

POLICY STATEMENT

Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of All Children

Committee on Pediatric Emergency Medicine

The Role of the Pediatrician in Rural Emergency Medical Services for Children

ABSTRACT. In rural America, pediatricians can play a key role in the development, implementation, and ongoing supervision of emergency medical services for children. Pediatricians may represent the only source of pediatric expertise for a large region and are a vital resource for rural physicians (eg, general and family medicine, emergency medicine), other rural health care professionals (physician assistants, nurse practitioners, emergency medical technicians), and local emergency medical services medical directors. They can provide education about management and prevention of pediatric illness and injury; appropriate equipment for the acutely ill or injured child; and acute, chronic, and rehabilitative care. In addition to providing clinical expertise, the pediatrician may be involved in quality assurance, clinical protocol development, and advocacy and may serve as a liaison between emergency medical services and other entities working with children (eg, school nurses, child care centers, athletic programs, and programs for children with special health care needs). *Pediatrics* 2005;116:1553–1556; rural health, pediatric emergency, EMSC, rural pediatrician.

ABBREVIATIONS. ED, emergency department; EMS, emergency medical services; EMSC, emergency medical services for children; PALS, pediatric advanced life support; APLS, advanced pediatric life support; AAP, American Academy of Pediatrics.

BACKGROUND

Ten percent of prehospital emergency responses¹ and 37% of emergency department (ED) visits are for patients 24 years and younger.² Children, in general, have been shown to use emergency medical services (EMS) less frequently than adults. When children younger than 5 years are cared for in the EMS system, they are less likely to receive appropriate interventions such as splinting or cervical spine immobilization.³

According to the 2000 US Census, 42% of the population lives in nonmetropolitan areas, 25% of which are rural.⁴ Depending on the state, one fourth to one third of the population resides in rural or frontier areas,⁵ where “rural” is defined as fewer than 1000 people per square mile and “frontier” is defined as 6

to 8 people per square mile. Additionally, rural and frontier areas are common vacation areas that experience seasonal increases in population. A study describing rural EMS reported that (1) rural EMS medical directors are more likely to be nonpediatrician, primary care physicians, and (2) 20% of states cross-train prehospital health care professionals in an expanded hospital role to address the national nursing shortage.⁶

Because of occupational and lifestyle exposure to work- and play-related vehicles and animals (eg, farm machinery, all-terrain vehicles, horses, grain silos) and environmental threats (eg, weather, terrain, toxins), children in rural areas differ in their medical and surgical emergency needs. Children in rural areas have increased risk of disability and death from trauma and medical diseases because of highway travel and long transport times to definitive care.⁶ Because definitive pediatric emergency and critical care usually are located far from rural children, any inadequacy of EMS education and intervention or lack of appropriate pediatric equipment may be even more detrimental in a rural setting.

Lack of access to all levels of care, with particular impact on vulnerable populations, is a major difference between rural and urban EMS for children (EMSC) systems. Decreased access to medical care increases the morbidity and mortality of rural children.^{7,8} Vital access issues include:

- Communication (eg, 911 access [especially enhanced 911 service with which public mobile/cellular phones can access 911 emergency calls and EMS can geographically locate the caller’s location when the call is made from cellular or land telephone lines]; the use of telemedicine in EMS consultation⁹; limited availability of cellular wireless telephone systems and high-speed and wireless Internet access);
- Transport method and availability (ground versus air, fixed-wing aircraft versus helicopter), and distance;
- Appropriate emergency care equipment for children from infancy through adolescence;
- Level of responding prehospital personnel (emergency medical technicians: basic versus paramedic, paid versus volunteer EMS);
- Pediatric skills of prehospital health care professionals;

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- Pediatric expertise at the immediate receiving facility (general, community hospitals);
- Rural-to-urban-hospital pediatric transport;
- Psychological needs of children related to trauma;
- Referral center care;
- Rehabilitation;
- Local follow-up care;
- Pediatric-specific primary and subspecialty care;
- Preparation for emergencies involving children with special health care needs (specifically, technology-assisted children⁹); and
- Public health emergency, disaster, and terrorism response plans applicable to rural settings (recognition of risk and familiarity with rural systems in preparation).

