



**St John
Ambulance
Australia**

**SKILLS
MAINTENANCE
PROGRAMME
1996**

1-C

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 Casualtyyears 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 INTERVALminutes
(Period of time between receipt of call and arrival of St John first aider at casualty)

ASSESSMENT INTERVALseconds
(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. commencedhours and minutes (24 hour clock)

Time IF CIRCULATION restoredhours and minutes (24 hour clock)

Time IF BREATHING restoredhours and minutes (24 hour clock)

Time AMBULANCE CALLEDhours and minutes (24 hour clock)

Time AMBULANCE ARRIVEDhours and minutes (24 hour clock)

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

Time AMBULANCE DEPARTS WITH CASUALTYhours and minutes (24 hour clock)

Defibrillation performed Yes No

Destination of Casualty (e.g. name of hospital)

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

Printed name of person completing proforma

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

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 **Casualty Report form OB12** 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
1996

Name

Signature

Division

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

St John Ambulance Australia
Canberra Avenue
Forrest ACT 2603

© St John Ambulance Australia 1995

This book is copyright. Apart from any fair dealings for purposes of private study, criticism or review, as permitted under the Copyright Act, no part may be reproduced without written permission. Inquiries should be made to the publisher.

Editor: Barry Price
Production management: Terrence E. Jeff
Typesetting: Delphinus Designs
Printing: Kingsway Printers Pty Limited.

Contents

Page **A. TRAINING BRANCH ADVANCED
CERTIFICATE CORE SUBJECTS**

			<i>Completed</i>	
			Signature	Date
7	Module 1	Resuscitation		
16	Module 2	Infection Control		
21	Module 3	Casualty Assessment		
25	Module 4	Traffic Accident Injuries		
28	Module 5	First Aid Equipment		
35	Module 6	Limb Injuries		
39	Module 7	Neck and Spinal Injuries		
48	Module 8	Chest Injuries and Respiratory Distress		
59	Module 9	The Acute Abdomen		
62	Module 10	Facial Injuries		
67		Glossary		

B. FOR INFORMATION

68	Extracts from National Corporate Plan
----	---------------------------------------

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*.

Welcome to Skills Maintenance Programme 1996

Greetings and salutations and welcome to the Skills Maintenance Programme for 1996. The Skills Maintenance Programme provides the method to ensure that members Australia wide are competent in first aid and thereby efficient under the General Regulations. Annual efficiency and completion of a member's record is vital not only for credit to be given towards the Service Medal of the Order at a personal level, but completion of the programme also carries with it responsibilities and recognition of competency in first aid.

Concern continues to be expressed that members are having modules signed as completed when their knowledge and skill in that module are not adequate. Any person signing a module as completed has legal and moral obligations. If the member is not competent in the module, then the public are placed at risk, the member places him/herself at risk and our Organisation is also put in jeopardy.

Responsibility for standards in each district is delegated to the District Surgeon but it is obvious that he/she is not able to be everywhere all the time. Because of concerns about the standard and its legal implications, districts will be setting in place checks or random checks on quality to test or to assess both theoretical and practical knowledge.

The Senior First Aid Certificate or equivalent is the basic requirement for a member of the public to join Operations Branch and to go on public duties. It is anticipated and expected of a member, however, that as soon as possible, and preferably within six months, the member will complete an Advanced First Aid course to ensure that on public duties their level of skill and knowledge is more appropriate to deal with the casualties and emergencies that may arise. The Advanced First Aid course may be obtained either through an Operations Branch course or a Training Branch course. For a member who has obtained the Advanced First Aid Certificate, satisfactory completion of the Skills Maintenance Programme over three years will ensure that his/her Advanced First Aid Certificate remains current. Issue of a Certificate may require an additional examination in those States where the examination must be conducted by a person other than the course instructor.

The Casualty Report Form OB12 has been revamped into an A4 size divided into four quadrants to enable it to be folded and placed in a member's pocket. The top copy **must** be kept by the division or district attending the duty, the middle copy will be given to the casualty or those caring for the casualty, and the third copy will be retained by the member for a minimum of seven years in the event that a claim is lodged against him/her. The new OB12 will be available once existing stock of the current OB12 is exhausted.

Fear of litigation should certainly not preclude us from delivering a high standard of first aid. This is the reason we are all members of St John Ambulance Australia.

Special thanks to those members who have forwarded to me the National Cardiac Arrest Data Collection - Utstein-style - proforma, having delivered cardio-pulmonary resuscitation to a casualty, as well as an OB12 completed for the task. I need both forms, please, and would appreciate some information on the age and sex of the person who delivered the C.P.R., his/her level of training and how long the first aider

has been a member of St John. It is very much appreciated that you stepped forward in these acute situations and it is only regrettable that the outcome is unfavourable in so many cases. But when a save occurs, it makes our training and efforts all worthwhile. Please keep up the good work.

All the best with this Programme. Thank you for your ongoing commitment and thank you on behalf of the public for the time and effort you give to St John.



J. Fred Leditschke
Chief Surgeon

National Skills Maintenance Programme Training Committee Members

Barbara Davis R.N.	Chief Nursing Officer
Mr Francis Chapman	Ambulance Officer
Mr Wayne Deakes	Corps Officer
Diana de Silva R.N.	Divisional Superintendent
Dr Nadine Fisher	Corps Surgeon
Stephen Hall R.N.	Acting Corps Nursing Officer
Mr Gavan Keane	Acting Corps Ambulance Officer
Andrew McMaster R.N.	Divisional Member
Correne Wassertheil R.N.	District Nursing Officer
Dr Jeff Wassertheil	District Surgeon - Reserve List
Jeffrey Williams R.N.	Divisional Superintendent (W.A.)

A. St John Members

1. Each member, on receiving his/her own copy 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.
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. Unless exempted under the General Regulations, all officers/members of Operations Branch shall complete the Skills Maintenance Programme to the standard prescribed.
2. 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 Surgeon for consideration. All such requests will receive written advice.
3. 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.
4. Practical skills items pertaining to the module being undertaken must be signed as satisfactory by one of the designated persons.
5. 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.
6. On satisfactory completion of the module by the member, the programme is to be signed and dated in the space provided at the end of that module.

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

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

OBJECTIVE: On completion of the training period, and after practising the practical skill listed below (to the satisfactory performance level as per the module points/checklists), the St John member will be able to apply this skill to the section's practical incident.

Practical Skills

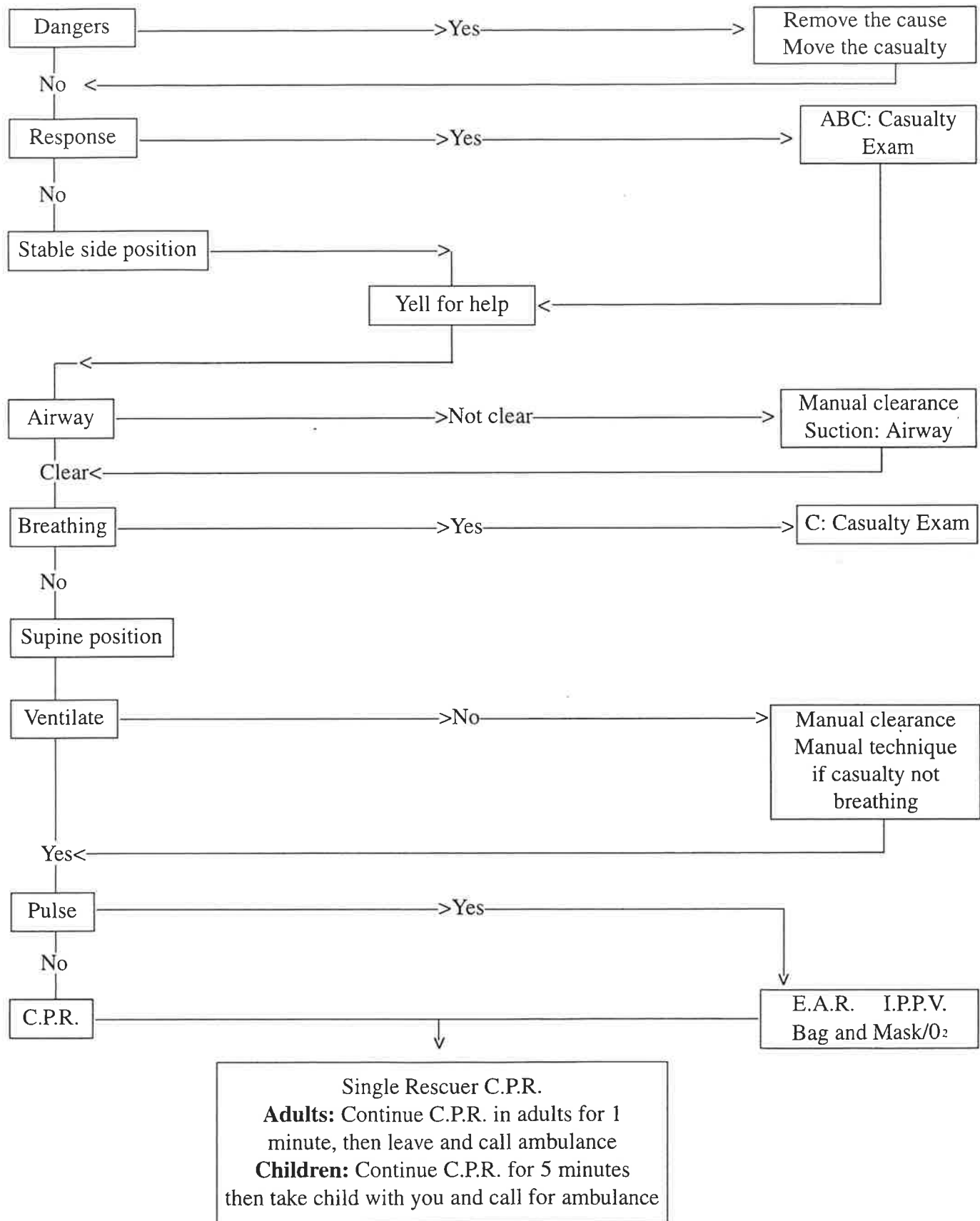
- 1.1 Perform effective resuscitation for an adult.
- 1.2 Perform effective resuscitation for a child.
- 1.3 Perform effective resuscitation for an infant.

Practical Incident

You are on duty at the football. You are called to an unconscious casualty. Examine and manage the casualty. Hand over to the ambulance officer who arrives. 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 Cardio-pulmonary Resuscitation research form (using a photocopy of the form in the front of this Manual).

Cardio-pulmonary Resuscitation Research

The Chief Surgeon wishes to continue the research study from 1994 and 1995. He asks any first aider who treats a casualty with a cardiac arrest to fill in the Utstein-style form in the front of this Manual and to please return it to him as soon as possible afterwards.



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

Fig. 1 Casualty Management Sequence

RESUSCITATION RATES

During C.P.R., allow equal time for compression of the chest and for relaxation.

	ADULT 5 initial breaths	CHILD 5 initial breaths	INFANT 5 initial breaths
E.A.R.	1 inflation every 4 seconds 15 cycles/min.	1 inflation every 3 seconds 20 cycles/min.	1 inflation every 3 seconds 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 (1.5-2 ins)	2.5 cms (1 inch)	1.5 cms (0.5 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 compressions to 1 breath in 5 seconds; 12 cycles/min.	5 compressions to 1 breath in 3 seconds 20 cycles/min.	
REVIVAL CHECKS	PULSE BREATHING 1 minute; every 2 minutes thereafter	PULSE BREATHING 1 minute; every 2 minutes thereafter	PULSE BREATHING 1 minute; every 2 minutes thereafter

1.1 Perform Effective Resuscitation For An Adult

Resuscitation Assessment

You are walking to your car at the completion of a football duty when you are called over to an elderly man who has collapsed. The only equipment you have is your first aid kit (with pocket mask and gloves) and St John radio. Manage the casualty as you normally would and keep in mind that you will be required to complete an Utstein-style report of the incident; try to keep an eye on the times you initiate your treatments.

Checklist	Needs Improvement Date	Proficient Date
DANGERS (No)		
RESPONSE (No) - Side position. - Yell for help; use radio for ambulance.		
AIRWAY (Vomitus) - Manual clearance/suction, if available. - Insert Oropharyngeal airway, if available.		
BREATHING (Nil/ Agonal gasps) - 5 quick breaths. - Good seal. - Watch rise/fall of chest.		
CIRCULATION (Yes)		
COMMENCE E.A.R. - Rate: 1 breath/4 seconds. - Good seal. - Watch rise/fall of chest.		
REVIVAL CHECK at approx. 1 minute. - Breathing (Nil) - Circulation (Nil)		
COMMENCE 1 PERSON C.P.R. at ratio 2:15. - Good seal. - Watch rise/fall of chest. - 15 compressions. - Location: lower half of sternum. - Depth: 4-5 cm. - Rate: 4 cycles/minute.		
SECOND MEMBER arrives with Oxy-Viva. Member being assessed to ventilate casualty. Call ambulance.		
COMMENCE 2 PERSON C.P.R. - Ratio of 1:5 at 12-15 cycles/ minute. - Good seal. - Watch rise/fall of chest.		
CASUALTY VOMITS - Manual clearance on side. - Suction, with Oxy Viva, if qualified. - Continue ratio of 1:5.		

AMBULANCE ARRIVES

- Handover.

RELATIVE ARRIVES

- If possible, obtain history and complete Utstein-style report and OB12 Casualty Report form.

GENERAL

- Use of oxygen equipment when available and qualified to use.
- Calls for help at appropriate time.
- Use of universal precautions.

--	--

VERBAL ASSESSMENT

Suppose that when you check the casualty for respirations, you observe that he has a respiratory rate of 8-10. What would you do?

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

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

COMMENTS

1.2 Perform Effective Resuscitation For A Child - Resuscitation Assessment

INCIDENT

You are attending a water sports duty when you see a 5 year old child lying face down in the pool.

