Chapter 12
Medical Overview

Unit Summary

After students complete this chapter and the related course work, they will understand the need for proper assessment techniques when called to patients with a chief complaint of a medical nature.

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.

Medical Overview

Assessment and management of a:

ÅMedical complaint (pp 453ï 460)

Pathophysiology, assessment, and management of medical complaints to include:

ÅTransport mode (pp 459ï 460)

ÅDestination decisions (p 460)

Infectious Diseases

Awareness of:

ÅA patient who may have an infectious disease (pp 461ï 466)

Assessment and management of:

ÅA patient who may have an infectious disease (pp 460ï 466)

Knowledge Objectives

1. Differentiate between medical emergencies and trauma emergencies, remembering that some patients may have both. (p 453)
2. Name the various categories of common medical emergencies and give examples. (pp 453ï 454)
3. Describe the evaluation of the nature of illness (NOI). (pp 453ï 454)
4. Discuss the assessment of a patient with a medical emergency. (pp 454ï 458)
5. Explain the importance of transport time and destination selection for a medical patient. (pp 459ï 460)
6. Define ñinfectious diseaseò and ñcommunicable disease.ò (p 461)
7. Describe the routes of transmission for an infectious disease. (p 460)
8. Discuss diseases of special concern and their routes of transmission, including herpes simplex, HIV/AIDS, syphilis, hepatitis, meningitis, tuberculosis, whooping cough, MRSA, hantavirus, West Nile virus, SARS, avian flu, and H1N1 (swine flu). (pp 461ï 466)

Lecture

I. Introduction

A. Patients who need EMS assistance generally have experienced either a medical emergency, a trauma emergency, or both.

1. Trauma emergencies involve injuries resulting from physical forces applied to the body.
2. Medical emergencies involve illnesses or conditions caused by disease.
3. It is important to remember that patients may have a combination of medical and trauma conditions affecting their health.

B. Types of medical emergencies

1. Respiratory emergencies occur when patients have trouble breathing or when the amount of oxygen supplied to the tissues is inadequate.
   a. Diseases that can lead to respiratory emergencies include asthma, emphysema, and chronic bronchitis.
2. Cardiovascular emergencies are caused by conditions affecting the circulatory system.
   a. Common examples include heart attacks and congestive heart failure.
3. Neurologic emergencies involve the brain.
   a. May be caused by a seizure, stroke, or fainting (syncope)
4. The most well-known gastrointestinal condition is appendicitis.
   a. There are many others, including diverticulitis and pancreatitis.
5. A urologic emergency can involve kidney stones.
6. The most common endocrine emergencies are caused by complications of diabetes mellitus.
7. Hematologic (blood) emergencies may be the result of sickle cell disease or various types of blood clotting disorders such as hemophilia.
8. Immunologic emergencies involve the bodyôs response to foreign substances.
   a. Allergic reactions are a type of immunologic medical emergency that can range from fairly minor to life threatening.
9. Toxicologic emergencies, including poisoning and substance abuse, result in other types of medical emergencies.
10. Behavioral emergencies may be especially difficult to deal with because patients often do not present with typical signs and symptoms.
11. Gynecologic conditions are a special category of medical emergencies that involve the female reproductive organs.

II. Patient Assessment

A. Assessment of the medical patient is similar to assessment of the trauma patient, but with a different focus.

1. Medical patient assessment is focused on:
   a. Nature of illness (NOI)

b. Symptoms
c. Chief complaint

2. Establish an accurate medical history.
3. Use dispatch information to guide your initial response, but do not get locked into a preconceived idea of the patientôs condition.
   a. Injuries may distract from the underlying condition.
   b. Tunnel vision occurs when you become focused on one aspect of the patientôs condition and exclude all others, which may cause you to miss an important injury or illness.

B. Assessment may be difficult with uncooperative or hostile patients.

1. Maintain a professional, calm, nonjudgmental demeanor at all times.
2. Refrain from labeling patients and displaying personal biases.
3. A frequent caller may have a different complaint this time.

C. The major components of patient assessment are:

1. Scene size-up
2. Primary assessment
3. History taking
4. Secondary assessment
5. Reassessment

D. Scene size-up

1. Scene safety
   a. Ensure the scene is safe for you, your partner, your patient, and bystanders.
   b. Determine the necessary standard precautions and whether you will need additional resources.
2. Mechanism of injury (MOI)/NOI
   a. Determine the MOI/NOI.
   b. The index of suspicion is your awareness and concern for potentially serious underlying and unseen injuries or illness.

