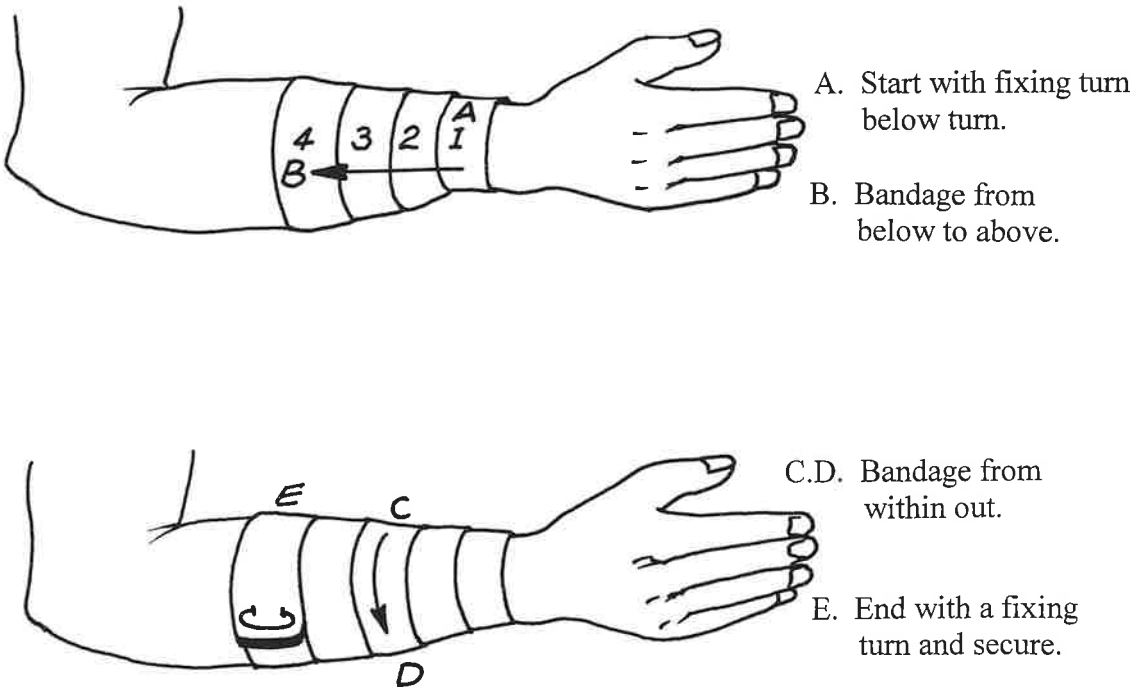


Fig. 2. Applying a spiral bandage

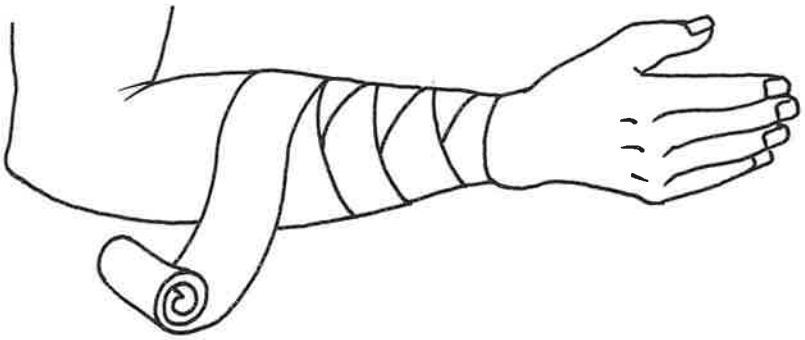


Fig. 3. Figure of eight bandage

9.1 *Apply a simple spiral bandage to the forearm*

Checklist	Needs Improvement Date	Proficient
Tell casualty what you are going to do. Check position of casualty. Check position of limb. Check correct size of bandage. Start the bandage with a fixing turn. Check correct method of bandaging. Check correct finishing turn. Secure bandage. Circulation check. Ask casualty if it is comfortable.		

9.2 Apply a figure of eight bandage to the leg

Checklist	Needs Improvement Date	Proficient
Tell casualty what you are going to do. Check position of casualty. Check position of limb. Check correct size of bandage. Start with a fixing turn. Secure bandage. Circulation check. Ask casualty if it is comfortable.		

See the assessment box at the end of Module 11.

