Alpine, Mother Lode, San Joaquin
Emergency Medical Services Agency

EMERGENCY DEPARTMENT PEDIATRIC GUIDELINES

Adopted by the Board of Directors

April 13, 1994

Table of Contents

This page intentionally left blank.

Introduction

Emergency departments vary in pediatric patient volume, education of staff in caring for pediatric emergencies and available equipment to care for pediatric patients. These variations make the development of standard guidelines, applicable in all emergency department (ED) settings, a fundamental component of an emergency medical services (EMS) system designed to meet the needs of children. The Emergency Department Subcommittee of the California EMS Authority's Emergency Medical Services for Children (EMSC) Project created two documents establishing minimum and uniform administrative, personnel, policy, equipment and medication guidelines for the care of pediatric patients in emergency departments statewide. These documents were distributed to the local EMS agencies by the California EMS Authority for adoption and implementation.

The Pediatric Advisory Committee (PAC) of the Alpine, Mother Lode, San Joaquin EMS Agency created the Emergency Department Pediatric Guidelines, based on the work of the ED Subcommittee of the California EMS Authority's EMSC Project. The Emergency Department Pediatric Guidelines are not practice standards, but are intended to serve as a reference for hospitals in the Alpine, Mother Lode, San Joaquin EMS Region to evaluate and upgrade, if necessary, their emergency department services for pediatric patients. Each hospital is encouraged to adopt these guidelines, if possible, based upon local resources.

These guidelines list recommendations for "Basic" and "Standby" Emergency Departments. These terms are used consistent with the definitions for emergency department permits in the California Code of Regulations. Any hospital with a "Comprehensive" emergency department permit should refer to the "Basic" guidelines.

Section I lists the administrative, personnel and policy components of the ED guidelines which are recommended as either essential ("E") or desirable ("D") for all emergency departments to meet.

Section II of this document lists the equipment, supplies and medications that all emergency departments should have available on a pediatric crash cart, in the emergency department or immediately available to the emergency department from other locations in the hospital, such as from the nursery or central supply.

This page intentionally left blank.

Section I - Administration, Personnel and Policy Guidelines

		BASIC	STANDBY
Administration/Coordination			
A.	Medical Director for the ED.	E	E
B.	A physician coordinator for pediatric emergency medicine[1].	E	E
1.	Qualifications:		
a.	Qualified specialist[2] in Pediatrics, Family Medicine or Emergency Medicine.	E	D
b.	Completion of eight hours of CME in topics related to pediatrics every two years.	E	E
2.	Responsibilities:		
a.	Oversight of ED pediatric quality improvement (QI).	E	E
b.	Liaison with appropriate internal hospital pediatric care committees.	E	E
c.	Liaison with pediatric critical care centers, trauma centers, the local EMS agency, base hospitals, prehospital care providers and community hospitals.	E	E
d.	Facilitation of pediatric emergency education for ED physicians.	E	E

[1]Personnel guidelines for a physician and nurse coordinator for pediatric emergency care may be met by staff currently assigned other roles in the department and may be shared between EDs.

[2]"Qualified Specialist" means a physician licensed in California who has: 1) taken special postgraduate medical training, or has met other specified requirements, and 2) has become board certified within six years of qualification for board certification in the corresponding specialties that have board certification and are recognized by the American Board of Medical Specialists.

E = Essential Component
D = Desirable Component

			BASIC	STANDBY
C.	A R.N. coordinator for pediatric emergency care[1], (e.g. Pediatric Liaison Nurse (PdLN).		E	E
	1.	Qualifications:		
		a. At least two years experience in pediatrics or emergency nursing within the previous five years.	E	D
		b. Current certification in pediatric advanced life support (PALS), advanced pediatric life support (APLS) or other equivalent pediatric emergency course.	E	E
		c. Completion of eight hours of CE in topics related to pediatrics every two years.	E	E
	2.	Responsibilities:		
		a. Coordination with pediatric physician coordinator for pediatric QI activities.	E	E
		b. Facilitation of ED nursing continuing education in pediatrics.	E	E
		c. Liaison with pediatric critical care centers, trauma centers, the local EMS agency, base hospitals and community hospitals.	E	E
		d. Liaison with appropriate internal hospital pediatric committees.	E	E
Personnel - Physicians				
A.	Physician Staffing - ED:			
	1.	ED physician on duty 24 hour/day (per section 70415 of Title 22, California Code Regulations).	E	D

E = Essential Component
D = Desirable Component

			BASIC	STANDBY
	2.	Physician on call and promptly available[3] to ED 24 hours/day as (per section 70653 of Title 22, California Code of Regulations).	-	E
B.	Qualifications/Education[4]			
	1.	At least one physician who is a qualified specialist in Pediatrics, Emergency Medicine or Family Practice on duty in the ED[2].	E	D
	2.	Physicians who are <u>not</u> qualified specialists in Emergency Medicine or Pediatric Emergency Medicine should possess current certification in PALS or APLS[2].	E	E
	3.	Completion of eight hours of CME in topics related to pediatrics every two years[5].	D	D
C.	Back-up MD Specialty Services:			
	1.	A designated pediatric consultant on-call and promptly available to the ED 24 hours a day[3].	E	D
	2.	Roster of specialty physicians available for consultation by telephone or in person at all times (per section 70653 of Title 22, California Code of Regulations).		

