

chapter 15

Preparedness for Pediatric Emergencies

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Objectives

- 1 Provide guidelines for the preparation of the general emergency department to care for pediatric patients.
- 2 List the equipment and supplies necessary to care for pediatric patients in the emergency department.
- 3 Discuss appropriate pediatric staffing skills, pediatric-specific policies, and incorporation of pediatrics into the department quality improvement process.

Chapter Outline

- Introduction
- Current State of ED Preparedness
- Children in the ED
- Designated Pediatric Coordinators
- Staff Qualifications
- Equipment and Medications
- Policies Addressing the Specific Needs of Children
 - Triage
 - Parental Presence
 - Child Maltreatment
 - Transfer to a Higher Level of Care
 - Consent
 - Disasters
- Quality Improvement Programs
- Support Services
 - Interface With Out-of-Hospital Care



CASE SCENARIO 1

A 2-week-old child arrives afebrile and in profound shock. The parents brought the child in because he would not awake for feedings as usual. Intravenous access was finally obtained in the emergency department (ED), and the neonate was intubated and stabilized before transport to another institution with a pediatric intensive care unit.

How would this child be triaged? Is the staff skilled at identifying the critical nature of this child's illness?

How will you determine the size of equipment and dosage of medications to be used for this boy? Is all of the equipment available?

Is there a policy in place facilitating the rapid transfer to a higher level of care?

Introduction

More than 25 years ago, the US Congress established the emergency medical services (EMS) for children (EMS-C) program, recognizing the inadequacy of the nation's EMS to meet the unique needs of children. Ten years later, in 1993, a landmark review of the effort by the Institute of Medicine concluded that despite progress, the response was far from complete.¹ This report made a number of recommendations, including that all agencies with jurisdiction over hospitals "require that hospital emergency departments... have available and maintain equipment and

supplies appropriate for the emergency care of children" and that they begin to "address the issues of categorization and regionalization and overseeing the development of EMS-C and its integration in the state and regional EMS system."¹ The effects of these recommendations have recently been examined.²

The public expects any hospital with an ED to be prepared to care for all patients, no matter what their problem or age, 24 hours a day, 7 days a week. There are not enough pediatric emergency medicine (PEM) subspecialists to care for all children with emergency condi-

tions in the United States, and most of these children present to general, community emergency centers³ (Figure 15.1). Not all of these hospitals have the same capacity to attend to the needs of children. General EDs can ensure good care by creating child-friendly environments, using pediatric protocols, providing pediatric training for staff, and making sure that appropriate pediatric equipment and supplies are available. Hospitals that do not have a pediatric inpatient service, pediatric specialists, or a pediatric intensive care unit should have transfer agreements and protocols in place to allow for rapid and efficient transfer of seriously ill or injured children from the ED to another facility with a higher level of care.

Current State of ED Preparedness

Since the 1993 Institute of Medicine report, researchers and policymakers have made significant advances in standardizing the integration of pediatric care into the emergency medical

system. In 2000, the American College of Emergency Physicians (ACEP) and the American Academy of Pediatrics (AAP) published a joint policy statement⁴ providing comprehensive guidelines for pediatric care, which included recommendations on the following:

- Pediatric coordinators
- Staff qualification
- Equipment and medications
- Support services
- Quality improvement programs
- Pediatric-specific policies (Table 15-1)

The policy statement was endorsed by 17 other professional medical organizations and still serves as a definitive framework for the integration of the special needs of children into the emergency care environment. Despite widespread dissemination of these guidelines, studies during the last decade have systematically documented an incomplete state of preparedness.⁵⁻⁸ One of the reasons for the failure of the emergency community to embrace these guidelines might be a surprising lack of awareness of published AAP/ACEP guidelines. Other



Figure 15.1 Emergency and Trauma Center.

predictors of preparedness include the type of ED (academic EDs are more prepared than community and rural EDs), the presence of pediatric inpatient resources, the presence of designated physician and nursing pediatric coordinators, increased pediatric volume, and ED configuration (separate pediatric ED).⁵ Yet, low-volume, community and rural EDs without designated inpatient resources are precisely where many of these children will present for care.⁹

TABLE 15-1 Key Pillars for the Provision of Pediatric Care in the Emergency Department (ED)

