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**Original Research Article**

# Pediatric Cardiopulmonary Resuscitation Training for Nurses: A Review Study

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## ABSTRACT

**Introduction:** Managing Pediatric Cardiopulmonary Resuscitation depends on having sufficient knowledge and skills for this vital care. Educating nurses on pediatric cardiopulmonary resuscitation helps nurses choose the right course of action and do it skillfully. The choice of pediatric cardiopulmonary resuscitation training method plays an important role in maintaining knowledge and increasing nurses' skills to maintain their survival. **Methods:** This review study by searching the databases of Google Scholar, SID, Scopus, PubMed and Web of Science, using Persian keywords pediatric cardiopulmonary resuscitation, nurse, education, knowledge, skills and equivalent Their English was done. In total, 46 articles with a time limit of the last 5 years were obtained by deleting 11 articles whose full text Not available; finally, 35 articles were included in the study. **Results:** Pediatric cardiopulmonary resuscitation training for nurses has changed from a pattern of oral instruction for reading books and slides to practical simultaneous instruction on modeling; and it has evolved from merely practicing resuscitation techniques at every stage, to simulation based on creating the same conditions as a real baby to make decisions and perform the correct method of cardiopulmonary resuscitation, even by mobile phone software. **Conclusion:** Choosing the methods of teaching pediatric cardiopulmonary resuscitation to nurses, methods can be more effective that, in addition to transferring knowledge, also improve the skill of applying that knowledge. New educational methods make it possible to increase children's cardiopulmonary resuscitation skills Provided in nurses

**Keywords:** Education and Skills, Pediatric Cardiopulmonary Resuscitation, Nurse

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## Introduction

One of the challenges for nurses is cardiopulmonary resuscitation (CPR), especially when dealing with children, which is complex and difficult and can be quite challenging [1] During this process, the nurse must consider several factors, including science, clinical skills, respect, ethics, and family [2] Correct cardiopulmonary resuscitation (CPR) multiplies the ability of the child to have the ability in this golden period, which is only a few minutes [3].

In pediatric hospitals that treat a significant number of children with complex and severe illnesses, it is important to discuss end-of-life issues and how their cardiopulmonary resuscitation is performed [4] American Heart Association has developed the correct process for resuscitating children (AHA) [5]. Improving knowledge and skills is one of the factors which could influence the consequences of Pediatrics Resuscitation [6]. Numerous factors such as underlying diseases, the time elapsed between stopping and starting resuscitation, the quality of the process, the practical skills of nurses and the duration of cardiopulmonary resuscitation are effective in the survival of children after the resuscitation process [7]. Nurses trained in the field of advanced pediatric cardiopulmonary resuscitation are considered as a very important strength for pediatric medical centers [8] which increases their clinical skills and functional knowledge in this fieldlearning objectives of the courses are recognising children at risk of cardiac arrest, preventive measures, basic knowledge and skills in CPR and development of the necessary psychomotor skills to perform CPR manoeuvres in a quick, coordinated and sequential fashion in children [9].

Knowledge transfer to improve cardiopulmonary resuscitation skills of infants in nurses is done in various educational methods [10] Proper method for teaching this clinical art to nurses is very important, because the training method to increase cardiopulmonary resuscitation skills is directly related to the survival of children and ultimately reduce their death [11]. Pediatric emergencies for whatever cause, such as respiratory, cardiac, endocrine, traumatic, and infectious [12] Most cases that require cardiopulmonary resuscitation are respiratory arrest [13]. Sudden heart attacks in children are much less common than in adults. In developed countries, children have a better prognosis than adults after a heart or respiratory complication [14]. One of the most important issues is the need for caregiver family involvement and a good relationship between family members and nurses, especially at the end of the child's life that should be considered. The aim of this study was to teach pediatric cardiopulmonary resuscitation to nurses [15].

