

*Handbook of*

# Cardiopulmonary Resuscitation & First Aid

Editor:

Samuel Sunarso

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Nata Pratama Hardjo Lugito

Tim Bantuan Medis Chrestotes



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CARDIOPULMONARY RESUSCITATION & FIRST AID**

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UPH PRESS

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## FOREWORDS

**The First Aid and CPR Handbook** contains basic knowledge and skill to perform management of injuries and emergency conditions. It also contains instruction on how to perform cardiopulmonary resuscitation as basic life support. Everyone including laypersons should be able to perform these basic first aid skills and cardiopulmonary resuscitation. Many victims of injuries and emergency conditions will be saved if these skills are correctly performed.

This book contains the reading materials for Basic Life Support and First Aid Training by the Medical Teacher and Medical Assistance Team (Tim Bantuan Medis) Chrestotes of Faculty of Medicine, Pelita Harapan University.

The concise format of this book makes it easy to read. The illustrations of the injuries and emergency condition, and the guide to perform cardiopulmonary resuscitation help the reader to comprehend the content.

This First Aid and CPR Handbook will be a guide for everyone facing injuries and emergency conditions, and in performing first aid and cardiopulmonary resuscitation.

**Prof. Dr. Dr. dr. Eka Julianta Wahjoepramono, Sp.BS, Ph.D**

Dean of Faculty of Medicine  
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## PREFACE

Emergency conditions can happen to anyone, anywhere, and anytime. If emergency conditions happen, the victims will need assistances ranging from the simplest first aid to the life-saving cardiopulmonary resuscitation. The first aid and cardiopulmonary resuscitation is basic knowledge and skill everyone should learn and practice to help a person in need.

This First Aid and CPR Handbook provides basic knowledge and skill on how to detect and manage frequent injuries and emergency conditions in daily life, and also provide cardiopulmonary resuscitation as basic life support for laypersons. Many people find it difficult to perform management of injuries and emergency conditions, and also cardiopulmonary resuscitation. In order to be able to grasp this knowledge, simple and easy to understand yet clear explanation is provided in form of images. This handbook is written by the Medical Teacher, Medical Student, and Medical Assistance Team (Tim Bantuan Medis) Chrestotes as the reading materials for Basic Life Support and First Aid Training of Faculty of Medicine, Pelita Harapan University. Nonetheless, everyone should read the materials in this book to learn and to perform first aid and cardiopulmonary resuscitation.

As this book is far from perfect, any critics and suggestions that could make this book fulfill its aim to help laypersons in detecting and managing injuries and emergency conditions, and providing cardiopulmonary resuscitation are welcomed.

Hopefully the First Aid and CPR Handbook could give a guide for laypersons in the detection and management of emergency conditions, and in carrying out cardiopulmonary resuscitation.

Editors





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## OUTLINE

- 1.1 BASIC LIFE SUPPORT FOR ADULTS
- 1.2 BASIC LIFE SUPPORT FOR INFANTS

## OBJECTIVES

- RECOGNIZING RESPIRATORY AND CARDIAC ARREST
- PERFORMING BASIC LIFE SUPPORT
- APPLYING AUTOMATED EXTERNAL DEFIBRILLATOR (AED)





## 1.1 BASIC LIFE SUPPORT FOR ADULTS

**BASIC LIFE SUPPORT** is giving heart resuscitation and rescue breathing to someone who have cardiac and respiratory arrest.

### RECOGNIZING RESPIRATORY AND CARDIAC ARREST

#### Evaluating responsiveness

1. Tap victim's shoulders, shout "Are you okay?" (Fig 1.1a).
2. Give pain stimuli and recognize even a small movement even if the victim still not responding (Fig 1.1b-d).
3. Call for emergency medical service (Fig 1.1e).



**Fig 1.1** Evaluating responsiveness. (a) Check victim responsive; (b) Pain stimuli in nail bed, (c) supraorbital, (d) sternum; (e) Call for emergency medical service.

#### Evaluating the victim's airway, breathing and pulse

1. Perform head-tilt chin-lift technique or modified jaw-thrust maneuver, if a head, neck, or spinal injury is suspected (Fig 1.2a-b). Signs that a person has a head, neck or spinal injury such as, battle sign (bruises found in the back of the ear), racoon eyes (bruises around the eyes), clear fluid coming out from the nose and ears, there are injuries around the head, neck, or injuries after accident.
2. Once the airway is open, simultaneously check for breathing (Fig 1.2c) and carotid pulse, for at least 5 but no more than 10 seconds (Fig 1.2d-e).



**Fig 1.2** Evaluate airway and pulse. (a) Head-tilt chin-lift; (b) Jaw-thrust maneuver; (c) Check breathing; (d) Check carotid pulse, or (e) radial pulse.



## PERFORMING BASIC LIFE SUPPORT

### Performing rescue breathing

If the victim is not breathing but has definitive pulse, the patient is in respiratory arrest and need to be given ventilation support.

1. Open the airway using head-tilt chin-lift or jaw thrust.

2. There are 2 methods in giving ventilation:

- a. **Mouth-to-mouth:** pinch the patient's nose and make a complete seal over the patient's mouth with your mouth (**Fig 1.3a**).
- b. **Pocket mask:** ensure the head is tilted back to open the airway, apply the mask, and press the mask into the face to create a tight seal, and blow through the inlet (**Fig1.3b**).



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**Fig 1.3** Rescue breathing. (a) Mouth to mouth; (b) Pocket mask.

3. Give each ventilation approximately 1 second, given every 5-6 seconds, avoid hyperventilation.
4. Rescue breathing is evaluated every 2 minutes by assessing breathing and the pulse.
5. Continue rescue breathing if there is still definitive pulse. If the pulse can't be determined, then do cardio-pulmonary resuscitation (CPR).



## Performing Cardio-Pulmonary Resuscitation (CPR)

When you determine that a patient is in **unresponsive**, **no normal breathing**, or **no definitive pulse**, you need to begin cardiopulmonary resuscitation (CPR) followed by Rescue Breathing.

### Cardiopulmonary Resuscitation

Start with the immediate delivery of high-quality chest compressions (**Fig 1.4**):

- Place victim on firm and flat surface.
- Kneel on the right side of the victim.
- Expose victim's chest to ensure proper hand placement.
- Put the heel of the dominant hand on the lower half of the sternum and place the other hand over it.
- Arms are as straight as possible, lock the elbow, with the shoulders directly over the hands to promote effective compressions.
- Do chest compressions 100-120 times per minute, proper depth of at least 2 inches.
- Chest must be allowed to fully recoil between each compression.
- Do chest compressions 30 times followed by 2 ventilations.



**Fig 1.4** Chest compression.

### Rescue Breathing

After 30 compressions, perform 2 rescue breaths either with mouth-to-mouth method or with pocket mask (**Fig 1.3**).

