

European Reference Guide for First Aid Instruction



Basic Life Support
Automated External Defibrillation
First Aid
Didactical Aspects

Published by:

Training Department, Belgian Red Cross-Flanders, Motstraat 40, 2800 Mechelen, Belgium.

Correspondence address:

Stijn Van de Velde, Training Department, Belgian Red Cross-Flanders, Motstraat 40, 2800 Mechelen, Belgium. E-mail: stijn.vandevelde@rodekruis.be.

Date of issue:

December 2006

The procedures and techniques described in this Reference Guide are in line with the European Resuscitation Council Guidelines 2005 on basic life support and automated external defibrillation¹ and the Red Cross Guidelines 2007 on first aid². The section on stroke is based on the American Heart Association Guidelines 2005³.

Guidelines are no substitute for a caregiver's own judgment of a specific medical or health condition. Casualties should consult a qualified healthcare professional for advice on a specific condition. The authors disclaim any liability to any party for any damages arising out of the use or non-use of this material and any information contained herein, and all warranties, expressed or implied.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronically, mechanically, by photocopy, recording or otherwise, without the prior written permission of the publisher, Belgian Red Cross-Flanders, Motstraat 40, 2800 Mechelen, Belgium.

Responsible publisher:

Philippe Vandekerckhove, Belgian Red Cross-Flanders, Motstraat 40, 2800 Mechelen, Belgium.

Belgian Red Cross-Flanders realized this project and received support from the European Commission. The Commission cannot be held responsible for any use made of the information in this publication.



* The list of references can be found at the end of this guide.

Preface

First aid does not stop at national borders. This is why the Belgian Red Cross-Flanders has looked outside its own area of operations and across the borders of Europe. What is immediately apparent is that the first aid manuals you find in Europe are not always consistent in their coverage of the techniques to use when administering a particular first aid procedure.

In the past, first aid handbooks were primarily based on experience and specialist knowledge. Gradually the importance of hard facts grew and first aid handbooks had to take account of scientific studies current at the time. In the jargon of the trade, this was known as “evidence-based medicine”. Science, specialist advice and experience were combined into guidelines.

The European Resuscitation Council’s (ERC) guidelines for resuscitation now form an important basis for European first aid handbooks. However, first aid is more than just resuscitation, and this means there is a need for additional evidence-based guidelines.

The Belgian Red Cross-Flanders has taken the lead in harmonising the content of all these handbooks. The European Commission provided the resources required to achieve this objective.

Working with 29 European experts, we have set up new guidelines for first aid.

These guidelines are based on scientific studies, specialist advice and experience: guidelines which sometimes fly in the face of established tradition, but which - however surprising they might seem - are all based on science and offer a guarantee of better first aid practice.

New guidelines call for updated handbooks and courses. So that the guidelines can simply and efficiently be adopted all over Europe, we have also produced the European Reference Guide for First Aid Instruction and the EFAM or European First Aid Manual.

In the Reference Guide we bundle the recommendations of the ERC 2005 guidelines on basic life support and automated external defibrillation with the Red Cross 2007 first aid guidelines. The Reference Guide is a popularized version of the scientific guideline manuscripts, which provides summary points of the guidelines and the evidence base behind it. The Reference Guide is therefore a handy reference work to transfer the scientific evidence into first aid practice.

The EFAM, the European First Aid Manual, is a handy tool for updating first aid handbooks: not a handbook in the strict sense of the word, but an electronic book containing digital texts and hundreds of high-quality photographs illustrating the latest techniques and procedures.

The EFAM is a useful instructional tool for authors of first aid manuals and providers of first aid courses. For a small fee, and subject to the terms of the user agreement, they can use the EFAM texts and photographs for their own printed and electronic publications. More information is available at www.efam.be

The expert panel consisted of 29 European specialists in anaesthesiology, cardiology, traumatology, emergency medicine, disaster management, psychosocial care, medical education, and first aid training. Delegates from the European Resuscitation Council (ERC), International Federation of Red Cross and Red Crescent Societies (IFRC) and the World Health Organisation (WHO) participated in the expert panel. The Belgian Centre for Evidence-Based Medicine (CEBAM), gave advice on methodology. The steering committee consisted of delegates from the French Red Cross, Austrian Red Cross, Finnish Red Cross, Hellenic Red Cross, Spanish Red Cross, Latvian Red Cross and the European Reference Centre for First Aid Education and the Red Cross/EU Office. A list of all the contributors can be found in the acknowledgements.

This work contributes to the international harmonisation of first aid and complements previous harmonisation efforts by the Red Cross and the Red Crescent, e.g. the IFRC's First recommendations

on life-saving techniques, the creation of the European First Aid Certificate and the activities of the European Reference Centre for First Aid Education.

First aid does not stand still. As new evidence becomes available, the guidelines and this Reference Guide will need to be revised.

Table of Contents

Introduction	3
Basic Principles	5
The Four Steps in First Aid	9
Basic Life Support and Automated External Defibrillation	15
First Aid	31
Didactical Aspects	49
Further information	53
Acknowledgements	55
References	57

Introduction

The ERC 2005 and Red Cross 2007 guidelines provide systematically developed recommendations and justifications for the procedures and techniques that should be included in first aid manuals and training programmes. They incorporate research evidence and expert opinion in a considerate and transparent way. Peer reviewers have evaluated the validity, quality and utility of these guidelines. Such a guideline development process is called evidence-based.