Administration and coordination of pediatric care

- Physician coordinator for pediatric care
- Nursing coordinator for pediatric care

Staff qualifications

Equipment and medications

Pediatric quality improvement

Pediatric-specific policies and protocols

ED ancillary support services

(Figure 15.2). Better care might be facilitated by segregating pediatric patients from the frightening sights and sounds of the general ED (Figure 15.3). Designated areas allow child-proofing the area with plug covers, locks on cabinets, and the removal of dangerous equipment out of reach of children. Sharps containers should be out of reach, and all trash cans should be tall and covered. Rooms can easily be made child-friendly with simple decorations and soothing colors. There is a limited window of tolerance for waiting for young children (and their



Figure 15.2 Designated pediatric area in an emergency department.

Children in the ED

A 2003 survey noted that only 11% of EDs nationwide have a section of the ED set aside specifically for children; this means that in almost 90% of EDs, children are seen side by side with adults.⁵ Although the pediatric volume in most EDs is not enough for a separate pediatric section, this does not justify a lack of attention to the physical, emotional, and distinct medical needs of children. Although most people would agree that children younger than 12 years are clearly “pediatric,” many would argue that the unique developmental needs of adolescents require close consideration as well.

The Society of Academic Emergency Medicine (SAEM), in a position statement endorsed by the AAP, states that “physically separate care areas for children are ideal, [but] they are not mandatory to provide high-quality care.”¹⁰ Infants, children, and adolescents should be examined in a designated pediatric area if possible



Figure 15.3 General emergency department.

siblings). A television with a DVD player can provide distraction for the child who often finds it difficult to remain still for prolonged periods. Coloring books and reading materials are also helpful but need replenishing frequently. Local charitable groups are often willing to provide these materials to the ED. Policies and procedures must be in place to ensure that all “distracters” or toys provided are age appropriate, checked frequently for safety, and cleaned between uses. Infants and young children typically present with a caregiver, and the examination is often best done with the patient sitting on the seated parent’s lap (Figure 15.4). Thus, a comfortable chair for the caregiver and a stool for the examining physician are important.



Figure 15.4 An examination of a child is often best done with the patient sitting on the seated parent’s lap.

Designated Pediatric Coordinators

The designation of a physician and nursing coordinator for pediatric care is explicitly recommended and highly correlated with the level of pediatric preparedness in the general ED.^{4,5,11} The physician coordinator should have a special interest, knowledge, and skill in the emergency care of children but need not have fellowship training in PEM.⁴ In smaller departments, this individual can also be the director of the department. The physician coordinator serves a critical role in providing inspiration, focus, and accountability for efforts to advance the care of

children in the department. A nursing coordinator for pediatric emergency care is equally vital, if not more so, and will often serve as the operational counterpart to the physician coordinator. Evidence suggests that the presence of pediatric coordinators is associated with improved pediatric preparedness.⁵ It is intuitive that having such physician and nursing champions will result in significant improvements in pediatric preparedness.

Staff Qualifications

Pediatric nursing is a recognized specialty. The assessment skills necessary for appropriate triage, ongoing assessment, and pediatric care are critical for good outcomes in the ED. Nurses can be educated through years of experience on a pediatric unit, through formal education in professional schools (clinical nurse specialist), or through specific continuing medical education, such as the Emergency Nurse Pediatric Course given through the Emergency Nurses Association.¹² The Pediatric Advanced Life Support (PALS) Course, offered by the American Heart Association, sets the standard for pediatric resuscitation skills and should be taken by all physicians, nurses, respiratory therapists, technicians, and other medical personnel who care for ill children.⁷ The recently developed Pediatric Emergency Assessment, Recognition, and Stabilization course offers an opportunity for health care professionals unlikely to need full resuscitative skills taught in PALS but who might occasionally encounter critical patients requiring more intervention than basic life support.^{13,14} Table 15-2 provides a comparison of these various programs, and Table 15-3 provides areas of potential focus for the development of pediatric competencies.¹¹

