

Ensuring Excellence in EMS Care for Kansas Children

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Summary

Through advances in medical care, physicians and other health care providers have come to learn that children are not “little adults” and that they have specialized anatomy, physiology, and disease processes, and they require pediatric-specific treatments. As a result of these developments, experts in the fields of pediatrics and emergency medicine have established national guidelines to ensure that children receive the same quality of emergency care as adults. These national guidelines cover the breadth of emergency medical care—from the initial 9-1-1 call through ambulance transport by EMS providers to care in a hospital emergency departments (ED). These pediatric and emergency medicine leaders have also called upon all emergency care providers to be adequately trained and equipped to provide quality care for sick or injured children. Unfortunately, children are still frequently treated as “little adults” and many EMS and other emergency medical providers lack essential training, equipment, and medical direction needed to provide adequate treatment for sick and injured children.

The Emergency Medical Services for Children (EMSC) is a federally-funded program of the Bureau of Maternal and Child Health. It is the only federal program focused on improving emergency care for children. Through funding and technical assistance from EMSC, the Kansas Department of Health and the Environment (KDHE) is seeking to implement the national pediatric emergency medicine guidelines in order to ensure excellence in EMS care for all of Kansas children.

Historical Background

Emergency room care developed in the 1940's-1960's after physicians serving in the Korean and Vietnam wars learned of the advantages of prompt medical care. In addition, research studies began to reveal improved outcomes for patients who received quality EMS and emergency room care. Empowered with this information and newly acquired federal funding, the EMS system and the number of emergency rooms quickly grew in the 1970's. Although some pediatric emergency rooms were established at that time, pediatric emergency medicine did not truly burgeon until the 1980's. The growth of pediatric emergency medicine was the result of studies demonstrating inadequacies in pediatric training and equipment and the discovery of worsened mortality and morbidity rates of injured children compared to adults. In 1984, Congress addressed

these deficiencies in pediatric emergency care by creating the EMSC program. Initially, the EMSC program merely funded a few state demonstration programs in order to learn how to improve emergency medical care for children. At the same time and later into the 1990's, pediatric and emergency medical societies were developing new pediatric emergency treatment protocols and a new subspecialty, Pediatric Emergency Medicine. In the early 1990's, the disparities in emergency care of children compared to adults also came to the attention of the American public. In response to both public concerns and to the advances in pediatric emergency medicine, the National Academies' Institute of Medicine released a study of the medical care given to children by EMS providers and in emergency rooms. This study, entitled "Emergency Medical Services for Children" (1993), sharply criticized the state of emergency care for children. It called upon states to require emergency medicine technicians (EMTs), paramedics, and emergency room providers to have pediatric-specific training, equipment, protocols, and medical direction. These recommendations were supported by the American Academy of Pediatrics and the American College of Emergency Physicians and were adopted as national guidelines ("performance measures") by EMSC.

The Current State of Pediatric Emergency Care

In 2007, the Institute of Medicine revisited these issues in its study "Emergency Care for Children: Growing Pains." The study concluded that while many states had implemented the EMSC guidelines, a great disparity of emergency care for children existed between states and between urban and rural areas. For instance, the IOM noted that only 6% of hospitals had the recommended pediatric supplies and that pediatric continuing education for paramedics was either not required or extremely limited in some states. The Institute of Medicine study noted the great differences in the emergency medical care for those "with access to children's hospitals and hospitals with separate pediatric capabilities . . . [while] others must rely of hospitals with limited pediatric expertise and equipment." (42)

Pediatric Emergency Medical Care and EMSC Priorities in Kansas

KDHE received funding for a Kansas EMSC program (KEMSC) in 2003 through the federal EMSC program. KEMSC is directed through KDHE's Office of Injury & Disability Programs and is advised by a Steering Committee composed of a diverse group of stakeholders, including pediatricians, parents, emergency room physicians, nurses, and EMS personnel. The Kansas EMSC program recognizes that the "communities best prepared to handle childhood emergencies are those with properly trained emergency personnel, sufficiently equipped ambulance and emergency departments, and well-defined pediatric treatment protocols and procedures." KEMSC seeks to have Kansas meet or exceed the national guidelines established by EMSC in order to insure excellence in emergency care for all Kansas children. The table below describes how Kansas is meeting the national EMSC performance measures. It also states whether the Kansas Board of EMS (KBEMS) supports the adoption of regulations

to ensure improved EMS care for children. (These specific performance measures will be discussed in more detail later in this synopsis.)

