



Preparation for Emergencies in the Offices of Pediatricians and Pediatric Primary Care Providers

Committee on Pediatric Emergency Medicine

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

ABSTRACT

High-quality pediatric emergency care can be provided only through the collaborative efforts of many health care professionals and child advocates working together throughout a continuum of care that extends from prevention and the medical home to prehospital care, to emergency department stabilization, to critical care and rehabilitation, and finally to a return to care in the medical home. At times, the office of the pediatric primary care provider will serve as the entry site into the emergency care system, which comprises out-of-hospital emergency medical services personnel, emergency department nurses and physicians, and other emergency and critical care providers. Recognizing the important role of pediatric primary care providers in the emergency care system for children and understanding the capabilities and limitations of that system are essential if pediatric primary care providers are to offer the best chance at intact survival for every child who is brought to the office with an emergency. Optimizing pediatric primary care provider office readiness for emergencies requires consideration of the unique aspects of each office practice, the types of patients and emergencies that might be seen, the resources on site, and the resources of the larger emergency care system of which the pediatric primary care provider's office is a part. Parent education regarding prevention, recognition, and response to emergencies, patient triage, early recognition and stabilization of pediatric emergencies in the office, and timely transfer to an appropriate facility for definitive care are important responsibilities of every pediatric primary care provider. In addition, pediatric primary care providers can collaborate with out-of-hospital and hospital-based providers and advocate for the best-quality emergency care for their patients.

INTRODUCTION

Pediatricians and pediatric primary care providers (PPCPs) are vitally important members of the emergency care system for children. Children with potentially life-threatening illnesses and injuries are sometimes taken to primary care offices, which often serve as the child's medical home, by parents or caregivers seeking help from health care professionals they know and trust. The office site then serves as an entry into the emergency care system, and it is there that vital, perhaps even life-saving, care is provided.

Studies have shown that emergencies are common in primary care practices that provide care to children. In 1 study, the authors surveyed 52 pediatric offices and found that these practices saw a median of 24 emergencies per year.¹ Most of the offices (82%) reported that they encountered, on average, at least 1 emer-

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Key Words

emergency readiness, office preparedness, emergency medical services for children, pediatric emergencies, emergency response plan

Abbreviations

PPCP—pediatric primary care provider
EMS—emergency medical services
APLS—advanced pediatric life support
BLS—basic life support
ALS—advanced life support
AAP—American Academy of Pediatrics
CPR—cardiopulmonary resuscitation
ED—emergency department
PALS—pediatric advanced life support
EMT—emergency medical technician

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gency per month. In another study, 62% of pediatricians and family physicians in an urban setting who were asked about emergencies in their offices reported that they assessed more than 1 patient each week in their offices who required hospitalization or urgent stabilization.²

Despite these findings, which suggest that a significant number of children present to primary care offices with urgent or emergent problems, some health care professionals discount the need for preparation because “emergencies are not very common” or because they feel they can rely on rapid response from emergency medical services (EMS) or proximity to a hospital. Some PPCPs have interpreted risk-management guidelines to mean that having emergency equipment and medications on site will increase their liability in emergency situations; however, lack of preparation may be a true cause of increased liability. Other providers state that emergency equipment and medications are expensive, and they cannot afford to maintain these items. Indeed, studies have shown that a substantial number of practices are not prepared to manage pediatric emergencies and have documented deficiencies in equipment and training.^{3,4} One study showed that physicians with training in advanced pediatric life support (APLS) were more likely to have resuscitation equipment and to have conducted a mock code in their office.⁴ Other studies have supported training in basic life support (BLS) as well as advanced life support (ALS), as suggested by the American Academy of Pediatrics (AAP) policy statement published in December 2004.⁵ The statement suggested that pediatricians will improve the chance of survival of children who experience cardiac arrest by advocating for cardiopulmonary resuscitation (CPR) training of parents and caregivers and participating in BLS training courses as participants and instructors.