- Give 2 ventilation with each breath approximately 1 second.
- Ventilation given every 5-6 seconds.
- Pay attention to the expansion of the patient's chest to ensure that the air enters the patient's lung cavity.
- Avoid giving too much ventilation (hyperventilation).



## Where to find the heart?

Heart lying under the sternum, from intercostal space 2-5. To perform chest compression, press on the lower half of sternum

## When to stop?

- You see signs of return of spontaneous circulation (ROSC) such as patient movement or breathing.
- Other trained rescuers take over.
- You're too exhausted.
- The scene becomes unsafe.
- There is no sign of return of pulse in the patient after 20 minutes of CPR procedure.

## Recovery position

When the victim shows the sign of ROSC, you should keep the airway clear and prevent aspiration by positioning the victim to recovery position (Fig 1.5).



Fig 1.5 Recovery position.



## APPLYING AUTOMATED EXTERNAL DEFIBRILLATOR (AED)

1. Turn on the AED.
2. Check the person:
  - If the person is lying in water or blood, pull the person clear.
  - Remove all clothing, jewelry, and medical patches that may come in contact with the pads.
  - Make sure the chest is dry and free of hair.
3. Follow the diagrams on the pads to place them on the person (**Fig 1.6**).
  - If you see a small scar and a lump on chest, apply the pads about 2.5 cm (1 in) away from the lump.
  - For a child or baby, use child or baby pads or ensure that the pads are 2.5 cm (1 in) apart. Place one on the front and one on the back if necessary.
4. Follow the AED's instructions.



<https://www.depositphotos.com>

**Fig 1.6** Automated External Defibrillator the in)

When the AED prompts you to give shock, stand clear. Make sure no one is touching the person during the “shock” phase.



## 1.2 BASIC LIFE SUPPORT FOR INFANTS

### RECOGNIZING RESPIRATORY AND CARDIAC ARREST

1. Tap the victim's shoulders, shout "ARE YOU OKAY?"
2. Give pain stimuli by pressing the victim's fingernails with your nail or by pressing their sternum, then check for any response from the victim.
3. Perform slight head-tilt chin-lift technique. Avoid over-extending the neck to prevent airway blockage. Do modified jaw-thrust maneuver, if a head, neck, or spinal injury is suspected.
4. Check for breathing and a carotid pulse, for 5-10 seconds simultaneously.
5. Call for emergency medical service (119).

### PERFORMING BASIC LIFE SUPPORT FOR INFANTS

#### Performing rescue breathing

If the victim is not breathing but has definitive pulse, the patient is in respiratory arrest and need to be given ventilation support. Ventilations are given every 3 seconds and avoid hyperventilation. There are 2 methods, using mouth-to-mouth or using pocket mask.

Steps of giving ventilation support:

1. Open the airway using head-tilt chin-lift or jaw thrust.
2. Pinch the nose and make a complete seal over the patient's mouth and nose with your mouth (**Fig 1.7**).
3. Check for pulse every 2 minutes.



**Fig 1.7** Rescue breathing for infants.



## Performing Cardio-Pulmonary Resuscitation (CPR)

When you determine that a patient is in cardiac arrest, you need to begin cardiopulmonary resuscitation (CPR) that starts with the immediate delivery of 30 high quality chest compressions followed by 2 ventilations.

### Steps of doing CPR for infants:

1. Start delivering 30 high quality chest compressions.
2. Release airway with head-tilt chin-lift or jaw thrust and put on c-spine collar if there's any suspicion of neck trauma.
3. During compression, press at the lower half of sternum 5 cm down. Children less than 12 months old may be pressed with 2 fingers at the lower half of sternum 2 fingers below imaginary line between the nipples (Fig 1.8).
4. During compression, press at the lower half of sternum 5 cm down. During compression, press 4 cm down. Allow the chest to fully recoil between compression.
5. Give 2 rescue breaths. Make sure the chest is rising when giving ventilation.



Fig 1.8 Two types of chest compression for infants.

### When to stop?

- You see signs of return of spontaneous circulation (ROSC) such as patient movement or breathing.
- Other trained rescuers take over.
- You're too exhausted.
- The surrounding area becomes unsafe.

### Recovery position

When the victim shows the sign of ROSC, you should keep the airway clear and prevent aspiration by positioning the victim to recovery position.



# Cardiopulmonary Resuscitation First Aid Basics

Chapter

# 2



## OUTLINE

- 2.1 CHOKING
- 2.2 DROWNING
- 2.3 ALLERGIC REACTION
- 2.4 ASTHMA
- 2.5 HEART ATTACK
- 2.6 DIABETES AND HYPOGLYCEMIA
- 2.7 FAINTING
- 2.8 SEIZURES

## OBJECTIVES

- CHOKING
  - Signs and symptoms for choking
  - First aid for choking
- DROWNING
  - First aid for drowning
- ALLERGIC REACTION
  - Signs and symptoms
  - First aid for allergic reaction
- ASTHMA
  - Several common symptoms of asthma
  - First aid for asthma
- HEART ATTACK
  - To recognize the symptoms of heart attack
  - First aid for heart attack
- DIABETES AND HYPOGLYCEMIA
  - Diabetic emergency
  - Recognizing hypoglycemia
  - First aid to diabetic emergency
- FAINTING
  - To provide care to patient
  - To keep patient safe
  - To immediately call for professional medical help as necessary
- SEIZURES
  - To recognize a seizure attack/to protect the patient from acquiring injuries during and after the attack
  - To immediately call for professional medical help





## 2.1 CHOKING

**CHOKING** occurs when a foreign object lodges in the throat or windpipe, blocking the flow of air. In adults, a piece of food often is the culprit. Severe conditions can cause a person to lose consciousness and can be fatal. This condition is a threatening emergency life and requires immediate first aid.

### SIGN AND SYMPTOMS FOR CHOKING



- Inability to talk
- Difficulty breathing or noisy breathing (**Fig 2.1**)
- Squeaky sounds when trying to breathe
- Cough, which may either be weak or forceful
- Skin, lips, and nails turning blue or dusky
- Skin that is flushed, then turns pale or bluish in color
- Loss of consciousness



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<https://www.depositphotos.com>

**Fig 2.1** Sign and symptoms for choking. (a) Difficulty breathing; (b) coughing; (c) loss of consciousness; (d) lips and (e) skin turn blue.



## FIRST AID FOR CHOKING

### In adults

1. Encourage the patient to cough (**Fig 2.2**).
2. Ask for help, but do not leave the patient yet.
3. In adults, choking management usually consist of 3 cycles with each cycle consists of 5 back blows and 5 Heimlich maneuver.

#### a. Maneuver (abdominal thrusts)

- Heimlich Maneuver, also known as abdominal thrust, is a first aid procedure that is performed to treat upper respiratory tract obstruction due to presence of a foreign object. The indications for administering the Heimlich maneuver are when the patient shows universal signs that the patient have respiratory obstruction. Keep in mind that this procedure is only performed on patients who are conscious and experiencing total obstruction.