[3]"Promptly Available" means being within the emergency department within a period of time that is medically prudent and proportionate to the patient's clinical condition and such that the interval between arrival of the patient to the emergency department and the arrival of the respondent should not have a measurable harmful effect on the course of patient management or outcome. Generally, personnel who are "on call and promptly available" should be available at the hospital within 30 minutes.

[4]Certification in Emergency Medicine or Pediatric Emergency Medicine is the preferred standard of competence for physicians in the ED.

[5]May be met by PALS or APLS.

E = Essential Component
D = Desirable Component

			BASIC	STANDBY
	a.	It is recommended that this roster include, but not be limited to, specialists in surgery, orthopedics, anesthesiology, and neurosurgery.	E	E
Personnel - Nursing				
A.	Qualifications/Education:			
1.		At least one emergency department RN per shift educated in PALS, APLS or other equivalent pediatric emergency nursing course.	E	D
2.		At least one RN in-house, on duty, per shift and available to ED shall complete PALS, APLS or other equivalent pediatric emergency nursing course.	-	E
3.		Completion of four hours of CE in topics related to pediatrics every two years for all registered nurses regularly assigned to the emergency department.	E	E
Quality Improvement (QI)				
A.	A Pediatric QI plan shall be established.		E	E
1.		Components of the plan must include an interface with prehospital, ED, trauma, inpatient pediatrics, pediatric critical care and hospital-wide QI activities.	E	E
2.		The pediatric QI plan should include the following:	E	E
	a.	A periodic review of aggregate data of pediatric emergency visits;		

		BASIC	STANDBY
	b. A review of prehospital and ED pediatric patient care to include: (i) deaths; (ii) transfers; (iii) child abuse cases; (iv) cardiopulmonary or respiratory arrests; (v) trauma admissions from the ED; (vi) operating room admissions from the ED; (vii) ICU admissions from the ED; (viii) selected return visits to the ED.		
	c. QI indicators or monitors established with a mechanism to provide for integration of findings from QI audits and critiques into education to ED staff.		
	3. Mechanism to monitor professional education.	E	E
Policies, Procedures and Protocols			
A.	Establish policies, procedures or protocols for pediatric emergency patients to include: 1. medical triage; 2. general assessment; 3. safety; 4. child abuse and neglect; 5. consent; 6. transfers; 7. do-not-resuscitate (DNR) orders; 8. death in the ED and the care of the grieving family.	E	E
B.	A formal relationship should be established with a tertiary pediatric critical care center with a pediatric intensive care unit (PICU) approved by California Children Services (CCS) for transfers and 24 hour phone consultation.	E	E
C.	A formal relationship should be established with a trauma center for transfers and 24 hour phone consultation.	E	E

E = Essential Component
D = Desirable Component

			BASIC	STANDBY
Support Services				
A.	Respiratory Care Practitioners			
	1.	Staffing:		
		a. At least one respiratory care practitioner in house 24 hour per day.	E	D
		b. Educated in PALS or APLS.	D	D
		c. Completion of 4 hours of CE in topics related to pediatrics every 2 years.	D	D
B.	Radiology			
	1.	Staffing:		
		a. Radiologist on call and promptly available 24 hours/day[3].	E	D
		b. ARRT/CRT radiologic technologist in house 24 hours/day	E	D
		c. ARRT/CRT radiologic technologist on call and promptly available 24 hours/day[3] (See footnote page on page 5).	-	E
	2.	CT scan technician on call and promptly available 24 hours/day[3] where CT capabilities exist.	E	D
C.	Laboratory			
	1.	Staffing:		
		a. Medical technologist in house 24 hour a day	E	D
		b. Medical technologist on call and promptly available 24 hours/day[3] (See footnote page 5).	-	E