ROLE OF THE PEDIATRICIAN

Pediatricians can play valuable roles in ensuring access to high-quality and comprehensive care for children in rural communities. Their leadership can aid local and regional EMS organizations in data collection and the legislative process. They can also be a resource for local EMS medical directors who are responsible for treatment protocols and, ultimately, the medical care rendered by EMS. Supporting and advising the local EMS medical director on pediatric quality assurance and EMS education will help focus EMS on appropriate care of the child. Pediatricians can also advocate for addressing the unique needs of children, including children with special health care needs, in local preparedness efforts around public health emergency and disaster planning. Through their expertise in the care of children, pediatricians can support efforts in pediatric emergency care education.

Local health care professional training (prehospital, emergency, and school nurses) in pediatricians would be enhanced by rural pediatricians' input and participation. Periodic updating of rural health care professionals to maintain acceptable levels of response is necessary as skill retention becomes an issue in rural settings. There are many pediatric-specific enhanced training courses (pediatric advanced life support [PALS], pediatric education for prehospital professionals, Neonatal Resuscitation Program, emergency nursing pediatric course, advanced pediatric life support [APLS]), and promoting telehealth initiatives and Web-based education could help increase access to training in the rural setting.¹⁰⁻¹⁵ In addition to health care professional education, pediatricians can provide patient and parent education about injury prevention, recognition of childhood emergencies, and accessing 911 and poison-control centers. Anticipatory guidance should also include first aid and preparing the home for public health emergencies and disasters.

Office preparation for emergency response is crucial in rural areas. Pediatricians must recognize that rural areas, similar to urban areas, are subject to terrorist attacks, and it is prudent to address the needs of children in rural areas in preparation plans. Pediatric offices should be prepared to care for acutely ill or injured children, arrange for definitive care, and participate in a community public health

emergency or disaster response. The American Academy of Pediatrics (AAP) provides information on office preparation in *Childhood Emergencies in the Office, Hospital, and Community: Organizing Systems of Care*¹⁶ and specifically regarding terrorism via the Internet at www.aap.org. Additionally, a statement by the AAP Committee on Pediatric Emergency Medicine, Committee on Medical Liability, and Task Force on Terrorism on the role of the pediatrician in disasters and bioterrorism preparedness is in press.¹⁷

Finally, involvement in legislator and public education about children's health care by collecting and reporting EMSC data will improve the system locally and statewide. Data collection and research are particularly needed for EMSC in rural areas, in which certain problems are more prevalent than in urban settings (eg, skills retention, transport mechanisms, volunteer responders' education and responsibilities, and delayed-access issues). Interested pediatricians, family and emergency medicine physicians, and EMS medical directors can find many opportunities to promote studies generating outcome-based information to improve local and national EMSC, with support from sources such as the Community Access to Child Health program, the Practice Research in Office Settings network, the AAP, and federal agencies (see Appendix). Legislative input can be presented by pediatricians knowledgeable about statewide EMSC issues. Building local and statewide coalitions is a sound approach to generate legislative responsiveness and community awakening to the importance of a sophisticated and competent EMSC program. In many rural areas, limited resources have led to the development of interstate coalitions to pursue EMSC agendas (eg, Intermountain Regional EMS for Children Coordinating Council). Rural issues that may need distinct legislative assistance include establishment of universal 911 (preferably "enhanced") service, communications technology, educational processes, advisory councils, regionalization issues, coding standards, and data-collection resources to assess areas for improvement in EMSC. Model legislation¹⁸ and guidelines¹⁹ are available to provide a framework for continued development of state EMSC; amendments specific to the rural locales may be necessary.

ADVOCACY AND RECOMMENDATIONS

Development of quality EMSC in rural America requires motivated pediatric advocates (pediatricians, family physicians, and emergency medicine physicians) to commit their expertise to prevention, education, legislation, and facilitation of these services. As highly trained child health professionals and leaders of the child health care team, rural pediatricians are encouraged to be aware of activities that would benefit from their involvement.

1. Collaborate with and be a resource for EMS medical directors who are responsible for local EMS system design and development, including educational programs, structured protocols, communication (from dispatchers to ED physicians), hospital care and transport (with a special focus