1. Stand behind the patients.
2. Make a fist with one hand, grasp with the other hand. Position it slightly above the person's navel (**Fig 2.2a**).
3. Push in an inward and upward motion five times. After giving the Heimlich

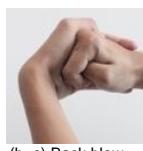


**Fig 2.2** Encourage the patient to cough.



maneuver then  
give back  
blows (**Fig  
2.2b-c**).

4. After giving 5 back blows repeat the whole cycle again.
5. If the patient become unconscious,



(b, c) Back blow.

choking for adults. (a) Heimlich maneuver;



immediately contact  
the ambulance.

## Cardiopulmonary Resuscitation & First Aid

Chapter 2



### b. Chest Thrust (Fig 2.2a-b)

- Chest thrusts, as well as abdominal thrusts, are a procedure to rule out upper airway obstruction due to foreign objects. In contrast to abdominal thrusts, chest thrust is performed on the lower part of the chest, while the abdominal thrust performed on the upper abdomen. Even so, both have the same function, namely producing an increase in intrathoracic pressure with the aim of pushing the foreign body out of the respiratory tract.
- Situations where chest thrusts are more appropriate than Heimlich Maneuver is when we're helping obese patients or in late-stage pregnant women, where the rescuer hand cannot surround the patient's abdomen. Chest thrusts are also recommended in infants to avoid organ damage due to strong urges. The steps to do chest thrust include:
  1. Stand behind the patient.
  2. Make a fist with one hand, grasp with the other hand. Position the fist under the sternum bone.
  3. Push in an inward and upward motion 5 times and then do back blows again.
  4. If the patient still unconscious, immediately contact the ambulance.

### c. Back Blow (Fig 2.2c-d)

- Stand behind the person and wrap one arm around their chest. Firmly strike the person on the back between the shoulder blades 5 times.
- If the back blows do not dislodge the object, wrap both arms around the abdomen. Make a fist one of your hands and place it thumb side in the center of the abdomen. Grasp your fist with the other hand.
- Give 5 abdominal thrust by making a quick hard movement inward and upward 5 times. Keep giving 5 back blows and 5 abdominal thrusts until the object is coughed up or the person loses consciousness.



## In babies and infants

### a. Back blow (Fig 2.3)

- Place the baby in a prone position on the arm, then use the thigh or lap as a support.
- Hold the baby's chest with one hand and hold the chin with the fingers of the same hand.
- Position the baby's head down, lower than the body, as much as 30 degrees.
- Use the heel of the other hand to pat the baby's back 5 times, right between the baby's shoulder blades.
- After that, continue to do chest thrusts (Fig 2.4a).

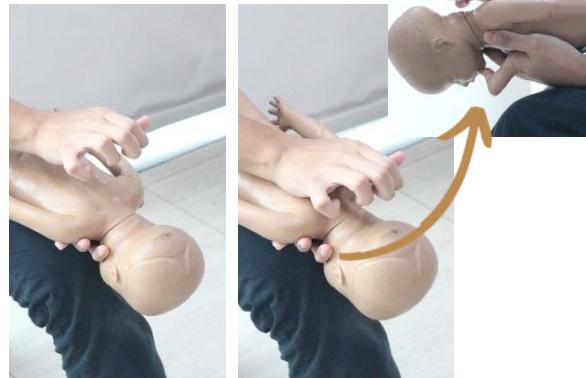


Fig 2.3 First aid choking for infants. Back blow.

### b. Chest thrust

- Position the baby on his back on a flat surface.
- Place the tips of the index and middle fingers in the middle of the chest, just below the mammary line.
- Press the breastbone five times to help push the foreign object out (Fig 2.4a).
- This procedure is carried out for 3 cycles before re-checking whether the patient is still experiencing obstruction or not, then continue until the foreign object is successfully removed.
- If the baby become unconscious, check CAB for circulation and do CPR if no circulation is felt.
- If the obstruction is cleared, cradle the baby in your arms, with their head tilted downwards to prevent them from choking or inhaling vomit. This is called **recovery position** for infants (Fig 2.4b).



Fig 2.4 First aid choking for infants. (a) Chest thrust; (b) Recovery position.



## 2.2 DROWNING

**DROWNING** is the process of experiencing respiratory impairment from submersion/immersion in liquid.

### FIRST AID FOR DROWNING

1. Shout to attract the attention of others around you (Fig 2.5a).
2. Try to grab the victim's hand or use a rope and other tools (Fig 2.5b).
3. Don't panic when you see a drowning person.
4. Help with adequate equipment (Fig 2.5c-d). Performed by trained personnel or sufficient swimming abilities.
5. Lift the victim to land. When lifting, the position should be right with chest level above the head to reduce water aspiration.
6. Lay the victim on the ground.
7. Check the patient's **CAB**.
8. If the patient's condition worsens or becomes unconscious, refer to BLS algorithm (refer to **Chapter 1, page 1**).
9. Manage hypothermia and take victim to the nearest hospital.



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**Fig 2.5** First aid for drowning. (a) Shout for attention; (b) Use rope or other tools; (c, d) Help with adequate equipment.



## 2.3 ALLERGIC REACTION



**Anaphylaxis** is a medical emergency caused by an allergic reaction that can be life-threatening. Without treatment, anaphylaxis is often fatal because it can interfere with the airways. Common trigger sources include exposure to certain medications, foods, or insect stings.

### SIGN AND SYMPTOMS

- Hard breathing



- Tongue swelling
- Swelling or tightness in the throat
- Persistent wheezing or coughing
- Difficulty speaking or hoarseness
- Persistent dizziness or fainting
- Pale
- Stomachache

- Vomiting



<https://www.istockphoto.com>



**Fig 2.6 Symptoms of allergic reaction.** (a) Tightness in the throat, difficulty speaking or hoarseness; (b) pale; (c) vomiting; (d) dizziness; (e) fainting.



## FIRST AID FOR ALLERGIC REACTION

1. In victims with mild and moderate allergic reactions, simply give an antihistamine drug such as Cetirizine (**Fig 2.7a**).
2. Lay the victim on a flat surface—do not allow them to stand or walk.
3. Call Ambulance.
4. Call family or emergency contacts.
5. Give an injection of adrenaline (such as an EpiPen® or Anapen®) to the outside of the middle of the thigh (**Fig 2.7b-c**).
6. Further adrenaline may be given if there is no response after 5 minutes.
7. Give CPR if the victim's condition worsens and there is no blood circulation (**Fig 2.8**).
8. Transfer the person to hospital for at least 4 hours of observation.



**Fig 2.7** First aid for allergic reaction. (a) Give antihistamine drug; (b, c) Give injection of adrenaline to the outside of the middle thigh.

**Fig 2.8** CPR. Chest compression.



## 2.4 ASTHMA



**ASTHMA** is a common disease in which a person's airway can become inflamed, narrow, and swell, and produce extra mucus, which would make breathing difficult. Common trigger for asthma includes exercise, environmental allergens, GERD, respiratory tract infections, stress, etc.

