Chapter 20

Endocrine and Hematologic Emergencies

Unit Summary

After students complete this chapter and the related course work, they will understand the significance and characteristics of diabetes, sickle cell disease, clotting disorders, and the complications associated with each. Students should be able to demonstrate knowledge of the characteristics of type1 and type 2 diabetes. They should be able to list the appropriate steps for assessment and prehospital treatment of diabetic emergencies. Students should also be able to discuss hematologic emergencies and describe sickle cell disease, hemophilia, thrombophilia, and deep vein thrombosis.

National EMS Education Standard Competencies

Medicine

Applies fundamental knowledge to provide basic emergency care and transportation based on assessment findings for an acutely ill patient.

Endocrine Disorders

Awareness that

• Diabetic emergencies cause altered mental status. (pp 780–781, 787–789, 790–792)

Anatomy, physiology, pathophysiology, assessment, and management of

• Acute diabetic emergencies (pp 778–793)

Hematology

Anatomy, physiology, pathophysiology, assessment, and management of

• Sickle cell crisis (pp 793–797)

• Clotting disorders (pp 793–797)

Knowledge Objectives

1. Describe the anatomy and physiology of the endocrine system and its main function in the body. (pp 778–780)

2. Discuss the role of glucose as a major source of energy for the body and its relationship to insulin. (pp 778–780)

3. Define the terms *diabetes mellitus*, *hyperglycemia*, and *hypoglycemia*. (pp 780–781)

4. Describe the differences and similarities between hyperglycemic and hypoglycemic diabetic emergencies, including their onset, signs and symptoms, and management considerations. (pp 780–781)

5. Distinguish between the individual types of diabetes and how their onset and presentation are different. (pp 782–784)

6. Describe the interventions for providing emergency medical care to both a conscious and unconscious patient with an altered mental status and a history of diabetes who is having symptomatic hyperglycemia. (pp 784–785)

7. Describe the interventions for providing emergency medical care to both a conscious and unconscious patient with an altered mental status and a history of diabetes who is having symptomatic hypoglycemia. (pp 785–786)

8. Explain the process for assessing and managing the airway of a patient with an altered mental status, including ways to differentiate a hyperglycemic patient from a hypoglycemic patient. (pp 784–786, 792)

9. Explain some age-related considerations when managing a pediatric patient who is experiencing symptomatic hypoglycemia. (p 786)

10. Discuss the steps the EMT should follow when conducting a primary and secondary assessment of a patient with an altered mental status who is a suspected of having diabetes. (pp 786–788)

11. Explain when it is appropriate to obtain medical direction when providing emergency medical care to a patient with diabetes. (pp 788–791)

12. Explain some age-related considerations when managing an older patient who has undiagnosed diabetes. (p 780)

13. Provide the forms, dose, administration, indications, and contraindications for giving oral glucose to a patient with a decreased level of consciousness who has a history of diabetes. (p 791)

14. Discuss the composition and functions of blood. (p 793)

15. Describe the pathophysiology of sickle cell disease, complications, and management of sickle cell disease. (pp 793–794, 797)

16. Describe two types of blood clotting disorders, and the risk factors, characteristics, and management of each. (pp 794–797)

Skills Objectives

1. Demonstrate the assessment and care of a patient with hypoglycemia and a decreased level of consciousness. (pp 780–781, 786–793)

Readings and Preparation

Review all instructional materials including ***Emergency Care and Transportation of the Sick and Injured***, **Twelfth Edition**, Chapter 20, and all related presentation support materials.

• Review local agency protocols for glucose administration and blood glucose testing in the field by the EMT.

• Provide the EMT student with evidence-based research articles relating to various endocrine and hematologic topics. This activity helps to validate the effectiveness and necessity of the basic endocrine and hematologic emergency management tools that EMTs are learning to master during their training program.

• Review local protocols pertaining to oral glucose administration in the prehospital environment.

Support Materials

• Lecture PowerPoint presentation

• Case Study PowerPoint presentation

• Equipment needed to perform the psychomotor skills presented in this chapter.

Enhancements

• Direct students to visit Navigate.