We define first aid as 'immediate help provided to a sick or injured person'. First aid consists of procedures and techniques requiring minimal or no equipment, which can be taught to the general public in basic first aid courses. First aid is concerned not just with the care of wounds of injuries, but with care of the whole person, including psychosocial first aid - assistance given to people with emotional distress, caused by experiencing or witnessing a stressful event. A first aider is defined as a layperson with first aid training. We focus on situations involving few casualties, where healthcare professionals are available within a short space of time.

This Reference Guide is intended for authors of first aid handbooks and first aid instructors. It explains and summarises the latest guidelines in a schematic way. For a full understanding of the guideline development process and the evidence behind the recommendations, the reader should consult the full guideline manuscripts. We stress that this Reference Guide is not a first aid manual and it is assumed that the reader knows the basics of first aid.

It is strongly advised that first aid manuals and programmes be reviewed in the light of these guidelines and revised where appropriate. We recognise that sometimes the procedures will have to be adapted in order to comply with local laws.

For convenience, in this manual we use the masculine pronoun "he". But it should be understood that whenever we use "he", we mean "he" or "she". No gender discrimination is intended.

There are many first aid products on the market. Any use of branded first aid products in this publication is for illustrative purposes only and does not imply endorsement by the Belgian Red Cross-Flanders.



Basic Principles

STRESS IN AN EMERGENCY

It is only normal that a first aider feels stress if he is suddenly faced with the need to administer first aid in a real emergency. A first aider should:

- Try to bring his emotions under control before he proceeds.
- Take a moment to stand back from the situation and regain his calm.
- Never place his own safety at risk.

The next chapter explains what he needs to know to work in safety.

PSYCHOSOCIAL FIRST AID

Key findings:

- Single session debriefing or actively exploring emotions is not recommended because it is ineffective and may even be harmful.
- Taking care of basic needs is part of psychosocial first aid, but food or drink should not be given because this complicates professional care if anaesthesia is required.

A first aider should:

- Approach the casualty in a friendly manner and without prejudgement.
- Explain to the casualty carefully what has happened and what will happen next. Ask for his cooperation.
- Listen to the casualty and be sympathetic.
- Give help with practical things if necessary.
- Do not give food or drink to a casualty who is sick or wounded unless you are doing so on the recommendation of professional healthcare providers.



AVOIDING INFECTION

Key findings:

- The risk of infection between first aider and casualty must be kept to a minimum.
- Washing hands with liquid soap and water, is an effective method of preventing cross infection.
- Using a barrier (e.g. gloves) between the first aider and the blood or body fluids of the casualty reduces the risk of cross-infection.
- Careful handling of sharp objects is essential in preventing infection.
- First aiders run little risk of infection during mouth-to-mouth ventilation. Cases of first aiders becoming sick after attempting to resuscitate a casualty are rare.

When dealing with open wounds it is important to keep the risk of infection between first aider and casualty to a minimum. A first aider should:

- > Make sure he does not come into direct contact with the casualty's blood or other bodily fluids.
- > Wash his hands with water and liquid soap before and after administering first aid if possible.
- > Use disposable gloves if they are available. If not, he can use a plastic bag to protect his hands.
- > Be careful when handling sharp objects and dispose of them in a safe manner.



EMOTIONAL REACTIONS AFTER ADMINISTERING FIRST AID

It is not always easy to process a traumatic event emotionally. It is not unusual for first aiders to experience difficulty when working through their emotions afterwards. A first aider should talk to his friends, family and fellow first aiders. If something is still preying on his mind, he should talk to a professional.

The Four Steps in First Aid

First aid situations vary greatly but there are four steps that every first aider should always follow. They will help him make a proper assessment of the situation and administer first aid appropriately without skipping any of the important points.

The four important steps are:

- 1 Ensuring safety.
- 2 Assessing the casualty's condition.
- 3 Getting help.
- 4 Administering first aid.

ENSURING SAFETY

Key findings:

- In the case of road accidents, it is not known whether parking the car ahead of or behind the accident is important.
- There is no evidence on which technique of moving a casualty is best.

A first aider should:

- Assess the situation and check for any potential dangers (e. g. traffic, fire, electricity...).
- Only approach the scene of the accident if he can do so without endangering himself.
- Try to ensure the safety of the casualty and bystanders if possible.
- Alert the emergency services if the situation is unsafe and wait at a safe distance until qualified help arrives.

>>> Ensuring Safety

Road Traffic Accident

A first aider should:

- > Always follow the Highway Code.
- > Reduce speed without braking sharply when approaching a road traffic accident.
- > Park his car in a safe place, on the hard shoulder, on the verge, or at the roadside.
- > Put on a reflective safety vest.
- > Use warning signs (such as a warning triangle) to warn approaching traffic of the accident.
- > Not attempt to cross a motorway on foot.
- > Watch out for electrical cables on the ground and make sure nobody touches these cables or moves too close to them.
- > Aim to prevent fire by switching off the ignition of every vehicle involved in the accident and not allowing anyone to smoke in the vicinity of the accident.
- > Remember that an airbag that failed to activate can sometimes blow up unexpectedly.
- > Try to stabilise the vehicles involved by applying their handbrakes.



