Chapter 1

EMS Systems

Preparatory
Applies fundamental knowledge of the emergency medical services (EMS) system, safety/well-being of the emergency medical technician (EMT), medical/legal, and ethical issues to the provision of emergency care.

National EMS Education Standard Competencies (2 of 3)

Emergency Medical Services (EMS) Systems
- EMS systems
- History of EMS
- Roles/responsibilities/professionalism of EMS personnel
- Quality improvement
- Patient safety

National EMS Education Standard Competencies (3 of 3)

Research
- Impact of research on emergency medical responder (EMR) care
- Data collection
- Evidence-based decision making

Public Health
Uses simple knowledge of the principles of illness and injury prevention in emergency care.

Introduction
- This textbook is the primary resource for the emergency medical technician (EMT) course.
- EMS is a system.
- Chapter 1 discusses that system’s key components.

Course Description (1 of 8)
- EMS system
  - Team of health care professionals
  - Provides emergency care and transport
  - Governed by state laws
Course Description (2 of 8)

• This course trains for the state certification exam.
• After passing the exam, you are eligible to apply for licensure.

Course Description (3 of 8)

• Most states have four training and licensure levels
  – EMR
  – EMT
  – Advanced EMT (AEMT)
  – Paramedic

Course Description (4 of 8)

• EMR has very basic training.
  – Provides care before ambulance arrives
  – May assist within ambulance

Course Description (5 of 8)

• EMT has training in basic life support (BLS), including:
  – Automated external defibrillation
  – Airway adjuncts
  – Medication assistance

Course Description (6 of 8)

• AEMT has training in advanced life support (ALS), including:
  – Intravenous (IV) therapy
  – Administration of certain emergency medications

Course Description (7 of 8)

• Paramedic has extensive ALS training, including:
  – Endotracheal intubation
  – Emergency pharmacology
  – Cardiac monitoring
**Course Description (3 of 8)**

- EMT course includes four learning activities:
  1. Reading assignments, lectures, and discussions
  2. Step-by-step demonstrations
  3. Summary skills sheets
  4. Case presentations and scenarios

**EMT Training: Focus and Requirements (1 of 2)**

- EMTs are the backbone of EMS system.
  - ALS doesn’t do any good without good BLS
- They provide emergency care to the sick and injured.
  - Some patients are in life-threatening situations.
  - Most others require only supportive care.

**EMT Training: Focus and Requirements (2 of 2)**

- Some of the subjects discussed include:
  - Scene size-up
  - Patient assessment
  - Treatment
  - Packaging
  - EMS as a career

**Licensure Requirements (1 of 4)**

- Requirements differ state to state; general requirements to be an EMT are:
  - High school diploma or equivalent
  - Proof of immunization against certain communicable diseases
  - Valid driver’s license

**Licensure Requirements (2 of 4)**

- Successful completion of:
  - BLS/CPR course
  - State-approved EMT course
  - State-recognized written certification exam
  - State-recognized practical certification exam

**Licensure Requirements (3 of 4)**

- Demonstration that you can meet mental and physical criteria necessary to perform the job
- Compliance with other state, local, and employer provisions
Licensure Requirements (4 of 4)

• Americans With Disabilities Act (ADA)
  - Guarantees disabled individuals access to state and local government programs.
  - Prohibits employers from failing to provide full and equal employment to the disabled.

Overview of the EMS System (1 of 3)

History of EMS

• Origins include:
  - Volunteer ambulances in World War I
  - Field care in World War II
  - Field medic and rapid helicopter evacuation in Korean conflict

Overview of the EMS System (2 of 3)

• EMS as we know it today originated in 1966 with the publication of Accidental Death and Disability: The Neglected Disease of Modern Society
• DOT published first EMT training curriculum in early 1970s

Overview of the EMS System (3 of 3)

• The AAOS prepared the first EMT textbook in 1971
  - “The Orange Book”
  - Your textbook is the tenth edition of that book.
• Efforts are underway to standardize levels of EMS education nationally.

Levels of Training (1 of 2)

• Federal level:
  - National EMS Scope of Practice Model provides guidelines for EMS skills.
• State level:
  - Laws regulate EMS provider operations.
• Local level:
  - Medical director decides day-to-day limits of EMS personnel.

Levels of Training (2 of 2)

• Hierarchies of the National EMS Scope of Practice Model

Source: Based on the Emergency Medical Services System from the Office of EMS.
Public BLS and Immediate Aid

• Millions of laypeople are trained in BLS/CPR.
  – Teachers, coaches, child care providers, etc
  – People who regularly accompany groups on trips to remote locations
  – Automated external defibrillators (AEDs) are used by laypeople.