E. Primary assessment

1. Form a general impression.
   a. Perform a rapid scan of the patient.
   b. Visual clues include:
      i. Apparent unconsciousness
      ii. Obvious severe bleeding
      iii. Extreme difficulty breathing
   c. Determine the patientôs level of consciousness using the AVPU scale.
2. Airway and breathing
   a. In conscious patients, ensure the airway is open and they are breathing adequately.
   b. Check the respiratory rate, depth, and quality.
   c. When in doubt, apply oxygen.
   d. For unconscious patients, make sure to open the airway using the proper technique for their condition, and take several seconds to evaluate their breathing.

3. Circulation
    a. Assess the circulation in a conscious patient by checking the radial pulse and observing the patientôs skin color, temperature, and condition.
    b. For unconscious patients, assess the circulation at the carotid artery.
4. Transport decision
    a. The following patients should be considered in serious condition and in need of rapid transport:
        i. Patients who are unconscious or who have an altered mental status
        ii. Patients with airway or breathing problems
        iii. Patients with obvious circulation problems such as severe bleeding or signs of shock
    b. If the patient does not meet the criteria for rapid transport, continue your assessment on scene and prepare for transport when you have completed the assessment and treatment.

F. History taking

1. Investigate the chief complaint.
    a. Gather a thorough history from:
        i. The patient
        ii. Any family, friends, or bystanders
    b. Investigate the NOI by asking questions about the chief complaint.
    c. For an unconscious patient, survey the scene for medication containers or medical devices.
2. As you continue to gather information, remember to obtain a SAMPLE history and to ask questions about the patientôs chief complaint using the OPQRST mnemonic.
    a. **O**nset of the problem
    b. **P**rovocation or palliation
    c. **Q**uality
    d. **R**egion/radiation
    e. **S**everity
    f. **T**iming of pain
3. Record any allergies, medical conditions, and medications of the patient.

G. Secondary assessment

1. The secondary assessment may occur on scene or en route to the emergency department.
    a. In some cases, you may not have time to conduct a secondary assessment.
2. Physical examinations
    a. All conscious patients should undergo a limited or focused assessment based on their chief complaint.
    b. For unconscious patients, you should always perform a full-body scan or head-to-toe examination to obtain clues to assess the problem.
        i. Examine the head, scalp, and face.
        ii. Examine the neck closely.
        iii. Assess the chest and abdomen.
        iv. Palpate the legs and arms.
        v. Examine the patientôs back.
    c. Treatment will depend on the condition(s) found and your local protocols.
3. Vital signs

a. Assess the pulse for rate, quality, and rhythm at the most appropriate site.
b. Identify the rate, quality, and regularity of the respirations and any difficulties that may be apparent.
c. Obtain an initial blood pressure, measuring both systolic and diastolic pressures.
d. Monitoring devices
   i. Consider using the automatic blood pressure cuff for future assessments at regular intervals.
   ii. Consider obtaining a blood glucose level and a pulse oximetry reading.

H. Reassessment

1. Once the assessment and treatment have been completed, reassessment should begin and continue throughout transport.
   a. Repeat the primary assessment, and reassess the chief complaint.
   b. Consider the need for ALS backup.
   c. Repeat your physical examination to identify and treat changes in the patientôs condition.
2. Interventions
   a. Review all treatments that have been performed.
3. Communication and documentation
   a. Document any changes that have developed as a result of the treatments, and, if needed, adjust any of the treatments accordingly.

III. Management: Transport and Destination

A. Most medical emergencies require a level of treatment beyond that available in the prehospital setting.

1. May require advanced testing available in a hospital
2. It may be beyond the scope of an EMT to administer medications to a patient.
   a. Any administration of medication by an EMT requires direct permission from medical control.
3. EMTs can use an automated external defibrillator (AED) on a patient who is pulseless and apneic.

B. Scene time

1. Scene time may be longer for medical patients than for trauma patients.
2. Gather as much information as possible to transmit to the emergency department.
3. Critical patients always need rapid transport. They include:
   a. Patients with altered mental status
   b. Patients with airway or breathing difficulties
   c. Patients with any sign of circulatory compromise
   d. Patients who are very old or very young

C. Type of transport

1. If a life-threatening condition exists, the transportation should include lights and sirens.
2. If the patient is not critical, careful consideration should be given to nonemergency transport.
3. Modes of transport ultimately come in one of two categories: ground or air.
   a. Ground transport EMS units are generally staffed by EMTs and paramedics.
   b. Air transport EMS units are generally staffed by critical care nurses and paramedics.

D. Destination selection

1. Generally, the closest hospital should be your destination.
2. At times, however, the patient will benefit from going to another hospital that is capable of handling his or her particular condition.