STATEMENT OF THE PROBLEM

Although pediatric emergencies may not be common occurrences in all primary care settings, numerous studies have shown that children continue to be taken to primary care offices at the time of an emergency.⁶⁻⁹ The most common types of emergencies include respiratory emergencies, seizures, infections in young infants, and dehydration.¹⁰ Pediatricians and PPCPs may be required to provide urgent or emergent care in their offices for children with these conditions, at least until the arrival of EMS. The consequences of being unprepared are serious; therefore, appropriate stabilization of pediatric emergencies and timely transfer to an appropriate facility for definitive care are important responsibilities of every PPCP.¹¹

OFFICE-BASED SELF-ASSESSMENT

Optimizing PPCP office readiness for emergencies begins with a consideration of the unique aspects of each office

practice, the types of patients and emergencies that have been or might be seen, the resources on site, and the resources of the larger emergency care system of which the PPCP's office is part. Reviewing a standardized office-based self-assessment can provide PPCPs with a starting point for optimizing office readiness.¹² Sample questions include:

1. What emergencies have you experienced in the office setting? How often have office emergencies occurred in your practice?
2. What is your office setting (freestanding office, clinic based, health center based, hospital based, other)? Are there resources outside of your office that you could call on during an office emergency (eg, security, other medical or dental professionals in the same building, hospital code team)?
3. What are the high and low staffing points during the times when your office is open? (Include nights and weekends if applicable.) What is the emergency readiness training of the staff present during those times?
4. How far is your office from a site of definitive care, such as the nearest emergency department (ED) or the nearest pediatric center? How long does it take for EMS to respond to a 9-1-1 call from your office? What is the point of entry for your local 9-1-1 response team (ie, the facility to which they are required by protocol to bring a pediatric patient)?
5. Does your practice care for any children who are technology dependent or have special health care needs? Do you have need for any additional equipment or expertise should a technology-dependent child have an emergency in your office?
6. What is your risk-management company's policy regarding emergency preparedness of your office?

Answers to these and other questions (see Appendix 1) can help PPCPs examine their office practice within the context of the larger emergency care system and make informed choices to enhance the readiness of their office setting for anticipated emergencies.

PARENT AND PATIENT EDUCATION

Through effective parent and patient education and anticipatory guidance, some emergencies that present to the PPCP office could be prevented or directed more appropriately to an ED. PPCPs can improve the outcome of childhood emergencies by advocating CPR and first aid training of parents and caregivers and by educating them about how to prevent injuries, recognize an emergency, and respond appropriately in terms of first aid, CPR, accessing the private office or EMS, and choosing the appropriate facility: office, urgent care center, local ED, or pediatric specialty care center. Anticipatory guidance regarding emergencies should include when and

how to access EMS (9-1-1 or the local emergency access number), posting the national Poison Control Center number (800-222-1222), a means of obtaining after-hours advice, the need for consent for treatment of minors, any constraints to emergency care from health plan requirements for referral, and what facilities to access in a true emergency. Family teaching materials such as *The Injury Prevention Program*, the first aid chart, and EMS information card are available through the AAP.¹³

PPCPs should discuss advance directives and limitation of life-sustaining treatment with a family before any emergency develops.¹⁴ Because some states do not allow EMS personnel to recognize and respect pediatric advance directives, it is critical that any out-of-hospital do-not-resuscitate or “accept-natural-death” orders be discussed at the time of their issue with local EMS medical directors to ensure that EMS personnel, when called and asked to perform comfort measures instead of aggressive resuscitative measures, are acting within preapproved medical direction and remain free from liability.

In addition, PPCPs who care for children with special health care needs can help improve emergency care for these children by providing a brief but comprehensive summary of important information for hospital and pre-hospital providers. Nationally recognized forms, such as the emergency information form,¹⁵ and medical-alert jewelry can provide needed information during an emergency. Inquiring about the existence of a local Emergency Medical Services for Children–sponsored “child alert” program can further enhance the EMS response and care by strengthening the link with responding EMS personnel and decreasing the anxiety levels of parents, EMS personnel, and hospital staff. With the family’s consent, mechanisms to identify children with special needs in an emergency can be established and shared with local EMS providers.¹⁵

PREPARING THE OFFICE AND OFFICE PERSONNEL

At the time of a pediatric emergency, good resuscitation knowledge and skills are essential to provide high-quality care and ensure the best chances for intact survival for the child, but the outcome does not depend solely on the pediatrician or primary care physician. Successful stabilization requires an effective team, and members of the office staff need to be prepared; they need adequate knowledge, training, and resources to respond to an emergency.¹⁰ They also need an opportunity to practice; awareness of each member’s role on the team and an opportunity to rehearse these roles will lead to a more highly functioning, effective emergency team.

The first person to assess patients who arrive in the office may be the least clinically experienced employee: the secretary or receptionist. These employees should be able to recognize emergencies and know how to summon help. They can be taught about signs and symptoms that may signal an emergency in a child, such as labored

breathing, cyanosis, audible stridor or wheezing, grunting or flaring, seizures, depressed mental status, or uncontrolled bleeding.¹⁶ Front-desk personnel or the office nurse might periodically check the waiting area, especially if the waiting time for an acute care visit is prolonged or the waiting area is not under direct visual supervision.

