Chapter 19

Medical Emergencies

Objectives

1. Define terms related to medical emergencies.
2. List the objectives of first aid.
3. List general priorities in working with patients in acute situations.
4. Explain the purpose of an emergency cart and its contents.
5. Differentiate between the two primary types of external cardiac defibrillators.
6. Explain the four levels of consciousness.
7. Describe the signs and symptoms of various medical emergencies.

Objectives

8. Discuss methods of avoiding the factors that contribute to shock.
9. Discuss factors that contribute to the development of hypoglycemia.
10. Describe the appropriate procedure for handling patients with various medical emergencies.
11. Describe the correct procedure for administration of cardiopulmonary resuscitation.
12. Describe the general procedure for the use of an automatic external cardiac defibrillator.
13. Demonstrate appropriate principles of cardiopulmonary resuscitation.
What Constitutes an Emergency?

Any situation in which the condition of a patient or a sudden change in medical status necessitates immediate attention and action.

Medical Imaging Professional’s Role

- Preserve life
- Avoid further harm to the patient
- Obtain appropriate medical assistance as quickly as possible
- Must be able to recognize emergency situation and initiate emergency measures

Emergency Priorities

- Ensure open airway
- Control bleeding
- Take measures to prevent or treat shock
- Attend to wounds or fractures
- Provide emotional support
- Continually reevaluate and follow up appropriately
Crash Cart

- You must know where the department crash cart is located.
- Become familiar with the crash cart contents and their locations.
- The ready availability of emergency equipment and drugs reduces the time required to respond to medical crises.

Locate Emergency Equipment

- Emergency cart or crash cart
- Oxygen
- Wall-mounted suction
- AED (automatic external defibrillators)

Radiology Emergencies

- Shock
- Anaphylaxis
- Pulmonary embolus
- Diabetic reactions
- Cerebrovascular accident (CVA)
- Cardiac and respiratory failure
- Syncope
- Seizures
Head Injuries

- Assess patient’s level of consciousness
- Clinical symptoms may not manifest right away
- Hematoma
- Brain swelling
- CT is preferred modality for assessment

Levels of Consciousness

- Alert and conscious
- Drowsy
- Unconscious
- Comatose

Know Your Patient

- Assess patient at beginning of procedure
- Note signs of deterioration from one level of consciousness to another
- Deteriorating head injury
Deteriorating Situations

<table>
<thead>
<tr>
<th>Signs</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sudden irritability</td>
<td>Maintain an open airway</td>
</tr>
<tr>
<td>Lethargy</td>
<td>Move patient minimally</td>
</tr>
<tr>
<td>Slowing pulse rate</td>
<td>Stop radiographic procedure</td>
</tr>
<tr>
<td>Slowing respiratory rate</td>
<td>Get medical assistance ASAP</td>
</tr>
<tr>
<td>Change in level of consciousness (LOC)</td>
<td>Monitor patient’s vital signs</td>
</tr>
</tbody>
</table>

Level of Consciousness (LOC)

- Ask patient to state name, date, address, and reason for coming to radiology.
- As you instruct patient in positioning, note patient’s ability to follow your commands.
- Assess the patient’s vital signs against a baseline to note change.
- Changes in patient’s neurologic status or LOC must never be ignored!

Shock

A failure of the circulatory system to support vital body functions
The Shock Continuum

- Compensatory Stage
- Progressive Stage
- Irreversible Stage

Classes of Shock

- Neurogenic
- Hypovolemic Shock
- Cardiogenic Shock
- Vasogenic Shock

Hypovolemic Shock Classes

- Class I
  - Blood loss of 15%
- Class II
  - Blood loss of 15% to 30%
- Class III
  - Blood loss of 30% to 40%
- Class IV
  - Blood loss of more than 40%
What Are the Common Signs and Symptoms of Shock?

How Can Shock Be Prevented?