Casualty Handover Technique

AIM: To help the Operations Branch member to prepare an adequate communication regarding a casualty.

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

10.1 state to whom handover care should be given;
10.2 state the details that should be included in such a handover;
10.3 discuss how the casualty's confidentiality can be protected;
10.4 complete the training exercise.

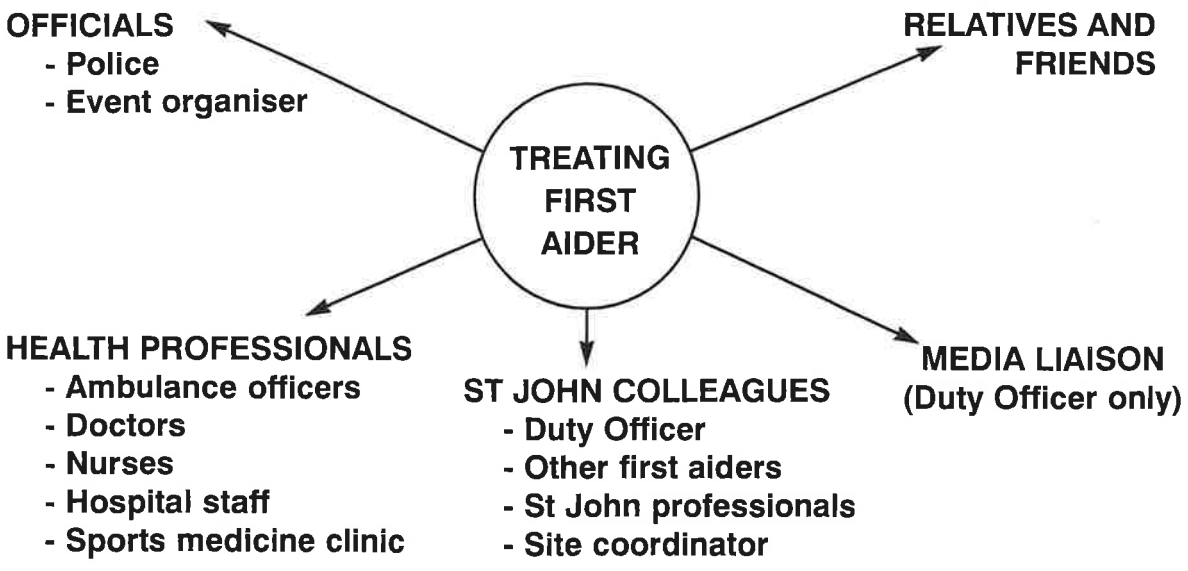
What is a handover?

Whenever a casualty leaves the care of the treating first aider, appropriate information about the casualty must be passed on to the person taking over the care. This is a handover.

The information required depends very much on the casualty, his/her injuries and to whom you are handing over. For example, the information given to the media will not include confidential matters that should be passed on to the Ambulance Service.

Confidential matters include:
- name and address;
- details of injuries;
- medical conditions, e.g. if HIV positive.

To whom may we need to give a handover?



Handover to medical and first aid personnel

Essential information:

- name of treating first aider;
- name of casualty, age and address;
- presenting problem and history including eyewitness accounts;
- past history (including medications and allergies);
- observations:
    - vital signs;
    - casualty examination;
- treatment;
- response to treatment;
- ongoing advice given.

All this information should be on the OB12 form. This will be sufficient for most handovers.

Where a detailed handover is required:

1. The severely injured casualty

Include:

- eyewitness account of accident;
- conscious state;
- airway state;
- breathing - rate and depth;
- circulation:
    - pulse rate;
    - blood loss.

Are there any:

- fractures?
- abdominal injuries?
- burns?
- wounds?
- embedded foreign objects?
- soft tissue injuries?
- spinal injuries?

2. Where there are multiple patients.

As above.

3. Specific medical conditions:

- asthma;
- chest pain;
- abdominal pain;
- stroke;
- pregnancy complications;
- seizures;
- diabetes;
- allergic reactions;
- overdose/poisoning;
- overexposure to heat and cold.

Details needed for specific conditions:

ALTERED CONSCIOUS STATE

- period of unconsciousness
- Glasgow Coma Scale
  - eye opening
  - verbal response
  - motor response
  - pupil size and reaction

RESPIRATORY DISTRESS

- colour
- respiratory rate and rhythm
- respiratory effort
- wheeze
- pulse
- conscious state

PAIN

- description
- onset
- location
- radiation
- other signs and symptoms
- relieving factors

FRACTURES

- pain
- irregularity
- loss of movement
- swelling
- deformity
- unnatural movement
- crepitus (may be heard if the casualty moves, but **don't** deliberately test for it) tenderness
- check circulation and feeling below the fracture.

