Abstract:
Prior to the publication of "Accidental Death and Disability, The Neglected Disease of Modern Society" in 1966, the field of emergency medical services (EMS) was an endeavor undertaken at the local level with minimal requirements, clinical sophistication, or oversight. Since then, there has been a substantial evolution of the definition of EMS provider scope of practice, certification requirements, and educational standards for training with a more recent focus on maintenance of competency and skill levels. This article will focus on describing the different levels of EMS providers, their scope of practice, and training requirements. We will also describe the issues and challenges with regard to maintaining competency in the care of children, given the infrequent contact many prehospital providers may have with this patient population. Finally, we will describe new advances and controversies in prehospital provider scope of practice including paramedic specialization and community paramedicine.

Keywords:
emergency medical services; competency-based education; specialization; scope of practice; pediatric prehospital care

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Prehospital Provider Scope of Practice and Implications for Pediatric Prehospital Care

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In the Emergency Medical Services (EMS) Act of 1973, the federal government laid the ground work for developing the EMS system, including identifying the scope of practice of EMS personnel.[1] This act authorized financial support and responsibility of EMS programs to the Department of Health, Education, and Welfare. It provided legislation for development of a comprehensive EMS system including education and training of personnel.

Overall, there are 2 tiers of care in EMS, basic life support and advanced life support. The National Highway Traffic and Safety Administration (NHTSA) National Standard Curricula was first developed in 1977 and provided a clear outline describing the 4 levels of prehospital providers: emergency medical responders (EMRs), emergency medical technicians–basic (EMTs), advanced emergency medical technicians (AEMTs), and paramedics. Basic life support care in the EMS system is provided by EMRs and EMTs. These providers are trained for scene response and initiation of basic life support such as cardiopulmonary resuscitation. Emergency medical technicians have basic knowledge on providing patient care and transportation and currently make up approximately 57% of the nation's EMS providers as a whole.[2] Advanced life support

care in the EMS system is provided by AEMT and paramedics. Advanced EMTs have additional training to provide advanced life support both on scene and during transport including advanced airway management and the administration of medications. Approximately 7% of EMS providers are AEMT. Paramedics are allied health professionals who have undergone extensive training that enables them to provide advanced life support to critically ill patients in the EMS system. Approximately 31% of EMS providers in the nation are paramedics. A summary of the scope of practice and general hours of training requirements is shown in Table 1.

REGULATION OF EMS SCOPE OF PRACTICE AND TRAINING

The publication of "Accidental Death and Disability, the Neglected Disease of Modern Society" in 1966 by the National Academy of Sciences has been widely credited as the foundation of modern EMS in the United States.[3] Subsequent efforts to organize EMS delivery led to a Presidential Commission on Highway Traffic Safety in 1965 to recommend the creation of a national certification agency to establish uniform standards for training and examination of personnel active in the delivery of emergency ambulance services. Acting on that recommendation, the National Registry of Emergency Medical Technicians (NREMT) was founded in 1970.[4] After the passage of the federal EMS Systems Act of 1973, states were encouraged to develop licensing programs for EMS personnel.[1] Figure 1 provides a timeline for the development of modern day EMS. Over the ensuing decades, various training programs have been established in different localities to advance the level of EMS care in their communities.

In 1996, the NHTSA published a consensus document entitled "The EMS Agenda for the Future."[5] This document was designed to guide EMS providers, health care organizations and institutions, government agencies, and policy makers. It outlined the need to: (1) expand the role of EMS in public health and prevention, (2) involve EMS in community health monitoring, (3) integrate EMS with other health care providers, and (4) for EMS to be cognizant of the special needs of the entire population, including children.

From this work came the EMS Education Agenda for the Future: A Systems Approach published in 2000.[6] In this report, the authors noted a lack of consistency between EMS education and formal higher-education systems. Therefore, the document established a systematic approach using 5 integrated components defining EMS scope of practice, training, and certification, along with the process of training program accreditation (Figure 2). Specifically, it outlined the development of the national EMS Core Content, which describes the full body of EMS knowledge and skills. It was followed by the National EMS Scope of Practice Model, published in 2007, which established minimum competencies for EMS provider levels, served as a guide for state legislation around certification, and promoted reciprocity between states for EMS providers.

TABLE 1. Summary of hours of training and general scope of practice by EMS provider level.

	EMR	EMT-B	AEMT	Paramedic
Didactic	40	90-100	175-225	300-720
Clinical	Optional	10	50-75	200-600
Internship	Optional	Optional	75-100	100-1150
Total Hours	40-60	100-110	300-400	1000-2000
Scope of practice	▪ CPR including AED ▪ Assessing scene safety ▪ Basic airway maneuvers ▪ Measuring vital signs ▪ Basic medical care ▪ Basic trauma care ▪ Assisting EMTs on scene	▪ History and PE skills, including the sample history ▪ Basic airway management (upper airway obstruction, bag-mask ventilation) ▪ Spinal immobilization ▪ Splint application ▪ Assisted administration of OTC medications	▪ Advanced airway management ▪ Procedural skills including IV/IO placement ▪ IV/IO/IM/SQ inhaled medications (including narcotics)	▪ Advanced airway management ▪ Pleural decompression ▪ ECG and 12-lead interpretation/management ▪ Administration of IVF, medications, blood products

CPR indicates cardiopulmonary resuscitation; ECG, electrocardiogram; IVF, intravenous fluids; AED, automated external defibrillator; IO, intraosseus; IM, intramuscular; SQ, subcutaneous; PE, physical exam; OTC, over the counter.
Source: Adelgais and Hennes.[47]