Checklist	Needs Improvement Date	Proficient Date
DANGERS (Remove casualty from the water)		
RESPONSE (No) - Side position. - Yell for help; call for ambulance.		
AIRWAY (Vomitus) - Manual clearance/suction.		
START HERE - Insert Oropharyngeal airway, if available.		
BREATHING (Nil) - 5 quick breaths. - Good seal. - Check for rise/fall of chest.		
CIRCULATION (Yes)		
COMMENCE E.A.R. - Rate: 1 breath/3 seconds.		
REVIVAL CHECK at approx. 1 minute. - Breathing (Nil) - Circulation (Nil)		
COMMENCE C.P.R. at ratio 2:15. - Good seal over casualty's mouth. - Watch rise/fall of chest. - Compression method: heel of one hand. - Location: lower half of sternum. - Depth: 2.5 cm. - Rate: 2:15 in 10 seconds (6 cycles/min.).		
AMBULANCE ARRIVES - Handover.		
GENERAL - Use of oxygen equipment when available and qualified to use. - Calls for help at appropriate time. - Use of universal precautions.		

VERBAL ASSESSMENT

Suppose that when you check the casualty for respirations, you observe that he has a respiratory rate of 10. What would you do?

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

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

Should the child's neck be extended as you would in adult resuscitation? Explain.

COMMENTS

1.3 Perform Effective Resuscitation For An Infant - Resuscitation Assessment

INCIDENT

You are on duty at a water sports event when you are called to the baby pool where a 6 month old baby seems to be 'drowning'.

Checklist	Needs Improvement Date	Proficient Date
<p>DANGERS (Remove casualty from the water)</p> <p>RESPONSE (No)</p> <ul style="list-style-type: none"> - Side position. - Yell for help; call for ambulance. <p>AIRWAY (Vomitus and mucus in nose and mouth)</p> <ul style="list-style-type: none"> - Manual clearance/suction (Y-catheter). Insert Oropharyngeal airway, if available. <p>POSITION</p> <ul style="list-style-type: none"> - Baby in arms. <p>BREATHING (Nil)</p> <ul style="list-style-type: none"> - 5 quick puffs. - Good seal over mouth and nose. - Check for rise/fall of chest. <p>CIRCULATION (Yes)</p> <p>COMMENCE E.A.R.</p> <ul style="list-style-type: none"> - Rate: 1 breath/3 seconds. <p>REVIVAL CHECK at approx. 1 minute.</p> <ul style="list-style-type: none"> - Breathing (Nil) - Circulation (Nil) <p>COMMENCE C.P.R. at ratio 2:15.</p> <ul style="list-style-type: none"> - Good seal over casualty's mouth and nose. Watch rise/fall of chest. - Compression method: 2 fingers. - Location: lower half of sternum. - Depth: 1.5 cm. - Rate: 2:15 in 10 seconds (6 cycles/min.). <p>AMBULANCE ARRIVES</p> <ul style="list-style-type: none"> - Handover. <p>GENERAL</p> <ul style="list-style-type: none"> - Use of oxygen equipment when available and qualified to use. - Calls for help at appropriate time. - Use of universal precautions. 		

VERBAL ASSESSMENT

Suppose that when you check the casualty for respirations, you observe that he has a respiratory rate of 10. What would you do?

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

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

Should the child's neck be extended as you would in adult resuscitation? Explain.

COMMENTS

<i>Skills Mastered</i>		Satisfactory	Fail	Re-test
EXAMINER Please tick				
	1.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Please sign and print name				
Signed:		Date / / 1996.		
Name:		Position:		
Qualification: (Please tick where appropriate)				
Doctor		Registered Nurse		Ambulance Officer
Training Branch Accredited Instructor:				
Operations Branch Member (approved by District Surgeon):				

Infection Control

OBJECTIVES:

1. On completion of the training session and following small group discussion, the student will demonstrate an understanding of the issues involved in first aider well-being.
2. On completion of the training session, the student will be able to list the key areas of infection control.
3. On completion of the training session, the student will:
 - define hepatitis;
 - list the known sub-types of hepatitis;
 - explain how hepatitis C is transmitted.

Well-being of the first aider

There is an old cliché in health care of 'who cares for the carer' and this is equally true in the voluntary environment.

How many of us have given our service when we have been unwell and perhaps would have been better off staying in bed? The unwell first aider is of little use to anyone - especially the casualty.

The following are some issues to consider in looking after your own well-being:

- Maintain an adequate, healthy diet. Avoid rushed meals on duty, i.e. choose a salad sandwich rather than a hamburger.
- Exercise regularly.
- Get sufficient rest and sleep for your needs.
- Avoid working long periods of duty; after 8 hours, you fatigue more easily and lose concentration.
- Do you have any health problems that may affect your work, e.g. asthma, diabetes?

Do not go on duty if you have an illness that may be transmitted to a casualty or other member, e.g. a cold, an active cold sore, gastric illness.

Remember the basic principles of infection control:

- hand washing;
- hand drying;
- waste disposal;
- good sanitation at the duty;
- adequate clean water supply.

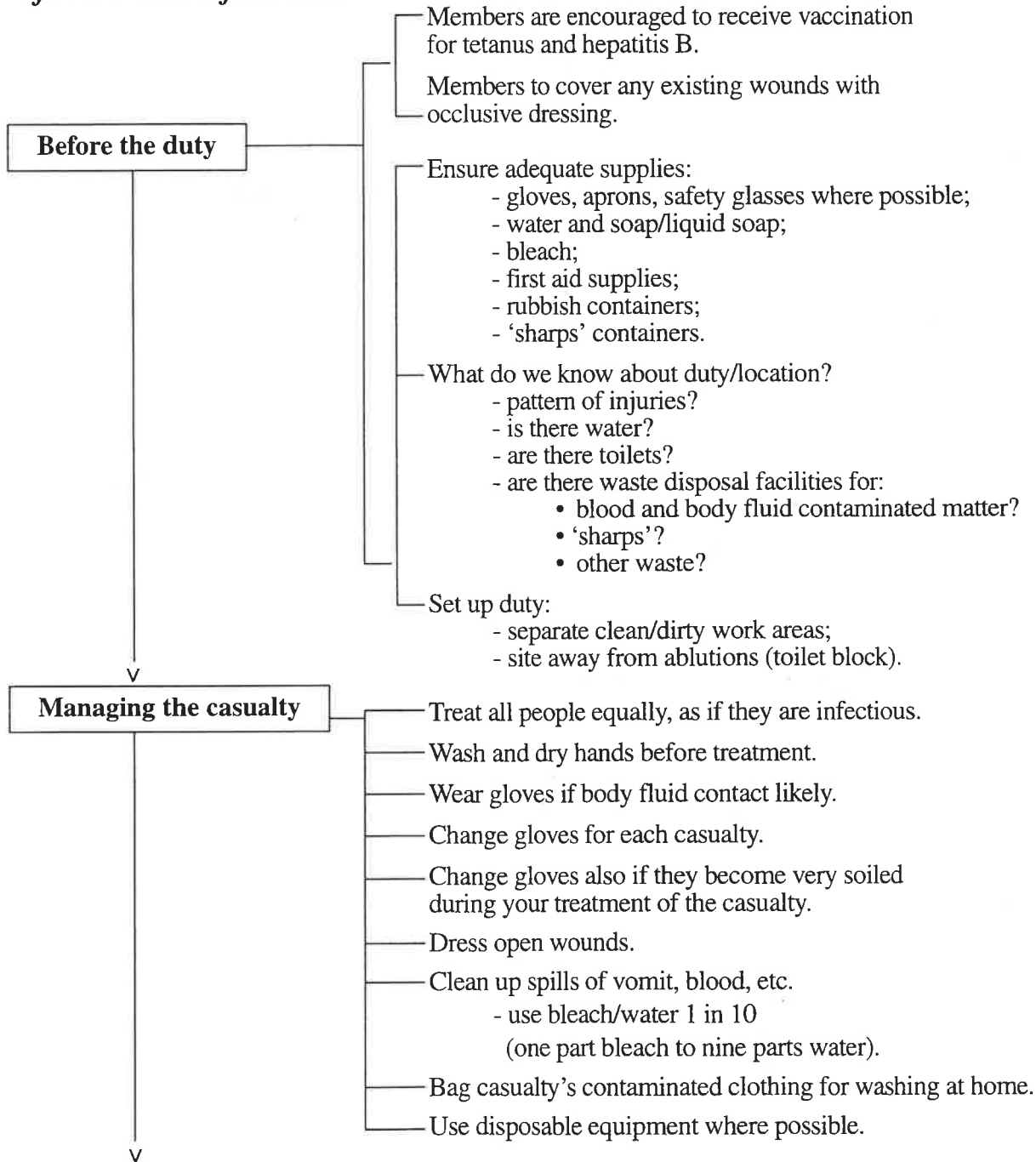
How current is your immunisation schedule? Consult your general practitioner for advice concerning immunisation against diphtheria, tetanus, hepatitis A and B, measles, mumps and rubella.

If you become unwell while on duty, go home. Seek medical advice if you feel it necessary.

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.

Infection control flow chart



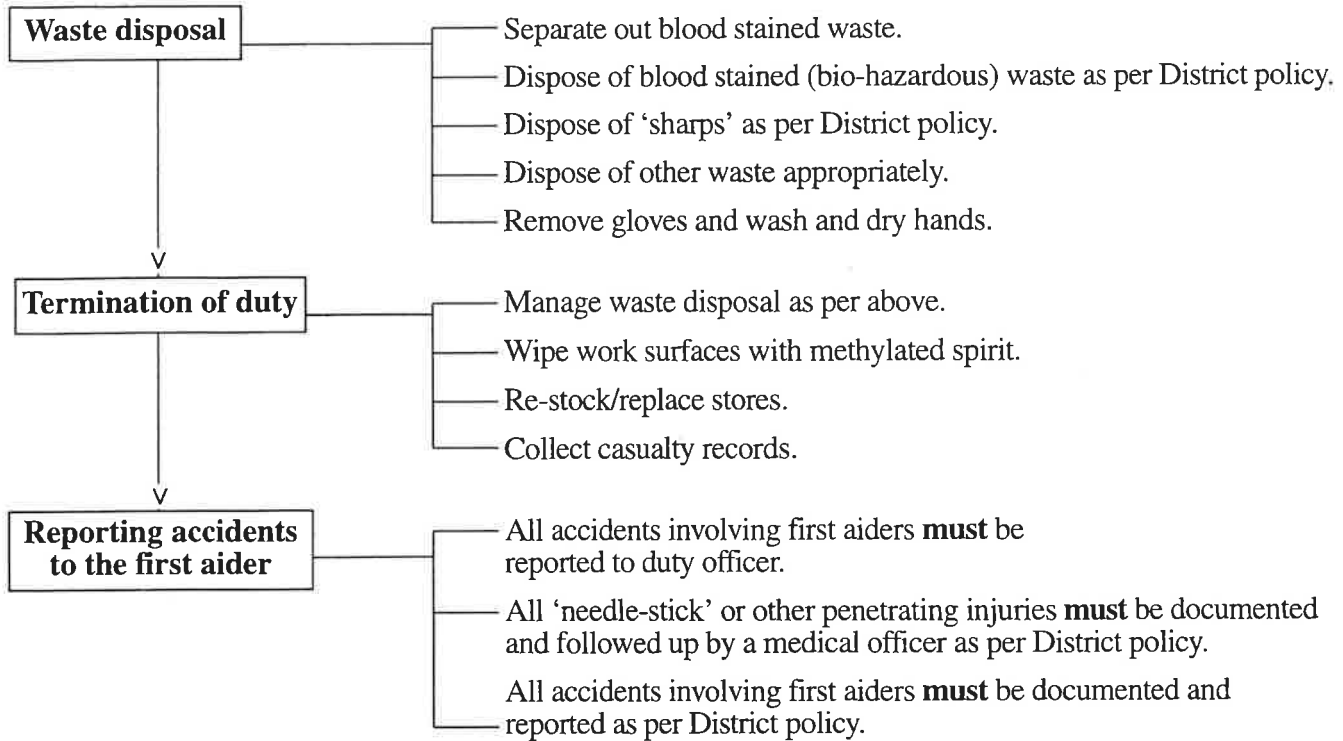


Fig. 1 Infection control sequence

Hepatitis

General

Hepatitis is inflammation of the liver. It may be due to infection, chemical poisoning or disease. The most common cause is a virus - a microscopic organism. To date, eight sub-types of the hepatitis virus have been identified - A, B, C, D, E, F, G and H.

Transmission

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

All the other known forms of hepatitis are spread by blood-to-blood (or body fluid) transmission, that is through injecting needle use, some sexual activity or contaminated blood/blood products.

Signs and Symptoms

Hepatitis rarely occurs as a sudden illness. Its progress from infection to illness usually occurs over a two week period. General signs and symptoms include:

- right upper quadrant abdominal pain;
- nausea/vomiting;
- yellow discolouration of the skin (jaundice);
- lethargy, fatigue;
- dark coloured urine.

Identification

Hepatitis is suspected after clinical examination. The specific sub-type (A to H) can only be ascertained by a blood test.

Hepatitis C

Hepatitis C is transmitted by the blood-to-blood or body fluid routes. It presents as an acute illness followed by a recovery phase. It is usual for the patient to then enter a 'carrier state'. In this situation, patients carry active virus in their systems but may be free of illness. Carrier states are infectious. In the long term (as long as twenty years), the prognosis with Hepatitis C is poor and it often leads to liver cancer.

Immunisations

Presently, vaccine is only available for Hepatitis A and B. Neither is a hundred per cent successful. Advice regarding immunisation should be sought from a St John medical officer or a general practitioner.

Prevention

All hepatitis can be prevented by the adoption of good basic hygiene techniques and the use of blood and body substance precautions.

Splinter Removal

OBJECTIVE: Following an instructional session and supervision in the first instance, the first aider will be able to remove a superficial splinter.

Splinters that St John members may remove:

Superficial splinters:

- the splinter end protrudes from the skin;
- the splinter is visible under the surface of the skin.

Splinters that need medical removal:

- large embedded splinters;
- splinters through joints;
- splinters under fingernails;
- splinters in the eye;
- splinters in the genitalia/buttocks;
- glass splinters.

Consider the casualty's medical history, e.g. diabetic or anti-coagulant medication, as this may have an outcome on healing ability or present problems with control of bleeding.