• Contact the patient education programs at your local hospital, along with the American Diabetes Association, the Sickle Cell Disease Association of America, and the National Hemophilia Foundation, and request to use their available educational materials.

• Invite a guest speaker who suffers from diabetes mellitus, sickle cell anemia, and/or hemophilia to visit the class to provide a patient’s perspective on a particular endocrine or hematologic disorder.

• **Content connections:** Refer students to Chapter 12, “Principles of Pharmacology,” and encourage students to familiarize themselves with oral glucose.

Teaching Tips

• Use charts, graphs, and diagrams in order to help students understand the mechanisms of diabetes. Visuals will be very helpful when describing the balancing act between glucose and insulin.

• Emphasize to students that most suspected diabetic emergencies will be treated with glucose, regardless of cause.

• Remind students that it is not necessarily their job to “diagnose” their patients. They should not get so caught up in the patient’s specific diagnosis that they fail to recognize and treat potential complications of the disease.

Unit Activities

**Writing assignments:** Assign one half of the class the task of interviewing individuals who suffer from diabetes mellitus or hematologic disorders. Assign the remaining students the task of interviewing a medical professional who has treated individuals with one of these problems (eg, a physician, nurse, paramedic, or EMT). Ask each student to write a brief report covering what he or she considers significant information gathered from these sources.

**Student presentations:** Ask each student to give a brief presentation on his or her writing assignment.

**Medical terminology review:** Create flash cards with pertinent medical terminology. Divide the class into groups of three or four students and have the students quiz each other using the flash cards.

**Visual thinking:** Distribute handouts or present slides depicting “mini-scenarios” (such as in “You are the Provider”). Include vital signs, SAMPLE history, and assessment findings. Conduct a class discussion about what these findings might indicate and what complications may develop.

Pre-Lecture

### You are the Provider

“You are the Provider” is a progressive case study that encourages critical thinking skills.

### Instructor Directions

1. Direct students to read the “You are the Provider” scenario found throughout Chapter 20.
2. You may wish to assign students to a partner or a group. Direct them to review the discussion questions at the end of the scenario and prepare a response to each question. Facilitate a class dialogue centered on the discussion questions and the Patient Care Report.
3. You may also use this as an individual activity and ask students to turn in their comments on a separate piece of paper.

Lecture

I. Introduction

A. The human endocrine system directly or indirectly influences nearly every cell, organ, and function of the body.

B. Endocrine disorders are often seen with a multiple of signs and symptoms.

C. Hematologic emergencies

1. Difficult to assess and treat in a prehospital setting

II. Anatomy and Physiology

A. The endocrine system is a communication system that controls functions inside the body.

B. Endocrine glands secrete messenger hormones.

1. Hormones travel through the blood to end organs, tissues, or cells that they affect.

2. When it arrives, the message is received, and an action takes place.

C. Endocrine disorders are caused by an internal communication problem.

1. If a gland is not functioning normally, it may produce

a. More hormone (hypersecretion) than needed

b. Not enough hormone (hyposecretion)

2. A gland may be functioning correctly, but the receiving organ may not be responding.

D. Glucose metabolism

1. The brain needs two things to survive: glucose and oxygen.

a. Insulin is necessary for glucose to enter cells.

b. Without enough insulin, the cells do not get fed.

2. The pancreas produces and stores two hormones:

a. Glucagon

b. Insulin

3. The pancreas stores and secretes insulin and glucagon in response to the level of glucose in the blood.

III. Pathophysiology

A. Diabetes mellitus is a disorder of glucose metabolism, such that the body has an impaired ability to get glucose into the cells to be used for energy.

1. Without treatment, blood glucose levels become too high.

a. In severe cases, may cause life-threatening illness, or coma and death.

2. If not managed well, it can have severe complications such as:

a. Blindness

b. Cardiovascular disease

c. Kidney failure

B. There are three types of diabetes.

1. Diabetes mellitus type 1

2. Diabetes mellitus type 2

3. Pregnancy-induced, gestational diabetes

C. Treatments for diabetes

1. Medications and injectable hormones that lower blood glucose level

a. If administered correctly or incorrectly, can create a medical emergency for the patient with diabetes

b. Low blood glucose level (hypoglycemia), if unrecognized and untreated, can be life threatening.