How should the handover be given?

1 A written handover should be issued for every casualty you attend.

The OB12 is usually sufficient; extra written notes may be needed for seriously ill or injured patients.

2. A verbal handover is used to pass on information:
- within St John (i.e. when you leave the room and another first aider takes over);
- for administrative purposes, e.g. to Duty Officer.

3. A written and verbal handover is required when passing the casualty over to ambulance officers, hospitals etc.

Normally you would stand by the casualty's side and introduce him/her to the ambulance officers.

Confidentiality

The casualty's confidential medical and personal details should be kept private and only passed on to those who need to know.

Ask the casualty's permission before discussing his/her case with non-first aid or medical personnel, e.g. police or relatives.

If you always talk about casualties within their hearing, they know what information has been passed on.

Example of verbal handover

(a) To Ambulance Officer

Mr Smith, a 52 year old male fell down stairs. There is L.O.C. (loss of consciousness).
State: - what injuries he has sustained;
- what observations have been made;
- what treatment has been given.

(b) To Police

Mr Smith, a 52 year old male, has fallen down the stairs. His relatives were with him. He has been transferred by ambulance to Downtown Hospital.

Exercises

These exercises should be developed by a medical professional or approved training officer.

Exercise 1

Child fell from horse and hit head with no L.O.C. (loss of consciousness) but bruising and abrasions. Child is crying. Child has been in your care 5 minutes. The duty registered nurse arrives and asks about the casualty. What will your verbal handover be?

Exercise 2

Outdoor evening concert; 15 year old female presents in respiratory distress. Her friend says she hasn't got her puffer. Casualty has difficulty speaking words and an audible expiratory wheeze.

Record details of assessment and movement on OB12 and give verbal handover to arriving ambulance officer.

Exercise 3

The casualty in Exercise 2 is the daughter of a visiting overseas dignitary. A journalist approaches you, as duty officer, asking about her condition. What would you include in your statement?

Protocols for a Major Duty

PRESCRIBED REFERENCE: Supplementary Training Material.

OBJECTIVE: To provide prompt and courteous service to members of the public.

OUTCOMES: Having read and discussed the topic with others, the St John member will:

11.1 be able to adequately prepare for a major duty;
11.2 have a knowledge of the command structure at a major duty;
11.3 be able to participate fully at a major duty.

Supplementary Training Material

Background

The purpose of this module is to familiarise members with the standard operating procedures that occur at a major duty in N.S.W., in preparation for the Olympic Games in the year 2000.

Command structure

The following positions are established at a major duty:

- **Commander:** assumes administrative control of the entire duty;

- **Deputy Commander:** assists the Commander and carries out tasks delegated by the Commander;

- **Medical Commander:** is in entire charge of the post as far as medical matters are concerned and shall instruct the Commander about any medical matters which are in his/her opinion necessary for the medical treatment of the casualties at the duty;

- **Site Commander:** is a person nominated by the Commander to take control of a designated duty post and its assigned area.

- **Communications Officer:** establishes an efficient radio network at the duty and ensures trained personnel are rostered for radio duty;

- **Liaison Officer:** represents St John Ambulance Australia in the central coordination facility and liaises with other organisations present at the duty, e.g. Police, Ambulance Service, Fire Brigade and other support agencies.

- **Transport Officer:** organises transport for members to and from the duty; may also be required to organise internal transport of casualties at the duty location;

- **Welfare Officer:** ensures members are adequately fed and hydrated; may also attend to other welfare needs of members;

- **Team Leader:** leads and supervises a group of members at a first aid post or in the field; oversees the immediate welfare needs of members;

- **Team Member:** provides first aid to casualties in accordance with the Team Leader's instructions.

