

Emergency Nursing 110

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ASSESSING LIFE-THREATENING CONDITIONS

Initial Status Assessment

- A. Airway.
 1. Open airway—if airway is obstructed, victim cannot get oxygen.
 - a. Move fast—time is critical because brain damage could occur after 4 minutes.
 - b. Check if tongue is obstructing airway—this is the most common obstruction.
 2. Check if spine stabilization or immobilization is needed.
 3. Check for respiratory distress, stridor, apnea, drooling, expectorating blood, universal sign for choking.
- B. Breathing
 1. Assess breathing by watching rise and fall of chest. Check rate, depth, pattern.
 2. Listen for air being expelled and for air movement through *both lungs*.
 3. Use head-tilt/chin-lift method if victim is not breathing and airway is not obstructed.
 - a. Feel or hear for air movement, which is a reliable indicator of an open airway.
 - b. If no response, repeat procedure. (If automated external defibrillator [AED] is available, apply to victim.)
- C. Circulation.
 1. Check carotid or femoral pulse.
 2. Assess bleeding—if not controlled within a short period of time, victim will go into shock. (See Clinical Signs of Blood Loss box, p. 496.)
 3. Assess color, temperature, and moisture of skin.
 4. Assess capillary refill.
 5. Identify type of bleeding.
 - a. Arterial bleeding (spurting blood).
 - b. Venous bleeding (flowing blood).
 - c. Capillary bleeding (oozing blood).
 6. Choose appropriate method to control bleeding.
 - a. Direct local pressure—place direct pressure over wound and press firmly (95% of bleeding can be controlled by direct pressure with elevation).
 - b. Maintain compression by wrapping wound firmly with pressure bandage.
 - c. Elevate wound above level of heart.
 - d. Use pressure point to slow blood flow to wound—brachial point for arm, femoral point for leg.
 - e. Use tourniquet if bleeding cannot be controlled by other methods—this is a last resort because it can present a serious risk to the affected limb if no circulation is present.

Secondary Status Assessment

- A. Remove clothes or helmet for total examination of victim.
 1. Move client to private room or area.
 2. Cover client to keep warm.
- B. Obtain vital signs—temperature, pulse, respiratory (T,P,R) and blood pressure (BP)—including pain level.
- C. Check initial intervention into an emergency situation (e.g., open wound, bleeding).
- D. Follow up major assessment interventions.
 1. Heart or echocardiogram (ECG) assessment.
 2. Oxygen saturation.
 3. Urinary catheter if necessary.
 4. Gastrointestinal (GI) tube insertion if necessary.
 5. Blood and laboratory studies.
 6. Pain/anxiety level.
 7. General appearance and demeanor, including mental status.
- E. Pay attention to family accompanying client.
- F. Obtain full history from client or family.
 1. Current problem or complaint.
 2. Allergies.
 3. Medications/herbs client is taking.
 4. Past health history, including surgeries.
 5. Physical assessment of client.

COMMON EMERGENCIES

Wounds

Definition: Break in the continuity of the tissue of the body, either internal or external.

- A. Classification.
 1. Open—break in the skin or mucous membrane.
 2. Closed—injury to underlying tissues without a break in the skin or mucous membrane.
- B. Types of open wounds.
 1. Incised.
 2. Contused.
 3. Lacerated.
 4. Punctured.
- C. The RYB wound classification classifies open wounds that are healing—not usually an emergency.
 1. Red wounds (R) are in the inflammatory, proliferative, or maturation phase of healing.
 2. Yellow wounds (Y) are infected or contain fibrinous slough and aren't ready to heal.
 3. Black wounds (B) contain necrotic tissue and aren't ready to heal.
 4. Treatment options are based on wound color.

- ◆ D. First aid for open wounds.
 1. Stop bleeding immediately.
 2. Protect wound from contamination and infection.
 3. Provide shock care.
 4. Obtain medical attention.
- ◆ E. Techniques to stop severe bleeding.
 1. Direct pressure.
 2. Elevation.
 3. Pressure on supplying artery.
 4. Tourniquet.
- F. Characteristics of closed wounds.
 1. No break in skin.
 2. Blood loss may be from outer openings of body cavities.
 3. Usually caused by an external force.
 4. Victim demonstrates signs of internal bleeding.
- ◆ G. First aid for closed wounds.
 1. Check for fractures and other internal injuries.
 2. Treat for shock.
 3. Do not give fluids by mouth if internal injuries are suspected.
 4. Apply ice to small areas of closed wounds.
- ◆ H. Measures to prevent contamination or infection of wounds.
 1. Do not remove cloth pad initially placed on wound.
 2. Do not cleanse deep wounds that require medical attention.
 3. Use sterile dressing or cleanest dressing available.
 4. Do not remove deeply embedded objects.

Choking

Definition: Temporary or permanent asphyxia due to obstruction of the airway.

- ◆ A. Signs and symptoms.
 1. Violent choking.
 2. Alarming attempts at inhalation.
 3. Cyanosis of face, neck, and hands.
 4. Cessation of breathing.
 5. Inability to speak; universal sign for choking.
 6. Unconsciousness.
- ◆ B. First aid measures.
 1. Remove object if possible.
 2. Allow victim to assume position of comfort.
 3. Encourage coughing.
 4. Use maneuver (see p. 502).
 5. If person collapses, check pulse and breathing. Start cardiopulmonary resuscitation (CPR) if indicated.
 6. Obtain medical assistance.

Poisoning

Definition: Introduction into the body or onto the mucous membranes, skin surface of any solid, liquid, or gas that tends to impair health or to cause death. This may be through inhalation, ingestion, injection, or contact.

- ◆ A. First aid treatment.
 1. Call doctor or poison control center (800-222-1222). Give the following information.
 - a. Age of victim.
 - b. Name and amount of poison taken.
 - c. Route of exposure.
 - d. Time exposure occurred.
 - e. Whether victim vomited.
 - f. Any signs of poisoning.
 - g. Any treatment rendered prior to arrival of emergency medical services.
 - h. Medical history
 - i. Any social, psychological, or environmental risk factors involved.
 2. If victim is conscious, give antidote, if known.
 3. Induce vomiting if material ingested is not strong acid or petroleum product as these will cause more tissue damage when vomited. With these substances, use activated charcoal.
 - a. 50–100 g activated charcoal or prepackaged charcoal/sorbitol product mixed with water.
 - b. The earlier charcoal is given, the more effective it is.
 4. If inhaled gases, remove victim to fresh air.
 5. If contact poison, wash exposed areas.
- B. Follow-up treatment as prescribed.

Frostbite and Cold Exposure

Definition: Tissues are frozen, which results in the formation of ice crystals in tissue and cells causing direct, irreversible damage.

- ◆ A. Signs and symptoms.
 1. White, waxy, or grayish-yellow skin.
 2. Local pain, sensation of burning, tingling, or numbness.
 3. Blisters.
 4. Area cold and numb.
 5. Mental confusion.
 6. Stinging, hot feeling after the tissue thaws.
- ◆ B. First aid treatment.
 1. Cover area.
 2. Rewarm area quickly in water bath (102 to 108°F or 38.9 to 42.2°C).
 3. Do not rub.
 4. Elevate affected area.

Dehydration

See Chapter 13, Pediatric Nursing.