Emergency Medical Responders (1 of 2)

• Law enforcement officers
• Fire fighters
• Park rangers
• Ski patrol officers
• Initiate immediate care and assist EMTs on their arrival

Emergency Medical Responders (2 of 2)

• Good Samaritans trained in first aid and CPR often show up at a scene.
  – They can provide valuable assistance.
  – They can also interfere with operations and endanger themselves and others.

Emergency Medical Technicians

• EMT course requires about 150 hours.
• EMT has knowledge and skills to provide basic emergency care.
• Upon arrival at scene, EMT assumes responsibility for assessment, care, package, and transport of the patient.

Advanced Emergency Medical Technicians

• AEMT course adds knowledge and skills in specific aspects of ALS.
  – IV therapy
  – Advanced airway adjuncts
  – Medication administration

Paramedics

• Extensive course of training
  – 800 to 1500 hours or more
  – May be offered within context of associate’s or bachelor’s degree program
• Wide range of ALS skills
Public Access (1 of 2)

- Easy access to help in an emergency is essential.
- 9-1-1 system is public safety access point.

Public Access (2 of 2)

- Emergency medical dispatch (EMD) system gives callers medical instructions until EMS arrival.
- http://www.state.nj.us/911/home/highlights/EMD%20Guidecards%202011%20update%202012%20final%20from%20DOH.pdf

Communication Systems (1 of 2)

- From caller information, dispatcher selects the appropriate parts of the emergency system to activate.
- EMS may be:
  - Part of fire department
  - Part of police department
  - Independent

Communication Systems (2 of 2)

- New technology helps responders locate patients.
  - Example: cellular telephones linked to GPS units

Clinical Care (1 of 2)

- Describes the pieces of equipment
- Describes the scope of practice for using that equipment
Clinical Care (2 of 2)

- Familiarizes EMTs with ambulance controls and with their primary service area (PSA)

Human Resources

- Focuses on people who deliver the care:
  - Compensation
  - Interaction with other members of medical community
  - Well-being
  - Efforts are underway to allow EMS providers to move from state to state.

Medical Direction (1 of 2)

- Physician medical director authorizes EMTs to provide medical care in field.
- Appropriate care is described in standing orders and protocols.

Medical Direction (2 of 2)

- Medical control can be off-line or online.
  - Off-line (indirect)
    - Standing orders, training, supervision
  - Online (direct)
    - Physician directions given over the phone or radio

Legislation and Regulation

- Training, protocols, and practice follow state legislation.
- Senior EMS official handles administrative tasks:
  - Scheduling
  - Personnel
  - Budgets
  - Purchasing
  - Vehicle maintenance

Integration of Health Services

- Prehospital care by EMT is coordinated with care administered by hospital.
- Care simply continues in the emergency department.
- This ensures patient receives comprehensive continuity of care.
Evaluation

- Medical director maintains quality control.
- Continuous quality improvement (CQI) reviews and audits EMS system.
- Refresher training or continuing education are important.
- Minimizing errors is the goal.

Information Systems

- Used to document care provided
- Once stored electronically, can be used to improve care
- Can help determine:
  - Average on-scene time for trauma patients
  - Need for educational sessions
  - National trends

System Finance (1 of 2)

- Finance systems vary depending on organization involved.

<table>
<thead>
<tr>
<th>Type of Organizational Provider</th>
<th>% of Providers Providing EMS Services</th>
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</thead>
<tbody>
<tr>
<td>Fire department</td>
<td>34.2%</td>
</tr>
<tr>
<td>City or county health service</td>
<td>26.9%</td>
</tr>
<tr>
<td>Hospital</td>
<td>9.0%</td>
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<tr>
<td>Public entity</td>
<td>7.7%</td>
</tr>
<tr>
<td>Public service agencies</td>
<td>15.9%</td>
</tr>
<tr>
<td>Local government</td>
<td>9%</td>
</tr>
</tbody>
</table>

System Finance (2 of 2)

- Personnel may be paid, volunteer, or a mix.
- EMTs may be involved with:
  - Gathering insurance information
  - Attending fund-raisers
  - Other activities to secure finances

Education Systems

- EMS instructors are licensed in most states.
- ALS training is provided in college, adult career center, or hospital settings.
- Continuing education is needed to update knowledge and refresh skills.

Prevention and Public Education (1 of 2)

- Prevention and public education are two components of the EMS system with a focus on public health.