Equipment:

- gloves;
- alcohol skin wipes (N.B. the only time alcohol swabs should be used for wound cleaning);
- hypodermic needle No. 21 or 22 gauge;
- Bandaid or transparent dressing, e.g. Opsite;
- small 'sharps' container;
- good light.

Non-disposable instruments, such as splinter probes, splinter forceps and lancets, must not be used by the first aider to remove splinters. They can spread infection.

Procedure:

- Sit casualty down.
- Obtain history.
- Explain what you are going to do.
- Wash and dry your hands and put on gloves.
- Examine wound and check that splinter is superficial.
- Clean skin, using alcohol wipe.
- Insert needle, bevel on the side, under splinter.
- Rotate needle below splinter.
- Lever splinter upwards and remove.
- Control any bleeding.
- Clean exit wound.
- Dress with Bandaid or transparent dressing.
- Dispose of used needle in sharps container. Do not recap.
- Dispose of gloves.
- Wash and dry your hands.
- Complete OB11 or OB12.

N.B. For children, two first aiders or the help of a parent may be needed.

If splinter cannot be easily removed with one or two gentle attempts, seek medical aid.

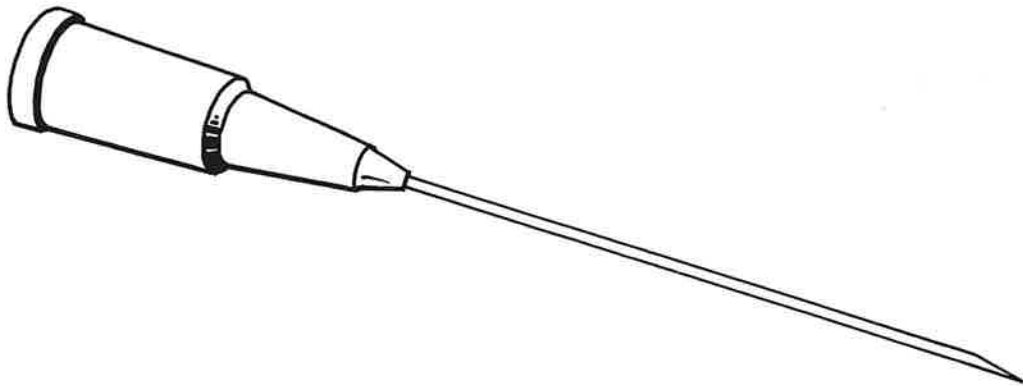


Fig. 2 Hypodermic needle

Casualty Assessment

AIM: To prepare the Operations Branch member to make a competent assessment of a sick or injured, conscious casualty in order to determine the emergency management required.

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

1. demonstrate a systematic primary examination procedure to identify life-threatening conditions in a conscious casualty;
 2. demonstrate a systematic secondary examination procedure to identify non life-threatening conditions in a conscious casualty;
 3. state the priorities of emergency care for a conscious casualty.
-

1. Introduction

The examination of any casualty involves three steps:

1. Look for life-threatening conditions.
2. Take a history.
3. Look again, to check for all injuries and medical problems.

To some extent, your examination starts before you even lay eyes on the casualty, as you think about where you are and the kind of injuries that may occur in that situation.

Consider:

(a) Weather

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

(b) Type of crowd

- Are there mainly excited young people in the crowd?
- Is there a lot of alcohol or other drug use evident?
- Is it a meeting of the Diabetic Society?
- Are there a lot of elderly people who may have pre-existing illnesses present?

(c) Resources available

Your treatment of a conscious casualty may be affected by how many other first aiders are present, radio communications available and distance from medical aid.

2. *Systematic primary examination*

Your **initial examination** of the casualty starts before either of you speaks a word. Watch them as they walk into your first aid post, or as you approach them.

- Are they in pain?
- Are they limping, unsteady on their feet, crying or panicky?
- Are they pale, flushed, puffing or sweating?
- Are there other clues:
 - a bandage already applied?
 - an obvious injury?
 - the chain saw still going?
- Is there a bystander, friend or relative present? Don't let them leave until you've questioned them.

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

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

- DANGER:** Is the casualty or the first aider in danger from the environment?
If so, remove the danger or remove the casualty.
If you can't do either, wait for expert help.
- RESPONSE:** Is the casualty unconscious?
(This module is concerned with conscious casualties only.)
- AIRWAY:** Is the casualty breathing noisily?
Ask him/her to remove items such as chewing gum that may cause problems later.
A casualty who is bleeding in the mouth will need to sit forward to keep the airway free.
- BREATHING:** A conscious casualty will be breathing.
Check the nature of breathing. Is it laboured?
Does the casualty need oxygen straight away, while you complete the rest of your examination?
- CIRCULATION:** Staunch obvious bleeding as you talk to the casualty.

Consider three other C's as part of your primary survey:
- CERVICAL SPINE:** Has the casualty had a significant fall or injury?
Does the casualty have multiple injuries?
If so, check the cervical spine and consider a cervical collar.

- CONSCIOUSNESS:** Did the casualty lose consciousness, even for a second?
If so, the casualty will automatically need medical assessment and you should organise it sooner rather than later.
If the casualty did lose consciousness as a result of a fall or fell after losing consciousness:
- start head injury observations;
 - check the cervical spine again;
 - apply a cervical collar.

CHECK pulse rate and respiratory rate.

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

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

(a) Injury: Treat obvious severe injuries as you talk; control bleeding, get a cold pack ready for the burn etc.

- How did it happen?
- When did it happen?
- What part/s of your body was/were injured?
- Does it hurt anywhere else?
- Did you lose consciousness?

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

(b) Illness

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

(c) For both injury and illness

- Do you have any other medical problems e.g.:
 - diabetes?
 - epilepsy?
 - heart conditions?
 - bleeding disorder?
- Are you taking any medications?
Why do we need to ask?
 - Some medications can make the pulse faster or slower.
 - A drug called warfarin makes the blood thinner and causes increased bleeding and bruising.

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

3. Systematic secondary examination

The secondary examination should reveal the extent of injuries the casualty has suffered. The examination may be a limited examination or a full examination.

(a) Limited examination

If the casualty has had a minor accident and only one part of the body is injured, it is reasonable to only examine that part, e.g.:

- steam burn to the arm;
- sprained wrist;
- grazes on the knee.

(b) Full examination

If the casualty has had:

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

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

(Refer to Module 6 and A.F.A. Ch. 10, 11, 12 and 13).

History taking should continue while the first aider is performing the systematic secondary examination. This may lead to further examination.

During the systematic examination, the first aider can check D.R.A.B.C. again, including pulse and respiration and the results of any life-saving treatment.

4. Priorities of emergency care for a conscious casualty

The priorities of care for a conscious casualty are as outlined in the D.R.A.B.C. Action Plan:

- remove dangers;
- clear airway;
- check breathing;
- control haemorrhage;
- check the cervical spine;
- head injury observations;
- assessment of chest pain.

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

Traffic Accident Injuries

AIM: To prepare the Operations Branch member to provide emergency first aid at a traffic accident.

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

1. Describe the actions to be taken to remove potential dangers at the scene of a traffic accident.
2. Describe the injuries that may occur with particular types of accidents.
3. Describe who should receive medical attention even if they appear uninjured.

1. What to do to make the scene safe

- (a) Position your car safely; use a reliable bystander to warn approaching traffic. Switch on your car hazard lights.
- (b) Check for electricity lines down across the scene. If they are, **do not approach** as the area around the contact point may be still 'live'; **call emergency services, telephone '000'**.
- (c) Check for fire and fuel, oil or chemical spills; if these are present, **do not approach**.
- (d) Open the driver's door (if possible) and ask the driver to:
 - put on handbrake;
 - turn off ignition;
 - leave keys in ignition.
 Do it yourself if the driver cannot.

Do not disconnect the battery. The battery may spark as it is disconnected, causing a hazard.

- (e) Perform D.R.A.B.C. on all casualties; attend to life-threatening conditions.
- (f) Make sure all occupants of each car are accounted for.
- (g) Send for help. Ask for all appropriate emergency services and state:
 - exact location;
 - number of vehicles;
 - number and nature of casualties;
 - if anyone is trapped;
 - if there are any chemical or fuel leaks.
- (h) Consider moving casualties to a safe area.

2. *Patterns of injury in motor vehicle accidents*

- (a) **Seat belts:** seat belts reduce injuries by 60-70 per cent but have their own injury pattern due to their restraining force:
 - bruises across seat belt line;
 - injuries to abdominal organs e.g. liver, kidneys;
 - injuries to the unborn child in a heavily pregnant woman, through haemorrhage in the uterus.

- (b) **Steering wheel:** fractured sternum and other chest wall injuries (especially if the driver is not wearing a seat belt).
 - bruising to the heart.

- (c) **Front seat:**
 - injuries to knees and forehead from dashboard;
 - neck injury, especially if there is no head-rest;
 - lacerations from windscreen if seat belt not used.
 - head injury from the door support;
 - clutch pedal injury (driver's left foot trapped under clutch pedal);
 - spinal injuries in a rollover accident.

- (d) **Back seat:** if the back seat occupants aren't wearing seat belts, they can be thrown around the car, with multiple injuries resulting.

- (e) **Pedestrians:** Pedestrians aren't usually 'run over'. Usually they roll onto the bonnet and are then thrown onto the road and pushed under the car.
Common injuries are:
 - head injuries;
 - fractured pelvis;
 - fractured lower limbs;
 - internal abdominal bleeding.

- (f) **Motor bike riders and passengers:**
 - spinal and head injuries;
 - compound fracture of lower leg;
 - extensive abrasions if not wearing protective clothing (jeans are not protective clothing!).

- (g) **Bicyclist:**
 - upper arm fractures;
 - head and spinal injuries.

3. *Who should go to hospital?*

There are some people who should go to hospital even if apparently uninjured:

A **pedestrian** hit by a vehicle travelling at over 30 km per hour;

In a car:

- impact speed over 70 km. per hour, i.e. add speed of both vehicles;
- any occupant under 5 or over 55;
- if an occupant of the same car has died;
- if anyone thrown from the car;
- if the car has been rolled over;
- if any part of the car has been pushed in more than 30 cm;
- if the accident caused a shift of the front or rear axle of the car;
- if the casualty has been trapped.

4. *Practical Exercise*

Using divisional members and personal or divisional vehicles, create your own scenarios, e.g.:

- driver trapped, wires down;
- driver unconscious, still in seat;
- 3 car collision, multiple casualties.

First Aid Equipment

PRESCRIBED REFERENCE: *Australian First Aid, Vol 2., 1989.*

OBJECTIVE: On completion of this training period and after practising the skills listed, the St John member will be able to demonstrate the correct methods and precautions to adopt when lifting and moving a casualty.

In order to provide the optimum level of first aid, first aiders require the tools with which to deliver their care.

By far, the best tools are those which most of us already possess - common sense and our senses. We are able to:

- see when casualties are distressed;
- listen for abnormalities in their breathing;
- feel the temperature of their skin and the rate of their pulse;
- and smell any unusual odours emanating from their breath.

It is often with these senses alone that we are able to determine the condition of our casualty.

When they are anxious, we can make appropriate physical contact, comfort them and hold their hand. In some circumstances, simply touching may be enough to lessen anxiety, distress and level of pain. Contact is especially important for the blind.

Equipment is often available to help first aiders perform their tasks. But we may occasionally need to improvise.

It is important that whenever we are about to lift or move a casualty, we first consider our own safety.

The principles applied in correct lifting:

- keep back straight;
- bend knees and hips but not the back;
- lift as close as possible to the weight;
- lift with straight arms;
- lift with a smooth even movement;
- keep feet straight and apart;
- avoid twisting spine;
- and hold weight securely.

1. Improvised equipment

Improvised first aid equipment surrounds us; its use is limited only by our imagination. The clothes we wear, the plastic and cardboard packaging which inundates our world, can all be used to splint limbs or arrest haemorrhage. From materials available at your divisional meeting, complete the following exercise.

Exercise

State appropriate items which may be used to improvise in the given situation:

- 1) Control of bleeding to the palm of the hand
- 2) Immobilisation of lower leg fracture
- 3) Cervical collar
- 4) Arm sling

2. Ambulance Stretcher

This stretcher is used by Ambulance Services. It can be used to:

- raise the feet or the head;
- convert into a wheel chair (some models);
- and, because it has wheels attached, allow for easier movement, without the strain of having to carry the stretcher.

Precaution: The St John member must be trained in the use of the stretcher used by the professional ambulance service in his/her State/Territory before using it.

3. First aid equipment

(a) Triangular bandages

The triangular bandage is one of the first aider's most useful pieces of equipment. It can be used to retain a dressing in place, as padding, to control bleeding, to immobilise limbs and to support an injured part.

(b) Roller bandages

The roller bandage is, like the triangular bandage, a useful item in any first aider's kit. It can be used to hold pads in place, to secure dressings, to manage snake bites, to provide support to limbs and joints and to control bleeding.

Because the bandage is available in many widths, we can choose a size that best suits the need, without being too bulky.

(c) Dressings

Dressings come in various forms. Most come individually packed and sterile. When choosing a dressing, it is important to select the right one for the job and to know how to correctly open the packet without contaminating the dressing and how to apply it to the wound. Examples are:

- gauze;
- non-stick;
- combine;
- transparent, e.g. Opsite/Tegaderm.

As well as the standard items we carry in our first aid kits, we may from time to time have access to other equipment, which we can use in the management of casualties. It is important that the Operations Branch member is properly trained before using new equipment. Members should be aware that St John insurance only covers the use of materials in the standard St John first aid kits.

(d) Air splints

Air splints can be used in the management of fractures to a limb. They are very useful in the treatment of fractures of the distal (lower) limbs, e.g. lower leg, lower arm. They are not recommended for fractures of the thigh or upper arm because they cannot immobilise the joint above the fracture. Disadvantages in using air splints include:

- they may puncture and the support is lost;
- the pressure may increase in sunlight;
- they are not appropriate with altitude changes.

Precautions:

- if inflated too tightly, they can restrict the circulation in the limb;
- do not use if:
 - the skin is very cold;
 - loss of sensation is evident below the fracture;
 - circulation is impaired.