### SEVERAL COMMON SYMPTOMS OF ASTHMA

• Wheezing or coughing  
• Shortness of breath

- Severe shortness of breath (Fig 2.9)
- Chest tightness or pain

### FIRST AID FOR ASTHMA

1. Ask the patient to sit comfortably upright, loosen tight clothing and reassure them (Fig 2.10).
2. Give 4 puffs of inhaler (Fig 2.11).
3. Wait 4 minutes; stay with the person and watch them carefully.
4. If the patient is getting worse, call for help.
5. If the patient is still having difficulty to breath, give more puffs.
6. If the patient is breathing normally, ask them to rest and avoid the source to prevent further asthma attack.



<https://www.istockphoto.com>

Fig 2.10 First aid for asthma. Loosen tight clothing. Give inhaler.



## 2.5 HEART ATTACK

### HEART ATTACK

**HEART ATTACK** happens when blood supply to heart muscle decreased suddenly, such as when there is blood clot in one of the coronary artery.

The most common symptom of heart attack is **chest discomfort or chest pain** at the center of the chest (Fig 2.12).

**Characteristics of the pain** are usually:

- Have **sudden onset** or start slowly **over minutes**, **doesn't improve with rest**, and is usually described as sensation of "**tightness**", "**heaviness**", "**fullness**", or "**like being squeezed**".
- Radiates to the neck and throat, jaw, shoulders, the back, and one or both arms, but **left side** is more often to be affected.



Fig 2.12 Signs of heart attack. (a) Chest discomfort or chest pain; (b) Pain radiates to neck, (c) shoulder, (d) left arm.

**While other signs and symptoms include:**

- Nausea or vomiting (Fig 2.13a)
- Shortness of breath or feeling choked in the throat
- Cold sweat (Fig 2.13b)
- Feeling dizzy
- Fainting



<https://www.pexels.com>

Fig 2.13 Other signs of heart attack. (a) Nausea or vomiting; (b) Cold sweat.



## FIRST AID FOR HEART ATTACK

1. Immediately call for professional medical help.
2. Put patient in a comfortable position: patient sitting on the floor, back leaning against a wall, knees bent, head and shoulder supported.
3. Loosen any tight clothing (**Fig 2.14**).
4. Ask if the patient has certain medication for a known heart condition, such as nitroglycerin, and help them take it.
5. Stay with the patient until help arrives.
6. If the patient's condition worsens or becomes unconscious, refer to BLS algorithm (refer to **Chapter 1, page 1**).



Fig 2.14 Loosen any tight clothing.



## 2.6 DIABETES AND HYPOGLYCEMIA

**DIABETES** is a high blood sugar level due to the body's inability to process and metabolize it efficiently because the pancreas is either producing too little insulin or none at all.

### DIABETIC EMERGENCY

**DIABETIC EMERGENCY** is a life threatening occurrence due to too much or too little insulin. There are two type of diabetic emergency, they are:

- a. **Hypoglycemia:** low blood glucose due to too much insulin.
- b. **Hyperglycemia:** high blood sugar due to insufficient insulin.

### RECOGNIZING HYPOGLYCEMIA

**HYPOGLYCEMIA** occurs more rapidly than a hyperglycemic emergency and can cause unconsciousness, even death if the brain is starved of vital glucose for a prolonged amount of time.

#### Signs and symptoms of diabetic emergency

- Pale and clammy skin
- Fast pulse and rapid, weak breathing
- Weakness and shaking
- Teariness or crying
- Lacking concentration
- Hunger

#### Signs and symptoms may eventually progress into:

- Slurred speech
- Confusion
- Lack of consciousness
- Seizures



## FIRST AID TO DIABETIC EMERGENCY

1. Help the patient into a comfortable position.
2. Reassure the patient.
3. Loosen any tight clothing (Fig 2.15a).
4. Give 15-20gr of simple sugar (Fig 2.15b), such as:
  - a. 1 tbsp of sugar or honey
  - b. 2 tbsp of raisins
  - c. Hard candy or jellybeans
  - d.  $\frac{1}{2}$  cup of orange juice
  - e. Glucose gel or tablets (see package)
5. Continue to give sugar every 15 minutes until help arrives or until the patient recovers.



**Fig 2.15** First aid for diabetic emergency. (a) Loosen any tight clothing; (b) Drink fluid containing simple sugar.

### NOTE: DO NOT FOOD OR FLUIDS IF THE PATIENT IS UNCONSCIOUS

6. If possible, check blood glucose level after 15 minutes of giving sugar.
  - Continue to give sugar if blood glucose is still below 70mg/dl.



## 2.7 FAINTING

**FAINTING** is partial or complete loss of consciousness due to temporary reduction of blood flow to the brain. People usually recover quickly from fainting without having any lasting effects (Fig 2.16).



### Potential triggers

Several **potential triggers** could have caused fainting, such as:

- E motional shock
- P pain
- O overexertion
- E exhaustion
- Lack of food
- Certain phobias
- Low blood pressure
- S standing still in hot environment

Fig 2.16 Fainting.

### Signs and symptoms

The **signs and symptoms** of fainting usually comes in the form of:

- Pale, cool, moist, "clammy" skin
- Numbness in fingers and toes
- Nausea
- Light-headedness and dizziness
- Confusion
- Loss of consciousness



## FIRST AID TO FAINTING

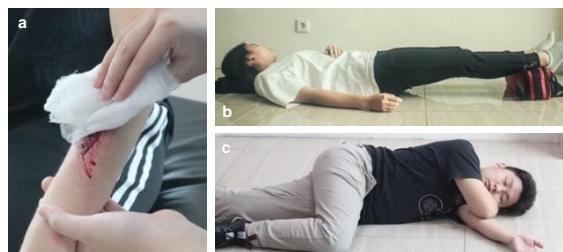
1. Ensure the patient's safety and evaluate responsiveness (**Fig 2.17**).
2. Lay the patient flat on his or her back.
3. Ensure if the CAB of the patient is normal (**Fig 2.18**).
4. Elevate the patient's leg to help the blood flow back to the brain (**Fig 2.19b**).
5. Loosen any tight clothing.
6. Try to revive the patient by shaking or tapping vigorously or yelling at them.
7. Provide plenty fresh air by opening windows and ask people not to crowd the patient.
8. Treat any injury sustained from the fall (**Fig 2.19a**).
9. Put the patient into recovery position if the patient is unconscious or is vomiting or bleeding from the mouth (**Fig 2.19c**).



**Fig 2.17** Evaluating responsiveness. (a) Check victim responsive; (b) Pain stimuli in nail bed, (c) supraorbital, (d) sternum; (e) Call for emergency medical service.



**Fig 2.18** Evaluate airway and pulse. (a) Head-tilt chin-lift; (b) Jaw-thrust maneuver; (c) Check breathing; (d) Check carotid pulse, or (e) radial pulse.