SAEM, ACEP, and AAP all explicitly recognize that physicians board certified in emergency medicine, as well as those board certified in PEM, possess the skills necessary to care for children with emergent conditions.^{10,15,16} However, ongoing physician education is also important. The PALS course is particularly important for physicians who do not frequently resuscitate children in the ED. This text, *APLS: The Pediatric Emergency Medicine Resource*, is also helpful for

TABLE 15-2 Pediatric Training Courses

Course	Sponsoring Organization	Duration, d	Recommended Update	Target Audience
Basic Life Support	AHA	1	Annual	Medical and nonmedical staff
Pediatric Advanced Life Support	AHA/AAP	2	Every 2 years	Physicians, physician assistants, nurses, nurse practitioners, and paramedics
Advanced Pediatric Life Support	AAP/ACEP	1–2	Every 4 years	Health care professionals providing frequent emergency care
Pediatric Emergency Assessment, Recognition, and Stabilization	AHA/AAP	1	Every 2 years	Health care professionals with little resuscitation experience
Emergency Nurse Pediatric Course	Emergency Nurses Association	2	Every 4 years	Registered nurses

Abbreviations: AAP, American Academy of Pediatrics; ACEP, American College of Emergency Physicians; AHA, American Hospital Association.

reviewing specific issues in pediatric emergency care. Conducting routine mock codes will enable the ED team to practice resuscitation skills.⁸

TABLE 15-3 Potential Areas for Pediatric-Specific Competencies

Triage
Sedation and analgesia
Airway management
Vascular access
Neonatal and pediatric resuscitation
Pediatric trauma care
Burn care
Medication delivery
Family-centered care

Partial list from American Academy of Pediatrics, Committee on Pediatric Emergency Medicine, American College of Emergency Physicians, Pediatric Committee and Emergency Nurses Association Pediatric Committee. Joint policy statement for care of children in the emergency department. *Pediatrics*. 2009;124:1233-1243.

Equipment and Medications

In 2001, the AAP and ACEP published a joint guideline addressing the need for the standardized and complete availability of pediatric-specific equipment and medication in the ED.⁴ Updated in 2009, this document, “Care of Children in the Emergency Department: Guidelines for Preparedness,” provides the most definitive recommendations for pediatric equipment and supplies for emergency facilities to date.¹¹ **Table 15-4** and **Table 15-5** list recommended medications, equipment, and supplies that should be available in all emergency facilities that care for children, however infrequently. Resuscitation drugs and equipment should be placed in an identified area or cart and contain a table and or tape for length-based weight determination¹⁷ (**Figure 15.5**).

In the past 10 years, researchers have demonstrated that a large percentage of the nation’s hospitals lack the proper equipment to care for the entire spectrum of pediatric emergencies.^{5–7,18} On a positive note, most hospitals stock most of the recommended items.^{5,7}



Figure 15.5 Tape for length-based weight determination.

However, significant and systematic deficiencies remain in place; Gausche-Hill et al⁵ noted that only 6% of institutions had all 118 recommended items (**Table 15-6**). Although McGillivray et al,⁷ in a 2001 study of 737 Canadian hospitals, demonstrated the unavailability of intraosseous needles in almost 16% of EDs, this finding was not apparently demonstrated in the 2003 survey of US EDs.⁵ The recent widespread interest in mechanical intraosseous devices and the explosion of literature on intraosseous use in both adults and children have likely improved this issue.¹⁹ Both studies, however, noted systematic deficiencies of neonatal and infant equipment in a significantly few hospitals, including infant warming devices, blood pressure cuffs, defibrillator pads, intubation equipment, and chest tubes.^{5,7} Some EDs use a color coding system based on the child's length to store resuscitation supplies and equipment¹² (**Figure 15.6**).

The universal availability of medications seems to be much less of a problem⁵; this is



NEONATE/INFANT	PINK/RED
3 TO 9 KG	
SMALL CHILD	PURPLE
10 TO 11 KG	
CHILD	YELLOW
12 TO 14 KG	
CHILD	WHITE
15 TO 18 KG	
CHILD/SMALL ADULT	BLUE
19 TO 23 KG	
SMALL ADULT	ORANGE
24 TO 29 KG	

Figure 15.6 An identified cart with resuscitation drugs and equipment.

