



Chapter 12

Medical Overview

Introduction

- Patients who need EMS assistance generally have experienced either a medical emergency, a trauma emergency, or both.
 - Trauma emergencies involve injuries resulting from physical forces applied to the body.
 - Medical emergencies involve illnesses or conditions caused by disease.

Types of Medical Emergencies

(1 of 5)

Table 12-1 Common Medical Emergencies

Type of Medical Emergency	Examples of Condition
Respiratory	Asthma, emphysema, chronic bronchitis
Cardiovascular	Heart attack, congestive heart failure
Neurologic	Seizure, stroke, syncope
Gastrointestinal	Appendicitis, diverticulitis, pancreatitis
Urologic	Kidney stones
Endocrine	Diabetes mellitus
Hematologic	Sickle cell disease, hemophilia
Immunologic	Anaphylactic reaction (severe allergy to bee stings or bites), food allergy
Toxicologic	Substance abuse, food or plant poisoning
Psychiatric	Alzheimer disease, schizophrenia, depression
Gynecologic	Vaginal bleeding, sexually transmitted disease, pelvic inflammatory disease



Types of Medical Emergencies

(2 of 5)

- Respiratory emergencies occur when patients have trouble breathing or when the amount of oxygen supplied to the tissues is inadequate.
- Cardiovascular emergencies are caused by conditions affecting the circulatory system.

Types of Medical Emergencies

(3 of 5)

- Neurologic emergencies involve the brain.
- The most well-known GI condition is appendicitis.
- A urologic emergency can involve kidney stones.

Types of Medical Emergencies

(4 of 5)

- The most common endocrine emergencies are caused by complications of diabetes mellitus.
- Hematologic emergencies may be the result of sickle cell disease or various types of blood clotting disorders.
- Immunologic emergencies involve the body's response to foreign substances.

Types of Medical Emergencies

(5 of 5)

- Toxicologic emergencies include poisoning and substance abuse.
- Behavioral emergencies may be especially difficult to deal with because patients do not present with typical signs and symptoms.
- Gynecologic emergencies involve female reproductive organs.

Patient Assessment (1 of 4)

- Similar to the assessment of the trauma patient, but with a different focus
- Focus is on:
 - Nature of illness (NOI)
 - Symptoms
 - Chief complaint



Patient Assessment (2 of 4)

- Establish an accurate medical history.
- Use dispatch information to guide initial response.
- Do not get locked into a preconceived idea of the patient's condition.
 - Injuries may distract from the underlying condition.



Patient Assessment (3 of 4)

- Assessment may be difficult with uncooperative or hostile patients.
 - Maintain a professional, calm, nonjudgmental demeanor.
 - Refrain from labeling patients.
 - A frequent caller may have a different complaint this time.



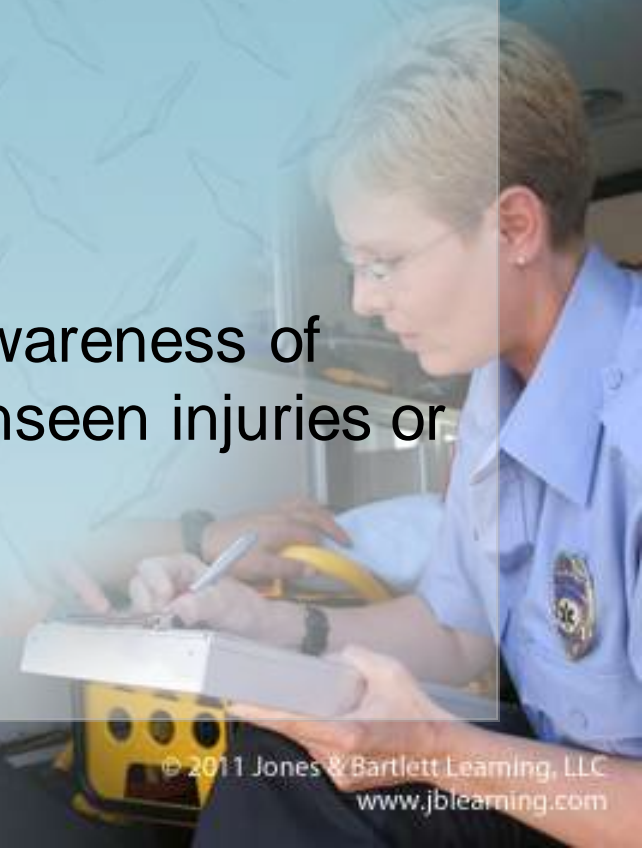
Patient Assessment (4 of 4)