- on long transport time and distance issues), and quality assurance. This system should address children's needs, including those of children with special health care needs, and integrate well with the state EMS system. Other key participants in this committee include representatives from the state office of rural health, Department of Health, state EMSC offices, and AAP chapters.
2. Provide expert guidance on appropriate pediatric equipment for physician (pediatrician, family physician) and other rural health care professional (physician assistant, nurse practitioner) offices, transport vehicles, and receiving facilities.
 3. Develop relationships with tertiary care referral centers. These interactions can serve to enhance education, aid in quality assurance and the development of clinical protocols, and establish a rapid transport system.
 4. Attain certification in basic and advanced pediatric resuscitation programs (eg, basic life support, PALS, APLS, Neonatal Resuscitation Program) (Appendix), and prepare office staff to deal with pediatric emergencies, including participating in local public health emergency and disaster preparedness initiatives.
 5. Through anticipatory guidance, educate parents and child caregivers in injury prevention, accessing care in pediatric emergencies, and preparing the home should a public health emergency or disaster occur.
 6. Provide guidance in recruiting and retaining community EMS providers (prehospital and ED) and primary health care professionals (family physicians, nurse practitioners, physician assistants) who have pediatric training. This includes helping them maintain skills and comfort with pediatric emergencies by providing continuing medical education, pediatric office rotations, and sensitive quality-assurance review.
 7. Advocate for EMSC legislative agendas, including equity in funding for EMSC, especially trauma services. This will be a step toward ensuring that all children (rural and urban; insured, underinsured, and uninsured) have unhindered access to care.
 8. Address disparities in access to EMS among underrepresented populations and populations with socioeconomic and geographic challenges.
 9. Generate and promote community injury-prevention programs.
 10. Raise awareness of available pediatric-specific training programs (PALS, APLS, pediatric education for prehospital professionals).
 11. Explore means to improve access to training and care with telemedicine and Web-based initiatives.
 12. Have a personal awareness of rural EMSC issues for American Indian/Alaska Native people. For more information, contact the Health Resources and Services Administration EMS for Children Indian Health Service Initiative (www.hrsa.gov).
 13. Provide expertise to ensure quality care for children with special health care needs in the emergency setting, which includes advocating that

public health emergency and disaster plans acknowledge and include preparation for populations with special needs.⁹

14. Serve as a liaison between EMS systems and schools (school nurses, athletics, child care, programs for children with special health care needs).

Pediatricians can develop strategies for community-sensitive outreach to rural areas with no pediatricians and assist in the organization for regionalized pediatric emergency care by using available rural expertise and assets to optimize outcomes of seriously ill or injured rural children. Several resources are available for implementation and continuation of such an EMSC agenda (Appendix).

APPENDIX: RESOURCES FOR PEDIATRIC EMS

American Academy of Pediatrics (AAP)
141 Northwest Point Blvd
Elk Grove Village, IL 60007-1098
www.aap.org

- Committee on Pediatric Emergency Medicine
- Committee on State Government Affairs
- Committee on Injury, Violence, and Poison Prevention
- Committee on Community Health Services
- Neonatal Resuscitation Program (NRP; www.aap.org/nrp)
- Emergency information forms kit
- Family readiness kit: preparing to handle disasters
- Pediatric education for prehospital professionals (PEPP)
- Childhood emergencies in the office, hospital, and community: organizing systems of care

EMSC National Resource Center (NRC)
111 Michigan Ave NW
Washington, DC 20010-2970
www.ems-c.org

- EMSC project grants

National EMSC Data Analysis Resource Center (NE-DARC)
410 Chipeta Way, Suite 222
Salt Lake City, UT 84108
www.nedarc.org

US Department of Health and Human Services (DHHS)
Health Courses
www.hrsa.gov

Pediatric Advanced Life Support (PALS)
7272 Greenville Ave
Dallas, TX 75231
www.americanheart.org

Advanced Pediatric Life Support (APLS)
1125 Executive Circle
Irving, TX 75038
www.aplsonline.com