(e) Lifting frames

Lifting frames have been designed to allow the relocation of casualties while still leaving them in the position originally found. This allows the casualty to be moved from ground to stretcher, or stretcher to hospital bed. Lifting frames as the name implies are for lifting the casualty and should not be used as stretchers.

There are various forms of lifting frames :

- Scoop: This allows the casualty to be scooped by bringing either the sides together and locking them in place or in a scissor method by leaving one end attached and joining the other end. The frame can be adjusted to suit the length of most casualties.

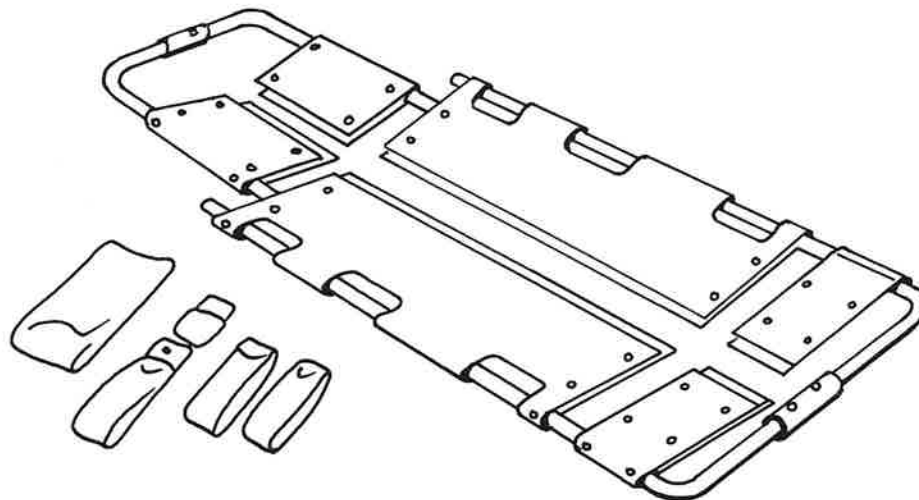


Fig. 1 The Scoop Stretcher

- Jordan: The Jordan Lifting Frame can be assembled by placing gliders under the casualty and securing them to the frame. The frame can not be extended for longer casualties and their legs may hang over the end.

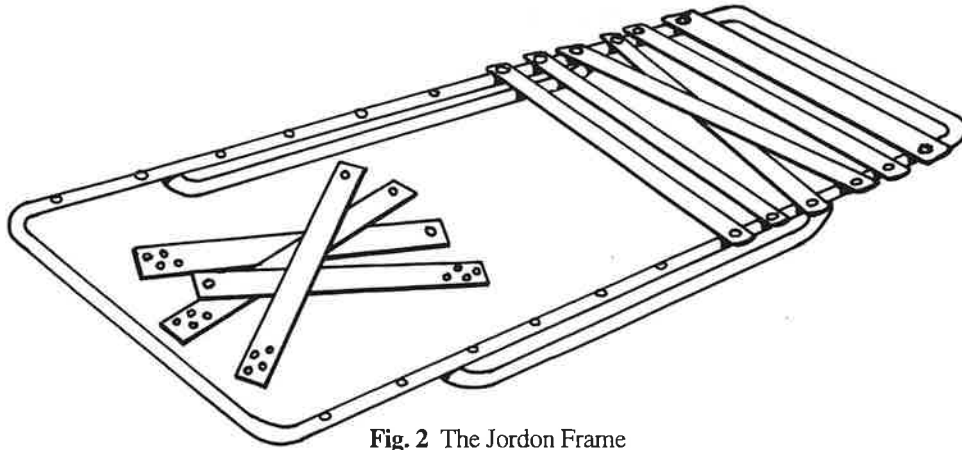


Fig. 2 The Jordon Frame

(f) Stretchers

Stretchers have been around for a long time in various forms. A stretcher is usually a cover which is attached to two poles and can be carried by either two or four persons. Before using a stretcher, we need to test that the stretcher is safe and that we are able to lift the casualty safely without injuring ourselves or the casualty.

The Furley Stretcher has a canvas cover attached to two wooden poles. This can be very heavy to carry, even without a casualty. Before using it, we must check that the canvas has not perished due to being stored while still wet or in a damp environment. If the stretcher becomes wet, it should always be left open to dry.

The PVC is a relatively new stretcher to replace the Furley. It consists of aluminium poles and a PVC cover. This is extremely light to carry and some can be folded in half both length and width ways for ease of storage. If it becomes wet, it can be wiped down without damage to the cover.

Group Exercise

You have a casualty who has an open fracture to his lower left leg and possible injury to his cervical spine.

With members working as a team, treat and then transfer this casualty from the ground to a stretcher for transport by the Ambulance Service.

Equipment available:

- dressings;
- padding;
- triangular bandages;
- splints;
- Jordon Frame;
- Scoop Stretcher;
- Ambulance stretcher.

Required skills:

- dress open fracture;
- pad legs;
- triangular bandages to immobilise, or use air splint;
- no cervical collar; therefore improvise;
- transfer casualty from ground to Jordon Frame to Ferno/PVC Stretcher;
- casualty on oxygen, if qualified to use.

5.1 Lifting A Casualty Onto A Stretcher Using A Scoop Stretcher

Checklist	Needs Improvement Date	Proficient Date
<p>Explain to the casualty what you are going to do.</p> <p>1) Position casualty.</p> <p>Casualty's arm should be placed alongside of body. Legs together.</p> <p>2) Position Scoop.</p> <p>Separate and place alongside casualty. Adjust to suit casualty by extending and lock in place. Top section in line with casualty's head.</p> <p>3) Secure Scoop.</p> <p>Position half alongside casualty. Gently place under casualty by lifting casualty's side slightly. Position other side under casualty. Secure ends together.</p> <p>4) Prepare stretcher.</p> <p>Position stretcher close to casualty.</p> <p>5) Lift casualty using the Scoop.</p> <p>Members squat at each end of Scoop. Coordinate lift. Correct lifting technique. 'Prepare to lift' - 'Lift'.</p> <p>6) Load Scoop on stretcher.</p> <p>Lower Scoop on to stretcher. Cover casualty with blanket.</p>		

5.2 Lifting A Casualty Onto A Stretcher Using A Jordon Lifting Frame

Checklist	Needs Improvement Date	Proficient Date
<p>Explain to the casualty what you are going to do.</p> <p>1) Position casualty.</p> <p>Casualty's arm should be placed alongside of body. Legs together.</p> <p>2) Position frame.</p> <p>Place frame to encircle casualty. Top lug in line with casualty's ear.</p> <p>3) Position and secure gliders.</p> <p>Position gliders alongside casualty. Large glider should be at the casualty's head. All gliders should be inserted so that the single hole is on same side. Secure gliders to frame, starting at the feet. Support head whilst securing head glider.</p> <p>4) Prepare stretcher.</p> <p>Position stretcher close to casualty.</p> <p>5) Lift casualty using the frame.</p> <p>Members squat at each end of frame. Coordinate lift. Correct lifting technique. 'Prepare to lift' - 'Lift'.</p> <p>6) Load frame on to stretcher.</p> <p>Lower frame on to stretcher. Ensure frame is correctly positioned. Cover casualty with blanket.</p>		

Skills Mastered

Satisfactory Fail Re-test

EXAMINER Please tick

5.1

5.2

Please sign and **print** name

Signed: Date / / 1996.

Name: Position:

Qualification: (Please tick where appropriate)

Doctor Registered Nurse Ambulance Officer

Training Branch Accredited Instructor:

Operations Branch Member (approved by District Surgeon):

Limb Injuries

AIM: To learn how to assess injured limbs and joints.

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

1. Describe how to systematically assess an injured limb or joint.
2. Outline specific fractures which may occur with particular modes of injury.

1. Assessment of injured limb or joint

If you remember **TOTAPS**, it will remind you of everything that needs to be done:

- **TALK** to the casualty and take a history.
- **OBSERVE** the whole casualty and the injured area.
- **TOUCH** to check for tenderness.
- **ACTIVE**: what active movement is possible?
- **PASSIVE**: what passive movement is possible?
- **SKILLS**: can the casualty use the limb?

(a) **TALK** to the casualty and listen to the history:

- How did the injury occur?
- When did it happen?
- Did you fall or trip?
- How far?
- Onto what surface?
- What part of your body hit the ground first?
- Did it hurt at once?
- How fast were you running?
- Did your limb twist in an awkward way?

(b) **OBSERVE** the whole casualty and the injured area:

- Is the casualty pale?
- Is the casualty in obvious pain?
- Is the casualty sweating?
- Is he/she moving the injured limb?
- Is the injured area:
 - > swollen?
 - > red?
 - > deformed?

Compare it to the other side if you're not sure.

- Is there a break in the skin at the injured area?
- Is the limb pale?

(c) **TOUCH**

- Touch the injured area, feeling for:
 - swelling;
 - tenderness;
 - warmth.
- Push on the nail bed to make it go white. On release, colour should return in 2 seconds. Delay means impaired circulation.
- Touch the limb **distal** to the injury (i.e. towards the fingers or toes) and check that the casualty has feeling and circulation there. **If the limb is pale, cold and numb distal to the fracture, arrange urgent medical attention.**

(d) **ACTIVE MOVEMENT**

- The first aider needs to find out what the casualty can do with the injured limb.
- Ask the casualty to perform **active** movements of the limb or the joint, starting from distal to the injured area; check the joint above the injury.
- For example, if the casualty has a painful elbow, give the casualty a series of instructions:
 - Wiggle your fingers.
 - Move your wrist.
 - Straighten your arm.
 - Bend your elbow.
 - Shrug your shoulder.

(e) **PASSIVE MOVEMENTS**

- If the casualty cannot, or is too frightened, to follow your instructions, you must move his/her muscles yourself to see if that causes pain. This is called passive movement. It must be done **very** gently. Stop as soon as the casualty shows any pain. Watch the casualty's face for signs of pain. He/she will usually grimace before saying 'it hurts'.
- For the example of an injured elbow:
 - support the elbow so the casualty is not in unnecessary pain to start with;
 - gently move the casualty's fingers;
 - gently move the wrist up and down and from side to side;
 - turn the hand over, palm up, then palm down;
 - gently straighten the elbow out and bend it up again;
 - check the shoulder by moving the whole arm forwards and backwards.

(f) **SKILLS**

It is important to know **how** the injury affects the casualty:

- Can he/she walk on the injured leg?
- Can he/she hold the steering wheel with the injured hand?

Once the TOTAPS assessment has been made, the first aider can decide on treatment.

(g) **TREATMENT**

Does the casualty simply need R.I.C.E. treatment (Rest, Ice, Compression, Elevation) or do they need to be assessed by a doctor?

These casualties must receive medical aid:

- those in severe pain;
- those who cannot use the affected limb;
- those with marked deformity of the limb or joint;

Very urgent: those with reduced circulation or loss of sensation distal to the injury.

2. Patterns of limb injury

There are certain types of falls that commonly result in a particular injury.

(a) Fall onto outstretched hand



Fig. 1 Fall onto outstretched hand

- This often results in a fracture of the wrist, especially in older people.
- Check the elbow and shoulder; they may be injured or even dislocated.
- The scaphoid bone in the wrist may be damaged in such a fall and, if so, there will be tenderness in the anatomical snuff box at the base of the thumb. A fracture of the scaphoid bone may not show up on the first x-ray and the casualty should be warned to have another x-ray if he/she is still sore after 7-10 days.

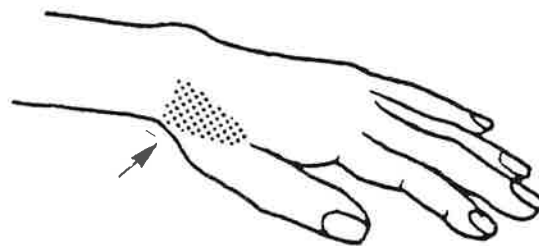


Fig. 2 Anatomical snuff box

(b) **Fractured neck of femur**

- This occurs in elderly people with frail bones.
- The leg may be typically deformed.
- In some cases, there may be no deformity and the casualty may even be able to walk on that leg.

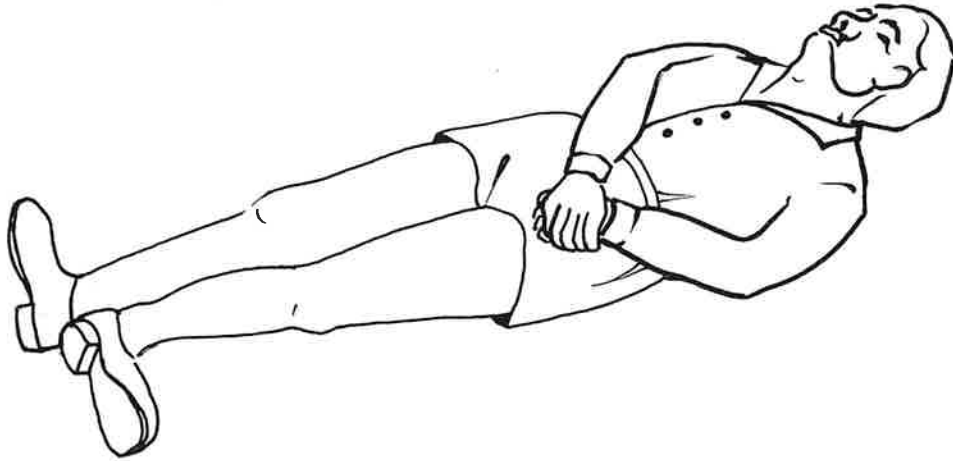


Fig. 3 This diagram shows shortening and deformity of left leg with the limb rolled outward.

(c) **Fall from a height**

A casualty who falls straight down from a height, e.g. falling down ladder, may have:

- fractured heels;
- fracture just below knees;
- fractured lumbar spine.

Neck and Spinal Injuries

**PRESCRIBED
REFERENCES:**

Australian First Aid, Vol. 1, pp. 117-121, 1989.
Australian First Aid, Vol. 2, pp. 11-12 and pp. 90-92, 1989.
Supplementary Training Material.

AIM:

To enable the Operations Branch member to revise the recognition and appropriate first aid care for spinal cord and vertebral injuries.