- Patient assessment steps:
 - Scene size-up
 - Primary assessment
 - History taking
 - Secondary assessment
 - Reassessment



Scene Size-up

- Scene safety
 - Make certain the scene is safe.
 - Use standard precautions.
- Nature of illness (NOI)
 - Determine the NOI.
 - The index of suspicion is your awareness of potentially serious underlying, unseen injuries or illness.



Primary Assessment (1 of 4)

- Form a general impression.
 - Perform a rapid scan of the patient.
 - Visual clues include apparent unconsciousness, obvious severe bleeding, and extreme difficulty breathing.
 - Determine the patient's LOC.

Primary Assessment (2 of 4)

- Airway and breathing
 - In conscious patients, ensure the airway is open and they are breathing adequately.
 - Check respiratory rate, depth, and quality.
 - When in doubt, apply oxygen.
 - For unconscious patients, make sure to open the airway using the proper technique.

Primary Assessment (3 of 4)

- Circulation

- Assess in a conscious patient by checking the radial pulse and observing the patient's skin color, temperature, and condition.
- For unconscious patients, assess at the carotid artery.

Primary Assessment (4 of 4)

- Transport decision
 - Patients in need of rapid transport:
 - Patients who are unconscious or who have an altered mental status
 - Patients with airway or breathing problems
 - Patients with obvious circulation problems such as severe bleeding or signs of shock

A man in a light blue shirt is looking at a patient's chart. The patient is lying down, and the man is leaning over her. The background is a blurred outdoor setting with trees and a building.

History Taking (1 of 2)

- Investigate the chief complaint.
- Gather a thorough history from:
 - The patient
 - Any family, friends, or bystanders
- For an unconscious patient, survey the scene for medication containers or medical devices.



History Taking (2 of 2)

- Obtain a **SAMPLE** history and use the **OPQRST** mnemonic.
 - **O**nset of problem
 - **P**rovocation or palliation
 - **Q**uality
 - **R**egion/radiation
 - **S**everity
 - **T**iming of pain



Secondary Assessment (1 of 3)

- May occur on scene or en route to the emergency department
 - In some cases you may not have time.
- Physical examination
 - All conscious patients should undergo a limited or focused assessment.
 - For unconscious patients, always perform a full-body scan or head-to-toe examination.



Secondary Assessment (2 of 3)

- Physical examination (cont'd)
 - Examine the head, scalp, and face.
 - Examine the neck closely.
 - Assess the chest and abdomen.
 - Palpate the legs and arms.
 - Examine the patient's back.



Secondary Assessment (3 of 3)

- Vital signs
 - Assess the pulse for rate, quality, and rhythm at the most appropriate site.
 - Identify the rate, quality, and regularity of the respirations.
 - Obtain an initial blood pressure.
 - Consider obtaining a blood glucose level and a pulse oximetry reading.

Reassessment

- Performed once the assessment and treatment have been completed
- Begins and continues throughout transport
 - Consider the need for ALS backup.
- Reassess interventions.
- Document any developed changes.

Management: Transport and Destination (1 of 6)

- Most medical emergencies require a level of treatment beyond that available in the prehospital setting.
 - May require advanced testing available in a hospital
 - May be beyond the scope of the EMT to administer medications to a patient
 - EMTs can use the AED.

Management: Transport and Destination (2 of 6)

- Scene time
 - May be longer for medical patients than for trauma patients
 - Gather as much information as possible to transmit to the emergency department.
 - Critical patients always need rapid transport.