House Fire

A first aider should:

- Try to warn everyone who is in danger, without risking his own safety.
- Never enter a burning house.
- Move away from the vicinity of the fire and keep at a safe distance.

If a first aider finds himself in a burning building he should leave the building immediately and help others to evacuate the building as long as he can do so in a safe manner.



Electrical accident at home

A first aider should:

- Assume that all electrical cables and appliances are live until proven to be disconnected.
- Not touch a casualty while he is still in contact with a power source.
- Remember that liquids and objects in contact with the casualty can also conduct electricity.
- Switch the power off. If it is not possible to switch it off he should insulate himself from the ground by standing on non-conductive material. Then use a non-conductive object to push the power source away from the casualty.

If this is not possible he should wait for the fire brigade or other specialised personnel to arrive.



>>> Ensuring Safety

Emergency removal of a casualty

As a general rule, do not move a casualty from the place of the accident. Only move a casualty if he is in uncontrollable danger, if the safety of the situation is not assured, and if the first aider can take action without placing himself at risk.

If necessary, the first aider should:

- Move the casualty to the nearest safe location.
- Explain to a conscious casualty what he is going to do and ask for his cooperation.
- Try to support the casualty's neck and avoid twisting the head, neck and body during the evacuation procedure.
- Try to use the correct technique, although quick removal may be the first priority.



A casualty should be shielded from cold or heat, but only be moved if he has spent a long time in a cold environment and is running a real risk as a result of this.



ASSESSING THE CONDITION OF THE CASUALTY

The first aider should :

- Introduce himself and explain what he is going to do. This will give the casualty greater confidence.
- Check the condition of the casualty. First of all, check that he is conscious and breathing normally.

Situations in which consciousness or breathing are impaired are often life-threatening. Other examples of life-threatening situations are severe bleeding, burns, chest pain or a stroke. In these cases the casualty is in need of immediate help.

GETTING HELP

If help is required, a first aider should alert out the emergency services, Poison Control Centre or other qualified help, depending on the situation.

112 is a recognised emergency telephone number in every member state of the European Union or dial the local emergency number.

State clearly:

- What has happened and what the dangers are.
- Where the emergency services are expected.
- Who the casualty is and what his condition is.

Cases of suspected non-accidental injuries should always be referred to professional healthcare providers.



ADMINISTERING FIRST AID

The procedures to administer first aid are explained in the following sections.

Basic Life Support and Automated External Defibrillation

CHECKING RESPONSE

OPENING THE AIRWAY

CHECKING BREATHING

CHEST COMPRESSIONS AND RESCUE BREATHS

AUTOMATED EXTERNAL DEFIBRILLATION

RECOVERY POSITION

INFANTS AND CHILDREN

CHOKING

Basic Life Support and Automated External Defibrillation

CHECKING RESPONSE

To check response a first aider should:

- Gently shake the casualty's shoulders.
- Ask the casualty loudly, "Are you all right?"



If the casualty responds:

- 1 Leave the casualty in the position in which you found him. Do not move him unless he is in danger.
- 2 Try to find out what is wrong with him.
- 3 Get help if necessary.
- 4 Assess the casualty's condition regularly.

If the casualty does not respond:

- 1 Shout for help.
- 2 Turn the casualty onto his back and open the airway.

OPENING THE AIRWAY

Key findings:

- In an unconscious casualty the muscles are relaxed. This causes the tongue to obstruct the airway. The risk can be eliminated by carefully tilting the head back and lifting the chin.
- The jaw thrust is not recommended for laypersons because it is difficult to learn and perform. It may even harm the casualty.

To open the airway in an unresponsive casualty a first aider should:

- > Carefully tilt the head back.
- > Lift the chin to open the airway.
- > Combining both actions will open the airway.



CHECKING BREATHING

Key findings:

- Feeling the carotid pulse is an inaccurate method of establishing the absence of circulation and should only be applied by professional healthcare providers experienced in the technique.
- It is unknown if checking for movement, breathing or coughing gives a better indication of circulation.
- If a casualty is unresponsive and not breathing normally, laypersons should begin CPR.
- In the first few minutes after cardiac arrest it often appears as if the casualty is trying to breathe. It can appear as if the casualty is barely breathing or is taking infrequent noisy gasps. Laypersons should be taught not to confuse this with normal breathing and to start CPR.

A first aider should keep the airway open and:

- > Look whether the chest is moving up and down.
- > Listen for sounds of breathing at the casualty's mouth.
- > Feel for breath by presenting his cheek.



When checking whether the casualty is breathing normally, look, listen and feel for no more than 10 seconds.

If a first aider is not sure whether the casualty is breathing normally, then he should proceed as if breathing has failed.

CHEST COMPRESSIONS AND RESCUE BREATHS

Key findings:

- Chest compression ensures a small but crucial supply of blood to the heart and to the brain.
- Ventilation ensures a minimum supply of oxygen to the blood circulation.
- Immediately after the collapse, in cardiac arrest of cardiac origin, chest compression is more important than ventilation.
- Mouth-to-nose ventilation is a good alternative if mouth-to-mouth ventilation is difficult.
- Many people, professional healthcare providers included, readily admit that they are not keen to do mouth-to-mouth ventilation. It is always better to perform just chest compression than nothing at all. If first aiders cannot or do not want to give mouth-to-mouth ventilation, then they should give chest compressions only. Obviously, chest compressions combined with rescue breaths is always the better form of resuscitation.
- First aiders do not deliver enough chest compressions during resuscitation. As a consequence the compression:ventilation ratio was increased to 30:2.
- The chances of survival after resuscitation are small. However, numerous studies have shown that immediate resuscitation by a bystander can double or even triple survival.