Heat Exhaustion

Definition: Response to heat characterized by fatigue and weakness; occurs when intake of water cannot compensate for loss of fluids through sweating. Common in the very young and very old.

- ◆ A. Signs and symptoms (generally have rapid onset).
 1. Pale, clammy skin.
 2. Profuse perspiration.
 3. Headache.
 4. Anorexia.
 5. Nausea.
 6. Vomiting.
 7. Dizziness.
 8. Fainting.
 9. Core body temperature normal or elevated (37–44°C/98.6–111.2°F).
- ◆ B. First aid treatment.
 1. Offer victim sips of fluid and electrolyte replacement—one-half glass every 15 minutes for 1 hour.
 2. Remove restrictive clothing and have victim lie down and elevate feet.
 3. Place in cool environment.
 4. Apply cool, wet cloths.
 5. Monitor for circulation, airway, and breathing (CAB).
 6. Administer intravenous (IV) fluids and electrolytes as ordered.

Heatstroke

Definition: Response to heat characterized by extremely high body temperature due to disturbance in sweating mechanism—a medical emergency. Common in the very young and very old. Can be precipitated by medications that effect heat production, decrease thirst, or limit diaphoresis.

- ◆ A. Signs and symptoms occur rapidly.
 1. High body temperature—104°F/40°C or higher.
 2. Hot, red, dry skin.
 3. Rapid, strong pulse.
 4. Rapid breathing.
 5. Neurological symptoms—hallucinations, confusion.
- B. First aid treatment—stabilize CAB (circulation, airway, and breathing).
- C. Cool body quickly using whatever methods are available (remove clothing, ice water bath, fan, wet sheets, cool fluids, ice packs axilla and groin, etc.).

- D. Rehydrate with room temperature IV fluids.
- E. Monitor electrolytes and clotting factors.
- F. Check urine for myoglobin as this indicates rhabdomyolysis.
- G. Control shivering as this causes body temperature to rise.

Burns

Definition: Injury of the skin, subcutaneous tissue, muscle, and/or bones caused by heat, chemical agent, or radiation. Burn injury results in vasodilatation, increased capillary permeability, intravascular fluid loss, and tissue edema.

ASSESS THE AIRWAY FIRST AND OFTEN.

All individuals with burns should receive supplemental oxygen until deemed unnecessary.

- ◆ A. Classification of burns.
 1. Superficial (first-degree)—red skin, mild swelling and pain, rapid healing.
 2. Deep, partial thickness (second-degree)—red or mottled skin, blisters, considerable swelling, wet appearance due to loss of plasma, and severe pain.
 3. Full thickness (third-degree)—deep tissue destruction, white or charred appearance, complete loss of all layers of skin. Skin graft needed for healing.
- ◆ B. First aid treatment for superficial burn.
 1. Apply cold water or submerge in cold water.
 2. Prevent contamination.
 3. Avoid greasy substances.
 4. Apply aloe vera gel if available.
- C. First aid treatment for deep, partial-thickness burn.
 1. Immerse burn, if fairly small area, in cold water for 1–2 hours.
 2. Apply clean cloths.
 3. Blot area dry.
 4. Do not break blisters.
 5. Do not apply antiseptic preparations or home remedies.
 6. Elevate affected extremities.
 7. Seek medical attention.
- ◆ D. First aid treatment for full-thickness burns.
 1. Do not attempt to remove clothing from burned area.
 2. Cover burn with sterile dressing.
 3. Elevate involved extremities.
 4. Do not immerse burn in water or apply ice water.
 5. If medical help is not quickly available, and victim is conscious and not vomiting, give victim, at 15-minute intervals, a solution of fluid and electrolytes if available or ½ teaspoon of salt and ½ teaspoon of soda in a quart of water.

EMERGENCY BURN TREATMENT**A. Immediate care.**

1. Put out flames—have client drop to floor or ground and roll.
2. Apply cold water for brief duration in second-degree burn if seen within 10 minutes of injury.
3. Apply no ointment.
4. Cover burns with sterile or clean cloth.
5. Irrigate chemical burns thoroughly.

B. Emergency care.

- ◆ 1. Patent airway and IV line are established.
- 2. 100% oxygen given if burn occurred in enclosed area.
- 3. Degree and extent of burn is determined—adequate pain relief given.
- ◆ 4. Fluid balance is maintained.
 - a. First day, give formula of choice according to percentage of body burned and weight plus 2000 mL D₅W.
 - b. Second day, give colloids with solutions.
 - c. Urine output is maintained at least 50 mL/hr.
 - d. Vital signs—central venous pressure (CVP) line usually inserted.
- 5. Nasogastric tube (inserted to prevent paralytic ileus).
- 6. Tetanus toxoid given.

Fractures

Definition: A break or crack in a bone.

A. Types of fractures.

1. Open or compound—bone ends protrude through skin. Increased risk of neurovascular complications, blood loss, and infection
2. Closed or simple—bone cracked or broken but does not protrude through skin.

◆ **B. Signs and symptoms.**

1. Victim heard or felt bone snap.
2. Abnormal or false motion in body area.
3. Differences in shape and length of corresponding bones.
4. Obvious deformities.
5. Swelling.
6. Discoloration.
7. Pain or tenderness to touch.

◆ **C. First aid measures.**

1. Prevent motion of injured parts and adjacent joints.
2. Elevate involved extremities.
3. Apply splints.

D. Splinting—device used to immobilize extremity or trunk when a fracture is suspected.

1. Purpose.
 - a. Immobilize part.
 - b. Decrease pain.
 - c. Reduce chance of shock.
 - d. Protect against further injury during transportation.

2. Principles.

- a. Ensure splint is long enough to extend past joint on either side of suspected fracture to stabilize bone.
- b. Place pad between splint and skin to prevent pressure points and breakdown.
- c. Immobilize joints above and below location of suspected fracture.
- d. Apply splint to extremity; do circulation checks to fingers/toes.

See Fractures in Chapter 8, pages 373–380.

Sprains

Definition: Injury to a joint ligament or a muscle tendon in region of a joint.

◆ **A. Signs and symptoms.**

1. Swelling.
2. Tenderness.
3. Pain on motion.
4. Discoloration.

◆ **B. First aid measures.**

1. Do not allow walking if ankle or knee sprained.
2. Elevate limb above heart level for 24 hours.
3. Apply ice first 24 hours.
4. If swelling and pain persist, seek medical attention.

C. Common athletic injuries (even those that require clinical attention) use the formula RICE.

1. Rest—immobilize injured part.
2. Ice—apply ice to dull pain and reduce blood flow.
3. Compression—apply pressure with towel or elastic bandage.
4. Elevation—for first day or two keep injured area elevated.

Strains

Definition: Injury to a muscle and its facial sheath as a result of overstretching.

◆ **A. Signs and symptoms.**

1. Pain on motion.
2. Discoloration.
3. Edema.
4. Decrease in function.

B. First aid measures.

1. Bed rest.
2. Ice, then after the acute phase (24+ hours), heat may be applied.
3. Bed board (with back sprain).
4. Elastic wrap.

Dislocations

Definition: Injury to capsule and ligaments of a joint that results in displacement of a bone end at a joint.