Management: Transport and Destination (3 of 6)

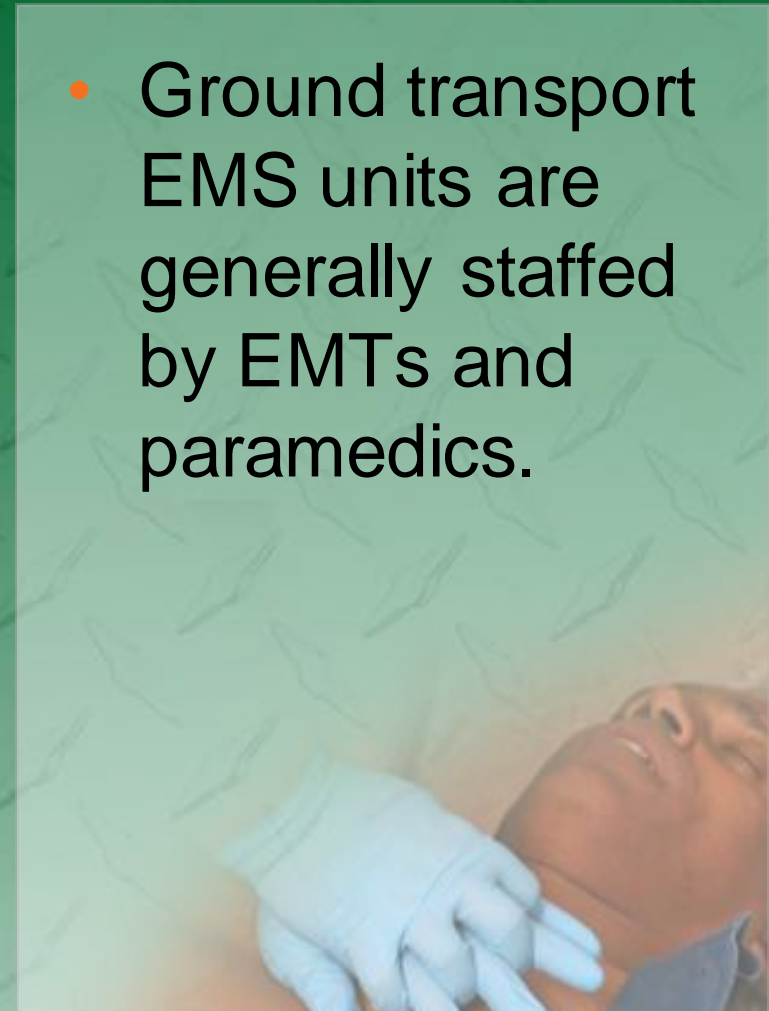
- Type of transport
 - Life-threatening condition: lights and sirens
 - Non-life-threatening condition: consider nonemergency transport
- Modes of transport ultimately come in one of two categories: ground or air.

Management: Transport and Destination (4 of 6)



Source: © Imageshop/Alamy Images

- Ground transport EMS units are generally staffed by EMTs and paramedics.



Management: Transport and Destination (5 of 6)



Source: © Keith D. Cullom

- Air transport EMS units are generally staffed by critical care nurses and paramedics.

Management: Transport and Destination (6 of 6)

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



Infectious Diseases (1 of 2)

- General assessment principles:
 - Approach like any other medical patient.
 - Size up the scene and take standard precautions.
 - Perform the primary assessment and history taking.
 - Typical chief complaints include fever, nausea, rash, pleuritic chest pain, and difficulty breathing.

Infectious Diseases (2 of 2)

- General management principles:
 - Focus on any life-threatening conditions identified in the primary assessment.
 - Be empathetic.
 - Place the patient in the position of comfort on the stretcher to keep warm.
 - Follow standard precautions.

Herpes Simplex

- Common virus strain carried by humans
- Of individuals carrying the virus, 80% are asymptomatic.
- Symptomatic infections can be serious and are on the rise.
- Primary mode of infection is through close personal contact.



HIV Infection (1 of 2)

- No vaccine yet exists.
- Despite treatment progress, AIDS is still fatal.
- Not easily transmitted in the EMS work setting
 - Far less contagious than hepatitis B

A man in a light blue shirt is looking down at a document or clipboard. The background is a blurred outdoor setting with greenery.