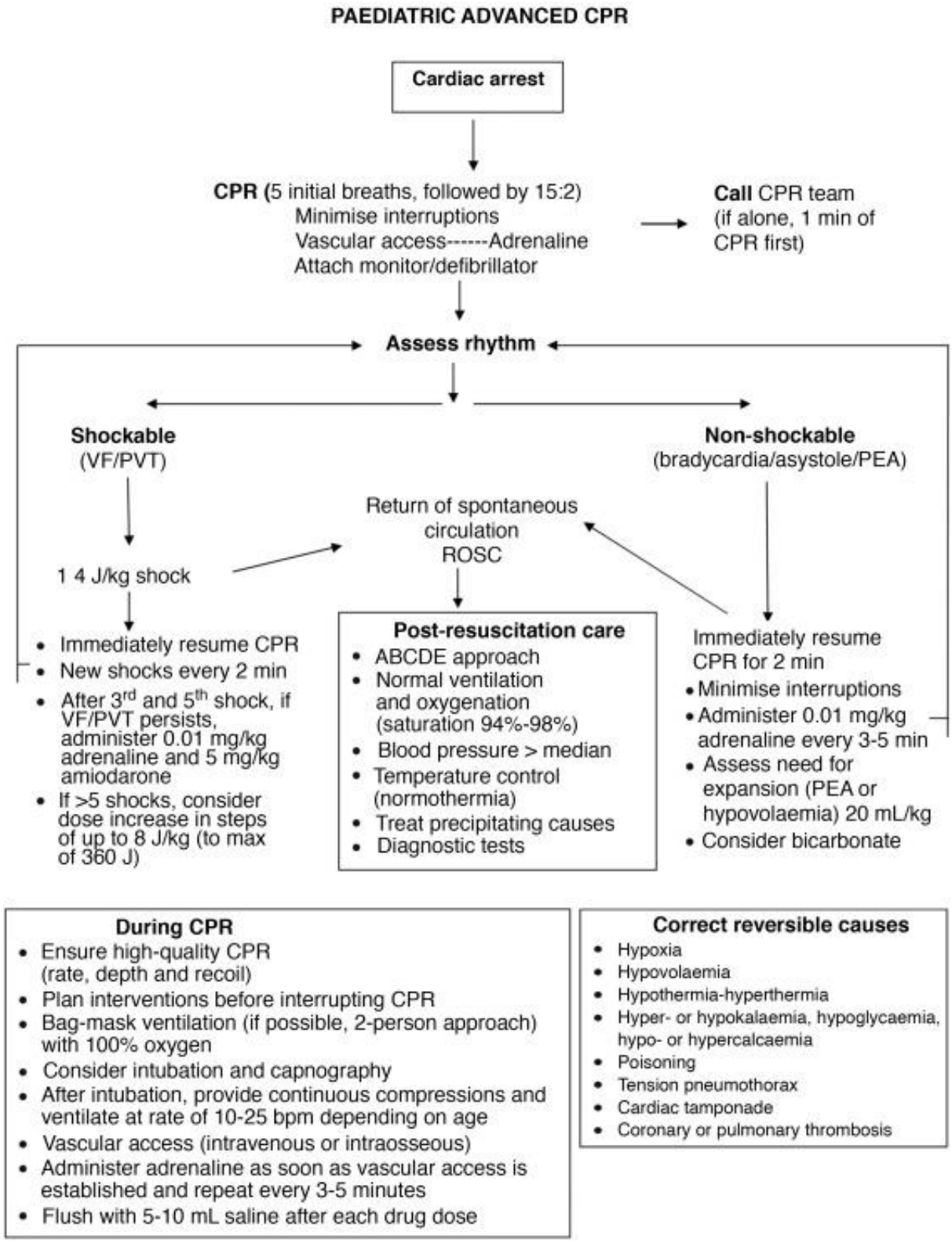


Figure 1. Pediatric Advanced PCR

**Methods**

In total, 46 articles with a time limit of the last 5 years were obtained by deleting 11 articles whose full text Not available; finally, 35 articles were included in the study

**Results**

Educational content of Pediatrics cardiopulmonary resuscitation is the same all over the world, and the latest edition of the book published by the American Academy of Pediatrics is used as a credible source for education [16]. Cardiopulmonary arrest, which occurs as a result of abrupt cessation of effective cardiac output and ventilation, requires cardiopulmonary resuscitation and the timely implementation of basic resuscitation principles that allow artificial circulation and ventilation [17]. Management of pediatric cardiac and respiratory arrest requires that nurses know the goals of resuscitation [18] Most common approach to understanding the goals of the resuscitation process is to use evidence-based resuscitation guidelines published by the AHA, the European Resuscitation Council and the Australian Committee for Advanced Support (PALS) for the lives of children [19] Management of Pediatric cardiac and respiratory arrest requires that nurses know the goals of resuscitation. Common approach to understanding the goals of the resuscitation process is to use evidence-based resuscitation guidelines published by the AHA, European Resuscitation Council and the Australian Committee for Advanced Protection (PALS) of children's lives [20] .Clinical guidelines should be used by default Nurses can consider changes based on specific aspects of the child's condition, severity of the illness, or conditions not yet covered in the standard guide [21].