Agarwal S, Swanson S, Murphy A, et al. Comparing the utility of a standard pediatric resuscitation cart with a pediatric resuscitation cart based on the Broselow tape: a randomized controlled, crossover trial involving simulated resuscitation scenarios. *Pediatrics*. 2005;116:e326-e333. Reprinted with permission.

likely due to the fact that the dosing, rather than the actual medication, is pediatric specific. Studies have shown that length-based (Broselow) resuscitation tapes have the potential to significantly reduce dosing errors, particularly in high-stress situations in which physicians might be unfamiliar with pediatric doses.^{17,20,21} A detailed treatment of doses and indications for drugs in pediatric emergencies has recently been published by the AAP.²²

TABLE 15-4 Potentially Useful Drugs in Pediatric Emergencies^a

Adenosine	Diphenhydramine	Glucagon	Lorazepam	Phenytoin
Albuterol (salbutamol)	Dobutamine	Glucose	Magnesium sulfate	Prednisone/ prednisolone
Amiodarone	Dopamine	Haloperidol	Mannitol	Procainamide
Atropine	Epinephrine (adrenaline)	Hydrocortisone	Methylprednisolone	Propranolol
Bicarbonate sodium	Epinephrine (adrenaline), racemic	Insulin	Midazolam	Prostaglandin E ₁
Calcium chloride	Etomidate	Ipratropium	Milrinone	Rocuronium
Charcoal, activated	Fentanyl	Kayexalate	Morphine	Succinylcholine
Dexamethasone	Flumazenil	Ketamine	Nalmefene	Vecuronium
Diazepam	Fosphenytoin	Levalbuterol (levosalbutamol)	Naloxone	
	Furosemide	Lidocaine (lignocaine)	Nitroprusside	
			Norepinephrine (noradrenaline)	
			Phenobarbital	

Partial list from Hegenbarth MA, Committee on Drugs. Preparing for pediatric emergencies: drugs to consider. *Pediatrics*. 2008;121:433-443.
^aRepresents a comprehensive drug list for pediatric emergencies, and some agents might be beyond the scope of the emergency department.

Policies Addressing the Specific Needs of Children

A number of specific policies and procedures should be developed and be readily available in all EDs that care for children⁴ (Table 15-7). Most require only the development and integration of pediatric-specific components into already existing general ED policies. Some policies, such as issues surrounding consent where a legal guardian is unavailable and addressing issues of children maltreatment, will require separate, pediatric-specific protocols. This list should not be considered comprehensive, and other pediatric-specific policies should be developed, depending on the needs of the department and the community. A few of these issues are addressed in more detail below.

Triage

All patients presenting to the ED are required to undergo a medical screening examination,²³ and (in the absence of direct bedding initiatives) triage is usually the first point of medical contact for these patients. In institutions without a high pediatric volume, staff might not be as comfortable or skilled at assessing and triaging children as they are with adults. Therefore, clear pediatric triage criteria should be established and incorporated into triage protocols and be readily available for reference.

Pediatric triage criteria are age specific; what is assigned a high level of acuity differs with age and associated signs and symptoms. For example, a temperature of 39°C (102.2°F) in a 1 month old is assigned an emergent triage acuity level, whereas the same temperature in a 7 year old who appears well is considered urgent but not emergent. All triage areas should have pediatric scales, and weights should be documented in kilograms, appropriate-sized blood pressure cuffs for infants, children, and adolescents, and pulse oximetry probes appropriate for infants and children.¹¹ Attention should be paid to how vital signs are obtained. For instance, a manual heart rate should be obtained before placement of the blood pressure cuff before the infant starts screaming. In addition, how the child's temperature is taken (ie, rectal in infants, oral or tympanic in older children) should be predetermined.