A clear response plan, including a plan for those times when the office is open but not fully staffed, is very helpful at the time of an emergency.¹⁷ Each member of the office staff can have a specific role in the overall management plan, including designation of the individual who will access the emergency response system. Personnel who fulfill this role should receive training specific to accessing EMS, and they should be knowledgeable about the capabilities and level of response provided by the local EMS agency. Office staff will need to provide information to the EMS dispatcher, including office address and location of the office within the building; the child’s age, condition, and vital signs; the transport destination; and need for an ALS unit if available.¹¹ Office staff cue cards can be posted by the telephone to assist in accessing emergency help and providing appropriate information¹² (Appendices 2A–2D).

The PPCP can preassign roles for the “resuscitation team,” and the team can then practice these roles by participating in office mock codes or simulated exercises on a regular basis. The PPCP can “run the code” and provide medical direction, but a contingency plan should be developed to guide staff if no physician is in the office at the time of the emergency. Pediatric care protocols adapted from EMS providers might help provide a basis for the development of individualized office-based protocols and scenarios for the top 5 to 10 emergency conditions. Tasks of the office team during an emergency include assisting and performing resuscitative measures, such as chest compressions, and recording or documenting the events of the resuscitation process and drawing up and administering medications and fluids. It may be helpful for PPCPs to assess the skill level and knowledge of new employees and clinical care providers who will likely have different levels of experience in handling pediatric emergencies. All PPCPs in practice should have a minimum of BLS training, and a more advanced level of training is essential if the office does not have rapid access to an ALS response unit. When the office is open, there should be someone in the office who can recognize an emergency situation, provide BLS, and activate the emergency response system. PPCPs can facilitate training in BLS and ALS by providing time for employees to take training courses offered in the community or local hospital or by collaborating with local EMS personnel who can offer training courses on site at the office. By working together in nonemergency situations, EMS providers and office staff can create an opportunity to improve communication and develop teamwork skills that will

facilitate the transfer of care at the time of an emergency (see Appendix 3). EMS staff may be able to identify logistic problems, such as ease in locating the office or accessing the examination room with a gurney, and clarify treatment and destination protocols in their region. Some PPCPs have also found it very helpful to review actual cases and invite local EMS providers to participate in simulated drills and to supplement certification or training with teaching specific to the most common problems seen in their offices.

EMERGENCY EQUIPMENT AND MEDICATIONS

Trained personnel must have rapid access to appropriate equipment and medications to use at the time of an emergency. All office staff members need to know where resuscitation equipment is located so that no time is wasted in finding it during an emergency. For those who practice in an office located in or near a hospital, basic airway equipment may be all that is needed. However, for practices and offices that have prolonged emergency response times, stabilization efforts may need to be maintained for up to 30 minutes before EMS arrives with their equipment and stabilization skills. In these offices, more equipment might be required to maintain an airway and to initiate treatment of shock.

Resuscitation equipment can be kept in an examination room designated as the resuscitation room, which is prestocked in an organized way, or it can be stocked and organized in a box, to be taken to the site of the resuscitation. A list of recommended equipment for office emergencies is provided in Table 1, and a list of recommended medications is provided in Table 2. Equipment and medications should be checked on a regular basis to ensure that all essential items are present, operating properly, and not expired.

Health care professionals, patients, and families have developed an increased awareness of issues related to patient safety since the release of the Institute of Medicine report on medical errors in 1999.¹⁸ Current safety literature suggests that pediatric patients are especially susceptible to medication error (dosing error) because of the need to calculate doses rather than using standardized dosing as in adult medicine.^{19,20} Over the past few years, a number of clinical tools have been developed to help decrease medication errors. One of the most familiar is the Broselow pediatric resuscitation tape, which is now available in many EDs and offices across the country.²¹ Studies have shown that the Broselow tape can help to reduce medication dosing (prescribing) error by providing precalculated doses.²² It allows prescribers to avoid the step of mathematical calculation, a frequent source of error in the medication process.^{23–25} However, some studies have described a potential increase in medical errors when using the Broselow tape because of its design and the fact that it is often used incorrectly.^{26,27}