IV. Infectious Diseases

A. General assessment principles

1. Approach the patient with an infectious disease like any other medical patient.
2. Size up the scene and take standard precautions.
3. Perform the primary assessment and history taking.
   a. Typical chief complaints include fever, nausea, rash, pleuritic chest pain, and difficulty breathing.

B. General management principles

1. Focus on any life-threatening conditions identified in the primary assessment.
2. Be empathetic.
3. Place the patient in the position of comfort on the stretcher and keep them warm.
4. Follow standard precautions.
   a. Always follow your agencyôs exposure control plan in cleaning equipment, and properly discard any disposable supplies as well as linens.

V. Common or Serious Communicable Diseases

A. Herpes simplex

1. This is a common virus strain carried by humans.
2. Of individuals carrying the virus, 80% are asymptomatic.
3. Symptomatic infections can be serious and are on the rise.
4. The primary mode of infection is through close personal contact, so standard precautions are generally sufficient to prevent spread to or from health care workers.

B. HIV

1. No vaccine yet exists to protect against HIV/AIDS.
2. Despite treatment progress, acquired immunodeficiency syndrome (AIDS) is still fatal.
3. It is not easily transmitted in the EMS work setting.
   a. Far less contagious than hepatitis B
4. The EMTôs risk of infection is limited to exposure to an infected patientôs blood or body fluids.
5. Many patients with human immunodeficiency virus (HIV) show no symptoms.
   a. Always wear the proper type of gloves.
   b. Take great care in handling and disposing of needles and scalpels.
   c. Cover any open wounds that you have whenever you are on the job.

6. If you have any reason to think that a patientôs blood or secretions may have entered your system, seek medical advice as soon as possible.

C. Syphilis

1. Although syphilis is commonly thought of as a sexually transmitted disease, it is also a bloodborne disease.
2. There is a small risk for transmission through:
   a. Needlestick injury
   b. Direct blood-to-blood contact
3. If treated with penicillin, the individual is considered noncommunicable within 24 to 48 hours.
4. The initial infection with syphilis produces a lesion called a chancre.

D. Hepatitis

1. Inflammation (and often infection) of the liver
2. Early signs include:
   a. Loss of appetite
   b. Vomiting
   c. Fever
   d. Fatigue
   e. Sore throat
   f. Jaundice
   g. Right upper quadrant abdominal pain
3. Toxin-induced hepatitis is not contagious.
4. There is no sure way to tell which hepatitis patients are contagious.
   a. A carrier is a person (or animal) in whom an infectious organism has taken up permanent residence and may or may not cause an active disease.
5. Hepatitis A is transmitted orally through oral or fecal contamination.
6. Hepatitis B is far more contagious than HIV.
   a. Vaccination with hepatitis B vaccine is highly recommended for EMTs.

E. Meningitis

1. Inflammation of the meningeal coverings of the brain and spinal cord
2. Signs and symptoms include:
   a. Fever
   b. Headache
   c. Stiff neck
   d. Altered mental status
3. Most forms of meningitis are not contagious.
   a. However, one form, meningococcal meningitis, is highly contagious.
4. Take standard precautions.
   a. Gloves and a mask will go a long way to prevent the patientôs secretions from getting into your nose and mouth.

b. Vaccines are rarely used.
c. Meningitis can be treated at the emergency department with antibiotics.

5. After treating a patient with meningitis, contact your employer health representative.
   a. In many states, meningitis is ñreportable.ò

F. Tuberculosis

1. A chronic mycobacterial disease that usually strikes the lungs
2. Many infected patients are well most of the time.
   a. If the disease involves the brain or kidneys, the patient is only slightly contagious.
3. Disease that occurs shortly after infection is called primary tuberculosis.
   a. Reactive tuberculosis is common and can be much more difficult to treat, especially because an increasing number of tuberculosis strains have grown resistant to most antibiotics.
4. Patients who pose the highest risk almost always have a cough.
   a. Consider respiratory tuberculosis to be the only contagious form because it is the only one that is spread by airborne transmission.
5. Absolute protection from infection with the tubercle bacillus does not exist.
   a. Everyone who breathes is at risk.
   b. According to the Centers for Disease Control and Prevention, one third of the worldôs population is infected with tuberculosis.
   c. The vaccine for tuberculosis, called BCG, is only rarely used in the United States.
   d. The mechanism of transmission is not very efficient.
6. Have tuberculin skin tests regularly.
   a. If the infection is found before you become ill, preventive therapy is almost 100% effective.