- ◆ A. Signs and symptoms.
 1. Swelling.
 2. Obvious deformity.
 3. Pain upon motion.
 4. Tenderness to touch.
 5. Discoloration.
- B. First aid measures.
 1. Splint and immobilize affected joint in position as found.
 2. Do not reduce dislocation or correct deformity near a joint.
 3. Apply sling if appropriate.
 4. Elevate affected part if possible.

SHOCK STATES

Definition: A syndrome in which there is insufficient circulating blood volume for the size of the vascular bed, thereby resulting in inadequate tissue perfusion and impaired cellular metabolism.

Classifications of Shock States

- A. Low blood flow states.
 - ◆ 1. Hypovolemic shock.
 - a. Absolute hypovolemia—lowered intravascular volume.
 - (1) Blood loss—from trauma, surgery, etc., is most common cause.
 - (2) Plasma loss from burns; fluid loss from diarrhea, vomiting, etc.
 - b. Relative hypovolemia—shift of fluid volume out of vascular space into extravascular space.
 - (1) Etiology: pooling of fluids.
 - (2) Internal bleeding or massive vasodilation.
 - ◆ 2. Cardiogenic shock.
 - a. Myocardial dysfunction that results in compromised cardiac output.
 - b. Causes.
 - (1) Systolic dysfunction: inability to pump blood forward.
 - (2) Diastolic dysfunction: ventricles unable to adequately fill (cardiac tamponade).
 - (3) Arrhythmias.
 - (4) Structural abnormalities (valvular stenosis or regurgitation).
- ◆ B. Maldistribution of blood flow.
 1. Distribution shock is caused by massive vasodilation and pooling of blood.

CLINICAL SIGNS OF BLOOD LOSS

Less than 1000 mL loss

- Blood pressure normal.
- Heart rate normal.
- Respiratory rate normal.
- Capillary refill time normal.
- No mental status changes.

1000 to 2000 mL loss

- Blood pressure 70–90 mm Hg systolic.
- Heart rate—more than 120 beats/min.
- Cool, pale skin.
- Respiratory rate increased.
- Mental status changes.

More than 2000 mL loss

- Blood pressure—less than 90 mm Hg systolic.
- Heart rate—more than 140 beats/min.
- Cold, clammy skin.
- Respiratory rate increased—hyperventilation.
- Mental status confused.

2. Types of distributive shock include septic, neurogenic, and anaphylactic shock.
3. Results in decreased cardiac output.

Hypovolemic Shock

◆ Characteristics—Stages of Shock

- A. Initial—15% volume loss: no signs/symptoms; body begins to respond to imbalance of O₂ supply and demand.
- B. Compensatory or second stage—volume loss increases from 15% to 30%; body activates mechanisms to maintain homeostasis. Clinical symptoms manifest.
- C. Progressive or third stage—30 to 40% blood loss: as the compensatory mechanisms fail, requires immediate interventions. Decreased perfusion and altered cellular permeability.
- D. Refractory—more than 40% volume loss: profound hypotension and hypoxemia; life-threatening.
- E. If victim remains in shock, it will lead to death of cells, tissue, and organs.
 1. Body initially compensates for blood loss—check signs carefully.
 2. Continually evaluate client's condition.

Assessment

- ◆ A. Assess for early signs due to
 1. Anxiety, thirst, postural changes in vital signs.
 2. Tachycardia, tachypnea, narrow pulse pressure.
 3. Increased sympathetic nervous system activity.
- B. Observe for signs/symptoms of shock.
 1. Rapid, shallow breathing.

- 2. Cold, pale skin (capillary refill > 2/second).
- 3. Failure to respond to simple commands.
- ◆ C. Observe for oliguria.
 - 1. Kidneys normally receive 20% of cardiac output, so if urine volume drops acutely, assume cardiac output has dropped.
 - 2. If urine output falls below 30 mL/hr, notify physician immediately.
- ◆ D. Note Kussmaul breathing—as blood pH is lowered, the respiratory rate increases in an effort to blow off excess carbon dioxide and return body to acid-base balance.
- E. Assess if cool, dry, or moist skin is present.
 - 1. Caused by peripheral vasoconstriction.
 - 2. Blood is diverted to vital organs rather than to skin.
- F. Observe sensorium changes—due to brain hypoperfusion.
 - 1. Restlessness/anxiety.
 - 2. Lethargy.
 - 3. Confusion.
- G. Note fatigue and muscle weakness—result of shift from aerobic to anaerobic metabolism leading to lactic acid buildup.
- ◆ H. Assess for severe shock.
 - 1. Blood pressure—systolic below 80 mm Hg and narrowing of pulse pressure to 20 mm Hg or below (body loses ability to compensate and blood pressure drops rapidly).
 - 2. Shallow, irregular respirations.
 - 3. Sustained tachycardia.
 - 4. Level of unconsciousness; progresses to coma as blood supply to brain decreases.
 - 5. Dilated, fixed pupils due to brain hypoxia.
 - 6. Anuria as perfusion to kidneys decreases sharply.
 - 7. Cyanotic skin, mucous membranes, and nailbeds—indicates poor prognosis.

Implementation

- A. Treat the cause of shock (stop bleeding).
- ◆ B. Maintain open airway—provide oxygen via mask or cannula—monitor pulse oximetry.
- ◆ C. Administer fluids to treat shock state.
 - 1. First-line treatment is crystalloids (isotonic fluids).
 - 2. Prepare client for IV fluid, colloids—plasma expanders, blood replacement.
- ◆ D. Place client in supine position with legs elevated (6–10 inches), head on pillow.
- ◆ E. Insert Foley catheter for hourly urine monitoring.
 - 1. Record intake and output (I&O).
 - 2. Notify physician if urine output is less than 30 mL/hr.

- ◆ F. Record vital signs every 15 minutes.
 - 1. Blood pressure.
 - a. Orthostatic hypotension develops before systemic hypotension.
 - b. Decreased BP is usually late sign of shock.
 - c. Progressive drop in BP (systolic blood pressure [SBP] < 90 mm Hg) with a thready, increasing pulse indicates hypovolemia.
 - 2. Respirations.
 - a. Rapid early in shock (compensation for tissue hypoxia).
 - b. Emergency equipment for intubation/ventilator should be available.
 - 3. Central venous pressure (CVP).
 - a. CVP reflects volume status (preload).
 - b. If below 5 cm H₂O, indicates hypovolemia.
- G. Monitor client responses.
 - 1. Change in skin temperature and color reflect changes in tissue oxygenation and perfusion.
 - a. Cold, clammy, pale skin indicates peripheral vascular constriction.
 - b. Pallor and cyanosis indicate tissue hypoxia.
 - 2. Restlessness indicates cerebral hypoxia.
 - 3. Assess for improvement in vital signs.
- H. Maintain body temperature.
- I. Avoid rough or excessive handling.
- J. Do not allow client to eat or drink.

Cardiogenic Shock

Characteristics

- A. *Definition:* Myocardial dysfunction that results in reduced cardiac output and compromised tissue perfusion.
 - 1. Systolic dysfunction: inability to pump blood forward (myocardial infarction; MI).
 - 2. Diastolic dysfunction: ventricles are unable to adequately fill (cardiac tamponade).
- B. Causes.
 - 1. Decrease in cardiac output—loss of myocardial contractility.
 - 2. Most common cause is myocardial infarction with greater than 40% muscle necrosis.
- ◆ C. Pathophysiology.
 - 1. Decreased cardiac output causes sympathetic nervous system stimulation, which produces vasoconstriction and inadequate tissue perfusion, resulting in anaerobic metabolism.
 - a. Result is increased lactate.
 - b. Increased lactate causes metabolic acidosis.