The Duke University Medical Center maintains a Web

TABLE 1 Recommended Equipment for Pediatric Office Emergencies

Office Emergency Equipment and Supplies	Priority ^a
Airway management	
Oxygen-delivery system	E
Bag-valve-mask (450 and 1000 mL)	E
Clear oxygen masks, breather and nonrebreather, with reservoirs (infant, child, adult)	E
Suction device, tonsil tip, bulb syringe	E
Nebulizer (or metered-dose inhaler with spacer/mask)	E
Oropharyngeal airways (sizes 00–5)	E
Pulse oximeter	E
Nasopharyngeal airways (sizes 12–30F)	S
Magill forceps (pediatric, adult)	S
Suction catheters (sizes 5–16F) and Yankauer suction tip	S
Nasogastric tubes (sizes 6–14F)	S
Laryngoscope handle (pediatric, adult) with extra batteries, bulbs	S
Laryngoscope blades (0–2 straight and 2–3 curved)	S
Endotracheal tubes (uncuffed 2.5–5.5; cuffed 6.0–8.0)	S
Stylets (pediatric, adult)	S
Esophageal intubation detector or end-tidal carbon dioxide detector	S
Vascular access and fluid management	
Butterfly needles (19–25 gauge)	S
Catheter-over-needle device (14–24 gauge)	S
Arm boards, tape, tourniquet	S
Intraosseous needles (16 and 18 gauge)	S
Intravenous tubing, microdrip	S
Miscellaneous equipment and supplies	
Color-coded tape or preprinted drug doses	E
Cardiac arrest board/backboard	E
Sphygmomanometer (infant, child, adult, thigh cuffs)	E
Splints, sterile dressings	E
Automated external defibrillator with pediatric capabilities	S
Spot glucose test	S
Stiff neck collars (small/large)	S
Heating source (overhead warmer/infrared lamp)	S

Note that some offices are located at a distance from EMS services. Providers in offices that are located more than 10 minutes away from the nearest EMS service need equipment that may not be required in the initial minutes of a resuscitation but will be required as the resuscitation effort extends past 10 minutes.

^a E indicates essential; S, strongly suggested (essential if EMS response time is >10 minutes).

Adapted from: 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.

site (Duke Enhancing Pediatric Safety Web site; available at: www.dukehealth.org/deps) that was developed to provide education about the proper use of the Broselow tape. New resuscitation tools, which are currently being developed, will help pediatricians and pediatric care providers by providing suggested care protocols with recommended medications and precalculated doses.

Every office needs a system to ensure that all equipment, medications, and resuscitation fluids are restocked and readily available. Many offices have found it helpful to stock equipment in a way that facilitates retrieval according to the size of the child. Making sure that staff members are educated about the storage system used at the office and assessing its effectiveness in quickly guiding clinicians to the appropriate supplies is crucial to ensuring a working system.

TABLE 2 Office Emergency Drugs

	Priority ^a
Drugs	
Oxygen	E
Albuterol for inhalation ^b	E
Epinephrine (1:1000)	E
Activated charcoal	S
Antibiotics	S
Anticonvulsant agents (diazepam, lorazepam)	S
Corticosteroids (parenteral/oral)	S
Dextrose (25%)	S
Diphenhydramine (parenteral, 50 mg/mL)	S
Epinephrine (1:10 000)	S
Atropine sulfate (0.1 mg/mL)	S
Naloxone (0.4 mg/mL)	S
Sodium bicarbonate (4.2%)	S
Fluids	
Normal saline solution or lactated Ringer's solution (500-mL bags)	S
5% Dextrose, 0.45 normal saline (500-mL bags)	S

^a E indicates essential; S strongly suggested (essential if EMS response time is more than 10 minutes).

^b Metered-dose inhaler with spacer or mask may be substituted.

Adapted from: 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.

HEALTH CARE PROFESSIONAL SKILLS

In the setting of a pediatric emergency, PPCPs must be able to provide basic airway management and initiate treatment of shock. The skills required to perform these tasks successfully are usually acquired in training, but many PPCPs do not use them frequently, because the incidence of office emergencies is not high. Nonetheless, when an emergency occurs, the best chance for intact survival of the child is determined by adequate airway management. Therefore, providers need to keep their resuscitation skills and knowledge up to date. Pediatric advanced life support (PALS)²⁸ and APLS²⁹ courses provide an excellent opportunity to renew knowledge and skills. The Emergency Nurse Pediatric Course, developed by the Emergency Nurses Association, provides training in basic assessment, triage skills, critical care, and pediatric emergency situations. The course includes small group sessions for skills training and evaluation.