OBJECTIVES:

Following prescribed reading and skills maintenance programme training, members will develop a more detailed understanding of:

1. the anatomy and physiology of the spinal cord;
2. mechanisms of injuries which are significant in causing spinal cord injuries;
3. assessment of spinally injured persons;
4. their first aid management.

Members will be able to satisfactorily prepare and apply an improvised cervical collar to a casualty.

INTRODUCTION

A spinal cord injury is one of the most disabling traumatic conditions affecting individuals. Besides the physical injury, it causes immense psychological damage to the casualty, the casualty's family and friends. Adolescents and young adults are the main victims. Their lifestyle predisposes them to the types of situations, occupationally and domestically, that cause spinal cord injuries. In Australia, approximately 50 per cent of spinal cord injuries result from road traffic accidents. Diving accidents are responsible for a further 10-12 per cent. The remainder occur in the sporting, occupational and domestic environments. Alcohol has been associated with approximately 50 per cent of spinal injuries.

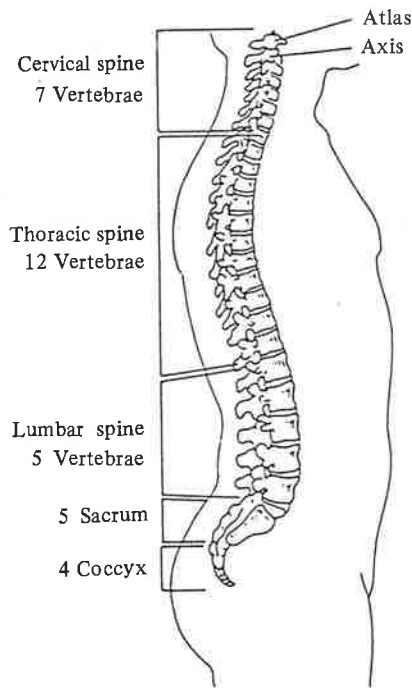


Fig. 1 The Spine

The vertebral column

The spinal column consists of a row of 33 individual bones called vertebrae which are aligned one on top of the other. The lowest four vertebrae are fused to form the coccyx (tail bones) and the five vertebrae immediately above the coccyx fuse to form the sacrum. The remainder are connected to each other by small joints formed by the bones themselves, together with ligaments and muscles which attach along the length of the vertebral column and in between the individual bones.

Each vertebra consists of a body and an arch. The body is largely weight-bearing and the arch surrounds and protects the spinal cord. A vertebral body is separated from its neighbours by an elastic disc which functions as a 'shock absorber'. The backs of the bodies and the arches of the vertebrae form a canal known as the spinal canal through which the spinal cord passes. The vertebrae and discs are attached to each other by a complex arrangement of ligaments and supported by several arrangements of muscle layers. The muscles, ligaments and discs provide stability and control movement. On each side of each vertebral arch just behind the vertebral body, the nerves to the body emerge (see Diagram 20.6 in *A.F.A.*, Vol. 2, p.12).

The spinal cord

The spinal cord can be likened to a series or collection of electrical cables in which nervous impulses are transmitted in cables from the body to the brain and vice versa. These impulses either continue to be transmitted uninterrupted in their cables or are tapped by 'modulating mechanisms' or 'electrical sub-stations' and directed out to the body in order to cause or change a function. Sensory impulses are also received by each 'sub-station' and transmitted up the spinal cord to the brain for interpretation. The transmission cables from the cord to the body are called nerves and transmit impulses both ways.

The nerves described above carry motor, sensory and autonomic messages from the spinal cord to the extremities and vice versa. *Motor* nerves cause movements by initiating muscular contraction. *Sensory* nerves transmit sensations such as pain, temperature and touch from the extremities to the spinal cord. Special *autonomic* nerves modify the intensity of autonomic (or automatic) functions such as heart beat, sweating, respiration and digestion, depending upon the needs of the body at any time.

Simply, impulses from the brain transmit commands to muscles and organs. Sensory impulses from the periphery transmit information to the brain on touch, temperature, pain and position of limbs.

Bony (vertebral) injury

The types of injury that result in spinal cord damage are:

- fractures;
- dislocations;
- subluxations (partial dislocations);
- or combinations of the above.

These can be classified as stable and unstable. However, proper x-ray evaluation is required for classification and is beyond the capability of a first aider at the scene of an incident. All suspected injuries to the spine must be considered to be unstable, likely to slip and cause more damage.

Spinal cord injury

Following an injury which causes impaired spinal cord function, a wide spectrum of damage from minor bruising or swelling to total division of the spinal cord may result. However, it is impossible to predict the quantity and permanency of cord damage from the signs at the time of the accident. The fact that a person has no feeling and no movement does not mean that the cord is necessarily torn and will not recover. Therefore, all casualties with spinal cord signs must be treated as though the injury could recover. In addition, twisting or bending an injured spinal column may increase the cord damage caused at the time of the initial injury, or cause damage to a cord which was not initially damaged.

An injury to the spinal cord will produce the following signs below the injured level:

- total or partial muscular weakness or paralysis;
- lost or altered sensation;
- altered autonomic control.

Quadriplegia/tetraplegia

Quadriplegia is produced by a neck injury. It involves paralysis of the upper limbs, lower limbs and trunk muscles. Some of the muscles of respiration may be affected to varying degrees.

Paraplegia

Paraplegia is paralysis involving the lower limbs and some or all of the trunk muscles. It is the result of an injury involving any part of the vertebral column below the neck.

Causes of spinal cord injury

More specifically, the situations which most likely result in spinal cord injuries are:

- casualties falling from a height greater than 5 to 6 metres;
- a direct blow to the spine including penetrating injury such as gun shot or knife wounds;
- jackknifing;
- diving or surfing accidents;
- vehicle (car, plane, farming equipment, boats etc.) occupants involved in high speed accidents, e.g. impact speed more than 60 k.p.h. with or without major damage to vehicle;
- sudden acceleration or deceleration injuries, e.g. a blow to the forehead of a competitor running past during a sporting event;
- where a person becomes a projectile, e.g. a person knocked off a bicycle and propelled a distance or ejected from a vehicle or from a motor cycle;
- pedestrians hit by vehicles travelling at more than 30 k.p.h.;
- casualties in a vehicle which has rolled over following an accident;
- casualties in a vehicle where there is a death of another occupant of that vehicle;

- casualty hit by a falling object from a height greater than 5 to 6 metres;
- victims of explosions;
- the injured casualty who is trapped and is likely to remain so for more than 30 minutes.

Spinal cord injury must be considered in all persons with severe head injuries or where an incident has resulted in the death of another victim.

ASSESSMENT OF THE INJURED PERSON

History

The casualty and observers must be questioned as to what happened. Also ask about the mechanism and magnitude of the forces involved. The first aider must appreciate and recognise the various types of situations that potentially cause spinal cord injuries.

Presenting features

1. The conscious victim.

Symptoms:

- Pain at or below the level of the injury.
- Absent or altered sensation below the injury, e.g. pins and needles.
- Absent muscular power or weakness below the injury.

Signs of bony injury:

- Tenderness over the injured area of the spinal column.
- Deformity of the spine is relatively uncommon and should not be looked for if it cannot easily be felt when assessing the tender area.
- External swelling is usually minimal or absent at the time of the injury. Its absence does not exclude significant bony injury.

Signs of cord injury

Motor:

- Reduced or absent muscle power, on asking the casualty to move upper and/or lower limbs.
- A poor cough may indicate weak chest and abdominal wall muscles. In neck and upper thoracic spine injuries, paradoxical movement of the chest wall will be present. Paradoxical breathing occurs when, instead of the chest expanding on inspiration, it moves inward and the reverse occurs as the casualty breathes out.

Sensory:

- Altered or absent sensation below the injury. Remember that a neck injury affects the upper limbs.
- Compare limbs and trunk sensation with that of the face. Sensation on the face will not be affected by spinal cord injuries and remains normal.

Autonomic:

- The usual signs of shock (as haemorrhage) may be absent as the nervous impulses that would produce these signs are interrupted. In neck and upper thoracic injuries, the exact opposite happens:
 - The pulse rate may be slow.
 - The pulse strength is either weak or near normal.
 - The skin remains dry but warmth and colour are variable. This is because blood vessels lose their ability to constrict as their nerve supply is not functioning.
 - A male casualty may have an erection as the penile blood vessels fill with blood

- because of the dilation of these blood vessels.
- Breathing may increase in rate but its depth is commonly reduced owing to muscular weakness of the abdominal and chest wall muscles. Paradoxical breathing will be present. Cough will be poor.
 - Following injury, the stomach and intestine will stop absorbing its content. Thus there is a potential hazard of the victim quietly regurgitating whilst lying flat on the back and obstructing the airway with or inhaling vomitus.
 - The victim will be unable to evacuate or empty the bladder and bowel owing to paralysis of those muscles. This leads to retention of urine and the bladder may be palpable like a tennis ball in the midline lower abdomen.

2. *The unconscious victim*

Spinal cord injuries need to be suspected in all persons unconscious as a result of an injury. It is unlikely that a first aider, who is not skilled in assessing spinal cord injuries, will be able to confidently diagnose such an injury in an unconscious casualty. But that does not matter. The approach is that of an unconscious casualty. Whether that victim has a spinal cord injury or not does not matter until the dangers and life threatening problems have been assessed and treated. Thus, the unconscious and spontaneously breathing casualty will be on his/her side at the time of examination for other injuries, with control of the head to ensure stability in a neutral position as the casualty is turned.

Signs

The signs which may assist in making a diagnosis of a spinal cord injury in the unconscious victim could be some or all of the following:

- a paraplegic will have loss of muscular tone in the lower limbs (floppy limbs) where upper limb tone is present;
- a quadriplegic may have no response to painful stimuli in the upper limbs, lower limbs or trunk when a grimace is noted on testing for painful stimulus on the face;
- dry skin in the presence of a slow, either weak or normal strength, pulse;
- paradoxical breathing;
- the presence of an erection in the male.

Internal haemorrhage

This must be suspected in all casualties who have suffered a spinal cord injury. The usual signs of blood loss do not occur in high spinal injury above the upper thorax.

Management of spinal cord injury

If the casualty is unconscious at the time of initial assessment, follow the D.R.A.B.C. rule and place the victim in the stable side position, in the usual manner, always remembering the potential for spinal cord injury. Then continue the examination of the casualty on the side. If **immediately** available, apply a cervical collar prior to rolling.

If the casualty is conscious:

- Reassure.
- Loosen tight clothing and ensure no hard objects are in pockets or underneath the casualty, to prevent pressure sores in areas now lacking normal sensation.
- Assessment should be brief and simple:
 - Can the casualty feel one or more of the limbs? Sensory loss may be incomplete or involve only one side of the body.
 - Can the casualty feel some, or all, of the trunk?
 - If not, where does it change?
 - Ask the casualty to shrug the shoulders, flex the elbow, move the fingers and make a fist.

- Ask the casualty to flex the hip, bend and straighten the knee and bend the foot up and push it down again at the ankle.
- Do not move the casualty unless this is essential because of danger. If essential, avoid bending (flexing) the spine; drag by feet or under the armpits.
- Unless circumstances make it necessary, leave lifting, loading and transportation to a qualified person, such as an ambulance officer. It is preferable that the casualty be transferred on to a stretcher using a lifting frame (see *A.F.A.*, Vol. 2, Ch. 27, pp. 90-91).
- Support the head and neck by hand until other support can be arranged; this is especially important if the casualty is found in a sitting position when trapped in a motor car.
- Apply a cervical collar if available; otherwise use a folded towel, newspaper or a bulky dressing around the neck, or place sandbags either side of the head.

If a previously conscious casualty becomes unconscious, the main problem is the airway and the victim must be placed in the stable side position. It is advisable, where possible, to apply an improvised collar prior to rolling.

Diving accidents

When a diving accident has occurred:

- Support the head and neck.
- Use a flotation or surf board if handy to support the casualty prior to removing from water.
- Leave the casualty on the board until a doctor or other qualified person has examined him/her and decided what to do.

A damaged cord may sustain further injury through improper handling. A partially severed cord may be completely cut. An undamaged cord may be injured. Consider every head injury as having a neck injury until proven otherwise.

Life threatening injuries always take precedence over possible spinal injuries.

The usual signs of shock may be obscured in the presence of a spinal cord injury. Always suspect and look for other injuries.

Prolonged or detailed evaluation of a cord injury is inappropriate outside hospital, and is certainly not a first aid measure.

JORDON OR DONWAY LIFTING FRAMES (*A.F.A.*, Vol. 2, pp. 90-91)

A rigid frame with plastic gliders, the Jordon Frame can be used to lift an injured person with little or no disturbance or movement of the injuries. This type of device is particularly useful for a casualty with suspected spinal injury or other major injury if the frame can be placed around an accessible casualty.

The frame is placed around the casualty. There are a number of prongs along the length of the frame and holes in each end of each glider (also known as 'slats'). The plastic gliders are slid underneath the casualty. This is done without altering the casualty's original position. Each end of each glider snaps onto the prongs of the frame. The position and tension of each slat can be adjusted individually against the casualty's body. The frame can then be lifted so that a stretcher can be placed beneath it or it can be lifted and carried a very short distance to an awaiting prepared stretcher.

It must be stressed that lifting frames are not stretchers and do not replace them. The design of the frame allows hand position to be comfortable during lifting but not for carrying. The slats can dislodge and the surface is slippery.

If no stretcher is available, the casualty must be secured to the frame as in a normal stretcher to prevent the limbs moving or the casualty slipping off.

THE SCOOP STRETCHER (See the skill sheet in Module 5)

The Scoop Stretcher enables a casualty to be gently scooped onto the stretcher by a scissors leverage action. The casualty can be moved in the position found, so minimising the possibility of complicating injuries. The stretcher is adjustable to the casualty's physique.

It can be lifted and carried by two or more first aiders and can be manoeuvred through a narrow passage way, door or staircase. In all circumstances, care should be taken to strap the casualty to the stretcher. A special velcro strap pillow should be used for immobilising the head and neck.