Anaphylactic Shock

- Vasogenic shock
- Most common type of shock encountered in medical imaging
- May occur with contrast media administration
- Signs and symptoms must be monitored as routine procedure with contrast studies
- Alert physician when signs occur
Diabetes

- Healthy patient adjusts own insulin production and excretion to meet carbohydrate demands of the body.
- Patients with diabetes may be treated with insulin shot or diabetic pills and will need to adjust diet to balance insulin depending on whether they are Type I or Type II.

Hypoglycemia

- Excessive insulin is present
- Can occur if patient takes normal dose of insulin and does not eat (exam preparation)
- Signs of insulin shock
- Patients often recognize early signs and need a quick form of carbohydrate or take a glucose tablet

Hyperglycemia

- Excessive sugar in the blood and characteristic of diabetes
- Develops gradually over a period of hours or days
- Excessive thirst and urination, dry mucosa, rapid and deep breathing, drowsiness, and confusion
- Insulin required—leads to diabetic coma if left untreated
Respiratory Distress

- Asthma
- Choking

Heimlich Maneuver

![Image of Heimlich Maneuver]

Obstructed Airway

- If the foreign object is visible in the open mouth, the rescuer should perform a finger sweep.
- If unsuccessful, begin CPR to force obstruction up.
- Check the mouth for obstruction before each set of ventilations.
Heimlich Maneuver

Pregnant Patient

Infant

FIG. 19-5 The Heimlich maneuver adapted for a woman in an advanced stage of pregnancy.

FIG. 19-6 The Heimlich maneuver on an infant. Position the infant face up over the forearm. Use two or three fingers to perform the abdominal thrust.


Cardiopulmonary Resuscitation (CPR)

• Medical imaging professionals should be familiar with an institution’s protocol for cardiac emergencies
• The professional technologist is encouraged to become familiar with all required skills and to achieve certification in all CPR procedures
• On realization that a patient has experienced cardiac arrest, the appropriate alert should be initiated before CPR is begun
• CPR must be initiated immediately on thorough verification that cardiopulmonary distress exists
• ABCs of CPR


Cerebrovascular Accident

• Commonly called a stroke
• Strokes are more likely to occur in older patients (over 75 years of age) but can occur in any adult
• May develop gradually or suddenly
• Warning signs
• Loss of consciousness may necessitate CPR
• Patient needs to be placed in recumbent position ASAP

Minor Medical Emergencies

- Nausea and Vomiting
- Epistaxis
- Vertigo and Syncope
- Seizures
- Falls
- Wounds

Epistaxis

- Seldom life-threatening
- Lean patient forward
- Pinch affected nostril against the midline nasal cartilage with finger pressure
- Keep patient upright in chair
- If bleeding persists, apply a moist compress and seek medical attention if bleeding continues for 15 minutes

Vertigo

- Dizziness
- Vertigo is often a precursor to syncope
- A patient who experiences vertigo should be assisted to a seated or recumbent position
- Watch for orthostatic hypotension and vertigo when sitting patients up from a recumbent position
Syncope

- Fainting
- Syncope is a self-correcting, temporary state of shock and the result of lack of blood flow to the brain
- Treatment is aimed at increasing blood flow to the head
- Assist patient into a recumbent position

Seizures

- Unsystemic discharge of neurons of the cerebrum that results in an abrupt alteration in brain function
- Accompanied by change in level of consciousness
- Generally a symptom of an underlying condition
- Take note of seizure event
- Begins with little or no warning

Care of Seizure Patients

- Gently secure patient to prevent injury.
- Call for assistance.
- Protect the patient’s privacy.
- Do not insert hard objects into the mouth or put your finger(s) into the mouth.
- Remove dentures or foreign objects.
- Do not finger-sweep with your finger.
- Place blanket or pillow under the patient’s head.
- Observe patient and record time of seizure duration.
- After seizure, place patient in Sims position and place face downward to permit vomitus and secretions to escape.
- After event ensure an open airway.
Wounds

• Hemorrhage
• Burns
• Wound Dehiscence

Conclusion

• Recognize emergency conditions and act appropriately.
• Ask for assistance in any emergency situation.
• Maintain competency with basic emergency skills.
• Become certified in CPR.
• Use your medical "common sense" in emergencies.