<table>
<thead>
<tr>
<th>Example of Public Health Accomplishments</th>
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<tbody>
<tr>
<td>Vaccination programs</td>
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<tr>
<td>Clean drinking water</td>
</tr>
<tr>
<td>Fire stations</td>
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<tr>
<td>Seatbelt laws</td>
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<tr>
<td>Helmet laws</td>
</tr>
<tr>
<td>Tobacco use laws</td>
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<td>Sewage systems</td>
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<tr>
<td>Restaurant inspections</td>
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<tr>
<td>Formation of the Food and Drug Administration</td>
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<tr>
<td>Pneumonia screenings</td>
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Prevention and Public Education (2 of 2)

- Emphasis is on prevention.
- EMS works with public health agencies on:
  - Primary prevention
  - Secondary prevention
  - Community paramedics

EMS Research

- Helps determine the shape and impact of EMS on community
- EMTs may be involved in research through gathering data.
- Evidence-based decision making is based on research.

Group Assignment

- List as many responsibilities of an EMT in 2 minutes
- Be sure to include non-incident responsibilities as well.

Roles and Responsibilities of the EMT (1 of 5)

- Keep vehicles and equipment ready for an emergency.
- Ensure safety of yourself, partner, patient, and bystanders.
- Operate an emergency vehicle.
- Be an on-scene leader.

Roles and Responsibilities of the EMT (2 of 5)

- Perform an evaluation of the scene.
- Call for additional resources as needed.
- Gain patient access.
- Perform a patient assessment.

Roles and Responsibilities of the EMT (3 of 5)

- Give emergency medical care to patient while awaiting arrival of additional medical resources.
- Only move patients when absolutely necessary to preserve life.
- Give emotional support to patient, family, other responders.
Roles and Responsibilities of the EMT (4 of 5)

- Maintain continuity of care by working with other medical professionals.
- Resolve emergency incidents.
- Uphold medical and legal standards.
- Ensure and protect patient privacy.

Roles and Responsibilities of the EMT (5 of 5)

- Give administrative support.
- Constantly continue professional development.
- Cultivate and sustain community relations.
- Give back to the profession.

Group Activity

<table>
<thead>
<tr>
<th>Desirable Traits</th>
<th>Undesirable Traits</th>
</tr>
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</table>

Professional Attributes (1 of 4)

- Integrity
- Empathy
- Self-motivation
- Appearance and hygiene

Professional Attributes (2 of 4)

- Self-confidence
- Time management
- Communication skills
- Teamwork and diplomacy
- Respect

Professional Attributes (3 of 4)

- Patient advocacy
- Careful delivery of care
- Every patient is entitled to compassion, respect, and the best care.
Professional Attributes

- As health care professionals, EMTs are bound by patient confidentiality.
- Be familiar with requirements of the Health Insurance Portability and Accountability Act (HIPAA).

Summary

- EMS standards are governed by state laws.
- EMS ambulance is staffed by personnel trained to EMR, EMT, AEMT, or paramedic level.
- An EMR provides care before an ambulance arrives and/or performs as an assistant within the ambulance.

Summary

- An EMT has training in basic emergency care skills.
- An AEMT has some ALS training.
- A paramedic has extensive ALS training.

Summary

- After scene size-up, EMTs provide care and transport.
- National EMS Scope of Practice Model provides skills guidelines.
- EMS Agenda for the Future includes 14 components that make up an EMS system.

Summary

- The EMT has certain roles and attributes to reduce suffering, pain, and mortality of patients.
- Present EMT course provides information needed for certification.
- Commit to continued learning.
- EMT is bound by HIPAA and its effects on patient privacy.

Review

1. Which of the following is an example of care that is provided using standing orders?
   A. Medical control is contacted by the EMT after a patient with chest pain refuses EMS care.
   B. The EMT defibrillates a cardiac arrest patient, begins CPR, and then contacts medical control.
   C. A physician gives the EMT an order via radio to administer oral glucose to a diabetic patient.
   D. Following an overdose, the EMT contacts the medical director for permission to give activated charcoal.
Answer: B

Rationale: Standing orders—a form of off-line (indirect) medical control—involves performing certain life-saving interventions (ie, CPR, defibrillation, bleeding control) before contacting a physician for further instructions.

1. Which of the following is an example of care that is provided using standing orders?
   A. Medical control is contacted by the EMT after a patient with chest pain refuses EMS care
      Rationale: This is an example of online medical control given via the phone or radio.
   B. The EMT defibrillates a cardiac arrest patient, begins CPR, and then contacts medical control
      Rationale: Correct answer

2. Quality control in an EMS system is the ultimate responsibility of the:
   A. paramedic.
   B. lead EMT.
   C. medical director.
   D. EMS administrator.

   Rationale: This is an example of online medical control given via the phone or radio.

   C. A physician gives the EMT an order via radio to administer oral glucose to a diabetic patient
      Rationale: This is an example of online medical control given via the phone or radio.

   D. Following an overdose, the EMT contacts the medical director for permission to give activated charcoal
      Rationale: This is an example of online medical control given via the phone or radio.