D. You must also recognize the signs and symptoms of

1. High blood glucose level (hyperglycemia)

a. Can result in coma or death

b. If treatment exceeds a patient’s need, it can cause a life-threatening state of hypoglycemia.

E. Hyperglycemia and hypoglycemia can occur with both diabetes mellitus type 1 and type 2.

1. You will encounter many patients displaying the signs and symptoms of high and low blood glucose levels.

2. Hyperglycemia and hypoglycemia can be quite similar in their presentation.

a. Patients present with altered mental status.

b. Can often mimic alcohol intoxication; intoxicated patients often have abnormal glucose levels

3. Hypoglycemia can develop:

a. If a person takes his or her medications but fails to eat enough food

b. If a person takes too much medication, resulting in low blood glucose levels despite normal dietary intake

4. All hypoglycemic patients require prompt treatment.

F. Diabetes mellitus type 1

1. An autoimmune disorder in which the immune system produces antibodies against the pancreatic beta cells

a. Missing the pancreatic hormone insulin

2. Onset usually happens from early childhood through the fourth decade of life.

a. The patient must obtain insulin from an external source.

b. Patients who inject insulin often need to check blood glucose levels up to six times or more a day.

3. Many people with type 1 diabetes have an implanted insulin pump.

a. Continuously measures glucose levels and provides insulin and correction doses of insulin based on carbohydrate intake at mealtimes

b. Limits the number of times patients have to check their fingerstick glucose level

c. Can malfunction and diabetic emergencies can develop

i. Always inquire about the presence of an insulin pump.

4. Type 1 diabetes is the most common metabolic disease of childhood. A patient with new-onset type 1 diabetes will have symptoms related to eating and drinking:

a. Polyuria: frequent urination

b. Polydipsia: increase in fluid consumption

c. Polyphagia: severe hunger and increased food intake

d. Weight loss

e. Fatigue

5. Normal blood glucose level is between 80 and 120 mg/dL.

6. When a patient’s blood glucose level is above normal, the kidney’s filtration system becomes overwhelmed and glucose spills into the urine.

a. This causes more water to be pulled out of the bloodstream in into the urine (polyuria).

b. Increased urine production and urination also cause dehydration and increased thirst (polydipsia).

7. When glucose is unavailable to cells, the body turns to burning fat.

a. When the body burns fat rather than glucose, it produces acid waste (ketones).

i. As ketone levels go up in the blood, they spill into the urine.

ii. Kidneys become saturated with glucose and ketones and cannot maintain acid–base balance in the body.

iii. The patient breathes faster and deeper, as the body attempts to reduce the acid level by releasing more carbon dioxide through the lungs.

(a) Known as Kussmaul respirations

iv. If fat metabolism and ketone production continue, a life-threatening illness called diabetic ketoacidosis (DKA) can develop.

v. DKA may present as generalized illness plus:

(a) Abdominal pain

(b) Body aches

(c) Nausea

(d) Vomiting

(e) Altered mental status or unconsciousness (if severe)

vi. If not rapidly recognized and treated, DKA can result in death.

vii. Obtain a glucose level with a fingerstick using a lancet and a glucometer.

(a) Generally higher than 400 mg/dL

G. Diabetes mellitus type 2

1. Caused by resistance to the effects of insulin at the cellular level

a. Obesity predisposes patients to type 2 diabetes.

b. The pancreas produces more insulin to make up for the increased levels of blood glucose and dysfunction of cellular insulin receptors.

c. Insulin resistance can sometimes be improved by exercise and dietary modification.

2. Oral medications used to treat type 2 diabetes

a. Some increase secretion of insulin and pose a high risk of hypoglycemic reaction.

b. Some stimulate receptors for insulin.

c. Others decrease the effects of glucagon and decrease the release of glucose stored in the liver.