2. Decreased cerebral perfusion.
3. Decreased renal perfusion, resulting in decreased urine production.

Assessment

- ◆ A. Differentiate from hypovolemic shock.
 1. Pulmonary capillary wedge pressure and CVP are increased in cardiogenic shock.
 2. Pulmonary capillary wedge pressure and CVP are low in hypovolemic shock.
- B. Hypotension (less than 90 mm Hg, or 300 mm Hg less than client's normal BP) and a low cardiac index ($< 2.2 \text{ L/min/m}^2$) are classic signs of shock.
- ◆ C. Measure urinary output. May be less than 30 mL/hr due to poor renal perfusion (oliguria).
- ◆ D. Assess for signs and symptoms of decreased cardiac output.
 1. Pallor or cyanosis.
 2. Hypoxia (decreased PO_2).
 3. Orthopnea.
 4. Dyspnea.
 5. Dependent pitting edema.
 6. Distended neck veins.
 7. Pulmonary congestion.
 8. Cool, pale, moist skin.
 9. Decreased orientation, fatigue.
 10. Tachycardia; arrhythmias.
- E. Assess for acidemia—decreased pH of the blood.

Implementation

- ◆ A. Oxygen therapy or mechanical ventilation to increase PO_2 , decrease work of breathing.
- B. Monitor medications.
 1. Diuretics for pulmonary congestion.
 2. MS Contin (morphine sulfate) for pain; vasopressors for hypotension unresponsive to fluid therapy.
 3. Vasodilators: Nipride (nitroglycerin) to decrease ventricular afterload.
 4. Symmetrel (dobutamine)—causes less vasoconstriction and tachycardia and may be ordered following stabilization of blood pressure.
- C. Intra-aortic balloon pump (IABP) is used for internal counterpulsation.
 1. Regular inflation and deflation of the balloon augments pumping action of the heart.
 2. Hemodynamic monitoring is important to monitor status of client.
- D. Establish fluid and electrolyte acid–base balance.
 1. Replace fluid if hypovolemic.
 2. Correct acidosis (improve cardiac output).
 3. Maintain urinary output—greater than 30 mL/hr.
- E. Control pain and restlessness by IV analgesia.

- F. Treat arrhythmias—result of hypoxia, acidosis, electrolyte imbalance, underlying disease, and drug therapy.
- G. Decrease cardiac workload.
 1. Physical and emotional rest.
 2. Psychological support.
 3. Comfortable position—flat with pillow, or semi-Fowler's position if client has difficulty breathing.

DISTRIBUTIVE (VASOGENIC) SHOCK

Definition: Three types—septic, neurogenic, and anaphylactic. In all three, shock occurs as a result of vasodilation and abnormal distribution of fluids within the circulatory system.

Septic Shock**Characteristics**

- ◆ A. Most common type of distributive shock—caused by infection (gram-negative or gram-positive bacteria).
- ◆ B. Progresses to bacteremia—bacteria enter bloodstream directly from site of infection or from toxic substances released by bacteria into the bloodstream.
- C. Nonspecific inflammatory response and specific immune responses initiated with release of biochemical mediators.
 1. Secondary mediators cause release of pro-inflammatory cytokines.
 2. Cytokines cause endothelial cell damage and multiple organ dysfunction.
- ◆ D. Usually occurs in two phases.
 1. **Phase 1:** high cardiac output with vasodilation. Client is overheated and demonstrates warm, flushed skin.
 2. **Phase 2:** low cardiac output with vasoconstriction. Blood pressure drops; skin is cool and pale.
- E. Multiple-organ dysfunction syndrome (MODS)—mortality rate high—40% (sepsis is 11th highest cause of death in United States).

Assessment

- ◆ A. Phase 1—may appear to be mild infection.
 1. Vital signs and mental confusion may be first sign with increased heart rate or increased respiratory rate.
 2. Assess for flushed, pink face warm to the touch; dry skin.
 3. Observe for low blood pressure and pulse.
 4. Check results of complete blood count—blood culture to determine organism.

- ◆ B. Phase 2.
 1. Assess for tachycardia; blood pressure decreases; PO₂ is dropping.
 2. Does not appear pink and warm—cool skin.
 3. Observe for tachypnea.
 4. Assess urine output—may drop to 30 mL per hour.
 5. Assess for thirst.

Implementation

- A. Goal of treatment for septic, neurogenic, and anaphylactic shock includes hemodynamic support.
 1. Fluid replacement (and blood products).
 2. Vasopressors and inotropes.
 - a. Inotropic drugs: Intropin (dopamine)—if tissue perfusion is inadequate.
 - b. Levophed (norepinephrine)—potent vasoconstrictor if dopamine does not raise mean arterial blood pressure.
 - c. Narcan (naloxone)—may be ordered to treat gram-negative septic shock; attacks bacterial endotoxin that causes cellular destruction.
- ◆ B. Administer broad-spectrum antibiotics as ordered—begin STAT (do not wait for regular medication times).
 1. Continue to check IV site frequently—if evidence of infection, restart IV in a new site.
 2. Check blood urea nitrogen (BUN) level regularly.
- ◆ C. Administer oxygen as ordered (mechanical ventilation)—concentration should be moderate; pulse oximeter reading useful for SaO₂.
- ◆ D. Take vital signs hourly. Stages can progress rapidly.
- E. Observe continually for change in pattern: blood pressure down, pulse and respirations up. Notify physician immediately.
- ◆ F. Check PO₂ and pH—client may go into metabolic acidosis. Notify physician if pH falls below 7.35.
- G. Give frequent skin care and perfusion to prevent breakdown.
- ◆ H. Check I&O frequently; pay attention to amount of urine from catheter.
 1. If urine output falls below 30 mL/hr, notify physician immediately.
 2. Prevent fluid overload by calculating previous hourly urine output plus 30 mL/hr.
- I. Provide appropriate psychological support.
 1. Client is frightened, so remain in the room.
 2. Explain all procedures and attempt to alleviate anxiety.
- J. Observe for complications or reversal in improvement of shock state.
 1. Respiratory: dyspnea, cyanosis, intercostal retractions (shock lung).
 2. Cardiac: heart failure—may require digitalis.
 3. Renal: oliguria—may require Mannitol.

Neurogenic (Spinal) Shock

Definition: Massive vasodilation and pooling of blood due to failure of peripheral vessels; imbalance of parasympathetic/sympathetic vascular tone (also see Spinal Cord Injury, page 190).

Characteristics

- A. Interference with sympathetic nervous system (head injury).
- B. Injury to spinal cord or as a result of spinal anesthesia.
- C. Severe pain, drugs, or hypoglycemia causing vasomotor center depression.

Assessment

- A. Assess for hypoglycemia, bradycardia, or hypothermia.
- B. Assess vital signs; hypotension.
- C. Loss of reflex activity in spinal cord below injury level (areflexia).
- D. Paralytic ileus.