Although maintaining knowledge and skills of clinicians is important, more is involved to ensure that the best care is provided to every child who is brought to the office with an emergency. The best way to ensure readiness for an emergency is to practice regularly in the office setting, with as many office staff members as possible participating. Simulated exercises, or mock codes, provide a good opportunity for staff members to practice the steps of an emergency.¹⁶ A mannequin, doll, or even “volunteer child” can be used to make the practice session more realistic, and participants can be asked to “act out” each step of the resuscitation. For example, direct an individual to act as a parent and “present” to the reception area of the office, holding an “infant” (man-

nequin) and complaining that the infant will not wake up. The receptionist would then need to activate the emergency response system designed for the office. In some offices, this may mean calling aloud for help; in other offices, the receptionist may ring a bell or overhead-page someone for help. The nurse can be instructed to respond as he or she would in a real emergency, perhaps by taking the infant to a treatment room if one exists in the office or by calling for help and locating the emergency equipment box to bring to the examination room where the infant is taken. Clinical staff can then be asked to locate specific pieces of equipment they may need for the resuscitation. For example, they might be asked to locate the oxygen tank with appropriate tubing and demonstrate how to turn it on or locate the bag-valve-mask device (eg, Ambu bag) and demonstrate proper bagging technique. The physical act of locating and handling equipment such as the bag-valve-mask device is important for staff members to practice to be better prepared to perform these tasks when a true emergency occurs. Team members can then offer observations of their own and others' performances, and specific action plans for improvement and problem solving can be developed. Action plans might address such topics as additional training needs, skills practice, equipment needs, and organizational issues. A sample of a mock-code evaluation form is shown in Appendices 4A and 4B, and sample scenarios for use in a mock code are shown in Appendix 5.

When planning a mock code for office personnel, designate a recorder for each simulated exercise. After completing the exercise, critique not only the mock code itself but also the documentation of the event. In addition, keep records of mock codes held in the office with a note of “lessons learned” from each one. If there has been a recent change in office practice or equipment (ie, new forms used to document treatment), it may be helpful to include these as specific teaching points after the simulated exercise.

Another strategy used by some offices to improve “readiness” for an emergency is a scavenger hunt.¹¹ This may be especially helpful for new staff or employees as part of their orientation to the office setting. Staff members are given a list of items (such as emergency equipment, medications, supplies, posted protocols for accessing EMS) and asked to find them within a defined period of time.

DOCUMENTATION

The most effective tool for risk management of office emergencies is documentation of efforts taken to improve office readiness, such as purchase and maintenance of equipment and medications; training provided; and policy and practice for patient education, patient triage, and office flow. Working toward the common goal of improved outcomes for office emergencies, pedi-

atric practices can collaborate with their risk-management agent to find ways to reduce risk while improving readiness. Documentation should also be included in office training and mock codes and, most importantly, during true resuscitation attempts.

Emergency situations are the most difficult to document properly. Stress levels are high, there are often not enough trained assistants, and other patients in the waiting room cannot be ignored. However, complete and accurate information regarding resuscitative efforts is vital for ongoing care, especially at the time of transfer of care. Documentation should include the date and time of treatment, the estimated or actual weight of the child if known, medications given with dosages and response noted, fluid volumes given, information or explanations given to the family, and the condition of the child at the time of departure from the office. An example of a “resuscitation log” is shown in Appendix 6.

EMERGENCY MEDICAL SERVICES

When a child requires resuscitation in an office, the PPCP and office staff members need help from other members of the emergency care team to ensure the best possible outcome. EMS personnel can provide competent assistance to the office team.

EMS personnel who respond to pediatric emergencies may include first responders, BLS emergency medical technicians (EMTs), or ALS EMTs (eg, EMT-paramedics). First responders and BLS EMTs can offer essential BLS skills and transport. ALS EMTs, acting under medical control and advanced protocols, can perform advanced airway-management skills, including positive-pressure ventilation and placing airway adjuncts. They can also establish intravenous or intraosseous access, administer intravenous or nebulized medications, defibrillate, and perform other advanced skills, in accordance with local protocols.¹⁶ Because only a small percentage (5%–10%) of EMS calls are for pediatric patients, many paramedics may have limited experience in working with children.¹¹ PPCPs can help EMS personnel gain experience with children by inviting them to observe well-child visits in the office and providing an opportunity to interact with children. In many communities, paramedics have assisted pediatricians by helping to teach PALS or CPR classes to office staff. Establishing good and close communication with local EMS providers can help inform your office of their unique skill sets and introduce them to the types of emergencies to which they might be called to respond from your office. Including the medical director of the EMS service in office-based emergency-preparedness activities can assist in helping the EMS personnel be prepared with proper training and protocols for pediatric patients.