HIV Infection (2 of 2)

- The EMT's risk of infection is limited to exposure to an infected patient's blood or body fluids.
- Many patients with HIV show no symptoms.
 - Always wear the proper type of gloves.
 - Take great care in handling needles.
 - Cover any open wounds.

Syphilis

- Sexually transmitted, but also bloodborne
- Small risk for transmission through:
 - Needlestick injury
 - Direct blood-to-blood contact
- If treated with penicillin, the individual is considered noncommunicable within 24 to 48 hours.



Hepatitis (1 of 3)

- Inflammation (and often infection) of the liver
- Early signs:
 - Loss of appetite
 - Vomiting
 - Fever
 - Fatigue
 - Sore throat

Hepatitis (2 of 3)

Table 12-2 Characteristics of Hepatitis

Type	Route of Infection	Incubation Period	Chronic Infection	Vaccine and Treatment	Comments
Viral Hepatitis					
Hepatitis A (infectious)	Fecal-oral, infected food or drink	2-6 wk	Chronic condition does not exist	Vaccine is available; no treatment is available	Mild illness, approximately 2% of patients die. After acute infection, the patient has life-long immunity
Hepatitis B	Blood, sexual contact, saliva, urine, breast milk	4-12 wk	Chronic infection affects up to 10% of patients and up to 90% of newborns who have the disease	Vaccine is available; treatment is minimally effective	Up to 30% of patients may become chronic carriers. Patients are asymptomatic and without signs of liver disease, but they may infect others. Approximately 1% to 2% of patients die
Hepatitis C	Blood, sexual contact	2-10 wk	Chronic infection affects 90% of patients	No vaccine is available; treatment is minimally effective	Cirrhosis of the liver develops in 50% of patients with chronic hepatitis C. Chronic infection increases the risk of cancer of the liver
Hepatitis D	Blood, sexual contact	4-12 wk	Chronic infection is common	No vaccine is available; no treatment is available	Occurs only in patients with active hepatitis B infection. Fulminant disease may develop in 20% of patients
Toxin-Induced Hepatitis					
Medications, drugs, and alcohol	Inhalation, skin or mucous membrane exposure, oral ingestion, or intravenous administration	Within hours to days following exposure	Some chemicals may initiate an inflammatory response that continues to cause liver damage long after the chemical is out of the body	No vaccine is available; treatment is to stop exposure. In patients with an overdose of acetaminophen, certain drugs may minimize liver injury if given early enough	This type of hepatitis is not contagious. Patients with toxin-induced hepatitis may have liver damage, such as jaundice. Not every exposure to a toxin will cause liver damage



Hepatitis (3 of 3)

- Toxin-induced hepatitis is not contagious.
- There is no sure way to tell which hepatitis patients are contagious.
- Vaccination with hepatitis B vaccine is highly recommended for EMTs.

Meningitis (1 of 3)

- Inflammation of the meningeal coverings of the brain and spinal cord
- Signs and symptoms include:
 - Fever
 - Headache
 - Stiff neck
 - Altered mental status



Meningitis (2 of 3)

- Most forms of meningitis are not contagious.
 - However, one form, meningococcal meningitis, is highly contagious.
- Take standard precautions.
- Meningitis can be treated at the emergency department with antibiotics.