Warning:

- avoid pressure on localised areas;
- use padding;
- remove coins, keys etc. from the casualty's pockets;
- sandbags or similar padding may be used to maintain the head in a neutral position;
- with the casualty on the back and the head supported by a pillow, monitor the airway closely;
- if the casualty is heavy, lift the stretcher from the sides.

The stretcher is a lifting device which should be removed when the casualty is placed on a standard stretcher, trolley or bed. Scoop Stretchers should only be used to transport casualties a very short distance.

PREPARE AND APPLY AN IMPROVISED CERVICAL COLLAR TO A CASUALTY

1. Making an improvised cervical collar

The function of a cervical collar is to support and minimise movement of the neck. It avoids further injury. A cervical collar should always be used whenever there is the possibility of injury to the cervical spine. It reminds the first aider of a possible spinal cord injury but still means the head and neck must be held and stabilised when moving the casualty.

2. Preparing a collar

- Use something firm for the core of the collar, e.g. folded newspaper or cardboard.
- Wrap the core material in something absorbent and/or soft, e.g. towel.
- Ensure that collar is the correct size before beginning application in order to prevent excessive flexion or extension of the neck:
 - the correct width from under the chin and jaw to the sternal notch with head in a neutral position, i.e. neither extended nor flexed;
 - the correct length to encircle neck.

If you do not have anything from which to make the core, it is best to fold an article of clothing or linen to the correct size. It should be firm but not rigid. Alternatively, place a sand bag, padded brick or rock each side of the head to prevent movement.

7.1 Prepare And Apply An Improvised Cervical Collar To A Casualty

Checklist	Needs Improvement Date	Proficient Date
<p>Check D.R.A.B.C.</p> <p>Prepare cervical collar. Important: Without a firm core there is added possibility of pressure on the trachea.</p> <p>Inform casualty of procedure.</p> <p>Remove obstructing neckware (ties, jewellery).</p> <p>Support the head and neck from behind if possible (using a second person when available).</p> <p>Mould collar firmly around neck.</p> <p>Tie collar into place with string, bandage etc.</p> <p>Check there is no pressure on the airway and that it is providing firm support.</p> <p>Check collar is firm enough to provide support and stability.</p> <p>Ask the casualty if comfortable (to ensure effectiveness and adequate support; some discomfort is inevitable).</p> <p>Re-check A.B.C.</p>		

LESSON OUTLINE FOR SPINAL INJURIES

Introduction

- | | |
|------------------------------|--|
| The vertebral column | - Basic anatomy. |
| The spinal cord | - Basic normal physiology. |
| Vertebral injury | - A brief discussion. |
| Spinal cord injury | - Brief explanation of pathophysiology. |
| Definitions | - Quadriplegia. |
| | - Paraplegia. |
| Causes of spinal cord injury | - Motor vehicle and motor cycle accidents. |
| | - Diving into shallow water and hitting submerged objects. |
| | - Dumped by surf. |
| | - Falls onto head, buttock or feet. |
| | - Direct injury to spine by knife wounds, gunshot or bullet. |
| | - Explosion in confined space. |
| | - Falls from a height greater than 6 metres (20 feet). |
| | - Sporting accidents where the victim has been a projectile. |

Assessment of the injured victim

History - symptoms and signs.

- (a) The conscious victim.
 - Vertebral injury.
 - Cord injury
 - Motor;
 - Sensory;
 - Autonomic effects.
- (b) The unconscious victim.

Management of spinal cord injury

- (a) The conscious victim.
- (b) The unconscious victim.
- (c) The victim that becomes unconscious.

Lifting frames

Skills maintenance

- (a) Using lifting frames.
- (b) Creating an improvised collar.
- (c) Semi-rigid collar.

<i>Skills Mastered</i>		Satisfactory	Fail	Re-test
EXAMINER Please tick	7.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Please sign and print name				
Signed:		Date / / 1996.		
Name:		Position:		
Qualification: (Please tick where appropriate)				
Doctor	Registered Nurse	Ambulance Officer		
Training Branch Accredited Instructor:				
Operations Branch Member (approved by District Surgeon):				

Chest Injuries and Respiratory Distress

REFERENCES: *Australian First Aid*, Vol. 1, Chapters 12 and 14.
Supplementary Training Notes.

AIMS:

1. To enable the St John member to recognise and administer appropriate first aid for chest injuries.
2. To enable the St John member to recognise and administer appropriate first aid for respiratory distress.

OBJECTIVES:

1. Demonstrate the management of fractured ribs.
2. Demonstrate the management of a penetrating chest wound.
3. Demonstrate an understanding of the mechanism of injury in chest trauma.
4. Explain the common type of chest injuries.
5. Give an account of the approach to a patient with chest trauma.
6. Name the causes of respiratory distress.
7. Outline the signs and symptoms of respiratory distress.

Chest Injuries

THE CHEST WALL

The chest wall has 3 main functions:

- involved in the mechanics of breathing;
- to provide protection to underlying structures such as the heart and great vessels, lungs and bronchial tree, upper part of the liver, the spleen and other organs located in the upper abdomen;
- attachments for muscles of the back, abdomen and upper limbs.

MECHANISM OF INJURY IN CHEST INJURIES

There are two main causes of chest trauma, blunt and penetrating injury. Blunt trauma accounts for a large proportion of injuries first aiders see.

Blunt trauma

Blunt trauma is more common. The chest wall is relatively pliable. It can tolerate moderate force with little or no exterior damage. Impact with an immobile object such as a steering wheel of a car will cause damage to the chest wall and transmit the force to the underlying structures to cause serious injury.

Common causes of blunt chest injuries:

- direct blows as in a kick or by being struck by an object;
- falls;
- crush injuries;
- blast wave from explosions.

Penetrating trauma

Penetrating wounds to the chest are due to knives, bullets and other missiles.

Damage from knives may only involve a single structure such as the lung but this can be dependent on such factors as the length of the knife, the angle of the stab and the movement of the knife whilst in place. When a person is stabbed in the lower chest with a downward motion, the knife may transect the liver, pancreas, stomach, diaphragm, lungs or the heart.

Damage from high velocity missiles such as bullets can cause massive tissue destruction. The entry wound may be quite small.

Common types of chest injuries

Any injury to the chest wall should be considered to be serious due to the proximity of underlying structures and the potential for damage.

- Soft tissue injury

Bruises and muscle strains from falls and collisions, as seen in sport injuries, are common, painful but rarely serious.

- Fractured ribs

Rib fractures are painful and frequently cause complications such as pneumonia and lung collapse, especially when the casualty is not breathing adequately to keep the lungs inflated.

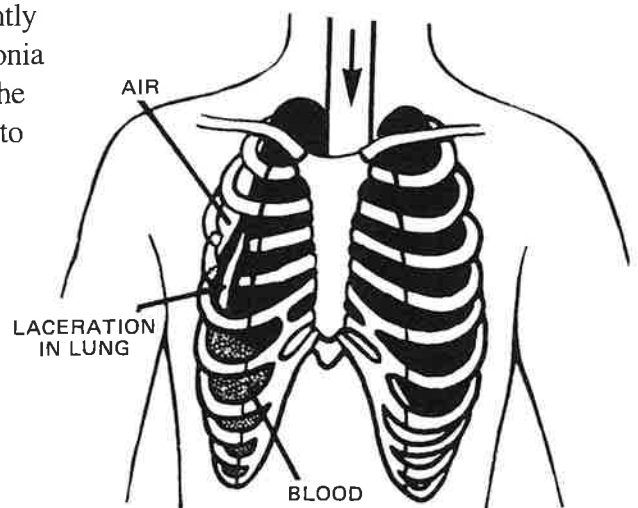


Fig. 1 Fractured ribs with lung damage

- Flail chest
A flail chest is where one or more ribs are fractured in two or more places. This is commonly seen in the motor vehicle accident where the chest strikes the steering wheel.

Paradoxical movement of the flail segment occurs. On inspiration, the flail segment is sucked in and on expiration it is pushed out. Serious complications are common with a flail chest.

A flail chest can exist without paradoxical movement when the loose segment is stabilised by surrounding muscle spasm.

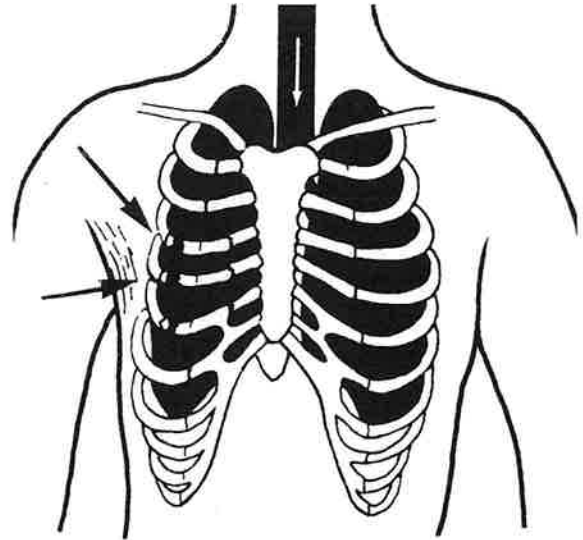


Fig. 2 Flail Chest

- Fractured sternum

This is a relatively uncommon injury as a great deal of force is required to fracture the sternum. The mechanism of injury is usually a direct blow. Complications such as bruising to the heart and lungs can occur.

- Clavicle fracture

Although not normally considered part of the thorax, the clavicle provides protection for structures leaving the thorax, such as major blood vessels to the neck and arms. Fractures of the clavicle may result in damage to major blood vessels such as the subclavian artery or vein (but it is rare). Always check the circulation in upper limbs.

Injuries to the lung and pleura

- Pneumothorax

A pneumothorax is a condition in which there is air around the lung. Loss of negative pressure causes the lung to collapse. The pneumothorax may result from a hole in the chest wall or a tear in the lung. The air may be under great tension when there is a flap in a lung wound which allows escape of air into the space around the lung, but not back out again during expiration. Such increase in pressure may deviate (push) the heart and compress the lung towards the other side.

- Haemothorax

A haemothorax is where bleeding into the chest cavity occurs. It may be due to a penetrating injury to the chest or from damage to the lung tissue or a blood vessel within the chest as a result of a fractured rib.

- Haemo-pneumothorax

There is both air and blood in the chest cavity.

- Pulmonary contusion

Pulmonary contusion is bruising of the lung. It follows blunt trauma. It usually develops over one to four hours. Blood leaks into the lung tissue causing a bruise or contusion. It is often associated with multiple rib fractures or chest compression.

Injuries to other structures

- Cardiac tamponade (constriction)

The heart is surrounded by a sac, the pericardium. This sac contains a small amount of lubricating fluid. Where there is damage to the heart, usually from a penetrating wound, blood accumulates causing pressure on the heart and decreasing its ability to pump. There is decreased output from the heart and a failing circulation.

- Great vessel injury

Within the thorax, there are large blood vessels. These vessels take blood to and from the heart and lungs. The most common injury seen is tearing of the arch of the aorta, the largest artery in the body. This can occur where there is sudden deceleration of the body. The heart which is suspended from the aorta, moves forward suddenly and twists, and the aortic arch tears. In most casualties death ensues within minutes, but in a small number of casualties, only a leak occurs and a blood clot builds up, preventing sudden death. This is an emergency which can only be adequately diagnosed and treated in a hospital.

- Bronchial injury

A serious injury where one of the bronchi is torn. It can result from either blunt or penetrating trauma. The casualty may present with coughing up blood, surgical emphysema (air under the skin), felt as a crackly sensation especially around the neck, and a pneumothorax.

General symptoms and signs of chest injuries

Symptoms

- Pain at injury site; pain usually worse with breathing and with movement.
- Difficulty breathing.
- Apprehension.
- Coughing blood.

Signs

One or several of the following depending on the severity of the injury:

- Bruising to the chest wall.
- Abnormal breathing pattern:
 - rapid, shallow respirations;
 - shortness of breath;
 - abnormal chest wall movements during breathing.

In flail chest, there may be a paradoxical motion of the chest wall. On inspiration,

the chest wall is sucked in and on expiration the chest wall bulges out:

- Cyanosis (blueness of the skin) especially around the face, lips, and limbs.
In great vessel injury and cardiac tamponade, there may be cyanosis to the upper chest, neck and face.
- Rapid weak pulse.
- Deviation of the larynx and trachea from the midline.
- Distension of the neck veins is seen with cardiac tamponade, because blood cannot get back into the heart as efficiently and backs up into the circulation.
- Pale, cool and clammy skin.
- Coughing up bright red frothy blood.
- Falling blood pressure.
- Bubbling or sucking noises associated with breathing.
Seen with a penetrating injury to the chest where air is sucked into the chest via the hole in the chest wall.
- Surgical emphysema.

Management of chest injuries

Follow the St John Action Plan when managing any casualty:

D - CHECK FOR DANGERS

R - Determine level of consciousness. Provide support and reassurance.

A - Check, clear and open the airway. Ensure the airway remains patent (open and clear).

B - Check breathing.
Assist with breathing as required.
Note the type of breathing.

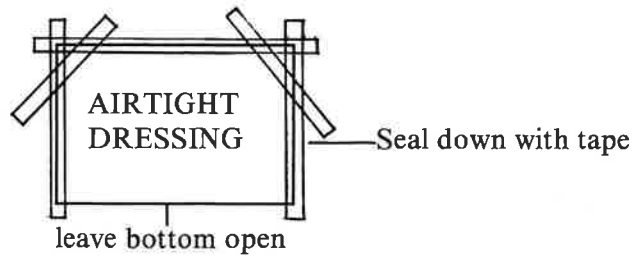
C - Check pulse. Support circulation with C.P.R. as necessary.
Note rate, strength and rhythm of pulse and document.
Control any external bleeding.

Place in a stable side position if unconscious and monitor A.B.C. after one minute, then every two minutes thereafter.

General principles of management

- Administer high flow oxygen via a mask if trained to use oxygen. (At least 8 litres/minute of oxygen by mask)
- Examine the chest wall for signs of injury. Look for:
 - signs of injury, e.g. bruising, swelling and deformity;
 - abnormal chest wall movements;

- penetrating wounds; look for any exit wound (it may be necessary to turn a casualty who has had a gunshot wound to look for an exit wound).
- Seal sucking chest wounds
 - immediately seal with your hand or the casualty's hand until an airtight dressing is available;
 - suitable items for an airtight dressing include plastic or aluminium foil;
 - seal three sides of the dressing only; this allows the dressing to act as a one way valve; air can escape but not to enter, therefore preventing a pneumothorax from getting worse.



