



Pediatric Equipment for Ambulance and First Responders

**Emergency Medical Services Authority
California Health and Human Services Agency**

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Pediatric Equipment for Ambulance and First Responders

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Pediatric Equipment For Ambulance and First Responders

Almost four decades ago, the Committee on Trauma (COT) of the American College of Surgeons (ACS) developed a list of standardized equipment for ambulances. Since 1988, the American College of Emergency Physicians (ACEP) has published a similar list. Both organizations adhere to the principle that emergency medical technicians (EMTs) at all levels must have the appropriate equipment and supplies to optimize prehospital delivery of care. Since EMTs care for patients of all ages, with a wide variety of medical and traumatic conditions, the ACS COT and the ACEP have joined to produce a document to serve as a widely accepted standard in the field of emergency ambulance service both in the United States and Canada.

PRINCIPLES OF PRE-HOSPITAL CARE

On-scene initial assessment and management of pediatric traumatic and medical emergencies by properly trained and equipped prehospital providers has significantly improved overall survival. Integral to this process is medical direction of prehospital care by preexisting pediatric protocol (indirect medical direction) or by physician/nurse via voice and/or video communication (direct medical direction). The protocols that guide pediatric patient care should be established in concert by medical directors for local EMS agencies and EMS provider agencies, emergency physicians, pediatric specialists, trauma surgeons, and appropriately trained basic and advanced emergency medical personnel. High-quality, consistent emergency pediatric care demands continuous quality improvement and is directly dependent on effectively monitoring, integrating, and evaluating all components of the patient's care. The goal of pediatric prehospital care is to minimize further systemic insult or injury through a series of well-defined and appropriate interventions.

EQUIPMENT AND SUPPLIES

The Pediatric Equipment for Ambulance and First Responders Guidelines list the recommended supplies and equipment that should be stocked on ambulances and first responder units to provide pediatric patient care. This list is pediatric specific and does not include adult equipment for ALS/BLS units. Previous documents regarding equipment have referred to essential or minimal equipment necessary to adequately equip an ambulance and first responder unit. However, very little scientific evidence supports requirements for specific equipment and supplies. Equipment requirements will vary, depending on the certification levels of the providers, approved optional scope of practice, population densities, geographic and economic conditions of the region, and other factors.

The following ambulance and first responder unit equipment list is based on the American College of Emergency Physicians and the American College of Surgeons revised June 2000 consensus document "Equipment for Ambulances". California's local Emergency Medical Services for Children (EMSC) Program Coordinators used this national document and developed a pediatric specific ambulance and first responder unit equipment list to supplement the standard ambulance equipment requirements. As children come in all sizes, there will be overlap of equipment requirements. As a general principle, latex-free equipment should be used when available.

The document was reviewed by the EMSC Technical Advisory Committee and submitted to the EMS Authority for approval and subsequently incorporated into an updated version of the "Prehospital Pediatric Equipment for BLS/ALS Support Units (EMS #188), originally drafted in February 1994.

I. BASIC LEVEL PROVIDERS

- A. Ventilation and Airway Equipment
 - 1. Portable and fixed suction apparatus
 - Wide-bore tubing;
 - Flexible suction catheters, 6F - 14F
 - 2. Oxygen administration equipment
 - Mask (adult, child, and infant sizes), transparent, non-rebreathing
 - Nasal cannulas (adult, child, and infant sizes)
 - 3. Bag-mask ventilation equipment
 - Manual Resuscitator, hand-operated, self-re-expanding bag (infant, pediatric and adult sizes), with oxygen reservoir/accumulator
 - Clear mask (adult, child, infant, and neonate sizes)
 - 4. Airways
 - Nasopharyngeal, oropharyngeal (adult, child, and infant sizes, sizes 0 - 5)
- B. Monitoring and Defibrillation