3. Injectable medications and insulin are also used for type 2 diabetes.

4. Often diagnosed at a yearly medical examination from complaints related to high blood glucose levels, including:

a. Recurrent infection

b. Change in vision

c. Numbness in the feet

H. Symptomatic hyperglycemia

1. Occurs when blood glucose levels are very high; the patient is in a state of altered mental status resulting from several combined problems.

a. In type 1 diabetes, leads to ketoacidosis with dehydration from excessive urination

b. In type 2 diabetes, leads to a nonketotic hyperosmolar state of dehydration due to the discharge of fluids from all of the body systems and eventually out through the kidneys, leading to fluid imbalance

c. If an individual has hyperglycemia for a protracted length of time, consequences of diabetes may present.

i. Wounds that do not heal

ii. Numbness in the hands and feet

iii. Blindness

iv. Renal failure

v. Gastric motility problems

2. When blood glucose levels are not controlled in diabetes mellitus type 2, a condition known as hyperosmolar hyperglycemic nonketotic syndrome (HHNS) can develop.

a. Signs and symptoms of HHNS include:

i. Hyperglycemia

ii. Altered mental status, drowsiness, lethargy

iii. Severe dehydration, thirst, dark urine

iv. Visual or sensory deficits

v. Partial paralysis or muscle weakness

vi. Seizures

3. Higher glucose levels in the blood cause the excretion of glucose in the urine.

a. Patients respond by increasing their fluid intake, which causes polyuria.

b. In HHNS, the patient cannot drink enough fluid to keep up with the exceedingly high glucose levels in the blood.

c. The urine becomes dark and concentrated.

d. The patient may become unconscious or have seizure activity due to severe dehydration.

I. Symptomatic hypoglycemia

1. An acute emergency in which a patient’s blood glucose level drops and must be corrected swiftly

a. Can occur in patients who inject insulin or use oral medications that stimulate the pancreas to produce more insulin

i. When insulin levels remain high, glucose is rapidly taken out of the blood.

ii. If glucose levels fall, there may be an insufficient amount to supply the brain.

2. The mental status of the patient declines and he or she may become aggressive or display unusual behavior.

a. Unconsciousness and permanent brain damage can quickly follow.

3. Common reasons for a low blood glucose level to develop

a. A correct dose of insulin with a change in routine

b. More insulin than necessary

c. A correct dose of insulin without the patient eating a sufficient amount

d. A correct dose of insulin and the patient developed an acute illness

4. Hypoglycemia develops much more quickly than hyperglycemia.

5. Signs and symptoms of hypoglycemia

a. Normal to shallow or rapid respirations

b. Pale, moist skin

c. Diaphoresis

d. Dizziness, headache

e. Rapid pulse

f. Normal to low blood pressure

g. Altered mental status

h. Anxious or combative behavior

i. Seizure, fainting, or coma

j. Weakness on one side of the body (may mimic stroke)

k. Rapid changes in mental status

6. Hypoglycemia is quickly reversed by giving the patient glucose.

a. Without glucose, the patient can sustain permanent brain damage.

IV. Patient Assessment of Diabetes

A. Scene size-up

1. Evaluate scene safety and ensure all hazards are addressed.

a. Be careful of the presence of syringes, used by patients with diabetes for insulin.

b. Be alert for clues (eg, syringes, insulin bottles, plate of food, glass of orange juice) that may help you decide what is possibly wrong with the patient.

c. Use standard precautions.

d. Question bystanders on events leading to your arrival.

e. Keep open the possibility that trauma may have occurred.

2. Determine the mechanism of injury (MOI)/nature of illness (NOI).

B. Primary assessment

1. Form a general impression.

a. How does the patient look?

b. Identify life threats and provide life-saving interventions, particularly airway management.

c. Determine level of consciousness using the AVPU scale.

i. If unresponsive and you suspect the patient has diabetes:

(a) Call for ALS.

(b) Patient may have undiagnosed diabetes.

ii. If patient has altered mental status:

(a) Assess blood glucose level if you have proper equipment and training.

d. Perform cervical spine immobilization, when necessary, and provide rapid transport.

