

Minimum equipment guidelines for paediatric prehospital care

A Cheng, D Hartfield; Canadian Paediatric Society, Acute Care Committee



Français en page 175

A Cheng, D Hartfield; Canadian Paediatric Society, Acute Care Committee. Minimum equipment guidelines for paediatric prehospital care. *Paediatr Child Health* 2011;16(3):173-174.

Prehospital care has become a well-defined specialty service in Canada, with various levels of paramedics providing specialized care to children before their arrival to hospital. The equipment required may vary according to the needs of the population being served and the level of training of the paramedics who are providing the care. The present statement provides a current list of the minimum equipment recommended for the provision of prehospital care to neonatal and paediatric patients. The most notable change to the present guideline is the addition of an automated external defibrillator, which has been added to reflect the most recent version of the paediatric advanced life support recommendations for the provision of basic life support.

Key Words: Care; Equipment; Guidelines; Minimum; Paediatrics; Prehospital

Since the first version of this position statement was published in 1994 (1), prehospital care for children and neonates has become recognized as a unique specialized service in Canada. As a result, paramedic training and qualifications have become more formalized and specialized. However, the responsibility for ensuring delivery of appropriate and effective prehospital care continues to rest with provincial authorities and agencies. Most of these agencies have developed specific equipment lists for the various levels of paramedic providers. The delegation of this service as a provincial responsibility has resulted in national variation in prehospital equipment guidelines.

The equipment needs of an ambulance service in rural and remote areas with potentially prolonged transport times vary from that of a service in a major urban centre. Additionally, the equipment needs for highly trained advanced or critical care paramedics transporting critically ill patients is significantly different from the needs of a basic life support crew (2). The present statement identifies the minimum basic equipment and supplies required to transport newborns and children. Some items have been intentionally omitted (eg, cardiorespiratory monitor, intravenous fluids) because they do not fit with the training requirements for basic-level paramedic providers in Canada.

The most significant change to this revised guideline is the addition of an automated external defibrillator (AED) suitable for use in children. It is recommended that paramedic teams that do not currently travel with defibrillators use AEDs, which will allow them to initiate appropriate treatment for the sudden, witnessed collapse of a child. These children are likely to have ventricular fibrillation or pulseless ventricular tachycardia, and thus require immediate cardiopulmonary resuscitation and defibrillation (3,4). Currently, AEDs can be safely and effectively used in children younger than eight years of age. In some AED models, paediatric-sized pad-cable systems are provided,

Les directives sur l'équipement minimal en vue des soins préhospitaliers en pédiatrie

Les soins préhospitaliers sont devenus un service spécialisé bien défini au Canada, divers échelons de personnel paramédical offrant des soins spécialisés aux enfants avant leur arrivée à l'hôpital. L'équipement nécessaire peut varier selon les besoins de la population servie et la formation du personnel paramédical qui fournit les soins. Le présent document de principes contient une liste à jour de l'équipement minimal recommandé pour dispenser des soins préhospitaliers aux patients d'âge néonatal ou pédiatrique. La modification la plus remarquable aux présentes directives consiste en l'ajout d'un défibrillateur externe automatisé, afin de respecter la version la plus récente des recommandations sur les soins spécialisés en réanimation pédiatrique en vue des soins immédiats en réanimation.

and the dosage of energy delivered has been attenuated to make use more suitable for children younger than eight years of age (5,6). These features make AEDs the ideal choice for prehospital care providers. An adult AED with an adult pad-cable system should be used in children younger than eight years of age if the paediatric system is not available, and also in all children older than eight years of age. This change is consistent with the most recent American Heart Association and International Liaison Committee on Resuscitation guidelines (5,6).

RECOMMENDATION

Table 1 outlines the minimum resuscitation equipment and supplies required for neonates, infants and children. Appropriate training specific to the paediatric population should be completed by all prehospital care providers before the use of paediatric-specific equipment. The services involved should have quality improvement programs in place to ensure that equipment is checked and maintained regularly, ensure maintenance of the skills of providers and evaluate the quality of care provided. Such standards are required to ensure that a consistent, high level of prehospital care is available for infants and children across Canada.

CONCLUSION

The present guidelines represent the minimum equipment necessary for the provision of an acceptable standard of prehospital care for ill newborns and children in Canada. Regional and service variations may mandate the addition of other supplies and equipment, but all Canadian prehospital care systems should at least be equipped to the level outlined in the present guideline.

ACKNOWLEDGEMENTS: This statement was reviewed by the Canadian Paediatric Society's Community Paediatrics Committee. It is also endorsed by the Canadian Association of Emergency Physicians.