(this acts as a one-way valve, allowing air to escape from the chest cavity but not to enter)

Fig. 3 Management of open sucking wound

- Do not remove impaled objects. Pad and support the impaled object to prevent injury and to relieve discomfort.
- If possible, place the casualty in the semi-sitting position, leaning towards the injured side. Allow the casualty to find the most comfortable position.
If unconscious, position in a stable side position with the injured side downwards.
- Complete the secondary survey looking for further injuries.
- Manage any other injuries that may be present.
- Treat for shock (if present).
- Monitor casualty's condition regularly and document:
 - respirations - rate, rhythm and depth;
 - pulse - rate, rhythm and strength;
 - blood pressure (if qualified to measure);
 - level of consciousness;
 - pupillary reaction.

CHEST INJURIES REQUIRE URGENT MEDICAL TREATMENT AND THEREFORE SHOULD BE TRANSPORTED TO HOSPITAL BY AMBULANCE AS SOON AS POSSIBLE.

8.1 Management Of Fractured Ribs

Checklist	Needs Improvement Date	Proficient Date
<p>Check D.R.A.B.C.</p> <p>Calmly reassure casualty.</p> <p>Take a history:</p> <ul style="list-style-type: none"> - What happened? - How did it happen? - When did it happen? <p>Identify painful left upper ribs.</p> <p>Position casualty semi-sitting, leaning towards left side.</p> <p>Administer oxygen (if available and trained to do so).</p> <p>Place soft padding over injured area.</p> <p>Position arm across chest to hold padding in place.</p> <p>Secure the arm to the injured side of the chest using a broad bandage.</p> <p>Tie off on the uninjured side using a broad bandage.</p> <p>Place a pad under the knot.</p> <p>Apply a St John sling to the arm on the injured side.</p> <p>Evaluate effectiveness of bandage:</p> <ul style="list-style-type: none"> - casualty comfortable; - breathing not restricted. <p>Take vital signs (pulse, respirations, level of consciousness). Record.</p> <p>Perform secondary survey.</p> <p>Document findings on Casualty Report Form.</p> <p>Record observations at regular intervals.</p> <p>Transfer to medical aid.</p>		

8.2 Management Of Penetrating Wound To Chest

Checklist	Needs Improvement Date	Proficient Date
<p>Check D.R.A.B.C.</p> <p>Calmly reassure casualty.</p> <p>Take a history:</p> <ul style="list-style-type: none"> - What happened? - How did it happen? - When did it happen? <p>Take vital signs (pulse, respirations, level of consciousness). Record.</p> <p>Identify penetrating wound to right upper chest wall.</p> <p>Place gloved hand over wound in chest wall as temporary measure to seal.</p> <p>Administer oxygen (if available and trained to do so).</p> <p>Position casualty semi-sitting, leaning towards left side.</p> <p>Place an occlusive dressing over the wound:</p> <ul style="list-style-type: none"> - tape three sides of the dressing. <p>Evaluate effectiveness of treatment:</p> <ul style="list-style-type: none"> - casualty comfortable; - breathing not worsening. <p>Perform secondary survey.</p> <p>Document findings on Casualty Report Form.</p> <p>Record observations at regular intervals.</p> <p>Transfer to medical aid.</p>		

Respiratory Distress

What is respiratory distress?

Shortness of breath or difficulty in breathing. Respiratory distress is a symptom which may be due to a number of complaints. It can be sudden (acute) in onset or long term as in asthma or chronic as in emphysema.

History

An accurate history is vital. The history should focus on the presenting complaint and its duration. Pre-existing medical conditions, allergies and current medication are also important.

Common causes of respiratory distress:

- Airway obstructions:
 - foreign bodies;
 - allergic reaction causing swelling of the throat, e.g. bee sting;
 - infections of the throat are very common in children, e.g. croup or epiglottitis (inflammation of epiglottis).

- Lung conditions:
 - asthma;
 - Chronic Obstructive Airways Disease (C.O.A.D.);
 - pneumonia.

- Injuries:
 - chest injuries;
 - damage to the upper airway as seen in hanging and strangulation.

- Other causes:
 - overbreathing;
 - heart attack;
 - heart failure with pulmonary oedema (fluids on the lungs);
 - snake bite;
 - poisoning;
 - drug overdose;
 - stress, excitement or anxiety
 - diabetes (hypoglycaemia and hyperglycaemia);
 - immersion or near drowning.

Symptoms and signs of respiratory distress

Respiratory distress is characterised by shortness of breath .

Symptoms:

- air hunger;
- choking feeling;
- feeling of being unable to get air in;
- chest tightness;
- feels wheezy;
- cough;
- dizziness;
- pins and needles in hands and feet and around mouth.

Signs:

- increased respiratory rate;
- noisy breathing:
 - audible wheeze on inspiration, expiration or both;
 - stridor (noisy breathing) usually on inspiration.
- laboured breathing:
 - use of accessory muscles, e.g. abdominal breathing and use of neck muscles;
 - sucking in of sternum and spaces between ribs in children;
 - flaring of nostrils and grunting noises in infants.
- difficulty in speaking; each word is interrupted with a breath;
- shallow breathing where there may be chest injury;
- increased pulse rate;
- anxiety, confusion and restlessness;
- evidence of chest injury;
- cyanosis around lips and in extremities;
- decrease in level of consciousness (late sign).

Follow the St John Action Plan when managing any casualty with breathing problems:

D Danger.

The cause of respiratory distress may be harmful to you as well, e.g. smoke, poison gas.

R Determine the conscious state of the casualty.**A Check, clear and ensure airway is open.****B Ensure casualty is breathing:**

- assess the type of respirations, their rate, rhythm and depth.

C Check the pulse. Assess the rate, rhythm and strength.

- Administer oxygen if available and trained to use it.
 - Mask (8 l/min);
 - Nasal Prongs (3 l/min) are not effective if person is mouth breathing. Where there is a history of respiratory distress in a casualty who is ill or injured and has a past history of Chronic Obstructive Airways Disease, the oxygen should be given at the usual rate. If a casualty is distressed from lack of oxygen, he/she will require extra oxygen. Insufficient oxygen may increase exhaustion and lead to respiratory failure.
- Rest and reassure the casualty.
- Sit the casualty up (or as high as he/she can manage) if fully conscious. Allow casualty to assume the position of maximum comfort and ease in breathing. They often know best.
- Manage the cause:
 - apply ice packs to the throat where there is swelling from a bite or sting or allergic reaction to a substance;
 - assist with administration of own medication, e.g. Ventolin or follow Operations Branch protocols in your State;
 - manage any injuries to the chest;
 - manage other problems as per recommended policies and protocols.

Overbreathing

Overbreathing is not a lung condition and can be difficult to diagnose. It may occur as a result of a stressful situation, e.g. at pop concerts. The symptoms and signs are:

- rapid respiration, often sighing which 'blows' off excess carbon dioxide and alters the blood chemistry so that the casualty complains of pins and needles in hands, feet and around mouth;
- cramps or spasms in the hands and feet, if prolonged.

The treatment is firm reassurance and advice to the casualty to breathe in and out slowly, to restore correct blood gas levels.

Skills Mastered

Satisfactory Fail Re-test

EXAMINER Please tick

8.1

8.2

Please sign and **print** name

Signed: Date / / 1996.

Name: Position:

Qualification: (Please tick where appropriate)

Doctor Registered Nurse Ambulance Officer

Training Branch Accredited Instructor:

Operations Branch Member (approved by District Surgeon):

The Acute Abdomen

OBJECTIVES:

- On completion of the training session, the student will:
- demonstrate an understanding of normal abdominal anatomy;
 - list the questions to be asked of the casualty with abdominal pain;
 - list the signs and symptoms of abdominal distress;
 - explain the management of acute abdominal pain;
 - demonstrate the management of protruding bowel.

Anatomy Review

The abdominal cavity contains many important structures that have the potential to become diseased or injured.

For practical purposes, we divide the abdominal cavity into four quadrants viz:

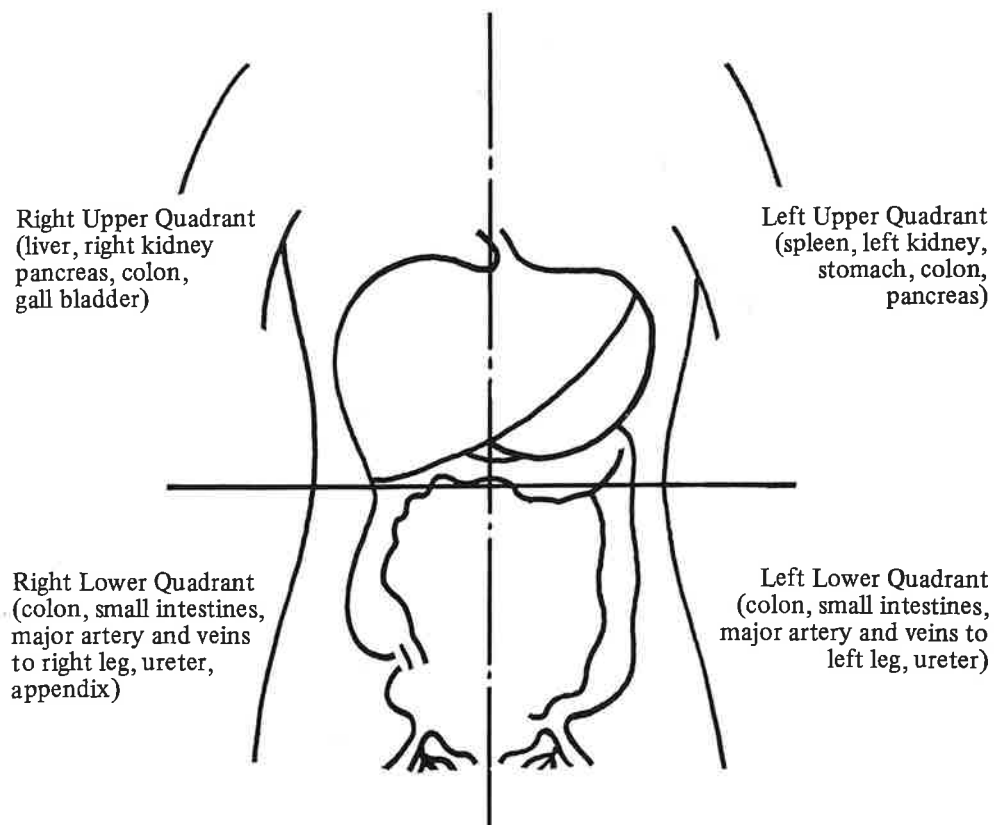


Fig. 1

The rear of the abdominal cavity is protected by the strong muscles of the back and loins. The front surface is less well protected, being covered by muscles, fat and skin.

The organs of the abdominal cavity, except the kidneys, are encased in a double-walled membrane called peritoneum. Like the similar membranes of the lungs (pleura) and heart (pericardium), the peritoneum is lubricated by a clear fluid (peritoneal fluid).

Most of the abdominal cavity is occupied by the large and small bowels. Significantly, both bowel systems contain various chemicals and juices, used in the digestion of food, that can cause severe inflammation of the peritoneum if the bowel is punctured or burst and leaks.

Abdominal pain

Pain is the most common condition that brings the abdominal cavity to our attention as first aiders.

Pain varies in intensity, duration and location. By itself, it may not tell us what is specifically wrong with the casualty, so it should be put in the context of 'the big picture'.

Ask the casualty about the pain:

- When did it start?
- Where is it?
- How would you describe it? Is it sharp or dull?
Is it there all the time or does it come and go?
- Have you had this before?
- How severe is it?

Relate it to bowel and bladder functions.

Ask the casualty about any other symptoms:

- nausea;
- vomiting;
- diarrhoea;
- sweating;
- discomfort with urination.

Ask yourself: How does the casualty look:

- pale?
- clammy?
- flushed?
- weak?
- distressed?

Ask the patient about any changes in eating or bowel habits recently.

Discreetly ask the female casualty if her period is due or if she may be pregnant. Does she have a previous gynaecological history?

Observe the casualty for any obvious trauma or injury.

Ask the casualty to point to the pain and note how they do this. Are they able to isolate the pain to a particular point using a finger, or do they use a sweeping motion of the hand? Pain originating from an organ is usually well localised, whereas the pain of gastroenteritis is usually widespread.

Take a full set of vital signs, including temperature, and record them.

Carefully document your observations and the casualty's responses to the above questions. Your careful history taking and observation, well documented, will build a clear picture of the casualty that may greatly assist other health workers later on.

Management of acute abdominal pain

The basic rules of casualty management always apply first, despite how the casualty may present:

- D - Dangers;
- R - Response;
- A - Airway;
- B - Breathing;
- C - Circulation.

Manage these as you would in any other first aid situation.

If you find an obvious injury, such as a wound, treat the wound appropriately.

Cover bowel or other protruding organs with a clean, damp non-stick dressing. Then cover with plastic food wrap.

Assist the casualty to a position of comfort, usually semi-reclining. A rolled blanket or pillow under the knees may ease the pain.

Do not give the casualty anything by mouth until medical advice is received.

REMEMBER: The patient with severe abdominal pain who **LOOKS SICK IS SICK** and requires urgent disposal to medical aid, preferably by ambulance.

Facial Injuries

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

OBJECTIVE: At the conclusion of this exercise the member will be able to manage an unconscious casualty with a fractured lower jaw.

FACIAL INJURIES

The skull consists of 22 bones and rests on the upper end of the vertebral column.

The skull is composed of:

- the 8 cranial bones which enclose the brain;
- and 14 facial bones including the lower jaw (mandible).

When injury or fractures occur to these regions they are termed facio-maxillary injuries.

The major hazards associated with facio-maxillary injuries are:

- obstruction of the airway and respiratory problems;
- absent cough reflex;
- haemorrhage which may be uncontrollable.