2. Assess the patient’s airway and breathing.

a. Patients showing signs of inadequate breathing, a pulse oximetry level less than or equal to 94% on room air or altered mental status should receive high-flow oxygen (12 to 15 L/min via nonrebreathing mask).

b. Hyperglycemic patients may have rapid, deep (Kussmaul) respirations and sweet, fruity breath.

c. Hypoglycemic patients will have normal or shallow to rapid respirations.

d. If the patient is not breathing or having difficulty breathing:

i. Open the airway; insert airway adjunct.

ii. Administer oxygen.

iii. Assist ventilations.

iv. Continue to monitor ventilations throughout patient care.

3. Assess the patient’s circulatory status.

a. Dry, warm skin: hyperglycemia

b. Moist, pale skin: hypoglycemia

c. Rapid, weak pulse: symptomatic hypoglycemia

4. Make a transport decision.

a. Patients with altered mental status and impaired ability to swallow should be transported promptly.

C. History taking

1. Investigate the chief complaint.

a. Obtain a history of the present illness from responsive patients, family, or bystanders.

b. If patient has eaten but not taken insulin, hyperglycemia is more likely.

c. If patient has taken insulin but not eaten, hypoglycemia is more likely.

d. Observe physical signs and symptoms to determine whether the patient is hyperglycemic or hypoglycemic.

2. Obtain the SAMPLE history from a responsive patient or a family member or bystander.

a. For a known patient with diabetes, ask:

i. Do you take insulin or pills that lower your blood sugar?

ii. Do you wear an insulin pump?

iii. Have you taken your usual insulin dose (or pills) today?

iv. Have you eaten normally today?

v. Have you had any illness, unusual amount of activity, or stress?

b. Look for an emergency medical identification device (eg, wallet card, necklace, or bracelet).

D. Secondary assessment

1. Physical examination

a. Assess unresponsive patients from head to toe.

b. When you suspect a diabetes-related problem, focus on mental status, ability to swallow, and ability to protect the airway.

i. Obtain a Glasgow Coma Scale (GCS) score.

2. Vital signs, including blood glucose level.

a. Use a glucometer, if available and protocols allow.

i. Normal nonfasting adult and child blood glucose level range: 80 to 120 mg/dL; neonates should be above 70 mg/dL

E. Reassessment

1. Reassess the patient with diabetes frequently to assess changes.

a. Improved mental status?

b. Are ABCs intact?

c. How is patient reacting to interventions performed?

d. Base administration of glucose on serial glucometer readings or a deteriorating level of consciousness.

2. Provide the indicated interventions.

a. For hypoglycemic, conscious patients who can swallow without the risk of aspiration:

i. Encourage patient to take glucose tablets, if available, or drink juice containing sugar.

ii. Administer gel preparation or sugar drink, if local protocol permits.

iii. Provide rapid transport to hospital.

b. For unconscious, hypoglycemic patients, or patients with risk of aspiration:

i. Intravenous (IV) glucose or intramuscular (IM) or intranasal (IN) glucagon is needed, which most EMTs are not permitted to give.

c. If in doubt whether that patient has symptomatic hyperglycemia or hypoglycemia, most protocols will err on the side of giving glucose.

3. Determining blood glucose level in a patient with diagnosed diabetes can be difficult when signs and symptoms are confusing and you have no way to test for a blood glucose value. In these situations:

a. Perform a thorough assessment.

b. Contact the hospital to help sort out the signs and symptoms.

4. Coordinate communication and documentation.

a. Patients who refuse transport because their symptoms improve after taking oral glucose may require even more thorough documentation.

V. Emergency Medical Care for Diabetic Emergencies

A. Giving oral glucose

1. Three types of oral glucose preparations available commercially

a. Rapidly dissolving gel

b. Large chewable tablets

c. Liquid formulation

2. The only contraindications are the inability to swallow and unconsciousness.

3. Wear gloves before putting anything in the patient’s mouth.

4. Follow local protocols for glucose administration.

5. Reassess the patient frequently.

6. Provide transport to the next level of care.

VI. The Presentation of Hypoglycemia

A. Seizures

1. Hypoglycemia is a possible cause of seizures.

2. Though brief seizures are not harmful, they may indicate a potentially life-threatening underlying condition.

3. Management

a. Ensure that the airway is clear.

b. Place the patient on his or her side, if there is no possibility of cervical trauma.

c. Do not place anything in the patient’s mouth (eg, bite stick or oral airway).

d. Have suctioning equipment ready in case the patient vomits.

e. If the patient is cyanotic or appears to be breathing inadequately, provide oxygen or artificial ventilations.

f. Transport promptly.