Implementation

- A. Monitor CAB (circulation, airway, and breathing).
- B. Fluid resuscitation to increase blood pressure.
- C. Monitor vasoconstrictors to increase blood pressure.
- D. Monitor atropine-like drugs to block vagal effects causing bradycardia.
- E. If hypothermia present, requires warming measures.

Anaphylactic Shock

Definition: A severe allergic reaction that is rapid in onset and may be fatal. It is often a reaction to an antigen to which the body has become hypersensitive.

Characteristics

- ◆ A. A whole-body allergic reaction caused by hypersensitivity to allergen (allergic reaction to medication, bee sting, nuts, etc.).
- B. Antigen-antibody reaction.
- C. Increased cell membrane permeability—histamine is released, causing marked vasodilation.
- D. Bronchiolar constriction and hypoxia.
- E. Pooling of blood, causing decreased venous return.
- F. Decreased cardiac output and hypoxia.

Assessment

- ◆ A. Assess for dyspnea, respiratory difficulty, cyanosis, wheezing (can be life-threatening).
- ◆ B. Observe for vertigo, decreased blood pressure, increased pulse.
- C. Evaluate local edema, skin rash, flushing, urticaria (occasional), and restlessness.
- D. Evaluate if apprehension is present.

Implementation

- ◆ A. Goal is to maintain a patent airway and insure breathing.
- B. Identify causative agent.
- ◆ C. Position client for optimal cerebral perfusion (flat or 30-degree elevation if dyspneic).
- ◆ D. Administer epinephrine subcutaneously.
 1. Dilates bronchioles and constricts arterioles.
 2. Side effects: tachycardia, central nervous system (CNS) stimulation.
 3. Rapid acting.
- E. Administer oxygen.
- F. Administer antihistamine
 1. H1 blockers: Benadryl (diphenhydramine).
 - a. Relieves itching, wheals, congestion of nasal mucosa.
 - b. Side effect: Dries mucous membranes.
 2. H2 blockers: Tagamet (cimetidine), Zantac (ranitidine), Pepcid (famotidine).
- G. Maintain IV of normal saline (NS) or lactated Ringer's to support perfusion.
- H. Administer corticosteroids—reduce formation of cellular proteins and decrease edema. They have no immediate effect but may be given to prevent biphasic reaction.
- I. Administer inhaled beta-2 adrenergic agonists such as Proventil (albuterol) to promote bronchodilation.
- J. Teach client and family about the need for Medic-Alert identification and use of the EpiPen (epinephrine).

Snake Bite**Assessment**

- A. Assess extent of envenomation.
 1. Rattlesnakes, copperheads, and cottonmouths (pit vipers) are responsible for 98% of venomous bites.
 - a. Pit viper venom is hemolytic.
 - b. Coral snake venom is neurotoxic.
 2. Reactions to poisonous snakes occur within 15 minutes.
- ◆ 3. Signs.
 - a. One or two distinct puncture wounds, fang marks.
 - b. Burning pain.
 - c. Edema and erythema.
 - d. Serosanguineous fluid oozing from wound.
 - e. Numbness around bite within 15 minutes.
- B. Assess systemic signs.
 1. Diaphoresis, chills.
 2. Anxiety.
 3. Tachycardia, hypotension.
 4. Temperature elevation.
 5. Tingling of tongue, rubber or metal taste.

6. Visual disturbance; seizure.
7. Nausea/vomiting.
8. Dizziness.
9. Muscle fasciculations.
10. GI bleeding.
11. Respiratory problems.

Implementation

- ◆ A. Emergency treatment: seek medical help immediately.
 1. Immobilize area with support or sling and position below heart.
 2. Remove constrictive clothing or jewelry.
 3. Do not apply a tourniquet or ice.
 4. Do not allow client to physically exert self, as this hastens spread of venom. Keep client still.
 5. Do not incise area or apply suction.
- B. In-hospital treatment.
 1. Skin test for sensitivity to horse serum.
 2. Administer prescribed antivenin intravenously.
 - a. Dilute antivenin dose in saline (250–500 mL).
 - b. Dose based on severity of envenomation.
 - c. Have EpiPen (epinephrine) available in case of allergic reaction.
 3. Monitor vital signs.
 4. Monitor for decreased swelling.
 5. Monitor blood coagulation studies.
 6. Type and cross-match blood.
 7. Administer analgesics for pain.
 - a. Aspirin (acetylsalicylic acid; ASA) for mild pain.
 - b. Codeine or Demerol (meperidine) for severe pain.
 8. Administer antibiotics.
 - a. Initial dose: Amoxil (ampicillin), Erythrocin (erythromycin), or Tetracycline (tetracycline) 500 mg.
 - b. Maintain 250 mg every 4 hours for 24 hours.
- C. Monitor for complications.
 1. Respiratory arrest due to neurotoxin.
 2. Acute renal failure due to hemolysis.
 3. Disseminated intravascular coagulation (DIC).
 4. Compartment syndrome; gangrene.
 5. Infection.
 6. Delayed serum sickness.

Bee Sting**Assessment**

- A. Tightness in chest, difficulty swallowing or breathing.
- B. Generalized swelling and itching.
- C. Erythema and hives.

- D. Feeling of heat throughout body.
- E. Weakness, vertigo.
- F. Nausea, vomiting, abdominal cramps.

Implementation

- ◆ A. Remove stinger by scraping motion with dull object like a credit card in the opposite direction of the angle of penetration. Do not grasp or pull stingers, this can squeeze the attached sac and inject more venom.
- B. Cleanse sting area and apply ice to relieve pain and edema.
- ◆ C. Observe for signs of laryngospasm or bronchospasm. Be prepared to assist with a tracheostomy.
- D. Keep client warm and positioned supine with head and feet slightly elevated.
- ◆ E. For client going into full-blown anaphylactic shock, implement following orders.
 - ◆ 1. Immediately administer EpiPen (epinephrine) 1:1000 solution SUB Q.
 - a. Adult: 0.25–0.3 mL at sting site and same amount in unaffected arm.
 - b. Child: 0.01 mL/kg (maximum 0.25 mL at each site).
 - 2. Repeat injections one to three times at 20-minute intervals until blood pressure and pulse rise toward normal.
 - a. Adult: 0.3–0.4 mL.
 - b. Child: less than 20 kg, 0.10–0.15 mL; over 20 kg, 0.15–0.3 mL.
 - 3. Administer pressor agents if blood pressure does not stabilize following two to three SUB Q injections of epinephrine.
 - a. Aramine (metaraminol) and Levophed norepinephrine are drugs of choice.
 - b. Administer IV drip at 30–40 drops/min.
 - 4. Begin IV solution of D₅W with 250 mg Phyllocontin (aminophylline) and 30–40 mg Solu-Cortef (hydrocortisone) to support circulation and prevent shock.
 - 5. Administer rapid-acting antihistamine: Benadryl 50 mg intramuscular (IM).

CARDIOPULMONARY RESUSCITATION

Indications

- A. Respiratory arrest with pulse present—establish airway, breathing.
- B. Cardiac arrest with ineffective breathing.
- C. No movement or response.

Assessment and Actions

- A. **BLS Adult Healthcare Provider Algorithm** (see Figure 10-1).