E = Essential Component
D = Desirable Component

				BASIC	STANDBY
	2.	Clinical lab capabilities either inside or outside the hospital:			
		a.	Chemistry and Hematology including: CBC, UA, amylase, electrolytes, ABG's and PH, glucose, CA, carboxyhemoglobin, BUN, creatinine, PT, PTT and CSF analysis.		
			(i) On a STAT basis.	E	D
			(ii) Available within 4 hours	-	E
		b.	Blood Bank;		
			(i) STAT blood typing and cross matching.	E	D
			(ii) Blood typing and cross matching.	-	E
			(iii) STAT availability of blood, platelets and fresh frozen plasma.	E	D
			(iv) Blood Bank access.	-	E
		c.	Microbiology;	E	E
		d.	Toxicology including: quantitative screening for iron, ethyl alcohol, acetaminophen, salicylates, phenobarbital, phenytoin, theophylline and qualitative screening for cyclic drugs.		
			(i) On a STAT basis.	E	D
			(ii) Available within 4 hours.	-	E
		e.	Micro-sampling capabilities;	E	E
D.		Aeromedical transport plan to include a helicopter landing plan and designated area to be used as a landing site.		E	E
E.		Two-way communication capability with the EMS system in accordance with local EMS policies and procedures.		E	E

E = Essential Component
D = Desirable Component

This page intentionally left blank.

Section II - Equipment, Supplies and Medications

Item	Location		
	Pediatric Crash Cart	Emergency Department	Immediately Available to the ED
General Equipment Needs			
A. Pediatric crash cart to store all supplies in an organized manner[6].		**T**	
B. Medication chart, tape or other system to assure ready access to proper dosage of medication or proper sizing of resuscitation equipment.	**T**		
C. Patient warming device.		**T**	
D. Scales for measuring weights of infants and children.		**T**	
Monitoring Equipment			
A. Blood pressure cuffs (neonatal, infant, child).	**T**		
B. Blood pressure cuffs (adult arm and thigh).		**T**	
C. Doppler ultrasound devices.		**T**	
D. ECG monitor and defibrillator or both (5-400 J. capacity) with pediatric and adult paddles.		**T**	
E. Hypothermia thermometer.		**T**	
F. Intravascular pressure monitoring system.		**T**	
G. Pulse oximeter.		**T**	

[6]In children's hospitals or hospitals with a separate pediatric emergency treatment area, this recommendation may be met by a crash room.

Item	Location		
	Pediatric Crash Cart	Emergency Department	Immediately Available to the ED
H. End tidal CO_2 detector or monitor.		**T**	
Respiratory Equipment and Supplies			
A. Endotracheal tubes:			
1. Uncuffed sizes: 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5.	**T**		
2. Cuffed sizes: 6.0, 6.5, 7.0, 7.5, 8.0, 9.0.	**T**		
B. Feeding tubes: 5-8 Fr.	**T**		
C. Laryngoscope blades: curved 2-3 and straight 0-3.	**T**		
D. Laryngoscope handle.	**T**		
E. Lubricant (water soluble).	**T**		
F. Magill forceps (pediatric and adult).	**T**		
G. Nasopharyngeal airways (infant, child and adult).	**T**		
H. Oral airways (sizes 0-5).	**T**		
I. Stylets for endotracheal tubes (pediatric and adult).	**T**		
J. Suction catheters (infant, child and adult).	**T**	**T**	
K. Tracheostomy tubes (Shiley tube sizes 0-6).	**T**		
L. Yankauer suction tips.	**T**	**T**	

Item		Location		
		Pediatric Crash Cart	Emergency Department	Immediately Available to the ED
M.	Bag-valve-mask (BVM) device, self-inflating capable of delivering 100% O_2, (pediatric size - 450 ml and adult size - 1000 ml).		**T**	
N.	Clear oxygen masks (standard and non-rebreathing) for an infant, child and adult.		**T**	
O.	Masks to fit BVM adaptor (neonatal, infant, child and adult sizes).		**T**	
P.	Nasal cannulae (infant, child and adult).		**T**	
Q.	Nasogastric tubes (infant, child and adult).		**T**	
Vascular Access Supplies and Equipment				
A.	Arm boards (infant, child and adult sizes).	**T**		
B.	Butterflies (19-25 gauge).	**T**		
C.	Catheter over the needle (14-24 gauge).	**T**		
D.	Intraosseous needles.	**T**		
E.	IV administration sets with calibrated chambers and extension tubing.	**T**		
F.	IV tubing (30 inches).	**T**		
G.	Stopcocks.	**T**		
H.	Syringes (TB, 3-60 ml).	**T**		
I.	T-connectors.	**T**		
J.	Umbilical vein catheters[7].	**T**		

[7]Feeding tubes (size 5 Fr) may be utilized as a UVC catheter.