**Fig 2.19** First aid to fainting. (a) Treat any injury; (b) Elevate the patient's leg; (c) Recovery position.



## HOW TO MOBILIZE A PATIENT WITH A STRETCHER (4 PERSON CARRY):

1. Prepare the patient for mobilization (Fig 2.20a-b).
2. While on a squat position, on the count of three, lift the patient to your knees as shown in the image (Fig 2.20c-d).
3. Place the stretcher right next to the patient (Fig 2.20e).
4. On the count of three, carefully place the patient on top of the stretcher (Fig 2.20f).
5. To lift the stretcher, each helper stands at each end of the stretcher in a squatting position with bent legs and holds the stretcher handle as shown in the image (Fig 2.20g).
6. On the count of three, stand in unison while keeping the stretcher straight and parallel (Fig 2.20h).
7. On the count of three, move forward with your feet



Fig 2.20 Steps to mobilize a patient with a stretcher (4 person carry).

nearest to the stretcher first (Fig 2.20i).



## SEEK PROFESSIONAL HELP IF:

- The patient has **blue lips or face**
- The patient has **irregular or slow heartbeat**
- Experiences unusual symptoms such as **chest pain, shortness of breath, confusion, blurred vision, or difficulty talking**
- The patient is **difficult to awaken**
- The patient is **pregnant**
- The patient **has any medical condition that may underly fainting episodes**, such as heart disease.
- The patient **faints more than once a month**.
- The person **hit his or her head** when falling.



## 2.8 SEIZURES

**SEIZURE** is defined as simultaneous and uncontrolled contraction of groups of muscles due to disruption of brain function that may be accompanied by alteration of consciousness. There are two common types of seizure, which is absence seizure and tonic-clonic (convulsive) seizure.

### ABSENCE SEIZURE

**ABSENCE SEIZURE** is a form of seizure that involves **brief, sudden lapses of consciousness**.

#### Signs and symptoms

The **signs and symptoms** of absence seizure includes:

- Sudden stop in any activity.
- Looks like staring into distance or has blank look (Fig 2.21a).
- The attack is usually triggered by flashing lights and hyperventilation.
- Upward turn of eye and eyelids flutter (Fig 2.21b).
- **Automaticity:** lip smacking, chewing movement, finger rubbing, etc.
- Doesn't response to touch.
- Attacks usually lasts for less than 10 seconds but may reoccur (clustered).



Fig 2.21 Signs and symptoms of absence seizure. (a) Blank look; (b) Upward turn of eye and eyelids.

#### First aid to absence seizure

1. Keep the patient in safe environment
2. Keep out dangerous object that might hurt the patient from his or her surrounding
3. Remove the patient from sports, water, or other potentially harmful activities (such as driving) during the cluster of attack or as long as the patient is disoriented.
4. Stay with and calm the patient after the attack (Fig 2.22).



Fig 2.22 Stay and observe the patient.



## TONIC-CLONIC (CONVULSIVE) SEIZURE

**CONVULSIVE SEIZURE** is the type of seizure that has two phase, tonic (stiffening) and clonic (jerking).

The **tonic phase precedes the clonic phase**, and is characterized by:

- Generalized muscle stiffening
- A cry or groan due to air being forced past the vocal cords
- Loss of consciousness and usually falling to the floor
- The patient may bite his or her tongue or inside of the cheek.

While the **clonic phase** is characterized by:

- Rhythmical jerking of the arms and legs, bending and relaxing at the elbows, hips, and knees.
- Usually last a few minutes, then the jerking slow and stops.

Other characteristic of **convulsive seizure** includes:

- The person may look a little blue if the attack lasts too long and he or she is having trouble breathing.
- The person may lose control of the bladder or bowel as the body relaxes, leading to urination or defecation.
- Consciousness returns slowly.
- The duration of an attack usually about 1-3 minutes and the person may be sleepy, confused, irritable, or depressed afterwards.



## First aid to convulsive seizure

1. Help the person to lie down and place something soft under the head and neck (Fig 2.23a)
2. Remove any potentially dangerous items from the patient's surrounding. Protect the patient, especially the head.
3. Take note of the length and the form of the seizure.
4. Position the person so that he or she turn onto one side with head and mouth angled toward the ground to prevent the patient from choking on his or her own saliva and the tongue from blocking the airway.
5. Loosen any tight and restrictive clothing and accessories.
6. Remove glasses or neck chains, but never try to take out contact lenses as it could potentially scratch the cornea
7. Do not hold or restrain the patient during the attack (Fig 2.23b).
8. Do not put anything into the patient's mouth (Fig 2.23c).



**Fig 2.23** First aid for convulsive seizure. (a) Place something soft under the head and neck; (b) Do not hold or restrain patient, and (c) do not put anything into the patient's mouth.

**NOTE: ALWAYS document a seizure attack! Video recording is preferable whenever possible!!**

## SEEK PROFESSIONAL MEDICAL HELP IF:

- The attack is the **person's first seizure**.
- The person has **difficulty breathing**.
- The person's **consciousness doesn't improve** after the attack.
- The seizure is **longer than 5 minutes**.
- The person **undergoes another seizure** soon after the first one.
- The person is **hurt or injured** during the seizure.
- The seizure **happens in water**.
- The person has **complicating health problems** such as diabetes and heart disease.



# Cardiopulmonary Resuscitation Injury Emergencies

Chapter

# 3



## OUTLINE

- 3.1 EXTERNAL BLEEDING AND WOUNDS
- 3.2 HEAD INJURIES
- 3.3 NECK AND SPINAL INJURIES
- 3.4 BROKEN BONES
- 3.5 SPRAINS AND STRAINS
- 3.6 BURN AND ELECTRICAL INJURIES

## OBJECTIVES

- EXTERNAL BLEEDING AND WOUNDS
  - Stop bleeding
  - Clean the cut/wound
  - Protect the wound
- HEAD INJURIES
  - Protect airways
  - Control wounds
  - Call for help
  - Positioning
- NECK AND SPINAL INJURIES
  - Keep casualty still
  - Call for help
- BROKEN BONES
  - Prevent movement from the injured site
  - Mobilize patient to the hospital
  - Maintaining patient in a comfort position on the way to the hospital
- SPRAINS AND STRAINS
  - Reduce swollen site & pain
  - Call for help
- BURN AND ELECTRICAL INJURIES
  - Determine grade of burn
  - Stop burning process
  - Remove constrictive clothing

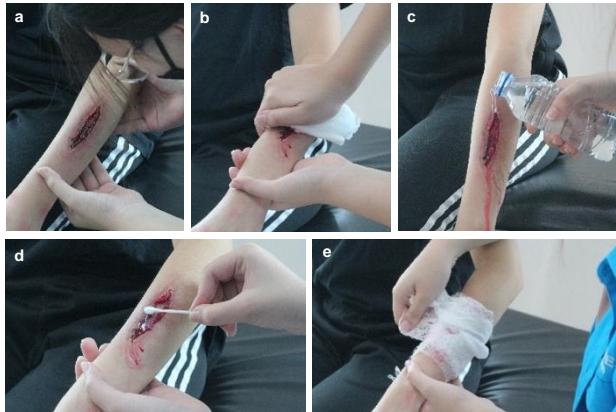




## 3.1 EXTERNAL BLEEDING AND WOUNDS

### HOW TO TREAT BLEEDING WOUNDS:

1. Observe and apply direct pressure on the cut/wound with a clean cloth (Fig 3.1a-b).
2. Clean the cut/wound with soap and warm water, then rinse. **DO NOT** use hydrogen peroxide/iodine (Fig 3.1c).
3. Protect the wound and apply antibiotic cream to reduce risk of infection (Fig 3.1d).
4. Cover the cut/wound with sterile bandage (Fig 3.1e).