G. Whooping cough

1. Also called pertussis, whooping cough is an airborne disease caused by bacteria that mostly affects children younger than 6 years.
2. Symptoms include fever and a ñwhoopò sound that occurs when inhaling after a coughing attack.
3. Prevent exposure by placing a mask on the patient and yourself.

H. Methicillin-resistant *Staphylococcus aureus* (MRSA)

1. MRSA is a bacterium that causes infections.
2. It is resistant to most antibiotics.
3. In health care settings, MRSA is transmitted from patient to patient by the unwashed hands of health care providers.
   a. Studies have shown that 5% to 15% of health care providers carry MRSA in their nares.
4. Factors that increase the risk for developing MRSA include:
   a. Antibiotic therapy
   b. Prolonged hospital stays
   c. A stay in intensive care or burn unit
   d. Exposure to an infected patient
5. The incubation period for MRSA appears to be between 5 and 45 days.

I. New and emerging diseases

1. Hantavirus
   a. Rare but deadly virus transmitted through rodent urine and droppings
   b. Not transmitted from person to person directly, but via food or a vector such as rodents
2. West Nile virus
   a. The vector is the mosquito.
   b. Affects humans and birds.
   c. These diseases are not communicable and pose no risk during patient care.
3. Severe acute respiratory syndrome (SARS)
   a. SARS is a serious, potentially life-threatening viral infection caused by a recently discovered family of viruses.
   b. SARS usually starts with flu-like symptoms, which may progress to pneumonia, respiratory failure, and, in some cases, death.
   c. Transmitted by close person-to-person contact or by secretions
4. Avian flu
   a. Avian (bird) flu is caused by a virus that occurs naturally in the bird population.
      i. This virus is carried in the intestinal tract of wild birds and does not usually cause illness.
      ii. However, in domestic bird populations (eg, chickens, ducks, and turkeys), it is very contagious.
      iii. If an infected bird is used for food and is cooked, it does not pose a risk to those who eat it.
   b. Humans can get it when they have close contact with infected birds.
   c. No rapid human-to-human cases have been reported.
5. H1N1
   a. Initially identified as the ñswine fluò
   b. It has been present for years in animals.
   c. H1N1 is contagious in humans.
   d. It is only one of many forms of influenza.

VI. Summary

A. Trauma emergencies are injuries that are the result of physical forces applied to the body.

B. Medical emergencies require EMS attention because of illnesses or conditions not caused by an outside force.

C. The assessment of a medical patient is similar to the assessment of a trauma patient, but the focus is more on symptoms and medical history than on visible physical injuries.

D. Many medical patients may not appear to be seriously ill at first glance.

E. For conscious medical patients, obtaining a thorough patient history can be one of the most beneficial aspects of the patient assessment.

F. Conscious medical patients seldom need a full-body scan, but all should get a focused examination based on their chief complaint. On the other hand, always perform a full-body scan on unconscious patients.

G. Most medical emergencies require a level of treatment beyond what is available in the prehospital setting. Also, the treatments depend on an accurate diagnosis of the exact medical condition; therefore, advanced testing in the hospital may be required.

H. If the patient is not in critical condition, you should gather as much information as possible from the scene so you can transmit that information to the physician at the emergency department.

I. Many medical emergency patients do not have immediate life-threatening conditions. If a life-threatening condition exists, transportation should include the use of lights and sirens, but if that is not the case, careful consideration should be given to nonemergency transport.

J. Modes of transport ultimately come in one of two categories: ground or air.

K. Many medical patients will benefit from being transported to a specific hospital capable of handling their particular condition.

L. Because it is often impossible to tell which patients have infectious diseases, you should avoid direct contact with the blood and body fluids of all patients.

M. If you think you may have been exposed to an infectious disease, see your physician (or your employer's designated physician) immediately.

N. Six infectious diseases of special concern are HIV, hepatitis B, meningitis, tuberculosis, SARS, and H1N1.

O. Infection control should be an important part of your daily routine. Be sure to follow the proper steps when dealing with potential exposure situations.

Post-Lecture

Unit Assessment

1. How do you investigate the nature of illness?

2. What are some common gynecologic emergencies?

3. Name three patients that should be considered serious and warrant immediate transport.

4. When questioning a patient with a medical complaint, you use the OPQRST mnemonic. What does the ñSò stand for?

5. When assessing the pulse rate of a patient, what other things are you assessing about that pulse?

6. In general, should your scene time be shorter or longer for medical patients when compared to trauma patients?

7. When would the closest hospital not be the appropriate choice for the medical patient?

8. Name five common, or serious, communicable diseases.

9. Name three of the five organisms that cause infectious diseases.

10. What are the early signs of viral hepatitis?

Knowledge Objectives

Knowledge Objectives