Automatic external defibrillator with pediatric capabilities is strongly recommended for systems that do not have immediate availability of an advanced life support service. Consider the option of an attenuator system.
- C. Immobilization Devices
 - 1. Cervical collars
 - Rigid for infant, child, and adult
 - 2. Spinal immobilization device (not sandbags)
 - Firm padding or commercial device (pediatric size)
 - 3. Backboards (should be radiolucent - long and short)
 - Joint-above and joint-below fracture site adult and child sizes, with padding, hand holds for moving patients, short (extrication, head-to-pelvis length), long (transport, head to feet), with at least 3 appropriate restraint straps
 - 4. Lower extremity (femur) traction devices (adult and child sizes)
 - 5. Upper and lower extremity immobilization devices
 - Joint-above and joint below fracture site (adult and child sizes), rigid-support appropriate material (cardboard, metal, pneumatic, vacuum, wood, or plastic)
 - 6. Pediatric extrication device
- D. Obstetrical
 - 1. Kit (separate sterile kit)

- Towels, 4"× 4" dressing, umbilical tape or clamp, sterile scissors or other cutting utensil, bulb suction, sterile gloves, and blanket
- 2. Thermal absorbent blanket and head cover, aluminum foil roll, or appropriate heat-reflective material (enough to cover newborn)
- 3. Appropriate heat source for ambulance compartment
- E. Miscellaneous
 - Sphygmomanometer - pediatric and adult (regular and large) cuffs, (for example, thigh sizes)
- F. Optional Basic Equipment
 - 1. Pediatric Pain Assessment Tool
 - 2. Temperature measuring device
 - 3. Childrens band-aids
 - 4. Child safety restraints (age appropriate as determined by local policy)

II. ADVANCED LEVEL PROVIDERS

For EMT-Paramedic, include all the equipment listed for the basic level provider plus the following additional equipment and supplies. For EMT-Intermediate (and other non-paramedic advanced levels), include all the equipment for the basic level provider and selected equipment and supplies from the following list, as appropriate to scope of practice.

- A. Vascular Access
 - 1. Normal saline solution (1,000-mL, 500-mL, 250mL bags)
 - 2. Intravenous access sizes 14G–24G, 1" long
 - 3. Intraosseous needles (when approved as optional scope; recommend size 15G)
 - 4. Tourniquet, rubber bands
 - 5. Syringes of various sizes (including tuberculin) with needles sizes 19G–25G ($\leq 1''$)
 - 6. Intravenous administration sets (micro drip and macrodrip),
 - Volume limiting device or small volume NS solution bags (50-100mL)
 - 7. Pediatric arm boards
- B. Airway and Ventilation Equipment
 - 1. Laryngoscope handle with extra batteries and bulbs, adult and pediatric
 - 2. Laryngoscope blades, sizes 0 (optional), 1 and 2 straight; 2 curved; sizes 3 and 4, straight and curved
 - 3. Endotracheal tubes, sizes 2.5 - 6.0 mm cuffed and/or uncuffed and 6.0 – 8.0mm cuffed (when pediatric intubation is approved as optional scope)
 - 4. 10-mL non-lock syringes (optional scope)
 - 5. Stylettes for endotracheal tubes, adult and pediatric
 - 6. Magill forceps, adult and pediatric (optional scope)
 - 7. Rigid and flexible suction device sizes 14F, 16F, and 18F

8. Colormetric End-tidal CO₂ detectors (pediatric and adult sizes) or quantitative end-tidal CO₂ monitor (optional scope)
- C. Cardiac
Portable, battery-operated monitor/defibrillator
With tape write-out/recorder, adult and pediatric defibrillator pads/paddles, quick-look pads/paddles or hands-free patches, ECG leads, adult and pediatric chest attachment electrodes with capability to provide electrical discharge below 25 watt-seconds
 - D. Other Advanced Equipment
Pulse oximetry with pediatric and adult probes
 - E. Miscellaneous
 1. Pediatric Pain Assessment Tool
 2. Length-based tape for determining equipment sizing and medication dosing or pediatric drug dosage chart
 - F. Optional Advanced Equipment
 1. Temperature measuring device
 2. Other advanced airway equipment as determined by local optional scope

III. REFERENCES

Equipment for Ambulances

American College of Emergency Physicians Policy Statement

<http://www.acep.org/practres.aspx?id=29436>

Medical Direction of Emergency Medical Services

American College of Emergency Physicians Policy Statement

<http://www.acep.org/practres.aspx?id=29570>

Resources for Optimal Care of the Injured Patient: 1999

American College of Surgeons Committee on Trauma