Education and training in the management of Cardiac Arrest are key to improve outcomes. Therefore, current guidelines emphasize the need to improve the efficiency of educational interventions [22] with adaptation of trainings to specific target groups, integrating new approaches in training and providing training at regular intervals [23].

Training of Nurses. Every nurse should know how to activate the chain of survival and initiate advance pediatrics CPR. Training should include paediatric CPR and the response to foreign body airway obstruction (FBAO) [24] Trainings should be delivered by instructors experienced in teaching nurses using methodology adapted to the specific needs and refresher trainings should be conducted at least several at year [25]

Professionals' nurses that work with children should get involved. It is recommended that training be delivered by instructors experienced in the use of specific materials (traditional CPR manikins, quality-control devices, advanced simulators, virtual/augmented reality systems, etc.) [26] and with qualifications on non-technical skills such as teamwork, leadership and communication. We recommend frequent refresher trainings and updating of skills [27] As for the format and content of the courses, we recommend limiting in-person theoretical knowledge sessions, using remote education platforms instead (for autonomous or instructor-guided learning), and study preceding in-person practical skill simulation activities followed by interactive discussion sessions [28].

That is important to train nurses so that they can all learn how to activate the survival chain and begin the cardiopulmonary resuscitation. The educational content should be adapted to the educational needs of nurses and improve their skills in this field [29] Standard resuscitation process and protocols for children should be included in the nurses' training program and scientific and clinical content should be provided to them by educators who have already been trained in this field [30] The purpose of educating nurses is to ensure that they respond appropriately when dealing with children with cardiac and respiratory arrest to improve their survival without neurological consequences [31]. Cardiopulmonary resuscitation skills and their application depend on the training and experience of nurses [32] In order to maximize this capability, educational content should be provided to them depending on their needs to increase clinical skills [33] Nurses can benefit from the pediatric resuscitation training program in person and by educators who have already been trained in the development of cardiopulmonary resuscitation in children [34] Pediatric resuscitation training program should be done virtually using applications designed to develop cardiopulmonary resuscitation in children [35]

**Table 1: Patterns of Pediatric Cardiopulmonary Resuscitation Training**

| Procedure | Training pattern |
|---|---|
| Read the book Cardiopulmonary Resuscitation in Children, watch the step-by-step instructional video on Cardiopulmonary Resuscitation in Children | custom |

| | |
|---|---|
| See how the instructor does the following on the model (ambobag check, equipment preparation, correct placement of mouth and nose mask on the child's model, creation Positive airway pressure by ambobag and mask on the model, counting sequences Breaths given on baby modeling, chest compression on baby modeling, Counting the sequence of simultaneous breathing with positive pressure and pressing the chest on the model), See how to calculate the drug | modern<br>Presence<br>Baby modeling |
| Practicing the following items on the model by the learner (checking the ambobag and equipment, placing the mouth and nose mask correctly on the child's model, creating a positive airway pressure by the ambobag and mask on the model, counting the sequence of breaths given on the child's model, squeezing the shelf Chest on the child's model, counting the sequence of breathing with positive pressure and pressing the chest on the model) How to calculate the drug | Basic |
| Practice the following on the simulator model by the learner (counting the beats Heart through pulse or Stethoscope, control the accuracy of positive tail pressure Created by Ambobag, checking the accuracy of cardiac massage), Drug injection | Professional |
| Combination of book content, educational video on methods required for pediatric cardiopulmonary resuscitation, scenario for diagnosing pediatric resuscitation stages | virtual |

**Conclusion**

Cardiopulmonary resuscitation training for children has changed from reading a book, which is a traditional method, to teaching at the same time with the presence of a nurse to practice on the child's model. This method is still considered as the best educational method for pediatric cardiopulmonary resuscitation for nurses. Simultaneous training with advanced modeling training has been able to play an effective role in increasing nurses' knowledge and practical skills, which improves the quality of services provided during pediatric cardiopulmonary resuscitation and can greatly contribute to the success of resuscitation operations. Virtual education through existing

software has also been considered as a new method to improve the knowledge and skills of nurse's step by step in cardiopulmonary resuscitation of children. In general, in order to apply pediatric cardiopulmonary resuscitation training methods for nurses, emphasis should be placed on training that, in addition to acquiring knowledge, also improves their clinical skills.

The main application of the results of this study is to teach pediatric cardiopulmonary resuscitation to nurses and all medical staff who work with children in some way, especially staff in pediatric intensive care units.

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