Answer: C

Rationale: The medical director is responsible for maintaining quality control, which ensures that all staff members who are involved in caring for patients meet the standard of care on every call.
2. Quality control in an EMS system is the ultimate responsibility of the:
   C. medical director.  
   **Rationale:** Correct answer
   D. EMS administrator.  
   **Rationale:** The EMS administrator sees to the daily operations and overall direction of the service or company.

3. Upon arriving at the scene of a domestic dispute, you hear yelling and the sound of breaking glass from inside the residence. You should:
   A. immediately gain access to the patient. 
   B. carefully enter the house and then call the police. 
   C. retreat to a safe place until the police arrive. 
   D. tell the patient to exit the residence so you can provide care.
   **Answer:** C  
   **Rationale:** Never enter a scene in which signs of violence are present, including yelling, screaming, or the sound of breaking glass. Law enforcement must secure the scene prior to the EMT’s entry.

4. Which of the following is NOT a component of continuous quality improvement (CQI)?
   A. Periodic review of run reports 
   B. Discussion of needs for improvement 
   C. Negative feedback to those who make mistakes while on a call 
   D. Remedial training as deemed necessary by the medical director
The purpose of CQI is to ensure that the standard of care is provided on all calls. This involves periodic run report reviews, discussing needs for improvement, and providing remedial training as deemed necessary by the medical director. Positive feedback should be provided during this process.

**Answer:** C  
**Rationale:**

4. Which of the following is NOT a component of continuous quality improvement (CQI)?

A. Periodic review of run reports  
   **Rationale:** This is a part of CQI.

B. Discussion of needs for improvement  
   **Rationale:** This is a part of CQI.

C. Negative feedback to those who make mistakes while on a call  
   **Rationale:** Correct answer

D. Remedial training as deemed necessary by the medical director  
   **Rationale:** This is a part of CQI.

5. All of the following are responsibilities of the EMS medical director, EXCEPT:
   A. evaluating patient insurance information.  
   **Rationale:** Correct answer

B. serving as liaison with the medical community.  

C. ensuring that the appropriate standards are met by EMTs.  
   **Rationale:** This is the responsibility of the medical director.

D. ensuring appropriate EMT education and continuing training.  
   **Rationale:** This is the responsibility of the medical director.
6. Which of the following situations would MOST likely disqualify a person for EMS certification?
   A. A misdemeanor at the age of 17
   B. Driving under the influence of alcohol
   C. Possessing a valid driver’s license from another state
   D. A mild hearing impairment that is corrected with hearing aids

Answer: B

Rationale: In most states, a person may be denied EMS certification for being convicted of a felony, such as driving under the influence of alcohol or other drugs.

7. Which of the following should be the EMT’s highest priority?
   A. Controlling severe bleeding
   B. Maintaining a patient’s airway
   C. Ensuring the safety of his or her partner
   D. Sizing up every scene prior to entering

Answer: D

Rationale: Personal safety is of utmost concern for the EMT. This involves sizing up a scene to determine whether or not the scene is safe to enter. This will ensure the safety of all personnel.
7. Which of the following should be the EMT’s highest priority?

A. Controlling severe bleeding  
   **Rationale:** This is the priority once the patient’s airway and breathing have been addressed.

B. Maintaining a patient’s airway  
   **Rationale:** This is most the important priority once patient contact is made.

8. A patient who requires cardiac monitoring in the field would require, at a minimum, which level of EMS provider?

A. EMR  
B. EMT  
C. Paramedic  
D. AEMT

**Answer:** C  
**Rationale:** Of all levels of EMS provider, the paramedic is trained in advanced medical care, including cardiac monitoring, IV therapy, and the administration of a variety of emergency drugs.
9. Which of the following is a professional responsibility of the EMT?
   A. Telling the family of a dying patient that everything will be OK
   B. Maintaining only the skills that he or she feels uncomfortable with
   C. Maintaining a professional demeanor even under the most stressful situations
   D. Advising an emergency department nurse that patient reports are only given to a physician

Rationale: Because the public relies upon the EMT to remain calm when others cannot, he or she must project a professional and calm demeanor even when under extreme stress.

10. Emergency patient care occurs in progressive phases. What occurs first?
    A. Activation of EMS
    B. Initial prehospital care
    C. The patient receives definitive care
    D. Incident recognition

Rationale: Someone must recognize an emergency before EMS can be activated.
10. Emergency patient care occurs in progressive phases. What occurs first?

A. Activation of EMS  
   **Rationale:** This occurs once an incident is recognized.

B. Initial prehospital care  
   **Rationale:** This occurs when the EMT arrives on scene.

D. Incident recognition  
   **Rationale:** Correct answer

C. The patient receives definitive care  
   **Rationale:** This occurs when the EMT and patient reach the hospital.

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