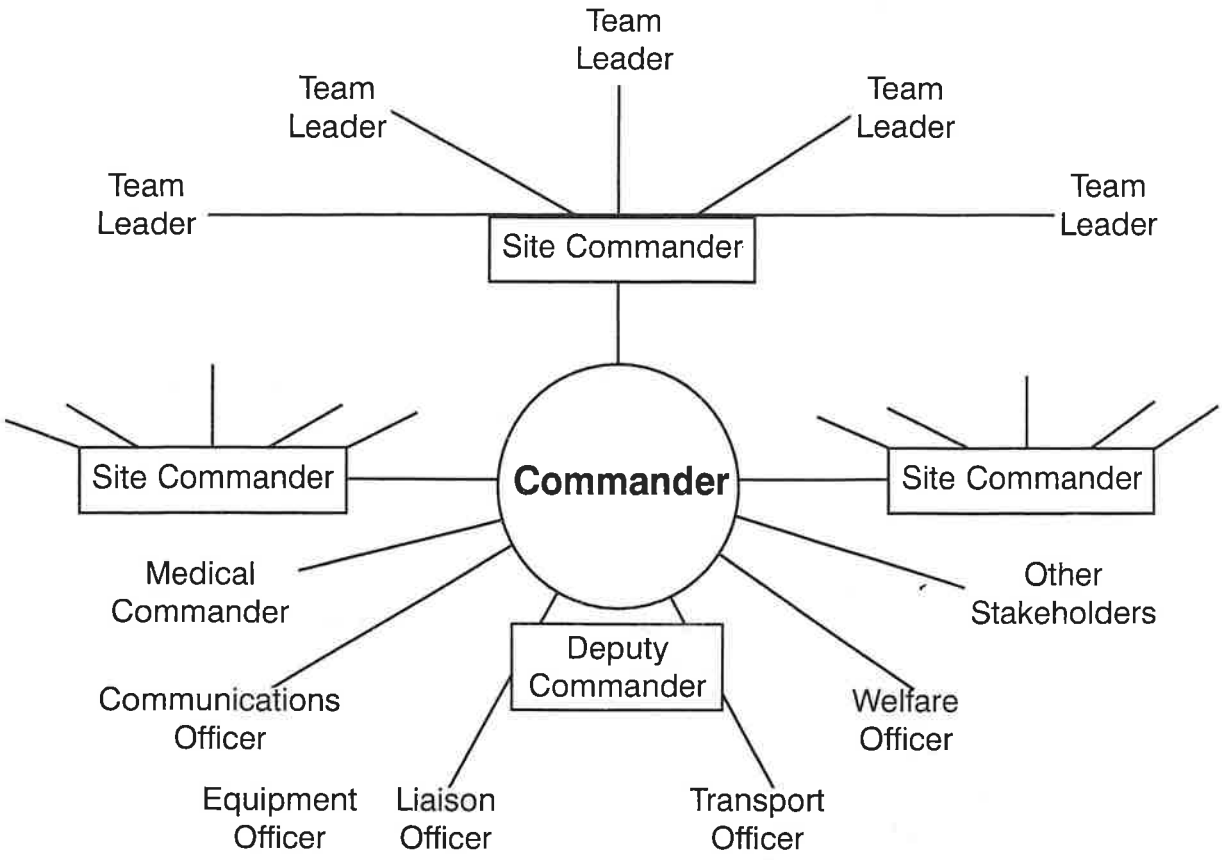


Fig. 1 Command structure at a major duty

Pre-duty preparation by the member

It is the responsibility of all members to ensure that they have the correct details regarding assembly point, time to report, uniform requirements and any other relevant information.

- **Assembly point:** the meeting place for members attending the duty. Members are to be conveyed from this point to the duty by Operations Branch vehicles. At the conclusion of the duty, members will be returned to this point.

- **Meeting time:** members must report to the assembly point at the nominated meeting time. Late arrival may delay the departure of the group, which in turn delays the arrival to and setting up of the duty.

- **Uniform:** the standard duty uniform is worn. Broad-brimmed hats are the preferred head dress. Members should also ensure that they carry a jumper or jacket to allow for changes in the weather. Wet weather gear should also be carried.

- **Equipment**: every member is required to carry a first aid kit. The preferred style of kit is the waistbag. Members should ensure that kits are adequately stocked with approved items and that water bottles are filled. If the duty extends into the night, it is advisable to carry a torch.

Arrival at the assembly point

Upon arrival at the assembly point, each member will be required to:

- present for uniform inspection; members inappropriately attired may be assigned a task of a non-operational nature;

- complete any necessary documentation, e.g. next of kin form;

- check skin integrity by:
    - washing hands with alcohol based handwash;
    - covering any lesions or areas that sting with an occlusive dressing;
    - ensuring an adequate supply of the correct size gloves.