If the casualty does not respond and is not breathing normally a first aider should:

- 1** Ask someone to alert the emergency services and tell him to bring an automated electronic defibrillator immediately (when available). A first aider should do this himself if he is alone.
- 2** Start with 30 chest compressions at a rate of about 100 compressions a minute.



- 3 Deliver 2 rescue breaths.
- 4 Alternate 30 chest compressions with 2 rescue breaths.
- 5 Not interrupt the resuscitation. Only check the casualty again when normal breathing resumes.
- 6 Continue resuscitating until:
 - > qualified help arrives and takes over the resuscitation;
 - > the casualty starts breathing normally;
 - > he becomes exhausted.



Check mouth

If the casualty's chest does not rise during the first rescue breath a first aider should do the following before attempting the second rescue breath:

- > Check the casualty's mouth. Remove anything that obstructs the airway.
- > Check that his head is tilted far enough back and that his chin is properly lifted.
- > Not attempt more than two breaths each time before returning to the chest compressions.



>>> Chest Compressions and Rescue Breaths

Resuscitation by two or more first aiders

If several trained first aiders are present at the scene it is best to alternate resuscitation.

- The first rescuer resuscitates for 2 minutes (chest compressions and rescue breaths).
- The other takes over and resuscitates for another 2 minutes.
- Then they alternate again.
- The less time wasted during change-over the better.

AUTOMATED EXTERNAL DEFIBRILLATION

Key findings:

- A casualty's chances of survival will increase if first aiders start resuscitation and defibrillation within the first few minutes of a sudden cardiac arrest.
- Members of the public should be taught to use an automated external defibrillator.

If the casualty does not respond, is not breathing normally and an automated external defibrillator (AED) is available, a first aider should:

- 1** Continue the resuscitation until the AED arrives.
- 2** Switch the AED on as soon as it arrives.
If there are two first aiders, the second should continue the resuscitation. Follow the instructions given by the AED.



- 3** Expose the casualty's chest and attach the electrodes as shown on the packaging or on the electrodes themselves.



>>> Automated External Defibrillation

- 4 Make sure nobody touches the casualty while the AED is analysing the heart rhythm.
- 5 Make sure that everyone is clear of the casualty and his immediate environment if an electric shock is needed. Press the shock button if asked to do so. A fully automatic device will administer a shock itself.
- 6 Start resuscitation if the device asks to do so.



- 7 Keep following the instructions of the device until:
 - > qualified help arrives and takes over the resuscitation;
 - > the casualty starts breathing normally;
 - > he becomes exhausted.
- 8 Stop resuscitating if the casualty starts breathing normally. Do not switch the device off, and leave the electrodes on the casualty's chest. If the casualty remains unconscious, he should be turned in the recovery position.

Precautionary measures

- Dry the casualty's chest, if wet, before attaching the electrodes.
- Shave or cut away excessive hair if the electrodes do not adhere.
- Remove any medication patches, if these are present on the casualty's chest.
- If the casualty has a pacemaker, do not place the electrodes on top of this device. Instead place the electrodes just to one side or below it. A pacemaker is usually visible as a lump under the skin.
- Keep the electrodes away from any metal jewellery. If possible, remove metal jewellery that might come into contact with the electrodes.

>>> Recovery Position

RECOVERY POSITION

Key findings:

- Several alternative recovery positions exist, but no best position could be identified.
- When putting a pregnant casualty in the recovery position, the left lateral side should be chosen.

If the casualty does not respond, but is breathing normally a first aider should:

- 1 Turn the casualty into the recovery position.



- 2 Ask someone to alert the emergency services.
Go and get help himself if he is alone.
- 3 Check the casualty's breathing regularly.

The same technique can be used to put an infant or child in the recovery position.

INFANTS AND CHILDREN

Key findings:

- First aid instructions must be simple to learn and to remember. That's why first aiders can use exactly the same sequence for resuscitating infants and children as they would for adults.

The basic life support guidelines make the following distinction:

- > infant: less than 1 year old.
- > child: between the age of 1 and the onset of puberty.

A first aider should use the same sequence for resuscitating infants and children as he would for adults.

In the case of infants and children, press the breastbone in to about one third of the chest depth.

Use two fingers to perform chest compressions on infants.



Use one or two hands to perform chest compressions on children. It is best to use both hands for large children or if you are not particularly strong.



>>> Infants and Children

It takes less air to achieve adequate ventilation in infants and children. A first aider will know that he has blown enough air in when he sees the casualty's chest rise.

Resuscitation of infants and children with an AED

Standard AEDs can be used for children over the age of 8.

For children between 1 and 8 it is best to use special electrodes for children. If these special electrodes are not available, the AED can be used as it is.

For infants under the age of 1, an AED should only be used if specifically labelled by the manufacturers as suitable for use in this age group.