**Fig 3.1** First aid to external bleeding and wounds. (a) Observe and (b) apply direct pressure with a clean cloth; (c) Rinse the wound; (d) Apply antibiotic cream and (e) cover the wound with sterile bandage.

### CALL EMERGENCY IF:

- Bleeding is severe.
- You suspect internal bleeding.
- There is an abdominal/chest wound.
- Bleeding can't be stopped after 10 minutes of firm & steady pressure.
- Blood spurts out of wound.



## 3.2 HEAD INJURIES

### HOW TO TREAT HEAD INJURY:

1. Protect the victim's airway by tilting back the jaw.
2. Protect the victim's neck while trying to keep their airway open (Fig 3.2a).
3. Carefully apply direct pressure to any scalp wounds that are bleeding (Fig 3.2b).
4. Watch for vomiting (Fig 3.2c).
5. If they are conscious, lay them on the floor with head and shoulders slightly raised. If unconscious, place them in the recovery position while protecting their neck (Fig 3.2d).
6. Call the emergency services.
7. Continue to watch their breathing, circulation, and level of consciousness until help arrives.



**Fig 3.2** First aid to head injuries. (a) Observe and protect; (b) Apply direct pressure to the wound; (c) Watch for vomiting; (d) Recovery position.



### 3.3 NECK AND SPINAL INJURIES



Fig 3.3 Signs of neck & spinal injuries. (a) Battle sign; (b) Rhinorrhea; (c) Otorrhea.

#### HOW TO TREAT NECK AND SPINAL INJURY:

1. Keep the casualty in the same position they are found (**Fig 3.4a**). DO NOT try to straighten or pull on the neck.
2. Ask someone else to get some towels or clothing and place these rolled-up items on either side of the neck to keep it still.
3. Call for emergency services (**Fig 3.4b-c**).
4. Monitor their breathing and pulse. If either start or stop, be prepared to start resuscitation procedures.
5. If they vomit, “log roll” them into their side (**Fig 3.4d-f**).



Fig 3.4 First aid to neck and spinal injuries. (a) Assess and keep in the same position; (b, c) Call for emergency services; (d-f) Log roll.



## 3.4 BROKEN BONES

**BROKEN BONES** (fracture) is a medical condition that happens when excessive force applied to your bone causes it to break or shatter.

### RECOGNIZING A BROKEN BONES

1. Limited use of the injured area (reduced motility)
2. Local swelling & bruising (Fig 3.5a)
3. Numbness or tingling downstream from the break
4. A limb that looks shorter, twisted, or bent
5. Grating noise or feeling
6. Loss of strength

### PERFORMING BASIC BROKEN BONES FIRST AID

1. Assess the injured area (Fig 3.5a).
2. Stop any bleeding:
  - a. Apply firm pressure to the wound with a sterile and absorbent bandage.
  - b. Hold for few minutes.
3. Immobilize broken bone (Fig 3.5b-f):
  - a. Splint a fractured bone using a simple splint (piece of stiff stuff like wooden board or folded magazine).
  - b. Tie these supports together firmly (using tape, string, rope, etc).
4. Check blood circulation below the injured site every 10 minutes!
5. On open fracture, remember to cover the wound with a sterile dressing, secure it with a bandage and apply pressure!



**Fig 3.5** First aid to external bleeding and wounds. (a) Assess; (b) Immobilize broken bone; (c) Check for capillary refill time; (d) Align patient's arm 90 degrees in front of patient's body, then (e) check for capillary refill time again; (f) Put on arm sling, then (g) check for capillary refill time again.



## 3.5 SPRAINS & STRAINS

### SPRAIN

**SPRAIN** is a stretching or tearing of ligaments—the tough bands of fibrous tissue that connect two bones together in your joints.

#### Recognizing Sprain

- Pain in & around the joint
- Swelling & bruising around the joint (Fig 3.6a)
- Patient may not be able to bear weight on the leg



Different Grades Ankle Sprain



<https://www.kilkennyphysioclinic.com>

Fig 3.6 Recognizing sprain. (a) Swelling and bruising; (b) Grades of ankle sprain.

### STRAIN

**STRAIN** is an injury caused by a tear in a muscle or tendon. In addition, overstretching can also be the cause of this injury. Twisting or pulling of this tissue can cause strain. These soft tissue injuries can occur suddenly or gradually.

#### Sprains & Strains First Aid

##### P.O.L.I.C.E (Fig 3.7)

###### Protect

- Protect the injury for further damage.

###### Optimal Loading

- Early activity encourages early recovery. Progressive loading of your injury can help promote optimal healing. It can prevent delays in returning to normal that may develop with prolonged rest such as joint and muscle tightness or muscle wasting.

###### Ice

- Ice for 20-30 minutes.
- Reducing swollen, bruises & pain.
- Use dry or damp cloth between skin and ice pack.

###### Compression

- Wrap injured part firmly.



Fig 3.7 First aid for sprains & strains. P.O.L.I.C.E.



- Use elastic bandage, cloth or compression bandage.

## Elevation

- Decrease blood flow to injured part & decrease swelling.
- Use objects and pillows.

## Do Not HARM

### Heat

- Heat can increase blood flow that can increase blood swelling.

### Alcohol

- Drinking alcohol can increase bleeding and swelling in injured area.

### Running

- Running or other forms of exercise that may cause further damages.

### Massage

- Massaging the injured area can cause more swelling or bleeding.



## 3.6 BURN AND ELECTRICAL INJURIES

**BURN** is damage to the skin or deeper tissues, caused by sun, hot liquids, fire, electricity, or chemicals.

### HOW TO TREAT BURN WOUNDS

1. Remove the source.
2. Cool it down over cool running water for 10-15 minutes or give cold damp towel (Fig 3.8a).
  - **DO NOT** apply ice.
  - **DO NOT** immerse the wound in cold water.
3. Remove items from burned area.
4. Avoid breaking blisters.
5. Apply aloe vera or lotion (on minor burns) (Fig 3.8b).
  - **DO NOT** use butter, ointments, toothpaste, lemon, or other home remedies.
6. Elevate burned area.
7. Cover the burned area loosely (Fig 3.8c).