Briefing

All members will be briefed at the assembly point. The Commander will ensure that officers who have a role at the duty are introduced. Members will be informed of their specific roles/tasks for the duty. Arrangements will be conveyed regarding:

- the location of first aid posts;
- refreshments;
- meals;
- toilet facilities;
- stores replenishment;
- radio communications procedures;
- transport of casualties;
- status of response squads;
- the issue and return of equipment; and
- transport arrangements.

Members will be issued with a map of the duty site which will contain locations of key areas.

Allocation of personnel to tasks/areas

Members are allocated to areas/tasks according to their qualifications and experience. Each group of members will work under the supervision of a Team Leader, who will guide the members as to their role at the duty. If members experience any problems or difficulties at the duty, they should, in the first instance, discuss the problem with their Team Leader.

Equipment

Members will be issued equipment to carry out their tasks at the duty. It is imperative that all equipment loaned is looked after and returned to the Equipment Officer at the end of the duty. Items that may be issued include:

- hand-held radios;
- approved oxygen equipment;
- analgesic gas equipment;
- semi-automatic defibrillators;
- backpack first aid kits;
- waistbag first aid kits;
- reflective vests;
- stretchers;
- carry sheets;
- other specialised equipment.

At the conclusion of the duty, equipment loaned to members must be returned to the Equipment Officer, as per instructions given in the briefing.

Deployment of personnel

Once assigned to a team, members will be deployed by transport being utilised by the Operations Branch. It is important that teams remain together and travel in the same vehicle to ensure a smooth start to the duty. Upon arrival at the duty, the team will proceed to the designated area and work under the direction of their Team Leader.

Arrival at duty

Upon arrival at the duty, teams should move promptly to their designated area and commence set up procedures. The first aid post may need to be set up and all team members should assist in this function. Tasks that need to be performed include:

- ensuring signage is displayed outside the post;
- making bed(s);
- setting out first aid stores;
- checking oxygen equipment, analgesic gas equipment, semi automatic defibrillators, stretchers, wheelchairs etc.;
- ensuring cleanliness of post;
- stowage of personal items for security and to prevent obstruction;
- setting up radio equipment;
- lining rubbish bins with appropriate liners.

At the post, the primary responsibility of each member is to provide prompt and courteous service to members of the public - be it information, directions etc. The Team Leader will devise a roster to ensure that all members do their fair share of work. Once the post is set up, all members should orientate themselves to the local area and its facilities.

If replacement stores or equipment are required, such requests should be passed to the Radio Controller who will alert the Equipment Officer to needs.

Conclusion of the duty

At the conclusion of the duty, the post will need to be cleaned and closed down. The Team Leader will provide guidance as to what needs to be done.

Once the duty has been completed, the Team Leader will conduct a debrief. Members may raise any issues that have caused them concern during the duty. Constructive criticism is always welcomed. The Team Leader will attend to any suggestions made or, if appropriate, pass the suggestions on to the Commander.

All casualty documentation except the member's copy of the OB12 must be left with the Team Leader at the conclusion of the duty. Equipment loaned to members must be returned to the Equipment Officer.

Upon completion of the debrief and closing down of the post, members will proceed to the designated pick up point for transport back to the assembly point. Upon arrival at the assembly point, all members will disperse.

Suggested practical activities

- using alcohol based handwash to detect breaks in the skin;
- application of occlusive dressing;
- completion of OB11s and OB12s.

Signing off the OB12 form

Whenever a casualty is treated, the OB12 form is potentially a document that could be required as evidence in a court of law. Consequently, it is to be signed at the bottom by the primary care-giver who is to retain the yellow copy for at least seven years.

When the primary care-giver is a minor (applies to most cadets), that person is to sign the OB12 form. However, it is desirable that it be countersigned by the supervising adult as corroboration.

If more than one adult administers treatment, the primary care-giver signs at the bottom of the OB12 form but others may countersign if they wish.