CHOKING

Key findings:

- Most adult cases of choking occur while eating. Infants and children often choke on swallowing foreign objects such as coins and small toys.
- Since choking often occurs while eating there are usually people present. This means there is a good chance that someone will be able to give help quickly.
- Coughing is an effective way to relieve mild airway obstruction. Nothing more should be done beyond this, as it could worsen the casualty's situation.
- It has been shown that back blows, abdominal thrusts and chest thrusts may all be effective to relieve severe airway obstruction.
- Chest thrusts generate higher airway pressures than abdominal thrusts. Because chest thrusts are very comparable to chest compressions, a first aider should begin resuscitation if a casualty loses consciousness.

**A first aider should ask the casualty,
"Are you choking?"**

If the casualty can still speak, cough and breathe a first aider should:

- 1** Encourage the casualty to keep coughing.
- 2** Do nothing more beyond this.
- 3** Stay with the casualty until he breathes normally again.



>>> Choking

If the casualty cannot speak, breathe or cough (he may in some cases wheeze or make silent attempts to cough) a first aider should:

- 1 Give up to 5 back blows. After each blow, check to see if the airway obstruction is relieved. If the object comes free there is no need to slap again.
- 2 Give 5 abdominal thrusts if back blows do not help.
- 3 If this doesn't solve the problem, he should alternate between 5 back blows and 5 abdominal thrusts.
- 4 If the casualty loses consciousness, he should be put carefully on the ground. Emergency services have to be alerted immediately. Resuscitation must be started. A first aider should start with 30 chest compressions.
- 5 Deliver 2 rescue breaths. If the casualty's chest does not rise during the first rescue breath a first aider should do the following before attempting the second rescue breath:
 - Check the casualty's mouth. Remove anything that obstructs the airway.
 - Check that his head is tilted far enough back and that his chin is properly lifted.
 - Not attempt more than two breaths each time before returning to the chest compressions.
- 6 Continue resuscitating until:
 - qualified help arrives and takes over the resuscitation;
 - the casualty starts breathing normally;
 - he becomes exhausted.



Referral to a doctor or hospital:

Abdominal thrusts can cause serious internal damage.

Casualties who have been given abdominal thrusts should be referred to a doctor for examination.

Once choking stops a part of the object may still remain in the windpipe. Casualties who continue coughing, have difficulty swallowing, or feel that something is still lodged in their windpipe should be referred to a doctor.

Choking in infants and children

These techniques can also be used for children over the age of 1.

For infants, replace abdominal thrusts with chest thrusts. To do this, use the same technique as chest compressions for infants. These chest thrusts should be administered more sharply, but at a slower rate.





First Aid

BLEEDING

SKIN WOUNDS

BURNS

INJURY TO HEAD, NECK OR BACK

INJURY TO BONES, MUSCLES OR JOINTS

POISONING

CHEST PAIN

STROKE

First Aid

BLEEDING

Key findings:

- It has been proven that direct pressure on the wound helps to staunch the bleeding.
- Application of a tourniquet can cause complications and is therefore better not carried out by laypersons.
- It is not known if elevating the limb and indirect pressure can help to staunch bleeding.

If the casualty has an open wound which is bleeding severely a first aider should:

- 1** Avoid contact with the casualty's blood. Ask the casualty to apply pressure to the wound himself. Carefully place the casualty in the prone position.
- 2** Ask a bystander to alert the emergency services. A first aider should do this himself if he is alone.



- 3** Press down directly on the wound with his hands. Wear disposable gloves if possible. He can lay a clean cloth (such as a towel) over the wound. The first aider can also apply a compression bandage. Make sure the bandage is tight enough to stop the bleeding, without cutting off all the blood flow. If the lower tissue area turns blue or becomes numb, the first aider should slacken off the bandage a bit but do not take it off completely.



- 4** If the wound keeps bleeding, press down on the wound more firmly or wrap a second bandage around the first. Do not remove the first bandage.
- 5** Apply pressure on the wound until the emergency services arrive.
- 6** Wash his hands after administering first aid.

SKIN WOUNDS

Key findings:

- It has been shown that rinsing wounds with drinking water reduces infection and improves healing.
- Rubbing the wound is not recommended because it can damage the wound tissue.
- Disinfectant can be toxic toward the skin and delay the natural healing process.
- Tetanus can be prevented by vaccination but casualties are often unaware about their exact immunisation status.

If the casualty has an open skin wound, such as an abrasion or cut a first aider should:

- 1** Avoid contact with the casualty's blood or other bodily fluids. If there is no severe bleeding, a first aider should wash his hands with liquid soap and water before administering first aid. Wear disposable gloves if possible.
- 2** Stem the bleeding by applying direct pressure if the wound has not stopped bleeding of its own accord.
- 3** Rinse the wound under the tap with clean, cold water. If there is no tap water in the vicinity use another source of drinking water.
- 4** Allow the water to flow directly on the wound to rinse the dirt out. Continue rinsing until there is no dirt left in the wound. Do not rub the wound to get the dirt out.
- 5** After rinsing dry the area around the wound if necessary, but do not touch the wound itself.



- 6 Cover the wound with a sterile compress. If not, use a clean, dry cloth.



- 7 Advise the casualty to consult a doctor. The doctor will check if the casualty is protected against tetanus.
- 8 Wash his hands after administering first aid.

If there is an object embedded in the wound a first aider should not remove it but try to immobilise the object. Then cover the wound with sterile gauze if available, or use a clean dry cloth.



