Chapter 1, EMS Systems

Table of Contents

1. Introduction to EMS Systems

- This report provides an **overview** of **ems systems**.
- It covers their **history** and the **roles** and **responsibilities** of **EMTs**.
- The main focus is understanding the structure and function of emergency medical services.
- It also highlights the EMT's place within this system.
- EMS is defined as a **system**.
- It consists of teams of healthcare professionals.
- This system provides **emergency care** and **transportation**.
- EMS is governed by state laws [10].

2. History and Evolution of EMS

Historical Event	Significance
Volunteer ambulances in World War 1 [36]	Early origins of organized field care.

Field care in World War II [36]	Continued development of field medical support.
Field medic and rapid helicopter evacuation in the Korean conflict [36]	Introduction of rapid transport and specialized medical personnel in the field.
Publication of "Accidental Death and Disability: The Neglected Disease of Modern Society" ("White Paper") in 1966 [38]	Originated modern EMS by highlighting deficiencies in emergency care.
Emergency Medical Services Act of 1973 [39]	Created funding and programs for improved pre-hospital care systems.
DOT published the first EMT training curriculum in the early 1970s [40]	Standardized initial EMT education.
American Academy of Orthopedic Surgeons published the first EMT book in 1971 [41]	Provided educational material for EMT training.
DOT developed a recommended national standard curriculum in the late 1970s [43]	Further standardized EMT training nationally.
Development of advanced levels of training in the 1980s [44]	Enhanced EMT capabilities with advanced life support procedures.
NHTSA developed the EMS agency for future in the 1990s [45]	Planned to standardize levels of EMS education and providers.
NHTSA revised the EMS agenda for the future and published EMS agenda for 2050 in 2019 [46]	Updated the plan for standardizing EMS education and provider levels.

3. Levels of EMS Providers

Level	Training Hours	Key Capabilities
EMR (Emergency Medical Responder) [18]	Very basic training [18]	Provides care before ambulance arrival [19]. May assist with the ambulance [19]. Initiates immediate care and assists EMTs [55]. Focuses on immediate BLS and urgent care with limited equipment [56].
EMT (Emergency Medical Technician) [20]	About 150 to 200 hours [57]	Basic training in life support (BLS) [20]. Includes automatic external defibrillation (AEDs) [20]. Includes airway adjuncts [20]. Assists with certain medications [20]. Possesses knowledge and skills for basic emergency care [58]. Assumes responsibility for assessment, care, packaging, and transport [59].
AEMT (Advanced Emergency Medical Technician) [21]	Adds to EMT training [61]	Training in specific aspects of advanced life support [21]. Includes IV access therapy [21]. Includes administration of a limited number of emergency medicines [21]. Includes advanced airway adjuncts [61].
Paramedic [22]	1,000 to more than 1,300 hours [64]	Extensive advanced life support training [22]. Includes endotracheal intubation [23]. Includes emergency pharmacology [23]. Includes cardiac monitoring [23]. Includes other advanced assessment and treatment skills [23]. Training may be in an associate's or bachelor's degree program [65].

4. Components of the EMS System

- The **EMS Agenda 2050** outlines five components of the EMS system [68].
- These components include comprehensive, quality and convenient care [69].
- Evidence-based clinical care is another component [69].
- Efficient, well-rounded care is also included [69].
- Preventative care is a key part [69].

- Comprehensive and easily accessible patient records are essential [69].
- **Public access** ensures easy access to help in an emergency [70].
- The **911 system** is part of public safety [71].
- An **emergency medical dispatch (EMD) system** helps dispatchers give medical instructions [72].
- **Mobile apps** can alert lay people trained in CPR to cardiac arrests [73].
- **Human resources** focuses on the people who deliver care [74].
- The EMS Agenda 2050 encourages an environment where talented people want to work [75].
- **Medical direction** is provided by a physician [76].
- The medical director authorizes EMTs to provide care in the field [76].
- medical directors are liaisons between the medical community and EMTs [77].
- Appropriate care is described in **standing orders** and **protocols** [77].
- protocols are a comprehensive guide for the EMT's scope of practice [78].
- standing orders are part of protocols [78].
- They designate what the EMT must do for a specific complaint [78].
- Providers do not need to consult medical direction before implementing standing orders [79].
- Medical control can be **offline** (indirect) or **online** (direct) [80].
- Offline control involves standing orders, training, or supervision [80].
- Online control is a physician's direct order over the phone or radio [81].
- **Legislation and regulation** ensure training, protocols, and practices follow state laws [82].
- A senior EMS official manages administrative tasks and daily operations [83].
- **Integration of healthcare services** means pre-hospital care continues in the emergency department [84].
- **Mobile integrated healthcare (MIH)** uses the pre-hospital spectrum for healthcare delivery [85].
- MIH evolved to improve access to affordable healthcare [85].
- Healthcare in the MIH model is provided in the community [86].
- This is done by an integrated team of professionals [86].
- This branch uses additional training levels for EMS providers [87].
- This includes **community paramedicine** [88].