RECORD OF SKILL MASTERY - 1998

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
1.1	☐	☐	☐	
1.2	☐	☐	☐	
1.3	☐	☐	☐	
1.4	☐	☐	☐	
2.1	☐	☐	☐	
3.1	☐	☐	☐	
3.2	☐	☐	☐	
3.3	☐	☐	☐	
3.4	☐	☐	☐	
3.5	☐	☐	☐	
5.1	☐	☐	☐	
5.2	☐	☐	☐	
5.3	☐	☐	☐	
5.4	☐	☐	☐	
6.1	☐	☐	☐	
7.1	☐	☐	☐	
7.2	☐	☐	☐	
8.1	☐	☐	☐	
8.2	☐	☐	☐	

Glossary

allergist:	allergy specialist
anaphylaxis:	hypersensitivity to a second or subsequent dose of antigen.
aqueous based:	water based.
aseptic/asepsis:	complete absence of bacteria, fungi, viruses and other micro-organisms that can cause disease.
aseptic technique:	a way of minimising the chance of disease-causing organisms entering an opening in the skin or mucous membrane, e.g. during dressing of wounds and giving of injections.
asphyxia:	deficiency of oxygen.
broncho constriction:	narrowing of the bronchial passages.
clotting disorders:	when the blood clots too much or not enough.
dermatitis:	inflammation of the skin.
dermatologist:	skin specialist.
epidermis:	outermost layer of skin.
exudate:	ooze.
facilitation:	helping.
hypoxia:	a deficiency of oxygen in the tissues.
immune deficiency:	decrease in the body's ability to fight infection.
laryngectomy:	surgical removal of the whole or part of the larynx.
lymph glands:	glands in parts of the body which fight infection.
meningitis:	inflammation of the coverings of the brain (meninges) due to infection.
molecule:	a minute particle.
occlusive:	prevents the passage of fluid.
palpitations:	extremely rapid heart rate.
paraesthesia:	pins and needles feeling.
perineum:	the region of the body between the anus and the urethral opening.
serous (discharge):	containing serum.
skin flora:	micro-organisms living on the skin.
stoma:	surgical opening onto body surface, e.g. laryngectomy stoma in region of Adam's Apple.
subcutaneous:	under the skin but not into the muscle.

topical exposure:	in contact with the skin.
tracheostomy:	a surgical operation in which a hole is made into the trachea through the neck.
tumour:	abnormal growth of tissue.

Appendix: Time critical casualties

Casualties are said to be 'time critical' if even minor delays cause a worsening of their condition.

Time critical conditions include:

1. uncontrollable bleeding, especially internal bleeding, e.g. ruptured spleen, severe chest wounds, limb amputations.
2. severe and deteriorating respiratory distress, e.g. acute pulmonary oedema (heart failure), blocked airway due to swelling or foreign object.
3. deepening unconsciousness following head injury or intercranial problems, e.g. stroke.
4. heart attack.
5. shock, with poor or failing circulation.

Some injuries are said to be 'potentially time critical' where the cause (or pattern) of the injury is likely to cause death or major disability but the casualty is currently stable, e.g. injuries from high speed car accidents, injuries following an explosion, pedestrians hit by cars travelling at greater than 30 kpm.

Other injuries are 'emergently time critical'. If left alone, the casualty will almost certainly become time critical because of the type of injury, e.g. multiple fractures, burns over 10 per cent of body.

(Adapted from The *Science of First Aid,* St John Ambulance Australia, 1996).

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.	Stable side position	☐
4.	Call for help	☐
5.	Airway clearance	☐
6.	Breathing check (five seconds)	☐
7.	Supine position	☐
8.	Five quick, full breaths	☐
9.	Pulse check (five seconds)	☐
0.	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 ..... / ..... / 1998.

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

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 ..... / /1998

The member has satisfactorily demonstrated his/her fitness.

Signed ..... / /1998
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 ..... / /1998

Printed name and address .....

.....

CONFIRMATION OF COMPLETION OF SKILLS MAINTENANCE PROGRAMME, 1998

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

Division ..... Date joined St John ..... / ..... /19 .....

Signed ..... Date ..... / ..... /199 .....
Member to sign when Programme completed

The above member has completed the programme to my satisfaction:

..... Date ..... / ..... /199 .....
Person responsible for training, print name and address and sign

..... Date ..... / ..... /199 .....
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 ..... / ..... /199 .....
Training Branch Accredited Instructor, print name and address and sign

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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, 1998

This is to advise that
Name (please print) .....
Family name

of ....Division who joined St John ..... / ..... /19 .....

has completed the Skills Maintenance Programme for 1998. 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 ..... / ..... /199 .....

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 ..... / ..... /199 .....
Training Branch Accredited Instructor, print name and brief address and sign