>>> Skin Wounds

A casualty must be referred to a doctor or hospital if:

- > there is uncontrollable bleeding;
- > a wound cannot be cleaned properly;
- > an abrasion is larger than half the casualty's palm size;



- > bone, muscle or other subcutaneous tissue is exposed;



- > the face, eyes or genitals are injured;
- > there is an object embedded in the wound;
- > the wound was caused by a human or animal bite.



If a first aider has to refer the casualty, he should stem the bleeding and cover the wound. Leave the further care of the wound to the professional healthcare provider.

BURNS

Key findings:

- Burns should be cooled immediately with tap-water.
- The evidence on the optimum duration of cooling a burn is inconclusive.
- When cooling, hypothermia in the casualty must be prevented.
- Breaking burn blisters should be avoided.
- Antibiotic creams should not be used as first aid.
- Tetanus can be prevented by vaccination but casualties are often unaware about their exact immunisation status.
- There is no evidence on which technique of assessing the extent of a burn is best. Estimating the size of a burn using the casualty's hand is a feasible first aid method.

If the casualty has a burn a first aider should:

- 1** Cool the burn as quickly as possible with cool or lukewarm tap-water.
- 2** Cool with water for 15 to 20 minutes or until the pain subsides.
- 3** Remove clothing and jewellery if they are not stuck to the skin.
- 4** Apply a wet wound dressing (e. g. compress or a clean cloth) after cooling the burn.
- 5** Not open intact burn blisters.



>>> Burns

- 6 Not apply (antibiotic) creams when administering first aid.
- 7 Advise the casualty to consult a doctor. The doctor will check if the casualty is protected against tetanus.

After administering first aid refer the casualty to a doctor or hospital in the case of burns:

- > on children under the age of 5 or adults over the age of 60;
- > to the face, ears, hands, feet, joints or genitals;
- > to the airways (e.g. through inhalation of smoke or hot gasses);
- > running entirely around the neck, torso or limbs;
- > affecting the deepest layer of the skin, the burn can look black, parchment-like or white and is dry;
- > caused by electricity, chemical products, ionising radiation or high pressure steam;



- > larger than 5% of the total body area in children under the age of 16 or larger than 10% in adults over the age of 16.



The size of the casualty's hand should be used to estimate the size of a burn: the palm and fingers together represent about 1% of the casualty's total body area.

If necessary, ask a bystander to alert the emergency services. The first aider should do this himself if he is alone. Start cooling the burn with water until qualified help takes over.

Prevent the casualty from becoming hypothermic. Avoid using very cold water to cool the burn. After cooling protect the casualty from the wind and use blankets to keep him warm.

INJURY TO HEAD, NECK OR BACK

Key findings:

- Initial evaluation of spinal or head trauma is difficult.
- No evidence was found regarding the effectiveness of manual immobilisation in a non-moving victim.

A first aider should suspect a head, neck or back injury if the casualty:

- > was in an accident involving a sudden impact on the body, such as a traffic accident or fall;
- > is or becomes drowsy, sleepy, agitated or unconscious;
- > cannot remember exactly what happened;
- > has a severe and persistent headache, is nauseous or begins to vomit, is irritable, behaves strangely, or has convulsions;
- > has serious injuries to his head;
- > complains of a lack of sensation or tingling;
- > feels pain in his neck or back, or his neck or back are tender.



If the casualty does not respond normally, or is under the influence, or in a lot of pain, the first assessment will not be particularly reliable. A first aider should alert the emergency services if he is not sure about the nature of the injury.

If an injury to the head, neck or back is suspected he should:

- 1** Calm the casualty and try to convince him not to move.
- 2** Ask a bystander to alert the emergency services. If a first aider is alone with the casualty he should do this himself.
- 3** Immobilise the casualty only if he agrees to cooperate.
- 4** If the casualty is restless or agitated, do not hold the head and neck still against his will.



Establishing a clear airway takes priority over concerns about a potential spinal injury. Unless a first aider can clearly establish that the casualty is breathing normally, an unconscious casualty must be turned onto his back to open the airway and to check breathing. When a casualty needs to be put in the recovery position, maintaining a clear airway also takes priority over potential spinal injury. The further steps to be taken are described in the chapter entitled 'Basic Life Support and Automated External Defibrillation'.

INJURY TO BONES, MUSCLES OR JOINTS

Key findings:

- Initial evaluation of limb injuries is difficult.
- Evidence is inconclusive on the effectiveness of immediate post-injury cooling.
- The evidence on the optimum duration of cooling is inconclusive.
- There is no evidence that elevation and compression is effective.
- Avoiding standing on an injured leg, or self immobilisation of an injured hand, arm or shoulder, are sufficient in most cases and are less painful than the application of a bandage or a sling.

The casualty has injured his hand, arm, foot or leg (through sports, a blow or a fall...). The casualty is often unable to move the injured member normally or put his weight on it. The injury is painful and can look swollen. In some cases the limb or joint has an abnormal appearance.



If a first aider is in doubt as to the severity of the injury, he should assume that the limb is broken and refer the casualty to professional healthcare providers.

If there is a major bleeding at the location of a break a first aider should use direct pressure or a compression bandage to stem the bleeding.