Triage nurses should be formally trained to approach the triage process of children differently than adults. For instance, neonates and infants should be unwrapped and carefully assessed to distinguish true lethargy from quiet sleeping and to fully assess the adequacy of respiratory effort. Triage staff should not only be comfortable with a different approach to triage but also be knowledgeable about pediatric-specific emergencies that might not be present in adults, such as neonatal fever, bilious vomiting in the neonate, fever and petechiae, and apnea in severe bronchiolitis, among other

TABLE 15-5 Guidelines for Pediatric-Specific Equipment and Supplies

General equipment	Patient warming device (infant warmer) Restraint device for children Weight scale for infants and children (in kilograms only, not pounds) Length-based resuscitation tape Pain-scale–assessment tools appropriate for age
Monitoring equipment	Blood pressure cuffs (neonatal, infant, child, adult-arm and thigh) Doppler ultrasonography devices Electrocardiography monitor/defibrillator with pediatric and adult capabilities, including pediatric-sized pads/paddles Hypothermia thermometer Pulse oximeter with both pediatric and adult probes Continuous end-tidal carbon dioxide monitoring device
Respiratory	Endotracheal tubes <ul style="list-style-type: none">• Uncuffed: 2.5 and 3.0 mm• Cuffed or uncuffed: 3.5, 4.0, 4.5, 5.0, and 5.5 mm• Cuffed: 6.0, 6.5, 7.0, 7.5, and 8.0 mm Feeding tubes (5F and 8F) <ul style="list-style-type: none">• Laryngoscope blades curved: 2 and 3; straight: 0, 1, 2, and 3) Laryngoscope handle Magill forceps (pediatric and adult) Nasopharyngeal airways (infant, child, and adult) Oropharyngeal airways (sizes 0–5) Stylets for endotracheal tubes (pediatric and adult) Suction catheters (infant, child, and adult) Tracheostomy tubes (sizes 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, and 5.5 mm) Yankauer suction tip Bag-mask device (manual resuscitator), self-inflating (infant size: 450 mL; adult size: 1,000 mL) Clear oxygen masks (standard and nonrebreathing) for an infant, child, and adult Masks to fit bag-mask device adaptor (neonatal, infant, child, and adult sizes) Nasal cannulas (infant, child, and adult) Nasogastric tubes (sump tubes): infant (8F), child (10F), and adult (14F–18F) Laryngeal mask airway†
Vascular access	Arm boards (infant, child, and adult sizes) Catheter over-the-needle device (14–24 gauge) Intraosseous needles or device (pediatric and adult sizes) Intravenous catheter–administration sets with calibrated chambers and extension tubing and/or infusion devices with ability to regulate rate and volume of infusate Umbilical vein catheters (3.5F and 5.0F)‡ Central venous catheters (4.0F–7.0F) Intravenous solutions to include normal saline, dextrose 5% in normal saline, and dextrose 10% in water
Fracture-management devices	Extremity splints, including femur splints (pediatric and adult sizes) Spine-stabilization method/devices appropriate for children of all ages§

TABLE 15-5 Guidelines for Pediatric-Specific Equipment and Supplies, continued

Pediatric trays or kits	<p>Lumbar puncture tray, including infant (22-gauge), pediatric (22-gauge), and adult (18- to 21-gauge) lumbar puncture needles</p> <p>Supplies/kit for patients with difficult airway conditions (to include but not limited to supraglottic airways of all sizes, such as the laryngeal mask airway, two-needle cricothyrotomy supplies, surgical cricothyrotomy kit)</p> <p>Tube thoracostomy tray</p> <p>Chest tubes to include infant, child, and adult sizes (infant: 10F–12F; child, 16F–24F; adult, 28F– 40F)</p> <p>Newborn delivery kit (including equipment for initial resuscitation of a newborn infant: umbilical clamp, scissors, bulb syringe, and towel)</p> <p>Urinary catheterization kits and urinary (indwelling) catheter (6F–22F)</p>
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American Academy of Pediatrics, Committee on Pediatric Emergency Medicine, American College of Emergency Physicians, Pediatric Committee and Emergency Nurses Association Pediatric Committee. Joint policy statement for care of children in the emergency department. *Pediatrics*. 2009;124:1233-1243.

¹Laryngeal mask airways could be shared with anesthesia but must be immediately accessible to the ED.

⁴ Feeding tubes (size 5F) may be used as umbilical venous catheters but are not ideal. A method for securing the umbilical catheter, such as an umbilical tie, should also be available.

⁵ A spinal stabilization device is one that can stabilize the neck of an infant, child or adolescent in a neutral position.