PERFORMING RESCUE BREATHING

- Pinch nose with thumb of hand on forehead.
- Take deep breath and seal your lips around victim's mouth—airtight seal.
- Give two slow breaths (1.5–2 seconds each).
- Observe that each ventilation causes chest to rise and fall, and hear and feel exhalation.
- Check carotid pulse for 5–10 seconds.
- Continue rescue breaths if pulse is present.
- If no pulse, begin CPR.

- B. Summary of BLS Maneuvers for Adults, Children, and Infants (see **Table 10-1**).
- C. Termination of CPR.
 - 1. Successful resuscitation.
 - a. Spontaneous return of adequate life support.
 - b. Assisted life support.
 - 2. Transfer to emergency vehicle (other trained rescuers assume care).
 - 3. Pronounced dead by physician.
 - 4. Exhaustion of rescuer(s).

Using an AED

- A. Initial steps.
 - 1. Place AED near victim's left ear.
 - 2. Open AED, turn on power switch, and lift up monitor screen. Follow prompts.
 - 3. Open defibrillator pads and connect to cables and to victim's chest.
 - 4. Stop CPR (if second rescuer performing).
 - 5. Shout, "Stand clear."
- B. Check rhythm.
 - 1. Shockable rhythm—give one shock, resume CPR immediately for five cycles.
 - 2. Not shockable rhythm—resume CPR immediately for five cycles.
 - 3. Check rhythm every five cycles and continue until advanced life support (ALS) provider takes over or victim moves.

UNIVERSAL STEPS OF AED OPERATION

1. Open AED, which automatically turns on power. If not, press power button on. Once power is on, AED will direct you through the steps.
2. Remove clothing from chest. Dry chest.
3. Attach AED to victim's chest with electrode pads.
4. "Snap" on connecting cables to adhesive electrode pads.
5. Stop CPR. Do not touch victim.
6. Analyze rhythm.
7. Loudly state, "Stand clear of victim."
8. Give one shock (if shock is indicated).
9. Begin CPR for 5 cycles or 2 minutes.
10. Analyze and repeat shock and CPR.
11. Check for presence of pulse.
12. Follow protocol for rescue breathing.

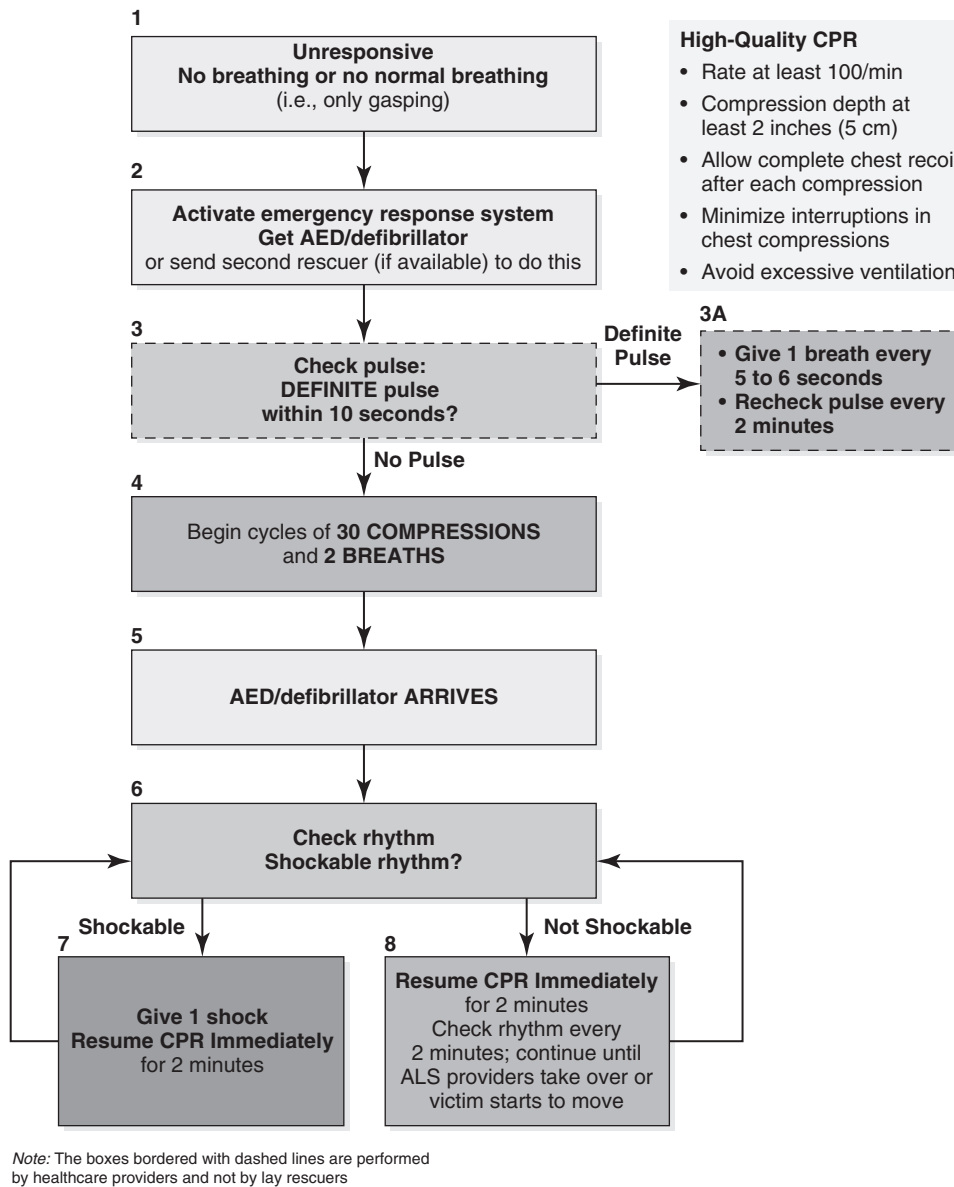


Figure 10-1 CPR algorithm.

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Heimlich Maneuver

♦ A. Airway obstruction management.

1. Victim standing or sitting.
 - a. Make fist with one hand.
 - b. Place thumb side of fist against victim's abdomen, between umbilicus and xiphoid process.
 - c. Grasp fist with other hand and press fist into victim's abdomen with quick upward thrust.

- d. Repeat thrusts until object expelled from victim's airway or victim collapses.

♦ 2. Victim lying down.

- a. Place victim supine.
- b. Kneel astride victim's thighs and place heel of one hand against victim's abdomen (between xiphoid process and umbilicus).
- c. Place other hand on top of first.
- d. Press into abdomen with quick upward thrust.

Table 10-1 SUMMARY OF BLS MANEUVERS FOR ADULTS, CHILDREN, AND INFANTS*

Component	Recommendations		
	Adult	Children	Infants
Recognition	Unresponsive for all ages		
	No breathing or no normal breathing (i.e., only gasping)	No breathing only gasping	
CPR Sequence	No pulse palpated within 10 seconds		
Compression Rate	C-A-B		
Compression Depth	At least 2 inches (5 cm)	At least 100/minute	
		At least 1/3 AP diameter	At least 1/3 AP diameter
		About 2 inches (5 cm)	About 1 1/2 inches (4 cm)
Chest Wall Recoil	Allow complete recoil between compressions		
	Rotate compressors every 2 minutes		
Compression Interruptions	Minimize interruptions in chest compressions		
Airway	Keep interruptions to < 10 seconds		
Compression-to-Ventilation Ratio (until advanced airway placed)	30:2	Head tilt-chin lift (suspected trauma: jaw thrust)	
	One or two rescuers	30:2	
		Single rescuer	
		15:2	
		Two rescuers	
Ventilation with Advanced Airway	One breath every 6–8 seconds (8–10 breaths/min)		
	Asynchronous with chest compressions		
	About 1 second per breath		
	Visible chest rise		
Defibrillation	Attach and use AED as soon as available.		
	Minimize interruptions in chest compressions before and after shock.		
	Resume CPR beginning with compressions immediately after each shock.		