Performance Measurement	2007 Benchmark	2011 Benchmark	Current Status in Kansas	KBEMS Support
Pediatric Protocols & Live Medical Direction	25% of EMS Agencies	90% of EMS Agencies	52% KS EMS Agencies (On-Line); 74% KS EMS Agencies (Off-Line; 50% carried by providers)	No
Essential Pediatric Equipment	25% of EMS Agencies	90% of EMS Agencies	25% KS EMS Agencies	No
Hospital Recognition System	N/A	State-Wide Recognition System in Place	No	Yes, if Voluntary Recognition System
Inter-Facility Transfer Agreements for Pediatric Patients	25% of Hospitals	90% of Hospitals	34% KS Hospitals	
Pediatric Continuing Education Requirements for Paramedics	State Requirement	See 2007.	No Kansas State Requirement.	No
Pediatric Representation on State EMS Board	State Requirement	See 2007.	No Kansas State Requirement.	No

As seen in the table, Kansas is currently meeting only half of the guidelines set by EMSC. In addition, KEMSC must rely on persuading the Kansas Board of Emergency Medical Services (KBEMS) to incorporate these national guidelines into their rules and regulations in order to see them consistently and uniformly implemented across the state. Unfortunately, KBEMS has recently come under scrutiny from federal agencies for its inability to assure adequate EMS training, equipment and other essential functions in general. (See National Highway Traffic Safety Administration Technical Assistance Team, "State of Kansas: a Reassessment of Emergency Medical Services" July 17-18, 2007.) KBEMS is

unwilling to support any requirements for pediatric-specific training, equipment, or medical direction. For those EMSC performance measures that require KBEMS adoption, it is unclear whether Kansas will be able to fully meet the national standards by 2011 and thereby ensure excellent emergency care for all Kansas children.

Kansas EMSC Goals

KEMSC has the mission of ensuring that Kansas has (1) state-of-the-art emergency medical care of ill and injured children and adolescents, (2) pediatric services that are well integrated into the state's EMS system, and (3) the entire spectrum of emergency services for children, adolescents and young adults—from primary prevention and acute care to rehabilitation.



At the present time, KEMSC has three *priority areas* corresponding to the national EMSC performance measures:

1. Operational Capacity: KEMSC seeks to ensure Kansas EMS agencies and hospitals have the operational capacity to provide uniformly excellent pediatric emergency care by having essential equipment, medical direction, and standardized protocols. This priority area is further subdivided into five (5) categories:
 - (a) “Off-line medical direction”: Written pediatric treatment protocols (“off-line medical direction”) are used by EMTs and paramedics when caring for children and ensure that pediatric patients are receiving standardized, appropriate, and best-evidence treatment.
 - (b) “On-line medical direction”: EMTs and paramedics need the ability to obtain real-time immediate advice and instruction when caring for a seriously ill or injured pediatric patient by calling a designated health care provider with pediatric expertise; this real-time advice is referred to as “on-line medical direction.” It includes authorization for advanced life support procedures, triage, destination assignment, and management support.
 - (c) Essential Pediatric Equipment: This equipment is considered *essential* in caring for sick and injured children. It has been

endorsed jointly by the American Academy of Pediatrics and the American College of Emergency Physicians. This equipment gives EMTs and paramedics the needed supplies to care for injured and sick children. The great majority of the equipment is also used in the care of adults. Although the remaining pediatric-specific equipment listed is often not reusable from one patient to another, it is relatively inexpensive. EMS ambulances are designated by the level of care they are able to provide to patients: Basic Life Support (BLS) or Advanced Life Support (ALS). The essential pediatric equipment is listed below:

BLS Essential Equipment and Supplies
Oropharyngeal airways: infant, child, adult (sizes 00-5)
Self-inflating resuscitation bag: child and adult sizes*
Masks for bag-valve-mask device: infant, child, and adult sizes
Oxygen masks: infant, child, and adult sizes
Non-rebreathing mask: pediatric and adult sizes
Stethoscope
Backboard
Cervical immobilization device
Blood pressure cuff: infant, child, and adult sizes
Portable suction unit with a regulator
Suction catheters: tonsil-tip and 6F-14F**
Extremity splints: pediatric sizes
Bulb Syringe
Obstetric pack
Thermal blanket [§]
Water-Soluble lubricant

ALS Essential Equipment and Supplies
Oropharyngeal airways: infant, child, adult (sizes 00-5)
Self-inflating resuscitation bag: child and adult sizes*
Masks for bag-valve-mask device: infant, child, and adult sizes
Oxygen masks: infant, child, and adult sizes
Non-rebreathing mask: pediatric and adult sizes
Stethoscope
Backboard
Cervical immobilization device
Blood pressure cuff: infant, child, and adult sizes
Portable suction unit with a regulator
Suction catheters: tonsil-tip and 6F-14F**
Extremity splints: pediatric sizes
Bulb Syringe
Obstetric pack
Thermal blanket [§]
Water-Soluble lubricant
Transport Monitor
Defibrillator with adult and pediatric paddles
Monitoring electrodes: pediatric sizes
Laryngoscope with straight blades 0-2, curved blades 2-4
Endotracheal tube stylets: pediatric and adult sizes
Endotracheal tubes: uncuffed sizes 2.5-6.0, cuffed sizes 6.0-8.0
Magill forceps: pediatric and adult
Nasogastric tubes: 8F-16F
Nebulizer
IV catheters: 16-24 gauge
Intraosseous needles
Length/weight-based drug dose chart or tape
Needles: 20-25 gauge
Resuscitation drugs and IV fluids that meet the local standards of practice