TABLE 15-6 Specific Missing Equipment and Pediatric Supplies^a

Airway	Vascular access	Miscellaneous
Nasopharyngeal airway (infant, child)	19-Gauge butterfly needle	8F chest tube (neonatal)
Stylet for endotracheal tube (infant)	Seldinger technique vascular access kit	10F–12F chest tube (infant)
Magill forceps (pediatric)	Venous cutdown tray	Heating source (overhead warmer for infants)
Laryngeal mask airway (sizes 1–5)	Umbilical vessel cannulation supplies	Newborn kit
Surgical airway kit (including needle cricothyrotomy)		Neonatal blood pressure cuff
		Medical photography capability

Gausche Hill M, Schmitz C, Lewis RJ. Pediatric preparedness of US emergency departments: a 2003 survey. *Pediatrics*. 2007;120:1229-1237.

^aSupplies found deficient in more than 10% of surveyed emergency departments.^b Not all of these supplies might be necessary at this time with the recent dissemination of more advanced equipment (eg, venous cutdown tray).

conditions. The Emergency Severity Index, extensively used in the United States and recognized by ACEP and the Emergency Nurses Association, has been shown to be reasonably accurate in triaging the pediatric patient, particularly in the hands of pediatric nurses.²⁴ The more recently developed and pediatric-specific Canadian Paediatric Triage and Acuity Scale has also demonstrated a high degree of accuracy in the more specialized setting of a dedicated pediatric ED.²⁵ Both systems suffer the problem of interrater reliability among different triage nurses, emphasizing the role of ongoing education rather than reliance on the triage to provide quality pediatric care.^{24,25}

Parental Presence

Patient- and family-centered care emphasizes the need to view the patient/child and the

family as a unit; patient care must be addressed in terms of the family context.²⁶ This has significant implications in terms of patient flow and the presence of multiple family members, as well as accurate identification of family members for security purposes. Addressing language or communications barriers, as well as active communication and coordination with the child's medical home, is also important.

Research has demonstrated that families and patients benefit from having family members present during procedures and cardiopulmonary resuscitation.²⁷ Even when there is a fatal outcome, families often feel comforted and have an easier time with the grieving process when they have witnessed the resuscitation.^{18,20} All EDs should have a policy that describes the circumstances under which family members are permit-

TABLE 15-7 Guidelines for Policies, Procedures, and Protocols for the Emergency Department (ED)

Pediatric triage
Procedural sedation
Documentation of vital signs and abnormal vital signs
Consent for care when guardian not immediately available
Child maltreatment (physical and sexual)
Death of a child in the ED
Family-centered care policies
Medical imaging policies (ie, ionizing radiation dosing)
Disaster preparedness
Interhospital transfers

Partial list from: American Academy of Pediatrics, Committee on Pediatric Emergency Medicine, American College of Emergency Physicians, Pediatric Committee and Emergency Nurses Association Pediatric Committee. Joint policy statement for care of children in the emergency department. *Pediatrics*. 2009;124:1233-1243.

ted the option of being present during procedures and cardiopulmonary resuscitation. Additional personnel, such as social workers, clergy, and volunteers, can be helpful resources for families so that they are comforted and have the procedures and resuscitation explained to them if the clinical staff is not immediately available.

Child Maltreatment

Child abuse or child maltreatment encompasses physical abuse, sexual abuse, emotional abuse, and physical or emotional neglect. Child abuse and neglect are defined by statute in all 50 states, the District of Columbia, Guam, Puerto Rico, and the US Virgin Islands. The ED is a common location for the identification of child abuse and neglect. The ED personnel should have knowledge of child abuse and neglect indicators and their jurisdiction's legal definition and reporting requirements. In most jurisdictions, suspicion of physical or sexual abuse is enough to trigger mandatory reporting to Child Protective Services. Failure to recognize and report abuse represents a tangible safety risk for the child and a significant medicolegal risk to the physician.²⁸ To assist in this process, all EDs should have clearly defined, written protocols for the care of the abused child. It is also important to have an identified source

for expert consultation and referral. Child maltreatment is discussed in greater detail in Chapter 7, Child Maltreatment.