Correspondence: Canadian Paediatric Society, 2305 St Laurent Boulevard, Ottawa, Ontario K1G 4J8. Telephone 613-526-9397, fax 613-526-3332, websites www.cps.ca, www.caringforkids.cps.ca

TABLE 1
Basic life support – minimum resuscitation equipment and supplies for neonates, infants and children

Equipment type	Item
Airway equipment	Oxygen tank with tubing, and with a humidified source for long transport times
	Oral airways: sizes 0–5
	Oxygen mask: newborn, infant, child and adult sizes (nonbreather masks preferred)
	Nasopharyngeal airways: 12F to 30F, or equivalent sizes in mm
	Self-inflating bags with oxygen reservoir: 250 mL, 500 mL and 1000 mL bags
	Face masks for a bag-valve-mask device: premature, newborn, infant, child and adult sizes
	Portable suction unit
	Suction catheters (flexible and rigid): 5F to 14F
	Automated external defibrillator: preferably with paediatric-sized pads and attenuated paediatric doses (unless the ambulance is already equipped with a monitor and defibrillator)
	Monitoring and defibrillation
Immobilization devices	Backboard for spinal immobilization: short and long boards with at least three restraint straps and padding
	Towel rolls, blanket rolls or equivalent for head immobilization
	Rigid C-spine collar: infant, child, adult small and adult medium sizes
	Upper and lower extremity immobilization devices for fractures
	Lower extremity traction device
Infection control	Protective eyewear or goggles
	Face protection or masks including N95-rated masks
	Gloves (latex free preferred)
	Disinfectant solution or hand cleanser
	Alcohol wipes
Obstetrical and neonatal supplies	Standard sharps containers
	Sterile towels
	Gauze, rolls and sponges
	Umbilical tape and adhesive tape
	Sterile scissors
	Bulb suction
	Cord clamp
	Sterile gloves
Blankets, towels and head cover	

TABLE 1 – CONTINUED
Basic life support – minimum resuscitation equipment and supplies for neonates, infants and children

Equipment type	Item
Miscellaneous	Stethoscope
	Blood pressure cuffs: neonatal, infant, child and adult sizes
	Thermometer (low-temperature capable)
	Sterile saline solution
	Lubricating jelly
	Blankets, towels and sheets
	Gauze, rolls and sponges
	Occlusive dressings and burn dressings
	Hot and cold packs
	Adhesive tape
	Elastic bandages
	Flashlight, light bulb and batteries
	Scissors
	Tourniquet
	Equipment sizing tape for weight and age: Broselow tape*
	Disposable bedpan and urinal

*Adapted from reference 2. *Armstrong Medical Industries Inc, USA*

REFERENCES

- Canadian Paediatric Society, Emergency Paediatrics Section. Minimum equipment guidelines for paediatric prehospital care. *Canadian Journal of Paediatrics* 1994;1:128-9.
- American College of Emergency Physicians (ACEP). ACEP Policy Statement. Equipment for Ambulances. <www.acep.org/workarea/downloadasset.aspx?id=8850> (Accessed on January 21, 2011).
- Mogayzel C, Quan L, Graves JR, Tiedeman D, Fahrenbruch C, Herndon P. Out-of-hospital ventricular fibrillation in children and adolescents: Causes and outcomes. *Ann Emerg Med* 1995;25:484-91.
- Atkins DL, Jorgenson DB. Attenuated pediatric electrode pads for automated external defibrillator use in children. *Resuscitation* 2005;66:31-7.
- Berg MD, Schexnayder SM, Chameides L, et al. Part 13: Pediatric Basic Life Support: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation* 2010;122:S862-75.
- Kleinman ME, Chameides L, Schexnayder SM, et al. Part 14: Pediatric Advanced Life Support: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation* 2010;122:S876-908.

ACUTE CARE COMMITTEE

Members: Drs Adam Cheng, British Columbia Children's Hospital, Vancouver, British Columbia; Catherine Farrell, Sainte-Justine UHC, Montreal, Quebec; Jeremy Friedman, The Hospital for Sick Children, Toronto, Ontario; Marie Gauthier, Sainte-Justine UHC, Montreal, Quebec (Board Representative); Angelo Mikrogianakis, Alberta Children's Hospital, Calgary, Alberta (Chair); Oliva Ortiz-Alvarez, St Martha's Regional Hospital, Antigonish, Nova Scotia

Liaisons: Drs Claudette Bardin, Montreal Children's Hospital, Montreal, Quebec (Canadian Paediatric Society, Hospital Paediatrics Section); Laurel Chauvin-Kimoff, Montreal Children's Hospital, Montreal, Quebec (Canadian Paediatric Society, Paediatric Emergency Medicine Section); Dawn Hartfield, University of Alberta, Edmonton, Alberta (Canadian Paediatric Society, Hospital Paediatrics Section)

Principal authors: Drs Adam Cheng, Vancouver, British Columbia; Dawn Hartfield, Edmonton, Alberta

The recommendations in this statement do not indicate an exclusive course of treatment or procedure to be followed. Variations, taking into account individual circumstances, may be appropriate. All Canadian Paediatric Society position statements and practice points are reviewed, revised or retired as needed on a regular basis. Please consult the "Position Statements" section of the CPS website (www.cps.ca/english/publications/statementsindex.htm) for the most current version.