(d) State-Wide Hospital Recognition System: A hospital recognition system designates hospitals based upon the level and type of care they are able to provide to children. This system will ensure that pediatric patients receive emergency and trauma care only from

qualified hospitals. Potentially fatal delays in definitive treatment will be avoided by transporting the patient to the correct hospital (rather than to a hospital not capable of helping the child and then transferring them to the appropriate hospital.)

(e) Inter-Facility Transfer Guidelines and Agreements: EMS agencies and emergency departments must clearly know which pediatric patients need to be transferred to hospitals with higher levels of pediatric care and must have agreements to ensure smooth and expedited transfer. Immediate access to pediatric specialty services is essential to improving child mortality and morbidity.

2. Education: KEMSC seeks to ensure that *paramedics* have sufficient knowledge and skills to provide appropriate pediatric emergency care. (“Pre-hospital providers” are divided into three categories: EMT-Basic, EMT-Intermediate, and EMT-Paramedic; paramedic is the highest level and can provide the highest level of care.) Because paramedics provide high levels of care to seriously ill and injured children, pediatric continuing education should be a requirement for recertification. Through improved education, this goal hopes to improve the quality and adequacy of pediatric care and thereby reduce pediatric mortality and morbidity. This performance measure requires that KBEMS enact rules and regulations which would to apply to all paramedics in the state.

3. Permanence: KEMSC wants to ensure a continued pediatric voice in Kansas EMS decision-making by achieving permanence of EMSC in the Kansas EMS. Kansas EMSC has already achieved two sub-goals-- it has created a state advisory committee (the Steering Committee) and has a full time employee dedicated to EMSC activities. However, KEMSC has yet to attain pediatric representation on the Kansas Board of Emergency Medical Services. Pediatric representation on state boards is required by statute in most neighboring states, including Missouri, Colorado, Oklahoma, Arkansas, Iowa, Minnesota, and Texas.

Assistance from the Child Health Advisory Committee

As stated above, Kansas EMSC is directed by a Steering Committee composed of a broad coalition of physicians, pre-hospital providers, nurses, hospital representatives, parents, and other stakeholders. The KEMSC Steering Committee attempts to enhance EMS and emergency medical services for children through both “micro” and “macro” levels approaches. The “micro level” approach is “bottom-up” and provides resources, information, education, and technical assistance to hospitals, EMS systems, and professionals, such as physicians, nurses, and EMTs. Through this approach, KEMSC has provided pediatric training courses for nurses and EMTs, furnished EMS systems with model pediatric treatment protocols, and informed all Kansas hospitals and EMS systems of essential pediatric equipment.

Unfortunately, the “micro level” is not as effective at producing changes in state-wide regulations and in stakeholder organization policies. For these changes to occur, a “macro level” (or top down) approach will be needed. The Steering Committee of the Kansas EMSC and the Kansas Chapter of the American Academy of Pediatrics is seeking the support of the Child Health Advisory Committee on the following essential elements of emergency care services for children:

1. Recommend that the Following EMSC Goals are *Adopted as Requirements* by KBEMS:
 - a. Essential Pediatric Medical Equipment for all Kansas EMS Ambulances,
 - b. Pediatric-Specific Continuing Education for Recertification of all Paramedics,
 - c. Pediatric Treatment Protocols (“Off-Line Medical Direction”) for all Kansas EMS Systems,
 - d. Available Live Pediatric Medical Advice (“On-Line Medical Direction”) for All Kansas EMS Systems.
2. Recommend that the Following EMSC Goals are *Supported* by KBEMS:
 - a. Inter-Facility Transfer Agreements and Protocols for all Kansas Hospitals,
 - b. State-Wide Hospital Recognition System Delineating Kansas (or Neighboring State) Hospitals Capable of Caring of More Severely Injured or Ill Children.
3. Recommend that a Pediatric Perspective Have Permanence Within the Kansas EMS System
 - a. Pediatric Representation on the Kansas Board of EMS
 - b. Integration of EMSC Priorities into Statutes, Rules, and Regulations, Including Those of KBEMS.

Sources

Emergency Medical Services for Children, “EMSC Performance Measures: Implementation Manual for State Partnership Grantees” (2007)

Institute of Medicine, “Emergency Medical Services for Children” (1993)

Institute of Medicine, “Emergency Care for Children: Growing Pains” (2007)

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