Transfer to a Higher Level of Care

More than half of hospitals do not have pediatric wards, and most lack a pediatric intensive care unit.⁵ Many of these institutions will admit critical pediatric patients to adult intensive care units, even though the presence of a pediatric critical care specialist has been shown to improve outcome.^{29,30} The EDs that do not have pediatric inpatient units or pediatric intensive care units sometimes must transfer patients to other hospitals for a higher level of care.^{23,30} All EDs should have a policy or procedure in place guiding these interfacility transfers.^{29,30} Transfer and transport plans should also address several specific conditions and the need for highly specialized care, such as major trauma, burns, critical illness, and necessary subspecialty care.⁴ Preexisting agreements should provide written acceptance guarantees by the accepting institution⁴ (Figure 15.7).

Documented physician-to-physician and nurse-to-nurse communication should always take place between the referring and receiving

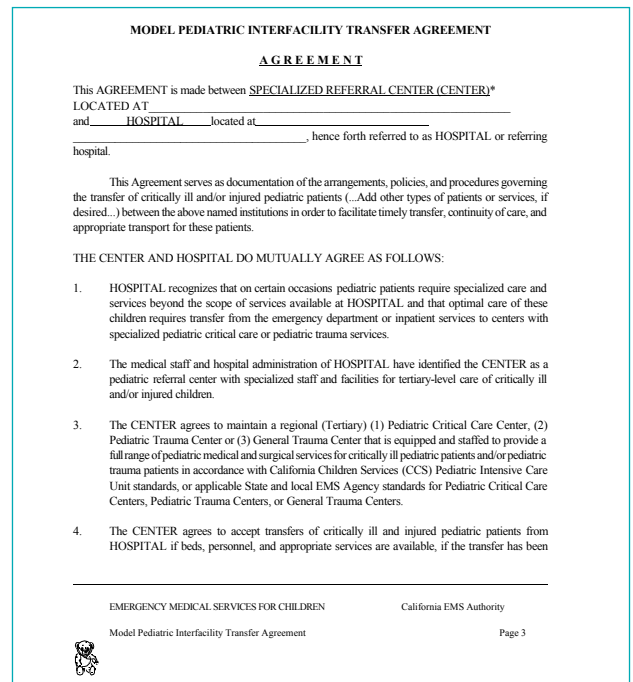


Figure 15.7 Partial example of a transfer agreement.

California EMS Authority

hospital staff. The decision on mode of transport (air vs ground) will depend on a variety of factors, including weather, patient acuity, transport time, and availability of resources.

Consent

Every ED should have a policy addressing the evaluation and care of children presenting without a consenting adult. Regardless of the availability of a legal guardian's consent, the Emergency Medical Treatment and Active Labor Act requires a medical screening examination.²³ Appropriate completion of a medical screening examination might or might not require extensive diagnostic studies.³¹ This legal mandate is independent of the provision of parental consent.

Physicians must be aware of the specific statutes in their states; this awareness can be significantly aided by the presence of a department policy regarding consent for emergency services. The ACEP and AAP policy dictates that appropriate medical care beyond the medical screening examination should never be delayed or withheld because of problems in obtaining consent.^{31,32} The degree of the emergency or urgency for which unconsented care is provided will be affected by several factors, including the risks of delay and benefits of early intervention for conditions for which serious impairment or dysfunction exists, the risks of the intervention, the age and maturity of the minor (mature minor doctrine), the specific medical condition (eg, pregnancy-related condition), and the emancipation status of the patient.³² Necessary interventions can even include surgery or transfer.³¹

Disasters

All hospital and ED disaster plans should address the special needs of children. These needs include family-centered care and psychological first aid for pediatric patients who have experienced violence or have witnessed a disaster. See Chapter 20, Disaster Management.

Quality Improvement Programs

Barely half of EDs have integration of pediatric-specific issues into the overall quality

improvement plan, and fewer have pediatric-specific quality improvement initiatives.⁵ Although, this quality improvement effort can be integrated into the department's overall quality improvement plan, pediatric-specific components are mandatory and must be included.^{4,33}

A robust quality improvement program provides necessary accountability toward the department's efforts to raise the standard of pediatric care. Variation in pediatric care is likely to be greater in a general ED than a pediatric ED, and variation in pediatric care is likely to be greater than variation in adult care within those departments.⁹ Incorporation of pediatric-specific quality improvement initiatives into the quality improvement program allows identification of outlier clinician practices and improvement in the safety and quality of pediatric care. Although specific indicators are not spelled out by ACEP/AAP guidelines, at minimum these must include outcome indicators, data collection directed at identifying variances in care, and defining and measuring the success of the quality improvement plan.^{4,33,34} Recommendations for pediatric-specific measures of quality have recently been published.³⁴