Fig 3.8 First aid for burn wounds. (a) Cool running water; (b) Apply aloe vera or lotion (on minor burns); (c) Cover burned area(s) loosely.

### CALL EMERGENCY/SEEK MEDICAL ATTENTION IF:

- Burn penetrates whole skin
- Skin is leathery/charred looking, with white, brown, or black patch
- Hands, feet, face, or genitals involved
- The person is an infant/senior



## HOW TO TREAT ELECTRICAL BURN

1. Approach scene if safe, switch off the power supply.
2. **DO NOT** touch casualty on high voltage situations.
3. Do not move casualty unless necessary.
4. Call for emergency medical service immediately
5. Assess casualty if you are sure, it's safe.
6. Check casualty's pulse and breathing (Fig 3.9a-e), be prepared to do CPR.
7. Treat burned area(s) by covering it loosely (Fig 3.10a), while waiting for medical assistance to arrive.
  - **DO NOT** cool it down with cool running water or immerse it in water.
  - **DO NOT** apply ice.
8. Keep casualty warm (Fig 3.10b).



Fig 3.9 Evaluate airway and pulse. (a) Head-tilt chin-lift; (b) Jaw-thrust maneuver; (c) Check breathing; (d) Check carotid pulse, or (e) radial pulse.



Fig 3.10 First aid for electrical burn. (a) Cover burned area(s) loosely; (b) Keep casualty warm.

# Cardiopulmonary Resuscitation

# Environmental

# Emergencies

Chapter

# 4



## OUTLINE

- 4.1 BITES AND STINGS
  - Snake and bites
  - Spider bites
  - Bee & wasp stings
  - Tick bites
  - Superficial animal bites
  - Deep animal bites
- 4.2 HEAT-RELATED EMERGENCIES
- 4.3 COLD – RELATED EMERGENCIES
  - Frostbite
  - Hypothermia
- 4.4 POISONING EMERGENCIES

## OBJECTIVES

- BITES AND STINGS
  - Initial treatment for bites and stings
  - In general
- HEAT-RELATED EMERGENCIES
  - Keep casualty in cool place
  - Rehydration
  - Call help if no improvement
- COLD-RELATED EMERGENCIES
  - FROSTBITE
    - Warm the pain area slowly to avoid further damage
    - Seek medical services if necessary
  - HYPOTHERMIA
    - Prevent further loss of heat
    - Warm the person with hypothermia
- POISONING EMERGENCIES
  - Recognize sign and symptoms of poisoning
  - Performing simpleation until help arrives





## 4.1 BITES AND STINGS

### GENERAL FIRST AID FOR BITES & STINGS

- Remove the stings if it's still in the skin.
- Wash the area with soap and water, keep it clean and dry (Fig 4.1).
- Apply a cold compress, an ice pack, or cool running water at least for 10 minutes.
- Elevate the affected area, if possible, to help reduce the swelling.
- **AVOID** scratching the area to reduce the risk of infection. Pain, swelling, and itchiness can last a few days.
- **IMMEDIATELY** call an ambulance if there is swelling around the lips, tongue or throat or difficulties in breathing after insect bites.



**Fig 4.1** First aid for bites & stings. Wash the area with soap and water.

### SNAKE BITES

#### Non-venomous Snake Bites

- **DO NOT** treat bites as non-venomous bite unless, you are sure.
- Stop the bleeding. Apply firm pressure to the wound with a sterile gauze or bandage.
- Clean the wound carefully, wash it with clean water and soap. Pat it with sterile piece of gauze.
- Treat the wound with an antibiotic ointment and a bandage.
- Seek medical attention to make sure the bite is cleaned.
- Drink plenty of fluids (about 2 liters of water per day).
- Return to doctor if there is any sign of infection such as redness, swelling, drainage, or fever.



<https://www.istockphoto.com>

**Fig 4.2** Non-Venomous Snake



## Venomous Snake Bites

- Call an ambulance or transport the victim to the nearest hospital.
- Reassure the victim who may be very anxious. Take note of the snake's appearance.
- Remove clothing, jewelry, or constricting items (bites from venomous snakes can cause rapid swelling).
- Clean the wound (**Fig 4.1**).
- Immobilize and support the area of the bite.
- **DO NOT** try to suck venom from the bite site.
- **DO NOT** flush it with water.
- **AVOID** using ice or tight bandages.



**Fig 4.3** Venomous Snake

<https://www.istockphoto.com>

## SPIDER BITES

Most Indonesian spider are not life threatening

### Call Emergency

**IMMEDIATELY** call an ambulance or seek medical services if the victim with spider bites has the following symptoms:

- Nausea
- Muscle spasm
- Difficulty breathing
- Tightening in the throat that makes it hard to swallow
- Sweating profusely
- A stripy pattern spreading from the bite area
- Feeling faint

### Performing Spider Bites First Aid

1. Clean the area with soap and water.
2. Apply a cool compress for 15 minutes each hour. Use clean cloth dampened with water or filled with ice.
3. Elevate the affected area.
4. Relieve minor symptoms of pain using acetaminophen.
5. If the wound is itchy, an antihistamine, such as diphenhydramine (Benadryl) or cetirizine (Zyrtec) might help.
6. Monitor the bites for the next 24 hours.

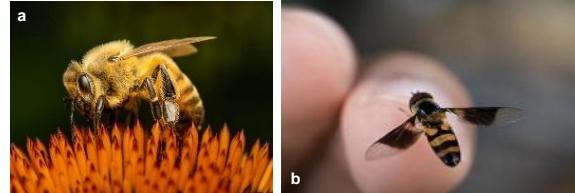


## BEE & WASP STINGS

### Call Emergency

**IMMEDIATELY** call an ambulance or seek medical services if the victim experiencing a severe reaction, such as:

- Shortness of breath
- Throat or tongue swelling
- Wheezing
- Weakness
- Feeling faint



<https://www.pexels.com>

Fig 4.4 (a) Bee; (b) Wasps.

### Performing Bee & Wasps Stings First Aid (Fig 4.5)

- Remove the sting.
- Scrape it out sideways with something with a hard edge, such as a bank card, or your fingernails.
- Don't pinch the sting with your fingers or tweezers because you may spread the venom.
- Wash the area with soap and water.
- Apply a cool compress for at least 10 minutes.
- Raise or elevate the affected area if possible.

### BEE STING FIRST AID



<https://www.freepik.com>

Fig 4.5 First aid for bee & Wasps Stings.



## TICK BITES

### Call Emergency

**IMMEDIATELY** call an ambulance or seek medical services if the victim with tick bites has the following symptoms:

- Rash occurs
- Fever develops
- Tenderness, swelling, redness
- Pus
- Red streaks leading from the bite

### Performing Tick Bites First Aid

1. Conduct a full-body and hair search for ticks.
2. Use tweezers to grasp the tick as close to the skin as possible (pull upward).
3. Pull out any remaining parts of the tick with tweezers.
4. Wash the area with soap and water.