AED = automated external defibrillator; AP = anterior/posterior; CPR = cardiopulmonary resuscitation.

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AED = automated external defibrillator; AP = anterior/posterior; CPR = cardiopulmonary resuscitation.

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EMERGENCY NURSING REVIEW QUESTIONS

1. On duty in the emergency department, the nurse is concerned when a client continues to bleed from severe lacerations even after applying direct pressure. The next action is to
 1. Apply ice to lower the body temperature.
 2. Monitor closely for signs of shock.
 3. Elevate the upper extremities and apply blankets to raise body temperature.
 4. Maintain a patent airway and prevent vomiting.
2. A client enters the emergency department complaining of severe chest pain. A myocardial infarction is suspected. A 12-lead ECG appears normal, but the doctor admits the client for further testing until cardiac enzyme studies are returned. All of the following will be included in the nursing care plan. Which activity has highest priority?
 1. Monitoring vital signs.
 2. Completing a physical assessment.
 3. Maintaining cardiac monitoring.
 4. Maintaining at least one IV access site.
3. A client enters the emergency department complaining of chest pressure and severe epigastric distress. His vital signs are BP 158/90, P 94, R 24, and T 99°F or 37.2°C. The doctor orders cardiac enzyme studies. If this client were diagnosed with a myocardial infarction, the nurse would expect which cardiac enzyme to rise within the next 1 to 2 hours?
 1. Creatinine kinase (CK).
 2. Lactic dehydrogenase (LDH).
 3. Troponins.
 4. Myoglobins.
4. The nurse knows that the most informative measurement for determining cardiogenic shock is
 1. Arterial blood pressure.
 2. Central venous pressure.
 3. Pulmonary artery pressure.
 4. Cardiac output index.
5. A 35-year-old male was knifed in a street fight, was admitted through the emergency department, and is now in the ICU. An assessment of his condition reveals the following symptoms: respirations shallow and rapid, paradoxical pulse, CVP 15 cm H₂O, BP 90 mm Hg systolic, skin cold and pale, urinary output 60–100 mL/hr for the last 2 hours. Analyzing these symptoms, the nurse will base a nursing diagnosis on the conclusion that the client has which one of the following conditions?
 1. Hypovolemic shock.
 2. Cardiac tamponade.
 3. Wound dehiscence.
 4. Atelectasis.
6. CPR cannot prevent possible brain damage unless initiated within _____ minutes of an arrest.
7. You enter a client's room and find him unresponsive. What is your first action?
 1. Call for an AED.
 2. Assess the client's respiratory and pulse status.
 3. Deliver four back blows to the client.
 4. Finger probe for a possible obstruction.
8. What is the second nursing action when the client remains unresponsive, as described in question 7?
 1. Call for help and retrieve an AED.
 2. Start CPR.
 3. Administer rescue breathing.
 4. Check carotid pulse.
9. For a client who has just been stung by a bee and has gone into anaphylactic shock, what is the priority assessment?
 1. Observe for vertigo.
 2. Evaluate for local edema.
 3. Assess for dyspnea or respiratory difficulty.
 4. Check for skin rash.
10. When circumstances require first aid care to several people at once, what is a priority action?
 1. Make rapid initial evaluation of the victims.
 2. Enlist other persons in the area to help.
 3. Call 911 or an emergency number.
 4. Improvise—decide on what material is available.

11. An earthquake has just occurred and the hospital has sustained a great deal of damage. The first action is to
 1. Call for help for the clients who are the most critical.
 2. Find the disaster instructions posted on every unit in the hospital and follow instructions.
 3. Return to the central staff room for instructions.
 4. Wait until you receive instructions.
12. If medical care is not available and someone is injured, the first nursing intervention should be to
 1. Determine the priority action.
 2. Call 911 or an emergency number.
 3. Don't get involved because of legal ramifications.
 4. Improvise—make do according to the circumstances.
13. A 6-year-old child is brought into the emergency department with a jellyfish sting on his leg. He is screaming with pain. The first emergency intervention is to
 1. Bathe the lesion in vinegar and apply shaving cream.
 2. Bathe the area with fresh water.
 3. Administer an antihistamine, as ordered.
 4. Administer a tetanus shot, as ordered.
14. A female client comes to the emergency department. The nurse's immediate assessment reveals that the client is bleeding profusely from a deep laceration on her left lower forearm. The first action is to
 1. Apply a tourniquet just below the elbow.
 2. Apply pressure directly over the wound.
 3. Call for the physician to check the wound.
 4. Place the client in shock position.
15. The first maneuver for the nurse to use when checking for airway obstruction is to
 1. Tilt the head and lift the chin.
 2. Attempt to ventilate.
 3. Turn the client to the side.
 4. Do a jaw thrust.
16. The intervention that can best establish whether a client is unconscious is by observing the client's response to
 1. Verbal stimuli.
 2. Light in the eyes.
 3. Pinching the earlobe.
 4. Opening the airway.
17. When the nurse is administering care to a client in hypovolemic shock, the sign that the nurse would expect to observe is
 1. Hypertension.
 2. Cyanosis.
 3. Oliguria.
 4. Tachypnea.
18. When a client experiences a severe anaphylactic reaction to a medication, the nurse's initial action is to
 1. Start an IV (standard orders).
 2. Assess vital signs.
 3. Place the client in a supine position.
 4. Prepare equipment for intubation.
19. A client has burns on the front and back of both his legs and arms. The approximate percentage of his body that has been involved is
 1. 27%.
 2. 36%.
 3. 45%.
 4. 54%.
20. While assessing a client who is being treated with a heating pad or hot compress, the first sign of possible thermal injury is
 1. Tingling sensation in the extremities.
 2. Redness in the area.
 3. Edema.
 4. Pain.
21. Proper depth of compressions for an infant (under 12 months) who is receiving CPR would be
 1. $> \frac{1}{3}$ of anterior-posterior diameter of chest.
 2. $\frac{1}{4}$ to $\frac{3}{4}$ of anterior-posterior diameter of chest.
 3. 1 to $1\frac{1}{2}$ inches.
 4. $1\frac{1}{2}$ to 2 inches.
22. A systolic blood pressure of 60 mm Hg or less would indicate shock in which of the following client age groups?
 1. 5 years old or younger.
 2. 5 to 12 years old.
 3. 12 to 16 years old.
 4. 16 to 20 years old.
23. The nurse assessing a client for shock observes that the earliest symptom of shock is
 1. Hypertension.
 2. Increased urine output.
 3. Narrowing pulse pressure.
 4. Warm, moist skin.