Support Services

The ACEP and AAP guidelines strongly recommend that services supporting the ED (eg, radiology, respiratory therapy, laboratory services) have the knowledge, skills, and equipment to appropriately service the needs of pediatric patients.⁴ Not only should equipment be appropriate to pediatric patients, but pediatric-specific policies should be in place within these departments. An important example would be a policy in the radiology department limiting the dosage of radiation experienced by children undergoing computed tomography.

Interface With Out-of-Hospital Care

Hospitals that have either online (direct) or offline (indirect) medical oversight responsibilities for out-of-hospital health care professionals should have pediatric treatment and destination protocols in place (**Figure 15.8**). If it is determined

in the field that a child will require intensive care, he or she should be primarily transported to a hospital that can offer that level of care, unless the transport time is too long or the child requires immediate stabilization. Emergency physicians working with the pediatric community can develop destination policies based on local needs and resources, particularly in urban and suburban settings. It is also crucial that all ambulances and basic and paramedic EMS units be equipped and supplied for pediatric emergencies. The ACEP and the Committee on Trauma of the American College of Surgeons published guidelines in 2009 for equipping ambulances for pediatric emergencies.³⁵ Continuing education in pediatric emergency care designed

specifically for EMS providers, such as the Pediatric Education for Prehospital Providers course, can be used to ensure that EMS personnel have the knowledge to care for pediatric emergencies.³⁶



Figure 15.8 Emergency medical services medical control communications room; with permission Inova Fairfax Hospital.

Check Your Knowledge

- The American College of Emergency Physicians and American Academy of Pediatrics have created specific guidelines for providing optimal pediatric care in the general emergency department (ED). All of the following are included in those guidelines EXCEPT:
 - pediatric coordinators.
 - equipment and medications.
 - quality improvement programs.
 - pediatric-specific patient care areas.
 - pediatric-specific policies.
- Which of the following statements is FALSE?
 - Pediatric physician coordinators must be board certified in pediatrics or pediatric emergency medicine
 - The pediatric coordinator can be a general emergency physician who has a special interest in the care of children
 - The pediatric coordinator position could be filled by the director of the general ED
 - The pediatric coordinator might be assigned to other positions within the ED as well
- Every ED should have specific policies for all of the following EXCEPT:
 - interfacility transfers of pediatric trauma patients.
 - children maltreatment.
 - pediatric resuscitation.
 - pediatric triage.
 - death of a child in the ED.
- For an adolescent patient who arrives with a mild asthma attack without a guardian:
 - the child should wait until the parents are contacted before completing triage unless in obvious distress.
 - the child should undergo an Emergency Medical Treatment and Active Labor Act–directed screening examination and then wait for parents to arrive before receiving definitive care.

- the child should be triaged and treatment begun, pending contact with the parents.

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CHAPTER REVIEW

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A 2-week-old child arrives afebrile and in profound shock. The parents brought the child in because he would not awake for feedings as usual. Intravenous access was finally obtained in the emergency department (ED), and the neonate was intubated and stabilized before transport to another institution with a pediatric intensive care unit.

1. *How would this child be triaged? Is the staff skilled at identifying the critical nature of this child's illness?*
2. *How will you determine the size of equipment and dosage of medications to be used for this boy? Is all of the equipment available?*
3. *Is there a policy in place facilitating the rapid transfer to a higher level of care?*

This child is critically ill and would be triaged after the triage nurse unwrapped the child and recognized his lethargy. He must be immediately placed in an appropriate resuscitation area.

There is no time to weigh the child, but a length-based resuscitation tape (ie, Broselow tape) can be used to quickly estimate weight and provide equipment sizes and precalculated drug dosages. Correctly sized equipment should be available and easily accessed in every ED (eg, in color-coded storage bags).

Once the child is stabilized and after telephone consultation with a physician at a higher level of care, the patient should be transported as rapidly as possible according to a preexisting transfer agreement.

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