## SUPERFICIAL ANIMAL BITES

### Call Emergency

**IMMEDIATELY** call an ambulance or seek medical services if the person with spider bites has the following symptoms:

- Bitten or exposed to the bodily fluid (that may carry rabies).
- Has not had a tetanus shot in five years.
- Has pain, swelling, redness, or pus draining from the wound.
- Might need stitches.

### Performing Superficial Bites First Aid

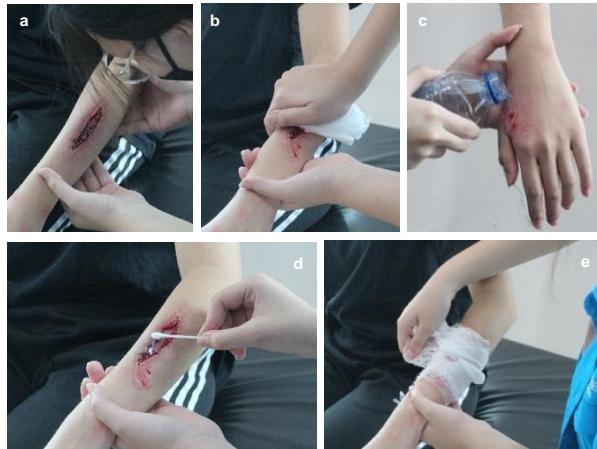
- Clean the wound carefully, wash it with clean water and soap.
- Pat it dry with sterile piece of gauze.
- Apply firm pressure to the wound with a sterile gauze or bandage.



## DEEP ANIMAL BITES

### Performing Deep Animal Bites First Aid (Fig 4.6)

- Apply firm pressure to the wound to stop the bleeding with a sterile gauze or bandage.
- Clean the wound with running water for 5 minutes.
- Dry the wound and cover it with sterile bandage.
- Raise the affected area.
- Transport the victim to the nearest hospital.



**Fig 4.6** First aid animal bites. (a) Observe and (b) apply direct pressure with a clean cloth; (c) Rinse the wound; (d) Apply antibiotic cream and (e) cover the wound with sterile bandage.



## 4.2 HEAT-RELATED EMERGENCIES

**HEAT-RELATED EMERGENCIES** is a group of illness that is caused by hot weather. Heat-related illness is commonly divided into heat exhaustion and heat stroke. Heat exhaustion and heat stroke both commonly occurs due to high temperatures and humidity, lack of drinking, sweating a lot, and disturbances in the body's temperature regulation. Despite the similarities, they both have many differences as can be seen in the table below:

Heat exhaustion	Heat stroke
Feeling faint or dizzy	Feeling confused
Excessive sweating	<b>NOT</b> sweating
Clammy skin	Temperature over 40°C, hot, dry skin
Nausea or vomiting	Nausea or vomiting
Rapid, weak pulse	Rapid, strong pulse
Muscle cramps	May lose consciousness or experience seizures

### FIRST AID TO HEAT-RELATED ILLNESS

1. Place the casualty in a cool place with a fan.
2. Sponge the casualty's skin with tepid water and give them plenty of cool water to drink (Fig 4.7).  
**DO NOT** give salt as this can cause further dehydration if used incorrectly.
3. If the casualty cannot drink because of nausea or vomiting, or there is no improvement after 1 hour, then call a doctor or the emergency service.
4. A medical adviser will tell you what to give or recommend an over-the-counter oral rehydration solution.



Fig 4.7 Drink cool water.

## 4.3 COLD-RELATED EMERGENCIES

**COLD-RELATED EMERGENCIES** are a group of illness caused by exposure to cold temperatures which result in a decrease of body temperature. If left without care, cold related emergencies can cause tissue injury and in worst case, organ system failure. Two of the most common cold-related emergencies are frostbite and hypothermia.

### Sign and symptoms of frostbite

- Numbness
- Central pallor
- Surrounding erythema
- Desquamation
- Dysesthesia
- Skin blistering
- Hemorrhagic blister
- Loss of skin of the affected part

**Fig 4.8** **Sign and symptoms of frostbite.** Loss of Skin of the affected part.

(Fig 4.8).

### Sign and symptoms of hypothermia

- Shivering
- Numbness
- Nausea
- Pale-dry skin
- Bradycardia
- Bradypnea
- Lowered blood pressure and heart rate

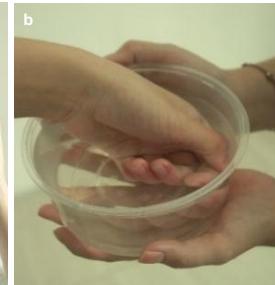


## FIRST AID FOR COLD-RELATED EMERGENCIES

1. Call EMS/1-1-8 for severe hypothermia.
2. Treat the victim with care and monitor his or her breathing carefully.
3. Keep victim away from cold and to shelter.
4. Remove all wet clothing and dry the victim carefully.
5. Warm the victim by wrapping in a blanket or dry clothes. Cover the head and neck. Warm the victim slowly (**Fig 4.9a-b**).
6. If a hot water bottle or heating pad is



- available, place it under the armpits and on the chest only, being careful not to light these areas.
7. Do not rub the affected area with cold.
8. If the victim seems alert, give a sip of warm liquid to drink (**Fig 4.10a**).
9. Active body heating such as hot baths should be used only when the person is away from a medical facility (**Fig 4.10b**).
10. Keep the area warm to prevent re-freezing.





## 4.4 POISONING EMERGENCIES

**POISONING** is injury or death due to swallowing, inhaling, touching, or injecting various drugs, chemicals, venoms, or gases.

### Sign and Symptoms

- Burns or redness around the mouth and lips
- Breath that smells like chemicals, such as gasoline or paint thinner
- Vomiting
- Difficulty breathing
- Drowsiness
- Confusion or other altered mental status

## FIRST AID FOR POISONING EMERGENCIES

### Swallowed poison

- Remove anything remaining in the person's mouth. If the suspected poison is a household cleaner or other chemical, read the container's label and follow instructions for accidental poisoning.

### Poison on the skin

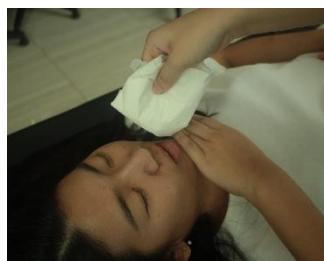
- Remove any contaminated clothing using gloves. Rinse the skin for 15 to 20 minutes in a shower or with a hose.

### Poison in the eye

- Gently flush the eye with cool or lukewarm water for 20 minutes or until help arrives.

### Inhaled poison

- Get the person into fresh air as soon as possible (Fig 4.10).
- If the person vomits, turn his or her head to the side to prevent choking.
- Begin CPR if the person shows no signs of life, such as moving, breathing, or coughing.



**Fig 4.10** First aid for poisoning emergencies. Cover the airway system.



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