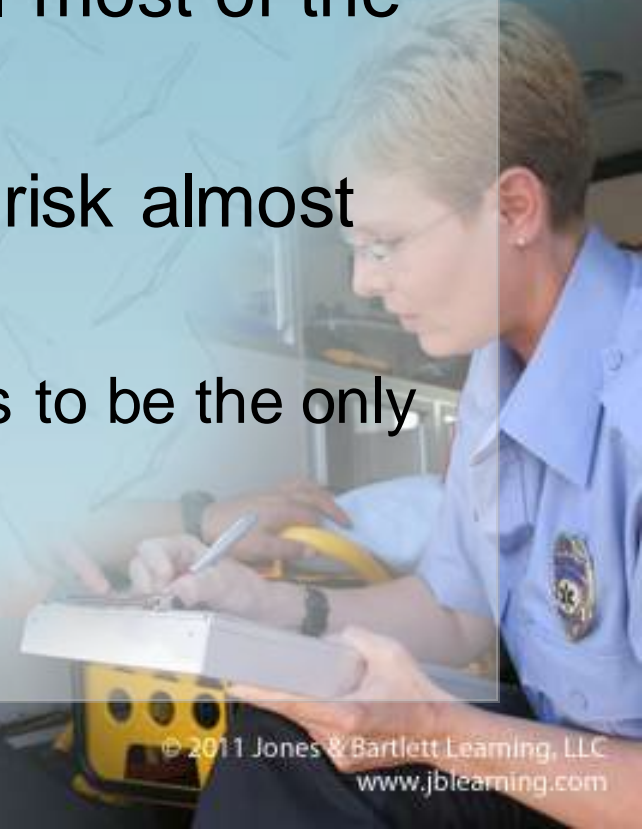
Meningitis (3 of 3)

- After treating a patient with meningitis, contact your employer health representative.
 - In many states, meningitis is “reportable.”



Tuberculosis (1 of 3)

- Chronic mycobacterial disease that usually strikes the lungs
- Many infected patients are well most of the time.
- Patients who pose the highest risk almost always have a cough.
 - Consider respiratory tuberculosis to be the only contagious form.



Tuberculosis (2 of 3)

- Absolute protection from the tubercle bacillus does not exist.
 - Everyone who breathes is at risk.
 - One third of the world's population is infected with tuberculosis.
 - The vaccine is rarely used in the United States.
 - Mechanism of transmission is not efficient.

Tuberculosis (3 of 3)

- Have tuberculin skin tests regularly.
 - If the infection is found before you become ill, preventive therapy is almost 100% effective.



Whooping Cough

- Also called pertussis
- Mostly affects children younger than 6 years
- Symptoms include fever and a “whoop” sound that occurs when inhaling after a coughing attack.
- Prevent exposure by placing a mask on the patient and yourself.

Methicillin-Resistant *Staphylococcus aureus* (MRSA) (1 of 2)

- MRSA is a bacterium that causes infections.
- Resistant to most antibiotics
- In health care settings, MRSA is transmitted from patient to patient by unwashed health care provider hands.

Methicillin-Resistant *Staphylococcus aureus* (MRSA) (2 of 2)

- Factors that increase the risk of MRSA:
 - Antibiotic therapy
 - Prolonged hospital stays
 - A stay in an intensive care or burn unit
 - Exposure to an infected patient

Hantavirus

- Rare but deadly virus transmitted through rodent urine and droppings
- Not transmitted from person to person directly, but via food or a vector such as rodents

West Nile Virus

- Affects humans and birds
- Vector is the mosquito
- Noncommunicable and poses no risk during patient care

SARS

- Severe acute respiratory syndrome (SARS)
- Potentially life-threatening
- Begins with flulike symptoms
 - May progress to pneumonia, respiratory failure, and, in some cases, death
- Transmitted by close person-to-person contact or by secretions

Avian Flu

- Caused by a virus that occurs naturally in the bird population
- Humans can get it when they have close contact with infected birds.
- No rapid human-to-human cases have been reported.

H1N1

- “Swine flu”
- Has been present for years in animals
- Contagious in humans
- Only one of many forms of influenza

Summary (1 of 5)

- Trauma emergencies are injuries that are the result of physical forces applied to the body.
- Medical emergencies require EMS attention because of illnesses or conditions not caused by an outside force.

Summary (2 of 5)

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

Summary (3 of 5)

- Modes of transport ultimately come in one of two categories: ground or air.
- Many medical patients will benefit from being transported to a specific hospital capable of handling their particular condition.

Summary (4 of 5)

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

Summary (5 of 5)

- Six infectious diseases of special concern are HIV, hepatitis B, meningitis, tuberculosis, SARS, and H1N1.
- Infection control should be an important part of your daily routine. Be sure to follow the proper steps when dealing with potential exposure situations.