- Experienced paramedics receive advanced training for community services [88].
- They can perform health evaluations and monitor chronic illnesses [89].
- They can obtain lab samples and administer immunizations [89].
- **Information systems** use computer systems to document patient care [90].
- Electronically stored information is used to improve care [90].
- **Evaluation** means the medical director is responsible for quality control [91].
- Adopting a **just culture** promotes fairness and accountability [92].
- **continuous quality improvement (cqi)** reviews and audits the EMS system [93].
- CQI identifies areas for improvement and assigns remedial training [94].
- Minimizing errors is the goal of CQI [95].
- It uses a plan, do, study, act cycle [95].
- **Patient safety** involves minimizing medical errors [95].
- This requires efforts from both the EMS agency and personnel [96].
- **System finance** varies depending on the organization [97].
- Personnel can be paid, volunteer, or a mix [98].
- EMTs may gather insurance information or secure signatures on hipaa notices [99].
- They may obtain permission to bill health insurance [99].
- The ET3 pilot program reimburses EMS for appropriate patient care [100].
- It sets up payment for transport to alternative destinations [101].
- It also covers on-scene treatment with no transport [101].
- **Education systems** involve licensed instructors in most states [102].
- Training programs must follow national standards from CoAEMSP and CAAHEP [103].
- Continuing education and refresher courses maintain and update EMT skills [105].
- **Prevention and public education** focus on public health [106].
- Public health examines the population's health needs [106].
- The goal is preventing health problems [106].
- EMS works with public health agencies in two ways [107].
- **Primary prevention** strategies prevent events from happening [107].
- Examples include pool safety education and car seat installation [107].

- **Secondary prevention** occurs after an event [108].
- It aims to decrease the effects of the event [109].
- Helmets and seat belts are examples of secondary prevention [109].
- Examples of public health accomplishments include vaccination programs and seat belt laws [110].

5. Roles and Responsibilities of an EMT

- EMTs are **healthcare professionals** [116].
- Roles include keeping vehicles and equipment ready [117].
- Ensuring safety is crucial: self, partner, patient, bystanders [117].
- Being familiar with emergency vehicle operation is needed [117].
- EMTs should be on-scene leaders [117].
- They perform an evaluation of the scene [117].
- Calling for additional resources when needed is a role [117].
- Gaining access to patients is necessary [117].
- Performing a patient assessment is a key task [117].
- Giving emergency medical care while awaiting resources is essential [117].
- Administrative support is also required [117].
- Constant professional development is important [118].
- Cultivating and sustaining community relations is a role [118].
- Giving back to the profession is encouraged [118].
- **Professional attributes** include integrity, acting consistently and honestly [119].
- Empathy involves being aware of others' needs [121].
- Self-motivation means solving problems without direction [121].
- Appearance and hygiene project trust and professionalism [121].
- Self-confidence is knowing what you know and don't know [121].
- Being able to ask for help is part of self-confidence [121].
- Time management involves performing or delegating tasks efficiently [122].
- Communication means understanding and being understood [122].
- Teamwork and diplomacy involve working with others and respecting them [122].
- Respect is holding others in high regard [122].

- Patient advocacy keeps the patient's needs central to care [123].
- Careful delivery of care means paying attention to details [123].
- It ensures care is done as safely as possible [123].
- Every patient is entitled to compassion and respect [124].
- EMTs are bound by **patient confidentiality** [125].
- Patient privacy must be protected [125].
- Findings or disclosures should only be discussed with treating personnel [126].
- Limited disclosures may be made as required by law, like to the police [126].
- Protection of patient privacy is highlighted by **hipaa** [127].

6. Licensure and Certification Requirements

- Successful completion of the EMT course allows taking national or state certification exams [11].
- After passing the certification exam, one is eligible for **state licensure** [12].
- Licensure is how the state ensures an applicant's competency [13].
- This process allows states to manage who can be a healthcare provider [14].
- Licensure requirements differ by state but generally include [27]:
  - A high school diploma or equivalent [27].
  - Proof of immunization [27].
  - Successful background check and drug screening [27].
  - A valid driver's license [27].
  - Successful completion of a recognized BLS CPR course [28].
  - Successful completion of a state-approved EMT course [28].
  - Successful completion of state-recognized written and practical exams [28].
  - Demonstrating necessary mental and physical abilities [28].
  - Compliance with other state, local, and employer provisions [28].
- The **americans with disabilities act (ada)** protects people with disabilities [29].
- It prevents denial of access to state or local government programs [30].
- It prohibits employers from denying equal employment to the disabled [31].
- Title 1 protects EMTs with disabilities seeking employment [32].
- Employers may need to adjust processes or modify the work environment [33].

- Personal background information is checked based on state criminal requirements [34].
- States have requirements prohibiting individuals with misdemeanors or felonies from becoming EMS providers [35].

7. Quality Improvement and Patient Safety

- The EMT has a role in the **quality improvement process** [2].
- The **medical director** is responsible for maintaining **quality control** [91].
- This involves adopting a just culture [92].
- A just culture promotes a learning culture [92].
- It balances fairness and accountability [92].
- **continuous quality improvement (cqi)** involves reviews and audits [93].
- CQI identifies areas for improvement and assigns remedial training [94].
- The goal of CQI is minimizing errors [95].
- It uses a plan, do, study, act cycle [95].
- **Patient safety** aims to minimize medical errors [95].
- Errors can result from rules-based, knowledge-based, or skills-based failures [95].
- Minimizing errors requires efforts from both the EMS agency and personnel [96].

8. Research and Evidence-Based Decision-Making

- An EMT has an impact on **research** and **evidence-based decision-making** [5].
- EMS research helps determine the shape and impact of EMS on the community [112].
- **evidence-based medicine** focuses on procedures proven useful for improving patient outcomes [113].
- Many ems systems consult national model EMS clinical guidelines [114].
- These guidelines are from the National Association of EMS Officials [114].
- The guidelines are based on a review of current research and expert consensus [115].