A first aider should:

- 1** Not attempt to reset limbs which appear abnormal or dislocated.
- 2** Cool the injury using ice. If there is no ice he can also use a Cold Pack. Do not hold the ice directly against the skin when cooling. Wrap something around the ice first.
- 3** Not cool for too long. Never cool for more than 20 minutes each time.
- 4** Not immobilise the injured limb if medical help is due to arrive shortly. Advise the casualty not to put his weight on an injured leg or painful foot. If the injury is to the hand, arm or shoulder, ask the casualty to hold his arm still against his chest.



POISONING

Key findings:

- Without medical advice a layperson should not let the casualty vomit, and should not give him water, milk or other remedies.
- The use of ipecac syrup is not recommended.

If the casualty has ingested a toxic substance or taken an overdose (alcohol, drugs, medication) a first aider should:

- 1 Contact the Poison Control Centre or other professional healthcare providers and follow their instructions.
- 2 Describe what has happened. Provide information on the toxin and the casualty.

Without advice of professional healthcare providers a first aider should not let the casualty vomit, and should not give him water, milk or other remedies.



CHEST PAIN

Key findings:

- Laypersons should be able to recognise the distinctive symptoms linked to acute coronary syndrome.

The casualty is complaining of chest pain. The pain can radiate to other parts of the upper body (e.g. to the arm, shoulder, neck, lower jaw or stomach). This usually goes hand in hand with shortness of breath, sweating, dizziness or fainting. Some casualties feel nauseous and have a tendency to vomit.

A first aider should:

- 1 Ask a bystander to alert the emergency services immediately. If a first aider is alone with the casualty he should do this himself.
- 2 Get the casualty to rest and not to exert himself. Get the casualty into a comfortable position.
- 3 Regularly check that the casualty is conscious and breathing properly.



STROKE

Key findings:

- Simple stroke assessment tools are a feasible method for the initial evaluation of stroke.

The signs of a stroke are often subtle. For example, the casualty suddenly finds that his face, arm or leg is limp or numb, often on the same side of the body. Sometimes the casualty can suddenly become confused or find it difficult to speak and follow a conversation. Other casualties have trouble seeing, are unable to walk, feel dizzy or are unable to keep their balance. Other signs are a sudden headache.



If a first aider suspects a person is having a stroke he should systematically check whether the casualty is able to perform the following actions without problem. He should ask the casualty:

- 1 To laugh or show you his teeth. Look to see if his mouth is crooked or the corner of his mouth has dropped.
- 2 To close his eyes, lift both arms to horizontal at the same time, and turn the palms of his hand upwards. Look to see if an arm drops or drifts.
- 3 To repeat a simple sentence. See if he is not speaking clearly or is fumbling for words.



If the person is unable to perform one or more of these actions he has probably had a stroke. Do not underestimate the situation even if the casualty denies that there is anything seriously wrong. The casualty is urgently in need of help.

A first aider should:

- 1** Ask a bystander to alert the emergency services immediately. If a first aider is alone with the casualty he should do this himself.
- 2** Get the casualty to rest and not to exert himself. Get the casualty into a comfortable position.
- 3** Regularly check that the casualty is conscious and breathing properly.



Didactical Aspects

When people are trained to save lives the training should lead to effective outcomes enabling them to give help when needed. On a first aid course participants should acquire new skills or improve existing skills. They should be more likely to retain the skills for long time after the course. We present our recommendations for the didactical aspects of first aid training below.

These recommendations rely on the conclusions of the International Liaison Committee on Resuscitation 2005 in respect of research on education in resuscitation ⁴, on the European Resuscitation Guidelines 2005 on resuscitation training ⁵ and on the expertise of the project's group of experts.

GENERAL PRINCIPLES

- Training programmes should have clear aims and objectives.
- Training programmes should be evaluated to ensure that skills are acquired and retained over time.

TRAIN THE TRAINER

- All trainers should be trained in facilitation learning and assessment.
- Trainers should attend regular updates.
- Trainers should attend updates when significant changes are introduced to first aid techniques (e.g. new guidelines).
- Trainers should be trained in the use of manikins and simulated patients. Simulated patients should be given training.

COMPETENCE PRINCIPLES

- Training should adhere to the principles of competence-based training. Competencies are the whole of skills, behaviours, knowledge and attitudes an individual requires in order to perform a job effectively.
- The whole of the course content should clearly relate to the competencies required.
- Performance standards should be specified and noted down before training starts.
- Performance standards should be defined for all first aid competencies.
- The standards should reflect actual performance expectations in real situations.
- The cases and problems handled in training should simulate real situations.
- The cases and problems handled in training should have a bearing on the course participants' lives.
- One of the first aid competencies is a positive attitude towards administering first aid. Training courses should therefore include a discussion on the risks of contracting infectious diseases when administering first aid.

TRAINING METHODS

- A variety of methods are used in first aid training. The best method of instruction to use will depend on the training goals.
- More research is needed to identify the advantages and disadvantages of the various training methods.

- All course participants should be given practical training.
- Practical training can involve the use of manikins and simulated patients.
- Practical training can involve course participants acting as casualties during role play.
- Practical training can involve video instruction or computer-assisted instruction.
- Trained simulated patients are preferable to course participants acting as casualties.
- On practical training courses there should be no more than 10 participants per trainer.
- In practical training sessions there should be one manikin to every 4 participants.