EMS personnel are well trained in resuscitative skills and are important members of the health care team. However, they cannot assist in the care of children who

are critically ill unless they are called. PPCPs should confirm the access number for EMS (usually 9-1-1, but in some areas it may still be a 7-digit number) and have the number posted for easy access by any office staff directed to call EMS when an emergency is recognized. The office staff and physician should not delay activating EMS because of a concern that they might not actually be needed. In the long run, it is much better to have a unit respond even if the call is canceled en route or the child is not transported if he or she stabilizes in the office.

ADVOCACY

PPCPs have a critical role as advocates for high-quality emergency care for their pediatric patients. In partnership with out-of-hospital and hospital-based staff, PPCPs can help ensure the readiness of all components of the emergency care system to care for children. For example, PPCPs can collaborate with local EMS to offer life-support training courses; provide office-based pediatric training for EMTs; participate in development of pediatric protocols with EMS; serve as advisors for out-of-hospital pediatric care review; and advocate for EMS to obtain appropriate pediatric training, equipment, and supplies. Finally, they can work to educate parents and lawmakers about the unique needs of children and the special and sometimes complex medical needs of children within the EMS system.

SUMMARY

Pediatricians and other PPCPs are critically important members of the pediatric emergency care team. They can be most successful when they understand their role within a larger emergency care system. Effective parent education can reduce emergencies and help ensure appropriate access to the emergency care system. Careful self-assessment of office practice and policies can optimize office readiness before an emergency. When the primary care office becomes the entry point into the EMS system for a child, that child’s long-term outcome can be greatly influenced by care provided in the first minutes of the emergency. Skilled physicians who work with appropriate equipment and a well-trained team, in collaboration with the EMS system, can achieve timely resuscitation and transfer to definitive care and offer the best chance for intact survival for every child and family who seeks their care in an emergency.

RECOMMENDATIONS

1. Perform a self-assessment of office readiness for emergencies based on a review of experiences of common emergent, urgent, and acute conditions treated in the office, including events involving children with special health care needs.
2. Develop an organizational plan for emergency response in the office, which includes:
 - a. recognition of an emergency;

- b. staff communication, roles, and responsibilities at the time of an emergency during times of high and low staffing;
 - c. protocol to access EMS; and
 - d. maintaining readiness through practice (mock codes).
3. Maintain recommended emergency equipment.
 - a. Organize emergency equipment in a way that facilitates access to appropriate type and size at the time of an emergency.
 - b. Develop a system to check equipment on a regular basis to make sure that it is immediately available and functioning properly.
 4. Maintain recommended emergency medications and use a resuscitation aid or tool that provides suggested protocols with precalculated medication doses.
 - a. Develop a system to check medications on a regular basis to make sure that stock is always present and expired medications are disposed of properly.
 5. Develop a plan to provide education and continuing medical education for all staff.
 - a. Front-line staff: recognizing emergencies; activating the emergency response plan; and understanding EMS roles, capabilities, and access
 - b. Clinical staff: maintaining knowledge and skills related to pediatric emergencies
 - c. All staff: maintaining readiness; participating in mock codes; office checklist; office self-assessment
 6. Practice mock codes in the office on a regular basis (quarterly or biannually).
 - a. Involve as many staff members as possible.
 - b. Include documentation as a defined role for a staff member.
 - c. Critique the simulation and maintain a list of lessons learned.
 - d. Include EMS when possible.
 - e. Include disaster-preparedness scenarios in mock drills (see www.dukehealth.org/deps).
 7. Educate families about what to do in an emergency.
 - a. Encourage first aid and CPR training for parents and caregivers.
 - b. Provide access number for after-hours advice, emergency response system, and poison information to families.
 - c. Educate families about symptoms and situations for which they should access office advice, EMS, and poison information.
 - d. Facilitate use and maintenance of emergency information forms for children with special health care needs.
8. Partner with EMS and hospital-based emergency providers to ensure optimal emergency care and emergency/disaster readiness for children.

APPENDIX 1: SELF-ASSESSMENT OF OFFICE PREPAREDNESS FOR PEDIATRIC EMERGENCIES

As you answer these questions, you may be better able to identify those areas in which your office preparedness can be enhanced.