B. Altered mental status

1. May be caused by complications of diabetes

a. Hypoglycemia

b. Ketoacidosis

2. Use the mnemonic AEIOU-TIPS.

a. Always suspect and check for low blood glucose in a patient with altered mental status.

3. Management

a. Ensure that the airway is clear.

b. Be prepared to provide artificial ventilations.

c. Be prepared to suction if the patient vomits.

d. Provide prompt transport.

C. Misdiagnosis of neurologic dysfunction

1. Occasionally patients with diabetic emergencies are thought to be intoxicated.

2. A diabetic patient confined by police is at risk.

3. An emergency medical identification bracelet, necklace, or card may help to save the patient’s life in such situations.

4. A blood glucose test performed at the scene or in the ED will identify the real problem.

5. Be alert to the potential for diabetes and alcoholism to coexist in a patient.

D. Relationship to airway management.

1. May not have a gag reflex and vomit or tongue may obstruct the airway.

2. Carefully monitor the airway.

3. Place the patient in a lateral recumbent position.

4. Make sure that suction is readily available.

VII. Hematologic Emergencies

A. Hematology is the study of blood-related diseases.

1. Four disorders that can create a prehospital emergency:

a. Sickle cell disease

b. Hemophilia A

c. Thrombophilia

d. Anemia

VIII. Anatomy and Physiology

A. Blood is made up of four components: erythrocytes, leukocytes, platelets, and plasma.

1. Each of the components of the blood serves a purpose in maintaining the body’s homeostatic balance.

2. Red blood cells contain hemoglobin, which carries oxygen to the tissues.

3. White blood cells respond to infection and collect dead cells for their correct disposal.

4. Platelets assist in forming a clot to stop bleeding.

5. Plasma serves as the transportation medium for blood components, proteins, and minerals.

IX. Pathophysiology

A. Sickle cell disease, also called *hemoglobin S disease*

1. An inherited blood disorder that affects RBCs

2. Found predominantly in people of African, Caribbean, and South American ancestry

3. People with sickle cell disease have misshapen RBCs that lead to dysfunction in oxygen binding and unintentional clot formation.

a. Clots may result in a blockage known as vasoocclusive crisis.

b. Can result in hypoxia, substantial pain, and organ damage.

4. Sickled cells have a short life span, resulting in more cellular waste products in the bloodstream and contributing to sludging (clumping) of the blood.

a. Maintaining hydration is important, as insufficient hydration leads to increased clumping.

5. Complications associated with sickle cell disease include:

a. Anemia

b. Gallstones

c. Jaundice

d. Splenic dysfunction

e. Vascular occlusion with ischemia

6. Many of these complications are very painful and potentially life threatening.

a. The patient is also more susceptible to infections.

B. Clotting disorders

1. Hemophilia

a. Rare: only about 20,000 Americans have the disorder.

i. Hemophilia A affects mostly males.

b. People with hemophilia A have a decreased ability to create a clot after an injury, which can be life threatening.

c. Patients with hemophilia A can be prescribed medications to replace missing clotting factors, release stored clotting factors, or prevent the breakdown of blood clots.

d. Complications

i. Long-term joint problems

ii. Bleeding in the brain

iii. Thrombosis due to treatment

2. Thrombophilia

a. A disorder in the body’s ability to maintain the smooth flow of blood through the venous and arterial systems

b. The concentration of particular elements in the blood creates clogging or blockage issues.

c. Thrombophilia is a general term for many different conditions that result in the blood clotting more easily than normal.

i. Inherited (genetic) disorders

ii. Medications or other factors

iii. Patients with cancer

d. Clots can spontaneously develop in the blood of the patient.