American Academy of Family Physicians (AAFP)
www.aafp.org

American College of Emergency Physicians (ACEP)
www.acep.org

Emergency Nurses Association (ENA)
www.ena.org

National Association of EMS Physicians (NAEMSP)
www.naemsp.org

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REFERENCES

1. Seidel JS, Henderson DP, Ward P, Wayland BW, Ness B. Pediatric prehospital care in urban and rural areas. *Pediatrics*. 1991;88:681–690
2. McCaig LF, Burt CW. National Hospital Ambulatory Medical Care Survey: 2002 emergency department summary. *Adv Data*. 2004;(340): 1–34
3. Suruda A, Vernon DD, Reading J, et al. Pre-hospital emergency medical services: a population based study of pediatric utilization. *Inj Prev*. 1999;5:294–297
4. US Census Bureau. 2004 US Census. Available at: www.census.gov. Accessed August 16, 2004
5. US Congress, Office of Technology Assessment. *Rural Emergency Medical Services: Special Report*. Washington, DC: Government Printing Office; 1989. Publication OTA-H-445
6. Knott A. Emergency medical services in rural areas: the supporting role of state EMS agencies. *J Rural Health*. 2003;19:492–496
7. Vane DW, Shackford SR. Epidemiology of rural traumatic death in children: a population-based study. *J Trauma*. 1995;38:867–870
8. Wright JS, Champagne F, Dever GE, Clark FC. A comparative analysis of rural and urban mortality in Georgia, 1979. *Am J Prev Med*. 1985;1: 22–29
9. American Academy of Pediatrics, Committee on Pediatric Emergency Medicine. Emergency preparedness for children with special health care needs. *Pediatrics*. 1999;104(4). Available at: www.pediatrics.org/cgi/content/full/104/4/e53
10. Haskins PA, Ellis DG, Mayrose J. Predicted utilization of emergency medical services telemedicine in decreasing ambulance transports. *Pre-hosp Emerg Care*. 2002;6:445–448
11. Criss A. Link to the future: EMS-based telemedicine. *JEMS*. 2002;27(10): 74–81
12. Bashford C, Veenema M. Tele-collaboration in EMS communications: new concepts & technology challenge EMS systems to think outside the box for communications. *JEMS*. 2002;27(10):82–86
13. Nordberg M. Remote control: telemedicine revolutionizes EMS in rural America. *Emerg Med Serv*. 1996;25:39, 41, 43–45
14. Garza MA. Telemedicine: the key to expanded EMS or an expensive experiment? *JEMS*. 1998;23(12):28–30, 32, 34–38
15. American Academy of Pediatrics, Committee on Pediatric Emergency Medicine. The role of the pediatrician in rural EMSC. *Pediatrics*. 1998; 101:941–943
16. American Academy of Pediatrics. *Childhood Emergencies in the Office, Hospital, and Community*. Elk Grove Village, IL: American Academy of Pediatrics; 2000
17. American Academy of Pediatrics, Committee on Pediatric Emergency Medicine, Committee on Medical Liability, and Task Force on Terrorism. The pediatrician and disaster preparedness. *Pediatrics*. 2006; in press
18. American Academy of Pediatrics. *Model Legislation: Pediatric Emergency Medical Services Act*. Elk Grove Village, IL: American Academy of Pediatrics; 1994. Available at: www.aap.org/policy/965.html. Accessed February 25, 2005
19. American Academy of Pediatrics, Committee on Pediatric Emergency Medicine. Guidelines for pediatric emergency care facilities. *Pediatrics*. 1995;96:526–537

SUGGESTED READING

- American Academy of Pediatrics, Committee on Injury and Poison Prevention, Committee on Community Health Services. Prevention of agricultural injuries among children and adolescents. *Pediatrics*. 2001;108:1016–1019
- American Academy of Pediatrics, Committee on Pediatric Emergency Medicine. *Emergency Medical Services for Children: The Role of the Primary Care Provider*. Singer J, Ludwig S, eds. Elk Grove Village, IL: American Academy of Pediatrics; 1992
- Diaz A, ed. *Recommendations to the Secretary*. Atlanta, GA: National Advisory Committee on Children and Terrorism, Centers for Disease Control and Prevention; 2003. Available at: www.bt.cdc.gov/children/PDF/working/Recommend.pdf. Accessed February 25, 2005
- Ross Laboratories. *Emergency Medical Services for Children: Report of the 97th Ross Conference on Pediatric Research*. Haller JA Jr, ed. Columbus, OH: Ross Laboratories; 1989
- Knapp JF. A call to action: the Institute of Medicine report on emergency medical services for children [published correction appears in *Pediatrics*. 1995;96:423]. *Pediatrics*. 1995;96(1 pt 2): 173–174
- Markenson D, Redlener I, eds. *Pediatric Preparedness for Disasters and Terrorism: A National Consensus Conference*. New York, NY: National Center for Disaster Preparedness; 2003
- Seidel JS, Henderson DP, eds. *Emergency Medical Services for Children: A Report to the Nation*. Washington, DC: National Center for Education in Maternal and Child Health; 1991
- Simmons SC, Murphy TA, Blarovich A, Workman FT, Rosenthal DA, Carbone M. Telehealth technologies and applications for terrorism response: a report of the 2002 coastal North Carolina domestic preparedness training exercise. *J Am Med Inform Assoc*. 2003;10:166–176

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