1. What emergencies have you experienced in the office setting? How often have office emergencies occurred in your practice?
2. What is your office setting (freestanding office, clinic based, health center based, hospital based, other)? Are there resources outside your office on which you could call during an office emergency (eg, security, other medical or dental professionals in the same building, hospital code team)?
3. What are the high and low staffing points during the times when your office is open? (Include nights and weekends if applicable.)
4. What is the emergency readiness of the staff present during those times? (Include first aid, CPR, BLS, ALS, PALS, APLS, Emergency Nurse Pediatric Course, other continuing medical education, etc.)
5. Have nonclinical staff been trained to recognize a potential or actual emergency?
6. What anticipatory guidance and education do you provide parents regarding injury prevention, first aid and CPR training, recognizing and responding to emergencies, and accessing EMS?
7. Is your waiting room under direct observation or screened frequently by a clinical staff member? Is it childproofed?
8. Does your practice have a written protocol for response in an office emergency? Does that protocol cover times of low staffing?
9. Do all staff members know how to access the EMS system? Staff members should be able to give the location and directions to the office, level of clinical staff present, age and condition of child (including vital signs if appropriate), desired transport location, and the level of emergency response (ALS or BLS) required.
10. Do you have specific telephone triage protocols for nonclinical and clinical staff?
11. How far is your office from a site of definitive care, such as the nearest ED, or the nearest pediatric center?

12. How long does it take for EMS to respond to a 9-1-1 call from your office?
13. Has EMS ever been to visit your office for a non-emergency call or to receive experience in evaluating pediatric patients?
14. What level of provider comes when you call 9-1-1: first responder, BLS, or ALS? Does your local EMS have the necessary equipment and expertise to manage children?
15. What is the point of entry for your local 9-1-1 response team (ie, the facility to which they are required by field protocol to bring a pediatric patient)?
16. If EMS does not go directly to a pediatric center on a 9-1-1 call, how do you emergently transport a child to the desired pediatric center when necessary?
17. Does your office use oxygen? If so, how is it supplied? Do all clinical staff members know how to operate the oxygen canister and know where the key is kept?
18. What emergency dosage strategy do you use in the office (code card, length-based tape, dosage book, no strategy)?
19. What airway equipment do you stock? Do all staff members know how to locate, choose, and use the appropriate size of equipment for any given child?
20. What equipment and supplies do you have on site to provide you and your staff with universal precautions?
21. Does your practice care for any children who are technology dependent or have special health care needs? Do you have need for any additional equipment or expertise if a technology-dependent child should have an emergency in your office?
22. Do you have written office protocols for common office emergencies such as respiratory distress, anaphylaxis, sepsis, dehydration, and supraventricular tachycardia?
23. How do you document events during an office emergency (assigned role, tape recorder, retrospective, other)?
24. How do you and your staff maintain skills and readiness? (Examples include attending nursery deliveries, moonlighting in urgent care or pediatric ED, being a PALS or APLS instructor, holding regular mock office codes and scavenger hunts for infrequently used equipment, providing expert review of pediatric runs for your local EMS, or other.)
25. How do you document parent education, staff training, protocols, and stocking for emergencies?
26. What is your risk-management company's policy regarding emergency preparedness of your office?
27. Are there other aspects of your office practice that you think could be improved to achieve fewer office emergencies and better outcomes?

APPENDIX 2A: RECEPTION DESK EMERGENCY CARD

The following signs and symptoms may signal an emergency:

- Extremely labored breathing
- Blue or pale color (cyanosis)
- Noisy breathing (wheezing or stridor)
- Altered mental status
- Seizure
- Agitation (in the parent)
- Vomiting after a head injury
- Uncontrolled bleeding

If you feel a patient has symptoms that may signal an emergency, alert the following office staff: _____.

APPENDIX 2B: IMPORTANT TELEPHONE NUMBERS

- EMS provider (9-1-1 or your local emergency response number)
- Private ambulance service
- Specialized pediatric transport team(s)
- Office building security
- Police department
- Fire department
- Receiving hospital

Office address and directions _____

APPENDIX 2C: CALLING EMS FOR AN OFFICE EMERGENCY

Call 9-1-1 or your local EMS emergency response number: _____.

Be ready to give the emergency medical dispatcher the following information:

- Age and condition of child (with vital signs, if appropriate)
- Your office location (with directions and telephone number, if necessary)
- Level of clinical staff present
- Desired transport destination (pediatric center, local ED, other)
- Level of EMS provider required: ALS (advanced life support) or BLS (basic life support)
- If required, where security or other personnel will be meeting them to assist in guiding EMS to location of the child

APPENDIX 2D: IMPORTANT EMERGENCY TELEPHONE NUMBERS

(Fill in the blanks with your local emergency numbers)

EMS 9-1-1 or local EMS access number _____

Non-EMS Ambulance Transport Services

Pediatric Transport Teams

Referral Hospitals

Poison Control Centers

Helicopter Service

Police (non-9-1-1) _____

Security _____

Other _____

APPENDIX 3: BUILDING A PPCP-EMS PARTNERSHIP—ACTION POINTS

- Offer your office as a pediatric training and refresher site for EMTs.
- Invite local EMS to participate in regularly scheduled office mock codes.
- Sponsor a local EMT to take a PALS instructor course together with one of your staff members.