RETRAINING

- Initial training should always include plans for refresher training.
- Frequent retraining is required to maintain knowledge and skills.
- It is believed that the knowledge and skills acquired on basic life support courses are not retained as long as those acquired on other first aid courses.
- More research is needed to identify optimal retraining intervals.

ASSESSMENT

- Assessments should focus on what course participants can do rather than on what they know.
- A written test or questionnaire should not be used as the sole means of evaluating a participant's performance.
- Individual performance is best evaluated through observation of a skill.
- Only the trainer and simulated patient can evaluate a participant's performance.
- A participant's performance should be compared against the written performance standards.
- Percentage ratings should not be used - judgements should only be made on the basis of 'competent' or 'not yet competent'.
- Action should be planned to turn a 'not yet competent' performance into a 'competent' one.

Further information

FULL GUIDELINES

The full guidelines include a description of the development process and a thorough analysis and discussion of the evidence on which the recommendations are based and references. The guidelines have been published in the scientific journal *Resuscitation*.

EUROPEAN FIRST AID MANUAL

The EFAM has been designed to support the implementation of the guidelines and can be requested from www.efam.be.



COMPANION WEBSITE

www.efam.be

Acknowledgements

The results of the EFAM project are the product of many people's work. We thank all contributors for their efforts, advice and support.

Project Management:

Stijn Van de Velde, Laurent Van Rillaer

Text And Editing:

Bart Henderix, Stijn Van de Velde

Project Steering Group:

Paul Broos, Pascal Cassan, Diane Issard, Kristiina Myllyrinne, Linda Rydant, Susanne Schunder, Vilnis Skrastins, Evgenia Theodorou, Lina Tsitsou, Carlos Urkia Mieres, Stijn Van de Velde, Laurent Van Rillaer, Moya Wood Heath

Project Expert Group:

Bert Aertgeerts, Chris Aubry, Joost Bierens , Paul Broos, Pascal Cassan, Enrico Davoli, Maaïke De Vries, , Rudy De Win, Gabor Göbl, Vincent Hubert, Door Lauwaert, Grace Lo, Andrew Lockey, Koenraad Monsieus, Marc Sabbe, Susanne Schunder, An Sermon, Elke Struyf, Christina Tobback, Carlos Urkia Mieres, Barbara Vantroyen, Marc Van Bouwelen, Stijn Van de Velde, Patrick Van den Steene, André Van Tichelen, Johann Verduyckt, Fabienne Vermunicht, Sarmite Villere

The European Resuscitation Council was represented by Koenraad Monsieus.

The World Health organisation was represented by Enrico Davoli.

The International Federation of Red Cross and Red Crescent Societies was represented by Grace Lo.

Models:

Chailles Ballali, Gilbert Banura, Sofie Belmans, Matthieu Clarysse, Jos Coenen, Marcel De Bolle, Steve De Roock, Fried'l De Winter, Annabel Delbrassine, Ronny Dreesen, Chris Dupont, Koen Engelen, Luc Geers, Mia Ghoos, Bart Ghysels, Erik Greunlinx, Lambert Greunlinx, Veerle Henderix, Narda Hermans, Kathleen Jacobs, Sabine Janssens, Beate Kalteier, Jacqueline Lathouwers, Bea Lenaerts, Laure Lievens, An Martens, Walther Moerdyck, Koshan Mohammadismail, Roel Nollet, Lars Nyskens, Kjell Olieslagers, Bram Peeters, Edin Pehadzic, Sally Roelandt, Fred Roussard, Linda Rydant, Ahmed Saidali, Sascha Peeters, Ingrid Schoutenden, Leen Sents, Islam Shariful, Joris Smeyers, Kristien Thijs, Marc Vanbouvewelen, Bart Van de Vel, Hans Van der Krieken, Jo Vanginderhuysen, Victoria van Vliet, Carry Verbruggen, Will Verdonck, Daniëlle Verlinden, Marijke Verrezen, Geert Verstraete, Diego Willemaers

Make-up:

Carine Daems, Jenny Koekhofs, Gaby Van Roosbroeck

Photographer:

Carl Vandervoort

Graphic Design And Layout:

Noël Bancken, Friederike Kratky

Web Applications:

Tom De Bruyn

References

- 1 Handley AJ, et al. European Resuscitation Council guidelines for resuscitation 2005. Section 2. Adult basic life support and use of automated external defibrillators. *Resuscitation* 2005 December;67 Suppl 1:S7-23.
- 2 Van de Velde S, et al. European first aid guidelines. *Resuscitation* 2007 February; 72(2):240-251.
- 3 2005 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation* 2005 December 13;112(24 Suppl):IV1-203.
- 4 2005 International consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations. Part 8: Interdisciplinary topics. *Resuscitation* 2005 November;67(2-3):305-14.
- 5 Baskett PJ, et al. European Resuscitation Council guidelines for resuscitation 2005. Section 9. Principles of training in resuscitation. *Resuscitation* 2005 December;67 Suppl 1:S181-S189.

THIS REFERENCE GUIDE:

- Bundles the recommendations of the ERC 2005 guidelines on basic life support and automated external defibrillation with the Red Cross 2007 first aid guidelines.
- Is a popularized version of the scientific guideline manuscripts, which provides summary points of the guidelines and the evidence base behind it.
- Is therefore a handy reference work to transfer the scientific evidence into first aid practice.

Further information
www.efam.be