3. Deep vein thrombosis (DVT)

a. A common medical problem in sedentary patients and in patients who have had recent injury or surgery

b. Methods to prevent blood clot formation include:

i. Blood-thinning medications

ii. Compression stockings

iii. Mechanical devices

c. Risk factors include:

i. Joint replacement surgery

ii. Remaining sedentary for long periods of time

d. Treatment

i. Anticoagulation therapy

ii. Oral medications are typically administered for at least 3 months after diagnosis of a DVT.

e. A clot from the DVT can travel from the patient’s lower extremity to the lung, causing a pulmonary embolus.

4. Anemia

a. An abnormally low number of RBCs

b. May result from:

i. Chronic or acute bleeding

ii. Deficiency in certain vitamins or minerals

iii. Underlying disease process

c. Blood is unable to deliver adequate amounts of oxygen to the tissues.

d. Pulse oximetry may indicate an adequate saturation, even though the tissues are hypoxic (hypoxemic hypoxia).

X. Patient Assessment of Hematologic Disorders

A. Scene size-up

1. Ensure scene safety.

a. Most sickle cell patients will have had a crisis before.

b. Wear gloves and eye protection at a minimum.

c. Consider ALS support (eg, analgesic administration for vasoocclusive crisis pain).

2. Determine the MOI/NOI.

a. Remember that trauma may also have occurred.

B. Primary assessment

1. Perform cervical spine immobilization, if necessary.

2. Form a general impression.

3. Assess the patient’s airway and breathing.

a. For patients with inadequate breathing or altered mental status:

i. Provide high-flow oxygen at 12 to 15 L/min via nonrebreathing mask.

b. Patients experiencing a sickle cell crisis may have increased respirations or exhibit signs of pneumonia.

c. For patients with breathing difficulty:

i. Open the airway; insert airway adjunct.

ii. Administer oxygen; assist ventilations.

4. Assess the patient’s circulatory status.

a. Sickle cell crisis patients will have increased heart rate to “force” sickled cells through smaller blood vessels.

b. For suspected hemophilia patients:

i. Be alert for signs of acute blood loss.

ii. Note bleeding of unknown origin.

iii. Be alert for signs of hypoxia, which is due to blood loss.

5. Make a transport decision.

a. Transport to an ED should always be recommended to any patient who is experiencing a sickle cell crisis or hemophilia.

C. History taking

1. Investigate the chief complaint.

a. Obtain a history of the present illness from responsive patients, family, or bystanders.

b. Be alert for physical signs indicating sickle cell crisis.

i. Swelling of the fingers and toes

ii. Priapism

iii. Jaundice

2. In addition to obtaining a SAMPLE history, ask following questions:

a. Is pain isolated to a single location or felt throughout the body?

b. Are you having visual disturbances?

c. Are you experiencing nausea, vomiting, or abdominal cramping?

d. Are you experiencing chest pain or shortness of breath?

e. Have you had a crisis before?

f. When was the last time you had a crisis?

g. How did your last crisis resolve?

h. Have you had any illnesses, unusual amount of activity, or stress lately?

D. Secondary assessment

1. Systematically examine the patient.

a. Focus on major joints at which cells congregate.

b. Evaluate and document mental status using the AVPU scale.

2. Obtain a complete set of vital signs, including oxygen saturation level.

a. Normal sickle cell crisis vital signs:

i. Normal to rapid respirations

ii. Weak, rapid pulse

iii. Pale, clammy skin

iv. Low blood pressure

b. Use pulse oximeter, if available, to monitor oxygen saturation.

i. Reading may be inaccurate due to patient’s anemic state.

E. Reassessment

1. Reassess vital signs frequently to determine changes in the patient’s condition.

2. How is the patient responding to the interventions performed?

3. Communicate with hospital staff for continuity of care and document clearly.

XI. Emergency Medical Care for Hematologic Disorders

A. Emergency care is mainly supportive and symptomatic.

B. For patients with inadequate breathing or altered mental status:

1. Administer high-flow oxygen 12 to 15 L/min via nonrebreathing mask.

2. Place in position of comfort.

3. Transport rapidly to hospital.

Post-Lecture

## Assessment in Action

A. Assessment in Action is available in the Navigate course.