- Consult your local EMS to review office emergency procedures, access, and equipment in light of their response time, medications, equipment, and destination options.
- Offer to review pediatric run sheets as part of your local EMS agency quality assurance/quality improvement processes.

APPENDIX 4A: MOCK-CODE EVALUATION FORM

	Yes	No	Comments
Clinical primary survey			
Airway assessed initially			
Breathing then assessed			
Oxygen started for respiratory distress			
Circulation assessed			
Initial interventions			
Protocol or treatment guideline followed			
Patient reassessed frequently			
Secondary survey (head-to-toe examination)			
Organization			
All supplies requested were available			
Supplies were found quickly when requested			
“Code form” available and/or used			
Personnel knew how to use equipment properly (O ₂ tanks, etc)			
Protocols available and/or used			
Communication			
Leader communicated effectively			
Events recorded accurately			
Roles were assigned			
Office staff reported to EMS			
EMS communicated needs/plans with office staff			
Other comments			

APPENDIX 4B: MOCK CODES IN THE OFFICE—OBSERVATIONS DURING A MOCK CODE

Clinical

- ❑ Were the ABCs assessed rapidly at the onset of the emergency then reassessed at frequent intervals during the resuscitation?
- ❑ If intravenous access was not established within 90 seconds, did the team move rapidly to intraosseous access?
- ❑ Once the ABCs were assessed, did the examiner complete a systematic evaluation of the patient?
- ❑ When interventions were unsuccessful, did the team move rapidly to another intervention?
- ❑ Was the patient stabilized before the transfer, or was the “scoop-and-run” principle utilized?
- ❑ Did office practitioners use services that EMS can provide, including equipment and skills?

Organizational

- ❑ Was the EMS system activated promptly?
- ❑ Was communication directed and clear between all members of the emergency team?
- ❑ Were roles clearly assigned by the team leader?
- ❑ Were all members of the emergency team free to make suggestions on the patient’s behalf?
- ❑ Did anyone speak to the family during the emergency stabilization?
- ❑ Did someone record the events during the emergency stabilization?

APPENDIX 5: SCENARIO SAMPLES

Diabetic ketoacidosis: 10-year-old with new-onset diabetic ketoacidosis; polyuria and polydipsia for 1 week; today lethargic and confused; glucose >800.

Sepsis: 2-year-old with meningococemia; well in past but found this morning with rash, moaning and minimally responsive; had upper respiratory infection yesterday and 2 episodes of vomiting; otherwise fine.

Asthma: 8-year-old with asthma; has been wheezing for 2 days with upper respiratory infection but worsened this afternoon; told mom before he was brought to the office that he had been giving himself puffs of his inhaler every half hour most of the day.

Head trauma: 6-year-old with concussion and possibly more; was playing soccer and collided with another child; she was “out” for 2 to 3 minutes, then woke up

and was groggy but oriented; vomited once on the way to your office.

Seizures: 1-year-old with a complex febrile seizure; pulling at her ears and found to have a temperature of 104°F; mom gave her a bath to cool her off, and she began to have a generalized seizure several minutes later; her parents rushed her to the office while carrying her on their laps; the seizure has persisted for over 20 minutes.

Stridor: 2-year-old with possible epiglottitis; woke up early this morning with very loud breathing and a barking cough; feels very hot to touch; has been drooling for past 30 minutes; now appears anxious and tired.

Anaphylaxis: 5-year-old boy who was stung by a bee while playing outside; mom notes that his eyes and lips swelled within minutes; she brought him to the doctor when he subsequently developed wheezing.

Patient _____ Date _____ Time _____
 Physician _____ Nurse _____ Other _____
 Nurse _____ Nurse _____ Other _____

Time	Intervention	Medication/Dose/Route	HR	RR	BP	Temp	Pox	O ²	CPR
Code start time			Transferred to						
EMS Time Called			Physician referred to						
EMS Time Arrived			Diagnosis						
EMS Time Departed									
Paramedic Names									
IO Size/Location									
IV Size/Location									

APPENDIX 6

Code chart: consider for use at time of office emergency. HR indicates heart rate; RR, respiration rate; BP, blood pressure; Pox, pulse oximetry; IO, intraosseous needle; IV, intravenous catheter.

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