24. A 20-year-old female client is admitted in a comatose state to the emergency department. Her vital signs are BP 140/80, P 110, R 30 and labored. A MedicAlert bracelet indicates that she is a diabetic. If the nurse were assessing her for ketoacidosis, one significant symptom would be
1. Oliguria.
 2. Acetone odor to breath.
 3. Kussmaul breathing.
 4. Sensorium change.
25. When caring for an unconscious client, the nurse's primary concern must always be
1. Airway protection and adequate respiratory status.
 2. Decreasing intracranial pressure.
 3. Fluid balance and cardiac stability.
 4. Maintaining range of motion and muscle tone.

EMERGENCY NURSING ANSWERS WITH RATIONALE

1. (2) Blood loss results in shock; therefore, close monitoring of vital signs and shock symptoms is essential. Applying ice (1) would not be appropriate. With hemorrhage, the temperature will be below normal, but should be monitored.
NP:I; CN:PH; CA:M; CL:A
2. (3) Even though initial tests seem to be within normal range, it takes at least 3 hours for the cardiac enzyme studies to register. In the meantime, the client needs to be watched for bradycardia, tachycardia, heart block, ventricular irritability, and other arrhythmias. The other activities can be accomplished around the MI monitoring.
NP:AN; CN:PH; CA:M; CL:AN
3. (4) Myoglobins—protein found in cardiac and skeletal muscle. Sensitive and early indicator of myocardial infarction, occurring 1–2 hours following injury. Creatinine kinase (CK, formerly called CPK) rises in 3–8 hours if an MI is present. When the myocardium is damaged, CK leaks out of the cell membranes and into the bloodstream. Lactic dehydrogenase rises in 24–48 hours, and LDH-1 and LDH-2 rise in 8–24 hours.
NP:P; CN:PH; CA:M; CL:A
4. (4) The cardiac output is that amount of blood pumped by the left ventricle each minute. It is a good indicator of left ventricular function. As the left ventricle fails, the pressure in the chamber rises. Then the arterial blood pressure falls. The CVP would increase later when peripheral flow is impeded into the right atrium due to pulmonary congestion.
NP:P; CN:PH; CA:M; CL:C
5. (2) All of the client's symptoms are found in both cardiac tamponade and hypovolemic shock except the increase in urinary output. In shock, urinary output decreases to less than 30 mL/hr; thus this is the symptom that would distinguish hypovolemic shock from cardiac tamponade and form the basis for a nursing diagnosis.
NP:AN; CN:PH; CA:M; CL:C
6. CPR should be initiated within 3 minutes, because after 4 minutes, there may be brain damage because of lack of O₂ getting to the brain.
NP:AN; CN:S; CA:M; CL:K
7. (2) An immediate assessment is needed, so the first action is to see if the client is breathing by observing for rise and fall of the chest. The remaining answers are incorrect.
NP:I; CN:S; CA:M; CL:A
8. (1) After finding a client unresponsive, the first action is to call for help and retrieve the AED, because AEDs should be used as soon as possible. CPR should then be started with rescue breathing.
NP:I; CN:S; CA:M; CL:AN
9. (3) The priority assessment is respiratory difficulty because this condition can be life-threatening and requires an immediate intervention. The other assessments are important and are present with this condition, but may not be life-threatening, unless the throat is swelling.
NP:A; CN:S; CA:M; CL:A
10. (1) A priority is to quickly evaluate victims to determine which victim is most seriously injured so that first aid can be administered. The other actions would follow answer (1).
NP:I; CN:S; CA:M; CL:AN
11. (2) The first action is to follow instructions posted in the disaster planning poster. If everyone follows these

guidelines, there will be less confusion and clients will receive the care they require. The other options would all follow the first action.

NP:I; CN:S; CA:M; CL:AN

12. (1) Setting the priority is the first action; if a person is bleeding, then stopping the bleeding is a critical action that could save a life. Calling for help or calling 911 (2) would come after assessing the priorities. It is a professional responsibility to get involved (3) if circumstances are critical. Improvising (4) would also come after setting priorities.

NP:I; CN:S; CA:M; CL:A

13. (1) A standard jellyfish kit contains vinegar and shaving cream. The vinegar is to bathe the lesion to reduce pain, and the cream is applied so that cysts will adhere to the cream and be scraped off. Seawater, not fresh water (2), is used to bathe the lesion because fresh water will cause the cysts to fire. Later, the child may be given an antihistamine (3) if the sting was severe; he would require a tetanus shot (4) only if he were not up-to-date with tetanus.

NP:I; CN:S; CA:M; CL:A

14. (2) The first action is to apply direct pressure to the wound. If the bleeding continues, additional actions must be taken. They include placing the client in a shock position (4) and perhaps applying a tourniquet (1).

NP:I; CN:S; CA:M; CL:A

15. (1) If airway obstruction is suspected, the first action is to tilt the head by pressing backward and lifting the chin. Then, the nurse would attempt to ventilate (2). To open the airway, a jaw thrust (4) is done.

NP:I; CN:S; CA:M; CL:A

16. (1) A client's response (or lack thereof) to verbal stimuli is the best indicator of unconsciousness. An unconscious client's pupils may continue to react to light. Pinching the lobe of the ear (3) offers little in the way of pain stimuli. Opening the airway (4) is not an appropriate stimulus.

NP:A; CN:PH; CA:M; CL:C

17. (3) In shock, there is decreased blood volume through the kidneys. This is evidenced by a decrease in the amount of urine excreted. The body has numerous compensatory mechanisms that assist in keeping the blood pressure normal for a short time.

NP:AN; CN:PH; CA:M; CL:A

18. (3) The shock position is necessary to maintain vital signs. The other interventions would be implemented in order (2), then (1) start an IV and prepare for intubation.

NP:I; CN:S; CA:M; CL:A

19. (4) The client's burns cover approximately 54% of his body surface. Each arm is 9% (18%) and each leg is 18% (36%).

NP:AN; CN:PH; CA:M; CL:C

20. (2) Redness, or erythema, is the first sign of possible injury. This is an important observation to prevent a burn injury.

NP:A; CN:S; CA:M; CL:A

21. (1) The proper depth of compression for infant and child CPR is $\frac{1}{3}$ to $\frac{1}{2}$ inch. This is done midsternum, using only two fingers or the thumbs, if the chest is encircled by the rescuer's hands. Compression depth for an adult (answer 4) is $1\frac{1}{2}$ to 2 inches.

NP:P; CN:S; CA:M; CL:K

22. (2) A systolic blood pressure of 60 mm Hg or less found in children 5 to 12 years old would indicate shock.

NP:P; CN:S; CA:M; CL:C

23. (3) Narrowing pulse pressure and hypotension are two early signs of shock. Decreased, not increased, urine output is present as well as cool, moist skin caused by vasoconstriction.

NP:AN; CN:S; CA:M; CL:A

24. (2) As acetone is liberated through the breakdown of fat, it is volatile and, therefore, is blown off by the lungs, creating the characteristic fruity odor of the breath. Polyuria (not oliguria), polydipsia, and polyphagia are early symptoms. Kussmaul breathing is a sign of early shock as the body attempts to return to acid-base balance. Sensorium change would occur later.

NP:A; CN:PH; CA:M; CL:A

25. (1) As neurological status deteriorates, the airway must be assured to avoid compromising oxygenation or aspiration. Hypoxia will exacerbate brain injury. The other answers are appropriate goals after airway patency is assured.

NP:I; CN:PH; CA:M; CL:AN