Item	Location		
	Pediatric Crash Cart	Emergency Department	Immediately Available to the ED
K. Vascular access supplies utilizing Seldinger technique.	**T**		
L. Infusion devices with the ability to regulate rate and volume of infusate.		**T**	
M. IV solutions to include: (micro, macro and blood administration)			
1. Isotonic balanced salt solutions, e.g. normal saline (NS).		**T**	
2. $D_5$0.2 NS		**T**	
3. $D_5$0.45 NS		**T**	
N. Needles (18 - 27 gauge).		**T**	
O. IV fluid/blood warmer.			**T**
Fracture Management Devices			
A. Cervical immobilization equipment or devices suitable for pediatric patients[8].		**T**	
B. Spine board (child and adult).		**T**	
Specialized Pediatric Trays or Kits			
A. Lumbar puncture tray.		**T**	
B. Peritoneal lavage tray.		**T**	
C. Surgical airway tray.		**T**	
D. Thoracotomy tray.		**T**	

[8] A cervical immobilization device should immobilize the neck of an infant, child or adult in a neutral position.

Item	Location		
	Pediatric Crash Cart	Emergency Department	Immediately Available to the ED
E. Tube thoracostomy tray/chest tubes (infant, child and adult).		T	
F. Urinary catheterization kit/urinary catheters (infant, child and adult).		T	
G. Vascular cutdown tray.		T	
Medications[9]			
A. Atropine.	T		
B. Bretylium.	T		
C. Calcium chloride	T		
D. Dextrose (injection).	T		
E. Epinephrine (1:1000 and 1:10,000).	T		
F. Lidocaine (injection).	T		
G. Naloxone.	T		
H. Sodium bicarbonate.	T		
I. Activated charcoal.		T	
J. Adenosine.		T	
K. Antibiotics.		T	
L. Anticonvulsants (injection).		T	
M. Antipyretics.		T	

[9]These medications represent a minimum inventory of medications to be stocked by emergency departments that care for pediatric patients. This list is not meant to be all inclusive and it is expected that emergency department will supplement this inventory based on local resources and needs.

Item		Location		
		Pediatric Crash Cart	Emergency Department	Immediately Available to the ED
N.	Benzodiazepines (injection).		**T**	
O.	Beta Agonist for inhalation.		**T**	
P.	Depolarizing neuromuscular block agents[10].		**T**	
Q.	Dexamethasone (injection).		**T**	
R.	Diphenhydramine (injection).		**T**	
S.	Dopamine.		**T**	
T.	Furosemide (injection).		**T**	
U.	Glucagon.		**T**	
V.	Insulin.		**T**	
W.	Ipecac.		**T**	
X.	Mannitol.		**T**	
Y.	Methylprednisone (injection).		**T**	
Z.	Morphine sulfate[11] (injection).		**T**	
AA.	Non-depolarizing neuromuscular block agents[10].		**T**	
AB.	Phenobarbital (injection).		**T**	
AC.	Phenytoin (injection).		**T**	

[10]May be available by the Anesthesiology Department only. this recommendation may be satisfied if policies exist that ensure the immediate availability of these medications for emergency intubation of the pediatric patient.

[11]Morphine sulfate or other narcotics (e.g. meperidine) would satisfy this recommendation.

Item		Location		
		Pediatric Crash Cart	Emergency Department	Immediately Available to the ED
AD.	Potassium chloride (injection).		**T**	
AE.	Propranolol (injection).		**T**	
AF.	Succinylcholine[10].		**T**	
AG.	Verapamil (injection).		**T**	
AH.	Hydralazine (injection).			**T**
AI.	Hydrocortisone (injection).			**T**
AJ.	Isoproterenol (injection).			**T**
AK.	Racemic epinephrine for inhalation.			**T**
AL.	3% Sodium chloride (injection).			**T**

This page intentionally left blank.

Suggested Readings

1. ACEP Policy Statement: Pediatric equipment guidelines. June, 1990.

2. Dieckmann EA (ed). Pediatric emergency care systems planning and management. Williams & Wilkins, Baltimore, MD, 1992.

3. Foltin G: Emergency medical services for children in Barkin EM (ed), Pediatric emergency medicine: Concepts and clinical practice. Mosby Year Book, St. Louis, MO, pp 24-41, 1992.

4. Henderson DP: The Los Angeles County pediatric emergency care system. Journal of Emergency Nursing 1988;14:2:90-100.

5. Joy C (ed). Pediatric emergency nursing. Aspen, Rockville, MD, 1989.

6. Kelley S (ed). Pediatric emergency nursing. Appleton & Lange, 2nd edition, Norwalk, CN, in press.

7. Kitt S, Kiser J (eds). Emergency nursing a physiologic and clinical perspective. W.B. Saunders, Philadelphia, PA, 1990.

8. Pediatric emergencies. Pediatrics 1990;85:5:879-880.

9. Seidel JS, Henderson DP (eds). Prehospital care of pediatric emergencies. Los Angeles Pediatric Society, Chapter 2, American Academy of Pediatrics, 1987.

10. 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.

11. Singer J. Ludwig S (eds). Emergency medical services for children: The role of the primary care provider. Elk Grove Village, IL. American Academy of Pediatrics, 1992.