Nose bleed (Also termed as “epistaxis”)

The cause may be from excessive blowing of the nose, a direct blow resulting from a head injury or nasal surgery and can be associated with hypertension. This may also have resulted from a fractured base of skull. Fractures to the nasal bone may also be present. Your initial history must be thorough.

Management

Wear gloves.

Instruct casualty not to blow his/her nose, and to breathe through the mouth.

Sit the casualty upright with the head slightly forward.

Instruct the casualty to apply finger and thumb pressure on the soft part of the nostrils for a period of 10 minutes by the clock.

Take base line (first set of) observations.

Loosen tight clothing around neck, chest and waist.

Place cold, wet towels over neck and forehead.

If haemorrhage continues after 10 minutes, record vital signs, i.e.:

- conscious state;
- heart rate;
- respiratory rate;
- skin, colour temperature and moistness;
- and capillary refilling in the nail beds.

Assess blood loss if haemorrhage continues after 10 minutes.

Arrange transport to medical aid.

Haemorrhage from the ear

Obtain a thorough history of the event. This injury may indicate a fractured base of skull.

Remember, if you suspect a head injury, then suspect a spinal injury. The two should always go together.

Management:

If casualty has been involved in a trauma situation and haemorrhage is visible, apply a cervical collar.

Wear gloves.

Place the casualty with the injured side down, place pad under ear and record vital signs, i.e.:

- conscious state;
- heart rate;
- respiratory rate;
- skin: colour, temperature, moistness and capillary refilling;
- pupils.

Administer oxygen at 8 l.p.m. via Hudson Mask (if member qualified to use it) and record vital signs every 5 minutes until medical aid arrives.

Injuries to the cheek bone

These injuries are caused by direct force, e.g. blow to the face. The casualty might have sustained a fracture to the cheek bone (also known as the zygoma).

The casualty may present with:

- pain to the area;
- swelling/contusion;
- tenderness on palpation;
- loss of sensation over cheek bone.

Management

- history of the incident;
- cold compress where possible (20 minutes);
- record vital signs;
- reassurance;
- arrange medical aid.

Fractured base of skull

This injury is usually the result of indirect force such as a blow to the lower jaw or a fall on the lower part of the spine transmitting the force to the base of the skull.

Management

Obtain a thorough history of the incident.

Loss of consciousness may occur.

Apply a cervical collar making sure it's the right size.

Examine ear canals or nose for blood or straw-coloured fluid.

Record vital signs, i.e.:

- conscious state;
- heart rate;
- respiratory rate;
- skin : capillary refilling;
- pupils.

Administer oxygen at 8 l.p.m. via Hudson Mask (if member qualified to use it).

Record vital signs every 15 minutes whilst waiting for medical aid.

If the casualty becomes unconscious, maintain cervical collar.

If straw colour/blood present from ear canal, place in stable side position, bleeding ear down; place a sterile pad under ear.

Maintain airway.

Maintain oxygen at 8 litres via Hudson Mask.

Take and record vital signs.

Obtain medical aid.

SUPPLEMENTARY TRAINING MATERIAL ON FRACTURED JAW

Airway management of a casualty with a fractured lower jaw

A fracture of the lower jaw may be life-threatening by causing airway obstruction if the casualty is unconscious, or if the jaw is fractured on both sides.

Factors which may cause airway obstruction include:

- loss of support of the tongue;
- bleeding;
- swelling;
- loose teeth;
- bandaging.

Management

- Do not apply a bandage.

- The majority of jaw fractures require no first aid treatment. If the casualty is conscious, he/she should be allowed to assume the position of greatest comfort, which is usually sitting up and leaning forward. The casualty may wish to support his/her own lower jaw.

For the unconscious casualty or a person with a threatened airway:

- turn the casualty on the side to ensure an open airway; it may be necessary to move the lower jaw (mandible) forward, and thus the tongue forward, or to pull and hold the tongue forward holding it with a cloth; wear gloves.
- continually assess to ensure no airway obstruction.
- place any dislodged tooth in a container of milk or saliva as it may be able to be replaced in its socket within 4-6 hours.

10.1 Management Of A Fractured Jaw

A casualty is brought into your first aid post who is unconscious and has a fractured lower jaw.

Demonstrate your management of the casualty.

Checklist	Needs Improvement Date	Proficient Date
<p>Dangers</p> <p>Response - shake and shout.</p> <p>Airway - stable side position; - clear; - open.</p> <p>Breathing - check.</p> <p>Circulation - check.</p> <p>Examination of casualty</p> <p>(On your examination of the casualty, you find the signs of a fractured jaw.)</p> <p>Fractured jaw - pull lower jaw forward if necessary to maintain an open airway.</p> <p>Seek medical aid.</p>		

Airway management: An Oropharyngeal Airway (if member is qualified to use it) may be used with all deeply unconscious casualties to assist with airway management. (Refer *A F.A.*, Vol. 2, 1989, p. 144).

Skills Mastered

Satisfactory Fail Re-test

EXAMINER Please tick

10.1

Please sign and **print** name

Signed: Date / / 1996.

Name: Position:

Qualification: (Please tick where appropriate)

Doctor Registered Nurse Ambulance Officer

Training Branch Accredited Instructor:

Operations Branch Member (approved by District Surgeon):

Glossary

agonal	relating to a phenomenon such as cessation of breathing
air hunger	unable to easily breathe in
bio-hazardous	containing blood
bronchial tree	a branching system of tubes conducting air from the trachea to the lungs
cervical	pertaining to the neck area
colon	large bowel
cyanosis	blueness of the skin
dislocation	displacement from their normal position of bones meeting at a joint
extend	if referring to the neck, the neck is tilted back
faecal/oral route	transmission of organisms from the anal region into the mouth e.g. another ingesting food which has been prepared by a person who did not wash his/her hands after going to the toilet
flex	if referring to the neck, the neck is tilted forward
gastroenteritis	inflammation of the stomach and intestine, often resulting in fluid loss
glider	also known as 'slat'
gynaecological	pertaining to disease of the female reproductive system
Hudson mask	a soft face mask, designed for the delivery of oxygen
hypertension	high blood pressure
immunisation	the production of immunity by artificial means
immunity	the body's resistance to disease
loins	the muscular area in the 'small of the back'
lumbar	lower back region
midline	a line drawn vertically through the centre of the body
needle stick injury	an injury caused by a needle or other sharp object that penetrates the skin
occlusive	preventing passage of air
paraplegia	weakness and/or altered sensation of the lower two limbs
patent	open and clear
periphery	in the location of the extremities
pliable	easily movable
pulmonary oedema	fluid on the lungs
quadraplegia	weakness and/or altered sensation of all four limbs
sacral	base of spinal bones in buttock region
slat	also known as 'glider'
stridor	noisy breathing
subluxation	partial dislocation
surgical emphysema	air under the skin
tetraplegia	weakness and/or altered sensation of all four limbs
thoracic	pertaining to the chest region
trachea	windpipe
vaccination	a method of immunisation by the injection of vaccines into the body

National Corporate Plan

St John Ambulance Australia issued its National Corporate Plan in May 1995. The main sections applying to Operations Branch are reprinted below:

Operations Branch Objectives

4. To render first aid and patient care to the community across a range of situations including public events and emergencies, on a voluntary basis. In particular:

- (a) To carry out public duties for the relief of the injured and sick.
- (b) To train its members to a high standard of first aid and patient/family care skills that will enable them to perform these duties.
- (c) To develop the personal qualities and skills of its members.
- (d) To offer to the young people of the community an opportunity to take part in organised activities that are worthwhile, developmental and fulfilling.
- (e) To maintain an organisation that is ready to respond promptly and effectively in emergencies and on other occasions when requested to do so by governmental and other agencies.
- (f) To be a disciplined and well organised body of members fit and able to carry out public duties.

Strategic Plan for the Current Triennium

Many of the proposals below were developed at the November 1993 Conference of National Headquarters Staff, Commissioners and District Superintendents. This national plan does not seek to encompass the detailed content of the strategic and business plans which are produced by individual States/Territories; but it has been examined as far as possible in conjunction with those plans to ensure compatibility and consistency. Numbers in brackets refer to the objectives above. Entries in italics are performance indicators.

Skills Maintenance Programme

- * To involve all adult members in the Skills Maintenance Programme (4b).
 - *number of members receiving Manuals each year, as indicated by sales statistics compiled by Assistant Secretary Operations (ASO) each February*
- * To ensure that all adult members learn effectively the skills in the Skills Maintenance Programme (4b).
 - *number of Completion sheets returned to District Surgeons each year (statistics reports by District Surgeons each February)*
 - *District Surgeons to investigate quality of training and assessment of SMP (District Surgeons' report at Professional Officers' meeting each June)*

Communication

- * To disseminate national decisions to members through District newsletters (4).
 - *ASO to provide copy on approx. quarterly basis - appearances of items in newsletters*

- * Commissioners and District Superintendents to hold regular teleconferences and general meetings for two-way communication with members (4)
 - *annual reports on actions to improve communication (District Superintendents report annually at meeting during Priory Week)*

Officer Training

- * ASO to arrange a National Management Training Seminar in March 1995 (4c).
 - *degree of District representation and post-course evaluation (each Commissioner to arrange participants and subsequent dissemination - Commissioners' report by November 1995)*
- * To complete programme of modules on topics of National Officer Training Syllabus (4c).
 - *number of modules produced (ASO to arrange completion of first drafts of 18 modules by December 1995)*
- * To publish a Management Training Manual based on the National Officer Training Syllabus (4c)
 - *ASO to arrange publication of Manual by December 1996*
- * To review the National Officer Training Syllabus (4c).
 - *District responses and decisions at national meetings (Commissioners and District Training Officer to provide comment by May 1996 for discussion at 1996 Priory Week)*
- * To ensure that District officer training is adequate (4c).
 - *reports on officer courses held and number of participants (District Superintendents to report annually at their June meeting)*
 - *examples of bilateral assistance between Districts*

Member Development

- * To survey the training needs of members (4c).
 - *reports on surveys (District Training Officers to conduct surveys by April 1996 and District Superintendents to report in June 1996)*
- * To develop a national programme of courses/materials to meet members' training needs (4c).
 - *production of courses/materials (ASO to edit trial materials by April 1997)*

National Policy Development and Change

- * To set out a clear process for development or change of national policy (4).
 - *notification of issues (Commissioners to use guidelines in notifying issues in relation to June and November meetings each year)*
- * To ensure effective implementation of new policy or changes to policy (4).
 - *notification of core members to disseminate policy (Commissioners/Deputy Commissioners to report on implementation of policies annually at Priory Week)*
 - *evidence of policy dissemination documents*

Recruitment and Retention

- * To ensure all Districts have policies and processes, including induction programmes, for recruitment (4a, 4d).
 - *reports on recruitment policies*
 - *evidence of recruitment materials (District Superintendents to report at their meeting in June each year)*
 - *sampling of induction programmes in terms of quality (National HQ Staff to seek evidence on visits to Districts)*
 - *statistics of new recruits (District Superintendents to provide statistics with annual Strength Statement)*
- * To improve the retention rate of effective members (4a, 4e)
 - *District Superintendents to report on retention policies at their meeting in June each year*
 - *District Superintendents to provide membership statistics with annual Strength Statement*

Publications

- * To produce new publications where there is a demonstrated need (4b, 4e).
 - *publication under ASO editorship of:*
 - *Dress Regulations by June 1995*
 - *3rd Edition of Cadet Manual by June 1995*
 - *Junior Manual by December 1995*
 - *Junior Workbooks by June 1996*
- * To maintain supplies of existing publications (4a, 4e).
 - *sales and production statistics, as monitored by ASO*
- * To review General Regulations and in the process improve their presentation (4e).
 - *review by Chief Superintendent to be presented to National Council in December 1996*
 - *separation of sections*

Uniform

- * To implement decision for subsidising uniforms (4c, 4d, 4e).
 - *reports from State Councils and Operations Branches (Commissioners to ensure subsidies in place by December 1995; and Council Chairmen and Commissioners to report at 1996 Priory Week)*
- * To have all Category A items of uniform available from National Supplies (4c, 4d, 4e)
 - *National Supplies Manager to arrange stock holdings by December 1995*

Consolidation of District Finances

- * To have a system of central financial reporting on all District, Corps and Division accounts (4d, 4e)
 - *reports from Districts (financial reporting to be consolidated by June 1995 by Operations Managers - District Superintendents to report at 1995 Priory Week)*

First Aid Competitions

- * To improve the staging of competitions in terms of contribution to first aid effectiveness and public relations (4b, 4e).
 - *reports from Districts (Commissioners to report at June 1995 meeting)*
 - *statistical evidence on involvement of members and community attendance*

- * To decide on future of national adult competitions (4b, 4e).
 - *survey of members (responses to be collated by ASO by June 1995)*
 - *Standing Committee to make decision at 1995 Priory Week*

Assistance to Rural/Isolated Divisions

- * To develop strategies to reduce disadvantages perceived by rural/isolated divisions (4b, 4d, 4e).
 - *twinning arrangements with city divisions*
 - *Commissioners to report each year in Priory Week on other projects by Districts*

Other Action

- * To examine the issue of competency-based assessment of fitness of members for their duties (4b, 4e).
 - *Committee to report by June 1995*
- * To consider structural reform of Operations Branch, e.g. fewer promotional levels (4d, 4e).
 - *Discussed at November 1994 Conference*
- * To develop guidelines for dealing with sexual harassment problems (4e).
 - *Guidelines discussed at November 1994 Conference for Standing Committee decision in June 1995*
- * To consider options for retiring members (4e).
 - *Commissioners to consider at District level and report in June 1995*
- * To introduce cadet representative councils (4d).
 - *Chief Officer (Cadets) to introduce national cadet council by January 1997; District Officers (Cadet) to introduce District cadet councils by January 1998*

CONFIRMATION OF COMPLETION OF SKILLS MAINTENANCE PROGRAMME, 1996

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 Surgeon 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

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 Surgeon at Headquarters.

CONFIRMATION OF COMPLETION OF SKILLS MAINTENANCE PROGRAMME, 1996

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 Surgeon 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 accreditation or re-accreditation.

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